PALMER TOWNSHIP

NORTHAMPTON COUNTY, PENNSYLVANIA

STANDARD CONSTRUCTION SPECIFICATION

June 2025

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 construction and installation of improvements and common amenities (as those items are defined in the Township Subdivision and Land Development Ordinance) which are intended to be offered for dedication or otherwise conveyed or transferred to the Township, and to common amenities for which the Subdivision and Land Development Ordinance requires construction to Township Standards, all pursuant to an approved subdivision/land development plan. 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 do not 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. Additionally, these Standard Construction Documents represent the minimum standards and requirements for construction and installation of improvements and common amenities. In cases where these minimum standards and requirements are not adequate for the specific design, it is incumbent upon and solely the responsibility of the Developer and Design Engineer to identify such inadequacies and provide for the necessary modifications in the design.

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.

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SECTION A: GENERAL PROVISIONS

GENERAL PROVISIONS

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

Art. 1 DEFINITIONS:

COMMON AMENITIES - Certain additions, alterations, or modifications constructed or made to, upon, or in connection with realty as required by an approved subdivision or approved land development plan and which are not intended to be offered for dedication to the Township or its Authorities.

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 and/or Zoning Ordinance.

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 Palmer 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 Consultant 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.

IMPROVEMENTS - All additions, alterations, or modifications constructed or made to, upon, or in connection with realty as required by an approved subdivision or land development as may be required by the Subdivision and Land Development Ordinance including, but not limited to, streets, walkways, curbs, storm sewers and stormwater

management facilities, street and parking lot lights, recreational facilities, open space improvements, buffer or screening plantings, landscaping, etc. and which are intended to be offered for dedication to the Township or its Authorities.

LANDSCAPE/LIGHTING CONSULTANT - The Landscape/Lighting Consultant shall be the consultant advising the Township on all landscaping and lighting issues.

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 or land development 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 - Palmer 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;

E. It shall be the responsibility of the Developer to complete the Work in accordance with the approved plans.

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, approved by the Township Solicitor's office, and naming the Engineer as additional insured;

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 including detours and lane closures as applicable, 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 Township or 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 improvements security 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, Geotechnical 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 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;

Any Work done or materials installed without proper notification of the Engineer for observation may be required to be removed or replaced by the Township. Additionally, improvements security for this work would not be released by the Township;

The Engineer and Township will coordinate with Landscape/Lighting Consultant regarding observation of the planting of shade trees, buffer strip landscaping, etc.;

B. For Work along any State Routes, the Developer and its Contractor shall meet with PENNDOT representatives 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 Subdivision and Land Development Ordinance, 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 Ordinance, these Documents, and the Plans and conditions of Plan approval by the Township are the documents which shall apply to Work in the 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 on each sheet and

submit copies 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, curbs and sidewalks 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 or Geotechnical 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 Developer and 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 212; 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", plus any other safety equipment as required by PENNDOT, 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. 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;

D. 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 only as reviewed by the Township on a case-by-case basis. Permanent construction of the traffic lanes shall be completed as soon as possible by the Contractor. The Contractor shall provide necessary pavement marking/signs at temporary bridging and plating.

In order to minimize hazard and inconvenience, excavation in driveway and sidewalk 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. Trenches shall be completely backfilled during weekends and holidays unless otherwise reviewed by the Township on a case by case basis.

It shall be the duty of the Contractor during the progress of the Work to maintain crossings, walks, sidewalks, and roadways open to traffic in a satisfactory condition, and to keep all fire hydrants, water and gas valves, storm sewers 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 or lane 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;

E. 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;

F. 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. The easement limits shall be clearly marked in the field. It is further advised that all reasonable care shall be taken to protect existing features, such as fences, curbs, utilities, sidewalks, shrubs, trees, etc., within these easements, and that any damage thereto shall be repaired, or damaged features replaced, at the Contractor's expense alone;

G. 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;

H. 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 a manhole adjoining a line being tested or in the vicinity of an exposed plug or pipe so long as pressure is maintained in the line;

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

NOTICE TO WORKERS

Palmer Township assumes 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 on site are to determine general compliance with applicable Township documents and to determine the acceptability of the final product. Should any worker feel 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 Developer through its engineer and/or 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, and property lines adjacent to proposed improvements, or other locations as may be required by the Township/Engineer, shall be visibly staked prior to construction;

D. Grade sheets for curbs, 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" survey control 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 Developer’s engineer will complete a preliminary basin as-built survey and volume calculations for review by the Engineer 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 testing shall be coordinated with the Geotechnical Engineer and the results of the liner material should be furnished to the Geotechnical Engineer for review with copies 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 for Geotechnical Engineer review and approval.

   Upon completion of topsoiling and seeding, a final basin survey and volume calculations for review by the Engineer will also be completed by the Developer’s engineer to verify the as-built basin location and volume generally conform to the approved plans.

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 prepare and provide three prints and two copies in electronic format (i.e., .pdf and .dwg format) 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 print of the plan(s) shall be submitted to the Township and Engineer for review;

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:

a. Pipe Systems (including underground detention facilities): Invert and top elevations at all manholes, water quality outlet snouts, underdrains, inlets, endwalls, and storm sewer lengths, slopes, pipe diameters, and types of pipe;

b. Detention/Retention Basins: Outlet control structures (orifices, weirs, etc.), riprap aprons or other energy dissipation structures (widths, lengths, type/size of material), low flow channels, emergency spillways (width, elevation, etc.), top of berm elevations, underdrains;

3. Traffic Improvements: Signal equipment, pull boxes, conduits, loops, signs, striping and other pavement markings, depressed curbs, street light poles, etc. shall be noted on the plan;

4. Other Underground Utilities: Location and depth of water, sanitary sewerage system, electric, telephone, cable TV, and gas lines, including wiring between street light poles and transformer where power is supplied within the rights-of-way. Any fiber optic lines should be specifically noted. Any encasement of the above utilities should be identified and the utility location and depth should be shown;

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

6. Landscaping: Location, species, and sizes of trees and shrubs;

7. Site Lighting: Location and type of light fixture and height of light standard and building mounted lights.

Art. 14 CERTIFICATIONS:

Certifications shall be provided by the Design Engineer or other appropriate professional (signed and sealed) for monumentation and property pins, and post construction stormwater management (PCSM) BMPs which document that each item has been installed in accordance with the approved plans.

Provide documentation from the Northampton County Conservation District (NCCD) which indicates their acceptance of the PCSM BMPs and site stabilization.

Art. 15 WAIVERS:

The Developer or Contractor, as the case may be, may submit a request for a waiver of the requirements of these documents. Such request shall be in writing and shall include evidence that the requirement is unnecessary given the nature of the work or the operation thereof or that the proposed alternative is equal to or greater than the requirements of these documents. The waiver shall be subject to the review and approval of the Board of Supervisors which may replace reasonable conditions on any such approval.

Art. 16 CONFLICTS:

Unless a specific detail or specification is approved by the Board of Supervisors as part of the plan review process, these documents shall apply to the construction and installation of all improvements. In the event of such conflict, the specific detail or specification approved by the Board of Supervisors shall control over the specific requirements of these documents.

SECTION B: TECHNICAL SPECIFICATIONS

PALMER TOWNSHIP

TECHNICAL SPECIFICATIONS

STREETS, CURBS AND SIDEWALKS

Materials and Construction

All materials and construction methods used in the construction of streets, curbs, and 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 and except that the use of any type of slag, lightweight aggregate, or crushed concrete 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. 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 95% of maximum density for cohesive soils or 100% of the maximum density for non-cohesive soils of the Standard Proctor Density (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% of maximum density for cohesive soils or 95% of the maximum density for non-cohesive soils of the Standard Proctor Density (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 property. All damage done to the work or property and adjacent offsite property shall be repaired at the Developer's expense. All operations of the Contractor in connection with the transportation, storage, security 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, as applicable, and notifying the Township prior to each day of blasting.

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 construction or demolition debris, 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% of the maximum dry density per Standard Proctor Density (AASHTO T 99 - Method C) for the top 3 feet, and 98% of the maximum dry density per Standard Proctor Density (AASHTO T 99 - Method C) for the remainder for cohesive soils. Embankment material shall be compacted to a density of 100% of the maximum dry density per Standard Proctor Density (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 fill gradation does not accommodate traditional in-place density measurements. These procedures establish a performance criteria 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 proof rolled with a fully loaded tri-axel dump truck (supplied by the Developer) and reviewed by the Engineer and/or the Geotechnical Engineer, as applicable.

BITUMINOUS CONCRETE PAVEMENT

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

Section 409, Superpave Asphalt Mixture Design, Hot Mixed Asphalt (HMA), including the following:

Material	Section
Excavation	203, 204, and 205
Embankment	206
Subgrade	210
Subbase	350
Superpave Asphalt Mixture Design, HMA Base Course (Standard)	309
Superpave Asphalt Mixture Design, HMA Wearing Course (Standard)	409
Plain Cement Concrete Curb	630
Cement Concrete Sidewalk	676

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) Where required by the Geotechnical Engineer/Township, eight inches of clay placed and compacted to seal the trench at the subgrade elevation;

(4) In lieu of 2. and 3. 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;

(5) New base and surface courses to the depths shown on the Standard Details or equivalent to the material of the existing roadway (whichever is greater), as determined by the Engineer;

(6) When excavation of an existing Township street is necessary, it shall be done in accordance with requirements of the Township.

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 pipe, only PENNDOT No. 2A stone 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, lightweight aggregate, or crushed concrete 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 mechanical 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, cable, or conduit 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 95% of maximum density for cohesive material and 100% for non-cohesive material. The maximum density is the maximum dry weight density in pounds per cubic foot as determined by the Standard Proctor Density (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, compacted and when required by the Geotechnical Engineer/Township, capped with eight inches of clay at proposed 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 HMA. Bituminous base course shall not be placed on surfaces that are wet or at a temperature of 35 degrees F or lower, or when the air temperature is 35 degrees F or lower.

   b. Bituminous Wearing Course -- Superpave HMA. 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.

      When the bituminous wearing course is placed adjacent to curbs, it shall be sealed with Koch 9005 rubberized asphalt. Excess bituminous material shall be removed to the satisfaction of the Engineer/Township.

c. Bituminous Wearing Course -- Superpave HMA. Placement may be permitted during the period 16 October to 15 November with the permission of the Engineer and 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;

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 and Engineer. At a minimum, conditions c(1) through c(5) above must also be met.

CONCRETE CURB, SIDEWALK, DRIVEWAY APRONS, AND CURB RAMPS: Construction of plain cement concrete curb shall meet the requirements of Section 630 - Plain Cement Concrete Curb, PENNDOT Specifications, Publication 408. This shall include the placement of concrete curb with an acceptable, self-propelled machine (slip-form machine).

The concrete curb shall be cast to a regular vertical and horizontal alignment. Transition in the vertical and horizontal alignment shall be smooth and continuous. The finish on the visible portion of the curb shall be dense and consistent in appearance. Visible differences in the finish alone shall be grounds for rejection of the curb construction.

Concrete curb, sidewalk, driveway aprons, and curb ramps shall not be placed or cured when the air temperature is or is anticipated to be 40 degrees F or lower without a written request from the Developer and the subsequent express written consent of the Township and Engineer. Concrete curb, sidewalk and driveway aprons shall not be placed on frozen base, subbase or subgrade. Concrete to be used shall be PENNDOT Class AA minimum (minimum mix design 28-day compressive strength of 3,750 psi).

The Contractor shall be particularly diligent in its craftsmanship at radii, expansion and contraction joints and stormwater inlets or any other structure that interrupts the continuity of the

concrete curb. Failure to integrate joints and inlets into a consistent and continuous vertical and horizontal alignment and smooth finish shall be grounds for rejection of the curb construction.

Construction of cement concrete sidewalks and driveway aprons shall meet the requirements of Section 676 - Cement Concrete Sidewalks, PENNDOT Specifications, Publication 408. Refer to Palmer Township Standard Construction Details - RESIDENTIAL SIDEWALK AND DRIVEWAY APRON; NON-RESIDENTIAL SIDEWALK AND DRIVEWAY APRON; CONCRETE CURB. Refer to PENNDOT Publication #72M, RC-67M for curb ramp construction details. The detectable warning surface material and color shall be reviewed by the Township.

BELGIAN BLOCK GRANITE CURB: When permitted by the Township, Belgian Block granite curb shall be installed in accordance with the Standard Construction Details – BELGIAN BLOCK GRANITE CURB.

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. 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-8800), Publication 149, Publication 212, Publication 236, and Publication 111 (TC-8600 & 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, vertical poles, 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 Engineer and 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 EPAC 3108 M42 Series, as manufactured by Eagle and shall be capable of integration into a Closed Loop System. The Controller shall include a hand-held cord in the police compartment, an MMU-16LE SmartMonitor as manufactured by EDI, a Solid State Flasher (PDC Model SSF-86-3), and Solid State Load Switches (PDS Model SSS-86-3) in an Eagle 'Stretch' M-36 EL 709 base-mounted cabinet or an Eagle M-36 EL704-S2 pole-mounted cabinet with a front door compartment and sufficient shelving for the necessary equipment. A larger cabinet may be required if necessary based on the required equipment.

A copy of closed loop software (MarcNX) shall be supplied to the Township, if applicable. Modifications to the existing software shall be completed by the Contractor at the Township Building, the Engineer's Office, and PENNDOT for any revisions or additions to the system.

All intersections shall be equipped with an Encom – Commpak Model 5200 Spread Spectrum Radio with Eagle CPS102 Power Supply, whether to be immediately connected to the system or not. Where inclusion in the closed loop system is to be implemented, a radio propagation study shall be completed to determine the communication requirements for the intersection. Where possible, a Maxrad MLVP800 or Kathrein Inc. SCALA TY-900 10 dB yagi antenna shall be utilized along with an IS-B50LN-C2 Polyphaser, as manufactured by Polyphaser Corporation. Where inclusion in the closed loop system is not to be completed immediately, a Kathrein Inc. SCALA TY-900 10 dB yagi antenna shall be placed in the controller cabinet.

At the discretion of the Township, the controller 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 in accordance with the Palmer Township Standard Construction Details – Cabinet Bypass Generation Hook Up.

Signal Support. All Traffic Signals shall be supported with Traffic Signal Mastarms. 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. Traffic Signal Supports shall be installed in accordance with PENNDOT Publication 408 and PENNDOT Supplemental Installation Procedures for Traffic Signal Supports. 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 be manufactured by GE Lighting Solutions with tinted lenses.

Red Circular	DR6-RTFB-77A
Yellow Circular	DR6-YTFB-77A
Green Circular	DR6-GTFB-77A
Red Arrow	DR6-RTAAN-17A
Yellow Arrow	DR6-YTAAN-17A
Green Arrow	DR6-GTAAN-17A
Pedestrian	PS7-CFF1-27A

The pedestrian signal heads shall have Portland Orange and Lunar White LED indications representing the 'Hand' and 'Walking Person', respectively. All vehicular and pedestrian signal improvements shall be contained in a polycarbonate housing as manufactured by McCain. Back plates, visors, louvers, and optically programmed signal heads shall be provided as indicated on the permit plans. Signal heads shall be securely mounted, using signal mounting brackets, 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., sidewalk, driveways, road widening, etc.). All loops will terminate in junction boxes, and there will be at least one junction box on each corner.

Detection. 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 rack mounted Oracle Enhanced 2E or 2EC, as manufactured by EDI. All intersections will be equipped with Optical Preemption for all approaches to the intersection. Detectors will be positioned to achieve the proper distance for activation and control of the intersection. Optical preemption equipment will be Strobecom II as manufactured by Tomar. The Contractor shall coordinate with the Township Fire Commissioner to ensure adequate advance detection of approaching emergency vehicles and shall adjust the system as necessary, including advance detection, to achieve desirable operation.

TRAFFIC SIGNAL 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.

TRAFFIC SIGNS: All stand alone traffic signs shall be mounted on PENNDOT Breakaway Type 'B' posts.

The street signs to be installed at unsignalized intersections for Township roadways shall conform to PENNDOT Specifications, Publication 236, Detail D3-1 with white reflectorized Type III or Type VII sheeting letters on green reflectorized Type III or Type VII sheeting background. All traffic control and street signs shall be installed prior to installation of roadway paving, and shall have a 7 foot bottom clearance height.

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 paint and shall conform to PENNDOT Publication 408, Section 962. 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.

PALMER 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, lightweight aggregate, or crushed concrete 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. 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 slope 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: Round and elliptical RCP shall conform to BD-636M, PENNDOT Design Manual Part 4M, Appendix H and Publication 280M (280) (all current additions).

HIGH DENSITY POLYETHYLENE PIPE (HDPE): HDPE pipe shall meet the requirements of PENNDOT Specifications, Publication 408, Section 601.2(a)6.

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 concrete 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: Standard manhole castings shall be as shown on the Standard Construction Detail and inlet grates shall be as shown on Detail – PT-D-3.

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 shown on Standard Construction Detail – PT-D-3.

STEPS: All manholes and inlets shall be provided with steps. Steps shall conform to PENNDOT Standards for Roadway Construction, current addition (PDT Publication #72M) RC-39M.

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 mechanical 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:

1. The Contractor shall perform all common excavation to the depth necessary for pipe installation as shown on the grade cut sheets reviewed by the Engineer;

2. The Contractor shall perform all rock excavation to the depth required for common excavation plus at least eight inches below the bottom of the pipe bedding.

When rock or noncushioning material is encountered in trench excavation, a cushion at least eight inches thick shall be placed between the rock and the bottom of the pipe bedding. The cushion shall consist of clean sand or equivalent granular material meeting the requirements of AASHTO No. 10 aggregate or PENNDOT No. 2A stone. The bottom of the trench shall be excavated to a horizontal section as far as practicable.

Blasting may be considered 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 Developer in connection with the transportation, storage, security, 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 Developer of its responsibility in blasting operations.

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

3. Should unstable soil be encountered or should the Engineer deem it necessary to excavate to a depth below the grade shown on the Plans to secure a good foundation, the Contractor shall remove the unstable soil for the full width of the trench and replace it with PENNDOT No. 2A stone or larger, as reviewed by the Engineer. The pipe bedding shall be constructed on top of the PENNDOT No. 2A stone. The Engineer or Geotechnical Engineer, if necessary shall determine the depth of removal of unstable soil and the amount of backfill necessary. The backfill shall be thoroughly compacted and shaped to form the bed for the pipe;

4. Excavated material not required or acceptable for backfill shall be legally disposed of by the Contractor. Common excavation shall not be carried below the required depth. When this occurs, the trench shall be backfilled with material reviewed by the Engineer and compacted to the density of not less than 95% of maximum density for cohesive material and 100% for non-cohesive material. The maximum density is the maximum dry weight density in pounds per cubic foot as determined by the Standard Proctor Density (AASHTO T 99 - Method C);

5. Where the bottom of the trench is found to be an inadequate foundation for the pipe and cannot be stabilized by the above methods, a concrete pad or cradle of sufficient size and reinforcement shall be constructed as determined by the Geotechnical Engineer;

6. The minimum width of the trench at the top of the pipe when placed shall be at least equal to the outside diameter of the pipe plus 12 inches on each side of the pipe. The trench shall be excavated accurately to the established line so that at least a 12-inch space will exist between the side of the trench and the side of the pipe. The maximum

allowable width of trench shall not exceed 24 inches on each side of the pipe when placed;

7. The sides of trenches shall be vertical for a minimum distance of four feet above the top of the pipe. These requirements are for the stability of the trench and not to be confused with the safety issues of the trench. The Contractor shall perform such veeing, trench bracing, sheathing, or shoring necessary to perform and protect the excavation and as required for safety and to conform to governing laws. Unless otherwise provided, bracing, sheathing, or shoring shall be removed by the Contractor as backfill progresses in strict accordance with all safety procedures and to conform to all governing laws;

8. In the absence of more stringent limitations specifically defined herein or imposed by the Engineer, Township, or any other regulatory agency, the length of open trench shall be limited to 50 feet in advance of where pipe has been laid and 100 feet in total at any single location. Any open trenches shall be completely backfilled, or may be covered with steel plates only as reviewed by the Township on a case-by-case basis. All construction equipment shall be removed from within rights-of-way of existing public roadways at the end of each work day and immediately upon the temporary or permanent discontinuance of work.

BEDDING: Unless otherwise directed by the Engineer/Township, all pipe to be installed, including that which is laid on an eight inch 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 reinforced concrete pipe – minimum compacted thickness of four inches beneath the pipe;

2. For HDPE pipe – when compacted the granular bedding shall extend from a minimum of four inches beneath the pipe to a minimum of 12 inches 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 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. All lifting holes shall be appropriately plugged.

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 relaid.

The Contractor shall provide, as may be necessary, for the temporary diversion of stream flow 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. 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 and the corresponding utility company as applicable.

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 Geotechnical 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 as determined by the Geotechnical Engineer: portland cement mortar (non-watertight joints) or rubber gasket (watertight joints). Alternative jointing pipe methods shall be reviewed by the Geotechnical Engineer on a case-by-case basis.

When mortar is used, on the inside of the pipe the lower half of the joint shall be filled flush with mortar for pipes 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: Backfilling of trenches for pipes shall be accomplished in accordance with these specifications. All trenches and excavations shall be backfilled promptly after the pipes are installed. Method of backfilling shall be as follows:

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

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

    a. A proper bedding of granular material properly formed to fully support the entire length of pipe;

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

    c. Where required by the Geotechnical Engineer/Township eight inches of clay placed and compacted to seal the trench at the subgrade elevation;

    d. In lieu of b. and c. above and with written approval from the Township, "flowable fill"; i.e., "Controlled Low Strength Material" (CLSM), with late-age strength of 80 psi 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;

    e. New base and surface courses at least equivalent to the material of the existing roadway, as determined by the Engineer;

f. When excavation of an existing Township street is necessary, it shall be done in accordance with requirements of the Township.

3. In all other areas (including but not limited to proposed streets) the backfill shall consist of:

   a. A proper bedding of granular material properly formed to fully support the entire length of pipe;

   b. Clean clay-like material or PENNDOT No. 2A stone for initial backfill of the sides and for 12 inches above the pipe. For HDPE pipe, only PENNDOT No. 2A stone 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;

   c. 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 mechanical 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 95% of maximum density for cohesive material and 100% for non-cohesive material. The maximum density is the maximum dry weight density in pounds per cubic foot as determined by the Standard Proctor Density (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 Geotechnical Engineer, all trench backfill shall be PENNDOT No. 2A stone, compacted 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.

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. 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-39M.

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 A615, 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 95% of maximum density for cohesive material and 100% for non-cohesive material. Maximum density is the maximum dry weight density in pounds per cubic foot as determined by the Standard Proctor Density (AASHTO T 99 - Method C).

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

All detention basins shall be constructed with concrete low flow channels that meet the details on the Standard Construction Details – REINFORCED CONCRETE LOW FLOW CHANNEL, unless otherwise permitted by the Township.

The fence around detention basins shall meet the requirements of the Standard Construction Details - DETENTION BASIN FENCE – CHAIN LINK. Alternative fence materials may be permitted by the Township as reviewed on a case-by-case basis, meeting the requirements of the Standard Construction Details - DETENTION BASIN FENCE – WOOD SPLIT RAIL - or DETENTION BASIN FENCE – ALUMINUM. The Developer is required to install either the permanent fence or a temporary fence prior to the basin detaining water.

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. These facilities shall be appropriately anchored to offset buoyancy.

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% to the outlet. The minimum pipe diameter shall be 36 inches, and pipes may not be closer to one another than ½ 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 system shall be further investigated and corrected by the Contractor.

TESTING: The Township may require infiltration/exfiltration testing of the storm sewers in accordance with ASTM C969-02 as may be updated or modified. The test would 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.

PALMER TOWNSHIP

TECHNICAL SPECIFICATIONS

RECREATIONAL FACILITIES

Materials and Construction

All materials and construction methods used in the construction of recreational facilities 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, lightweight aggregate, or crushed concrete material is prohibited, and shall meet the applicable requirements as set forth in the Technical Specifications for Roads, Curbs and Sidewalks as contained in these Documents.

BITUMINOUS SURFACE COURSE: Construction shall conform with the applicable requirements of PENNDOT Specifications, Publication 408, Sections 309 and 409 as referenced above, except that maximum surface irregularity of tennis and basketball courts shall be not greater than 1/8 inch in 10 linear feet and depressions shall be not deeper than 1/16 inch. The contractor shall provide the proper metal straightedge for verifying the regularity of grades.

RECREATIONAL SURFACE COURSES: The finished surface shall be smooth, free from ridges, valleys, puddles, and tool marks.

After placement of the bituminous concrete wearing course and following a suitable curing period as recommended by the surface coating system manufacturer, an acrylic emulsion recreational surface coating system shall be applied in accordance with the manufacturer's recommendations. The system shall consist of an Acrylic Resurfacer (920-29) plus silica sand, a texture course of DecoBase I (920-05) and DecoColor MP Classic (920-27), and a finish color course of DecoColor MP Classic (920-27), all as manufactured by DecoTurf, a Division of California Products Corporation. Alternative recreational surface systems may be used providing they are equal to the specified system as determined by the Engineer.

LINE STRIPING: The Contractor shall lay out, measure and provide line striping for tennis courts in accordance with the United States Lawn Tennis Association and the Standard Construction Details – TENNIS COURT, and for basketball courts in accordance with the Pennsylvania Interscholastic Athletic Association (PIAA) High School Measurement Standards and the Standard Construction Details – BASKETBALL COURT. These painted line striping markings shall be applied in two coats. Paint shall be DecoColor 920-22 as manufactured by DecoTurf, or an approved equal.

TENNIS COURT POSTS AND NETS: The Contractor shall furnish and install tennis court posts and nets in accordance with these Specifications and as indicated on the Standard Construction Details – TENNIS COURT. Posts shall be a minimum of 2-l/2 inches I.P.S. with a 3/l6-inch wall thickness of high-grade steel, green vinyl coated inside and outside. An eye bolt

shall be provided approximately one inch from the court surface. One post shall include an internal geared net cable winding mechanism with a removable handle.

Steel post sleeves shall be of proper size to receive the net posts and shall be 30 inches in length with a minimum 3/l6 inch wall thickness. Approved nylon net center anchor and appurtenances shall also be provided.

Tennis court nets shall be provided which are 42 feet long by 3 feet - 3 inches wide, tapered toward the center. The minimum weight of the net shall be 20 pounds. The net shall be furnished with a vinyl impregnated steel cable and maple dowels for the net bracing. Top binding shall be double-coated nylon impregnated and bound by four rows of nylon stitching. A 2-l/8 inch wide, nylon center strap with galvanized hardware and appurtenances shall be provided.

Nets and posts shall be installed in accordance with the manufacturer's instructions. Holes for net posts shall be cut through pavement and posts installed prior to constructing recreational surface.

BASKETBALL GOALS AND GOAL POSTS: Basketball goal equipment shall be Porter Backboard posts and basketball rims or an approved equal. Equipment at each court end shall be as follows: No. 175, Goal Support; No. 216, Backboard; and No. 235, Super Goal with net. Basketball goal posts shall be installed after completion of the pavement and before installation of the recreational surface.

CONCRETE: Concrete used for the installation of court nets, goal posts, fence posts, gate posts and appurtenances shall conform to the requirements of Pennsylvania Department of Transportation (PENNDOT) Specifications, Publication 408, Section 704, Class A concrete minimum.

CHAIN-LINK FENCE AND GATE: Chain link fences and gates shall be supplied as complete units by a single supply source including necessary erection accessories, fittings, and fastenings, and shall meet the requirements of the Standard Construction Details – COURT FENCE AND PAVEMENT as provided by Anchor Fence, Inc. or an approved equal. Fence selvage shall be knuckled. All materials and construction shall comply with the Chain-Link Fence Manufacturers' Institute Product Manual. One-piece fabric widths shall be provided. Core wire shall be 9 gauge and PVC coating shall be Woodland Green complying with ASTM F668- Class 2b, with a thickness not less than 0.006 inch. All framework and accessories shall be provided and constructed in accordance with the Chain-Link Fence Manufacturers' Institute Product Manual, Industrial Steel Guide for Fence Rails, Posts, Gates and Accessories, including Table II and conforming to ASTM F 669. All materials and construction shall comply with ASTM F 1083. Fittings shall comply with ASTM F 626 and top rail shall be l-l/4-inch NPS weighing l.35 lbs. per foot.

Swing gates shall comply with ASTM F 900 and hinges shall be the non-lift-off type with a l80 degree opening configuration. Latch shall be forked type with padlock. Gates shall be installed plumb and level, and hardware shall be adjusted for smooth operation.

Fence shall be installed in accordance with ASTM F 567. Posts shall be installed after construction of the pavement and before installation of the recreational surface. Post installation shall be in place a minimum of seven days before fabric is installed. Posts shall be spaced 10 feet o.c. with the hole diameters four times the post diameter and hole depth of 5'-3". Top rails shall be run continuously through line post cap fittings and include expansion fittings. Center rail shall be provided and braces shall be installed so posts are plumb. Both tension wire and tennis bars shall be provided. Fabric shall be installed approximately two inches above finished grade. Fabric shall be tied to line posts 12 inches on center and to rails and braces 24 inches on center.

PVC coated components shall be installed without abrading. Abraded components will be rejected as determined by the Engineer.

BICYCLE PATH: Construction of Bicycle Paths shall be as specified in the Standard Construction Details – BICYCLE PATH.

TOPSOILING: Screened topsoil shall be furnished and placed at all disturbed areas of the site for lawn construction and seeding. If excess topsoil is stockpiled as a result of the court construction it shall be hauled away and disposed of at no expense to the Township. Topsoil shall be of proven quality to grow lawn seed.

Soil shall be loosened to a depth of 8 inches before placing the topsoil. All stones 2 inches and larger and other foreign matter shall be removed before topsoil placement. All unsuitable and surplus material shall be removed and satisfactorily disposed.

Topsoil shall be placed on the prepared areas, spread and compacted, with a roller weighing not over l20 pounds per foot width of the roller, to a 4-inch uniform depth. Topsoil shall not be placed in wet or frozen conditions.

SEEDING: All disturbed areas shall be seeded after being properly topsoiled. Grass seed shall be predominantly a blend of Kentucky Bluegrass seed, with approximately 20% "nurse-grass" seed, complying with standards of Official Seed Analysis of North America for 85% purity, 80% germination and one percent (maximum) weed seed, recommended by producer for full-sun exposure of lawns in geographic location of project. Appropriate soil amendments shall be added and mixed thoroughly into the topsoil layer.

The prepared lawn surface shall be graded and rolled. The area shall be watered thoroughly without mud development and grass seed shall be uniformly sowed in two directions perpendicular to each other, in quantity recommended by the seed producer for a dense turf. The seed shall be lightly raked into top l/8 inch of lawn surface, and watered thoroughly with fine spray. The seeded areas shall be mulched with loose 1-1/2 inch depth of straw hay.

The seeded areas shall be adequately maintained throughout the 18-month maintenance period, including necessary watering, weeding, cultivation, restoration of grade, mowing and trimming of grass, protection from insects and diseases, fertilizing, and similar operation as needed to ensure healthy, vigorous growth.

SECTION C: STANDARD CONSTRUCTION DETAILS

PALMER TOWNSHIP

NORTHAMPTON COUNTY, PENNSYLVANIA

STANDARD CONSTRUCTION DETAILS

MARCH 2008
REVISED APRIL 2014

PREPARED BY

THE PIDCOCK COMPANY
CIVIL ENGINEERING AND LAND PLANNING ARCHITECTURE LAND SURVEYING

OXFORD DRIVE AT FISH HATCHERY ROAD
ALLENTOWN, PENNSYLVANIA

PALMER TOWNSHIP

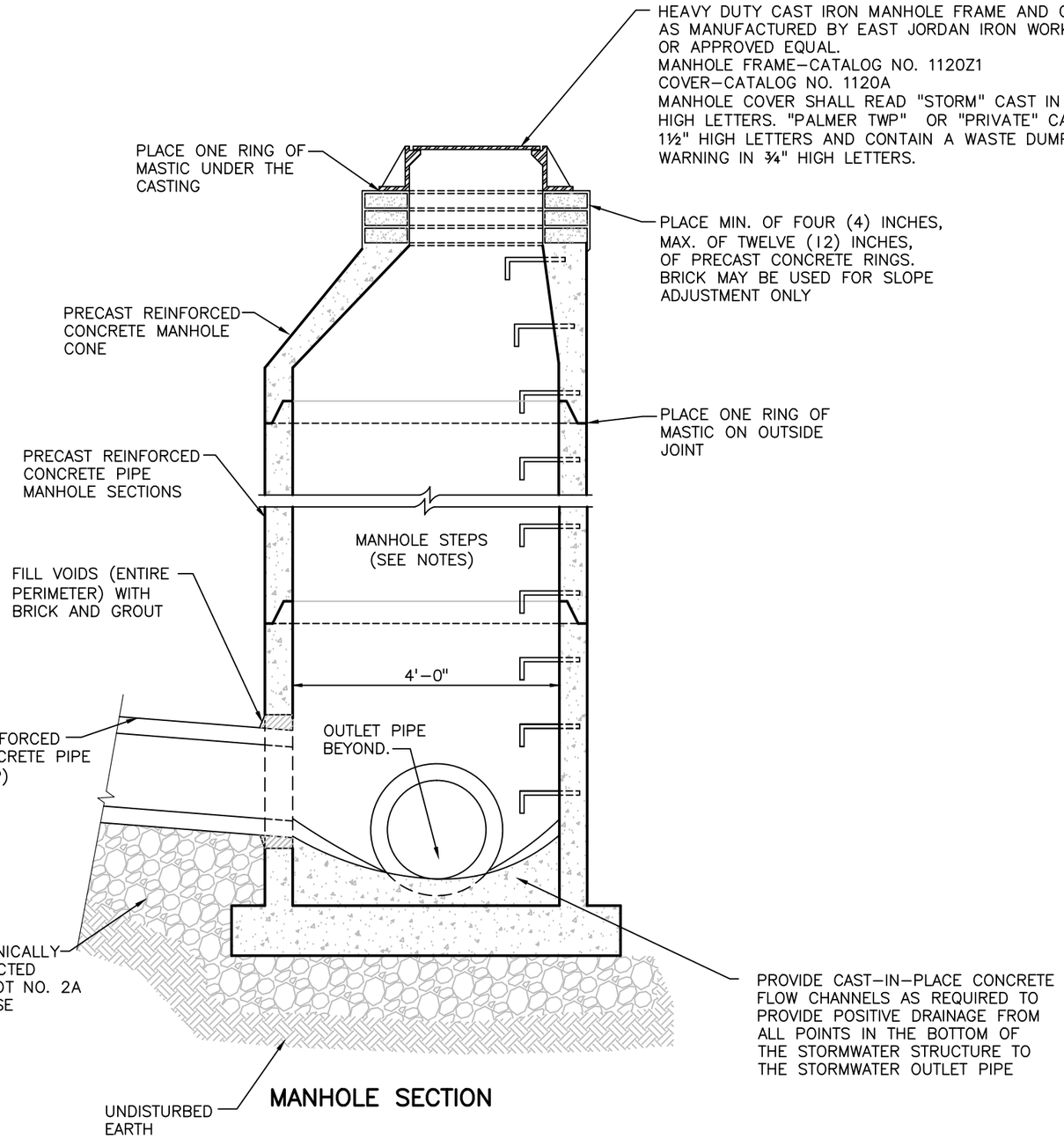
NORTHAMPTON COUNTY, PENNSYLVANIA

INDEX OF DETAILS

NO.	TITLE	PLAN DATE OR LAST REVISION
TP-D-1	STANDARD PRECAST CONCRETE PIPE MANHOLE	APRIL 2014
TP-D-2	SHALLOW PRECAST CONCRETE PIPE MANHOLE	APRIL 2014
TP-D-3	PRECAST CONCRETE, TYPE M INLET	APRIL 2014
TP-D-4	PRECAST CONCRETE, TYPE C INLET	APRIL 2014
TP-D-5	MANHOLE TO INLET CONVERSION	APRIL 2014
TP-D-6	MODIFIED INLET	APRIL 2014
TP-D-7	CONCRETE LOW FLOW CHANNEL	MARCH 2008
TP-D-8	DETENTION BASIN FENCE - CHAIN LINK	MARCH 2008
TP-D-9	DETENTION BASIN FENCE - WOOD SPLIT RAIL	APRIL 2014
TP-D-10	DETENTION BASIN FENCE - ALUMINUM	MARCH 2008
TP-G-1	STANDARD TRENCH	MARCH 2008
TP-R-1	TYPICAL ROADWAY CROSS SECTIONS	APRIL 2014
TP-R-2	NON-STATE HIGHWAY PAVEMENT RESTORATION AND TRENCH BACKFILL	APRIL 2014
TP-R-3	RESIDENTIAL SIDEWALK AND DRIVEWAY APRON	APRIL 2014
TP-R-4	NON-RESIDENTIAL SIDEWALK AND DRIVEWAY APRON	APRIL 2014
TP-R-5	CONCRETE CURB	MARCH 2008
TP-R-6	SIDEWALK AND CURB RAMP	APRIL 2014
TP-R-7	BELGIAN BLOCK GRANITE CURB	MARCH 2008

NO.	TITLE	PLAN DATE OR LAST REVISION
TP-REC-1	TENNIS COURT	MARCH 2008
TP-REC-2	BASKETBALL COURT	MARCH 2008
TP-REC-3	COURT FENCE AND PAVEMENT	APRIL 2014
TP-REC-4	BICYCLE PATH	APRIL 2014
TP-TS-1	TRAFFIC SIGNAL CABINET BYPASS GENERATOR HOOK UP	APRIL 2014

NOTE:
THESE STANDARD CONSTRUCTION DETAILS TOGETHER WITH THE GENERAL PROVISIONS AND TECHNICAL SPECIFICATIONS CONSTITUTE THE STANDARD CONSTRUCTION DOCUMENTS FOR PUBLIC INTEREST IMPROVEMENTS INSTALLED AS PART OF SUBDIVISIONS/LAND DEVELOPMENTS WITHIN PALMER TOWNSHIP.



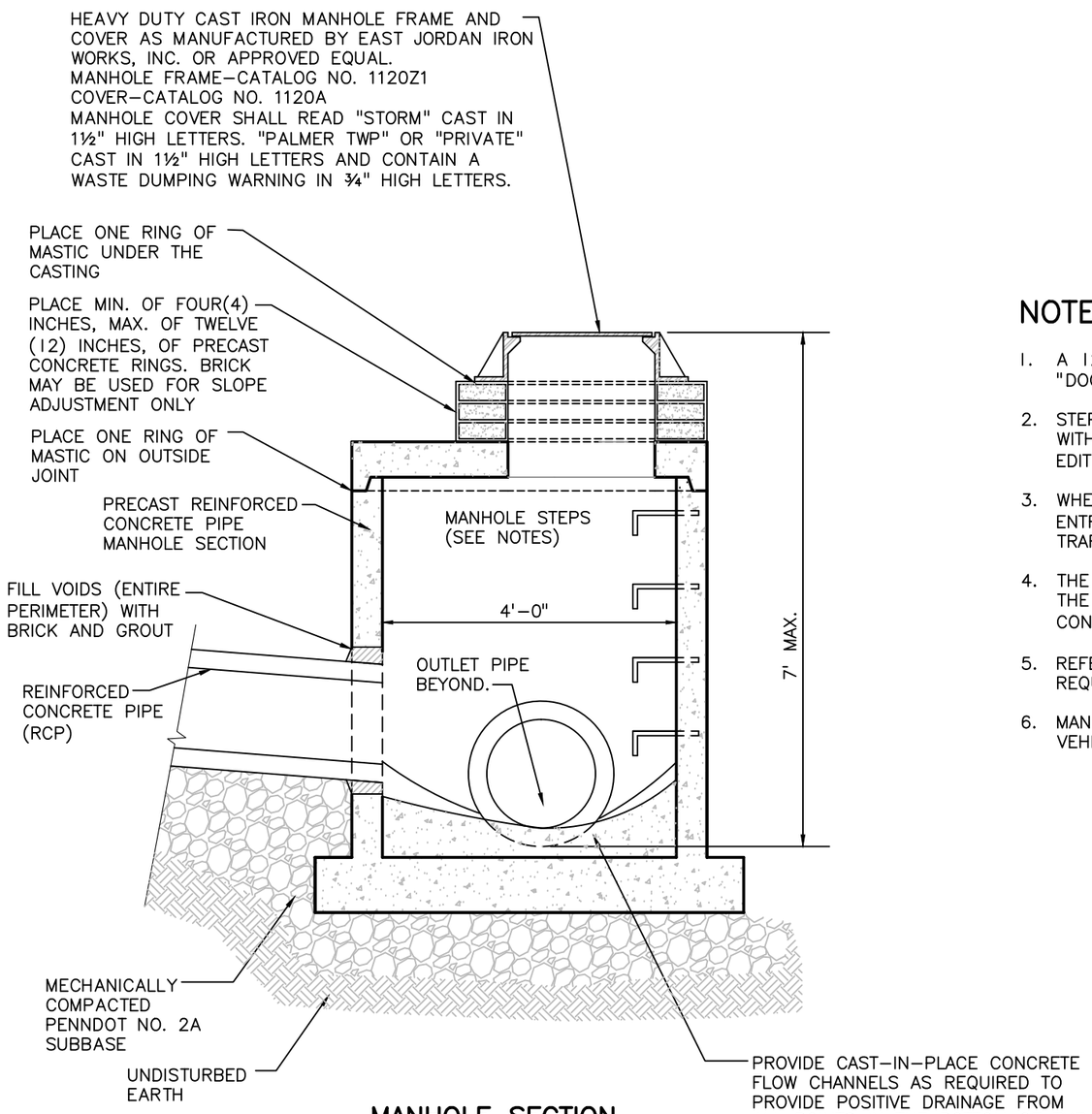
MANHOLE SECTION

NOTES:

1. A 12" CAST–IN–PLACE, REINFORCED BASE MAY BE USED FOR A "DOGHOUSE" TYPE MANHOLE.
2. STEP DIMENSIONS AND CONFIGURATION SHALL BE IN ACCORDANCE WITH PENNDOT STANDARDS FOR ROADWAY CONSTRUCTION, CURRENT EDITION (PDT PUB #72M), RC–39M.
3. WHERE POSSIBLE, STEPS SHALL BE ORIENTED SUCH THAT ENTRY/EXIT WILL FACE THE GENERAL DIRECTION OF ONCOMING TRAFFIC.
4. THE MANUFACTURER OF THE MANHOLES SHALL BE INCLUDED ON THE PENNDOT LIST OF APPROVED MANUFACTURERS OF PRECAST CONCRETE PRODUCTS (BULLETIN 15).
5. REFER TO PDT PUB #72M, RC–39M FOR ADDITIONAL REQUIREMENTS.
6. MANHOLE FRAME AND COVER SHALL BE PLACED OUT OF VEHICULAR WHEEL PATH AS MUCH AS PRACTICAL.

STANDARD PRECAST CONCRETE PIPE MANHOLE
(SHOWN WITH PRECAST BASE)
NO SCALE

REVISIONS	PALMER TOWNSHIP
1 APRIL 2014 GENERAL REVISIONS	**STANDARD CONSTRUCTION DETAILS** NORTHAMPTON COUNTY, PENNSYLVANIA
	STORM DRAINAGE **STANDARD PRECAST CONCRETE PIPE MANHOLE**
	THE PIDCOCK COMPANY — CIVIL ENGINEERING AND LAND PLANNING ARCHITECTURE LAND SURVEYING — OXFORD DRIVE AT FISH HATCHERY ROAD ALLENTOWN, PENNSYLVANIA
	DATE: MARCH 2008 · CHKD BY: RJG · SCALE: NO SCALE · TP–D–1



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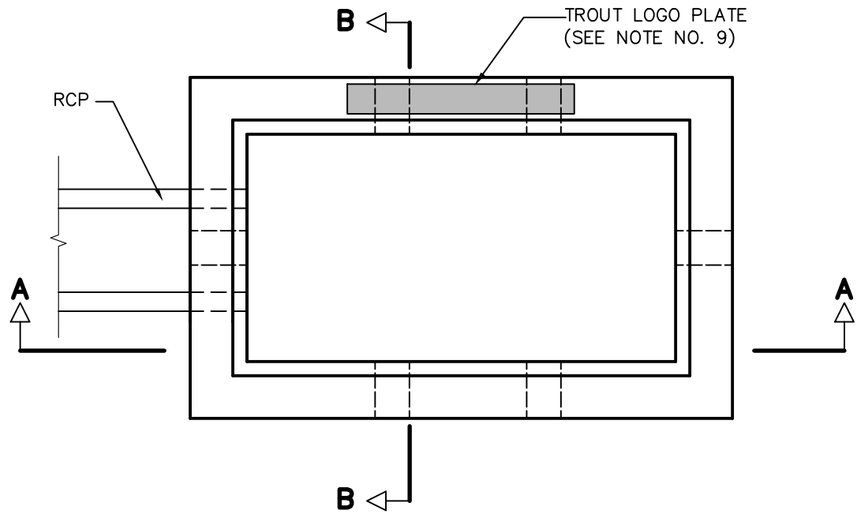
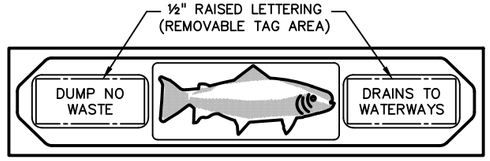
SHALLOW PRECAST CONCRETE PIPE MANHOLE
(SHOWN WITH PRECAST BASE)
NO SCALE

REVISIONS	PALMER TOWNSHIP
1 APRIL 2014 GENERAL REVISIONS	**STANDARD CONSTRUCTION DETAILS** NORTHAMPTON COUNTY, PENNSYLVANIA
	STORM DRAINAGE
	SHALLOW PRECAST CONCRETE PIPE MANHOLE
	THE PIDCOCK COMPANY — CIVIL ENGINEERING AND LAND PLANNING ARCHITECTURE LAND SURVEYING — OXFORD DRIVE AT FISH HATCHERY ROAD ALLENTOWN, PENNSYLVANIA
	DATE: MARCH 2008 · CHKD BY: RJG · SCALE: NO SCALE
	TP–D–2



PLAN

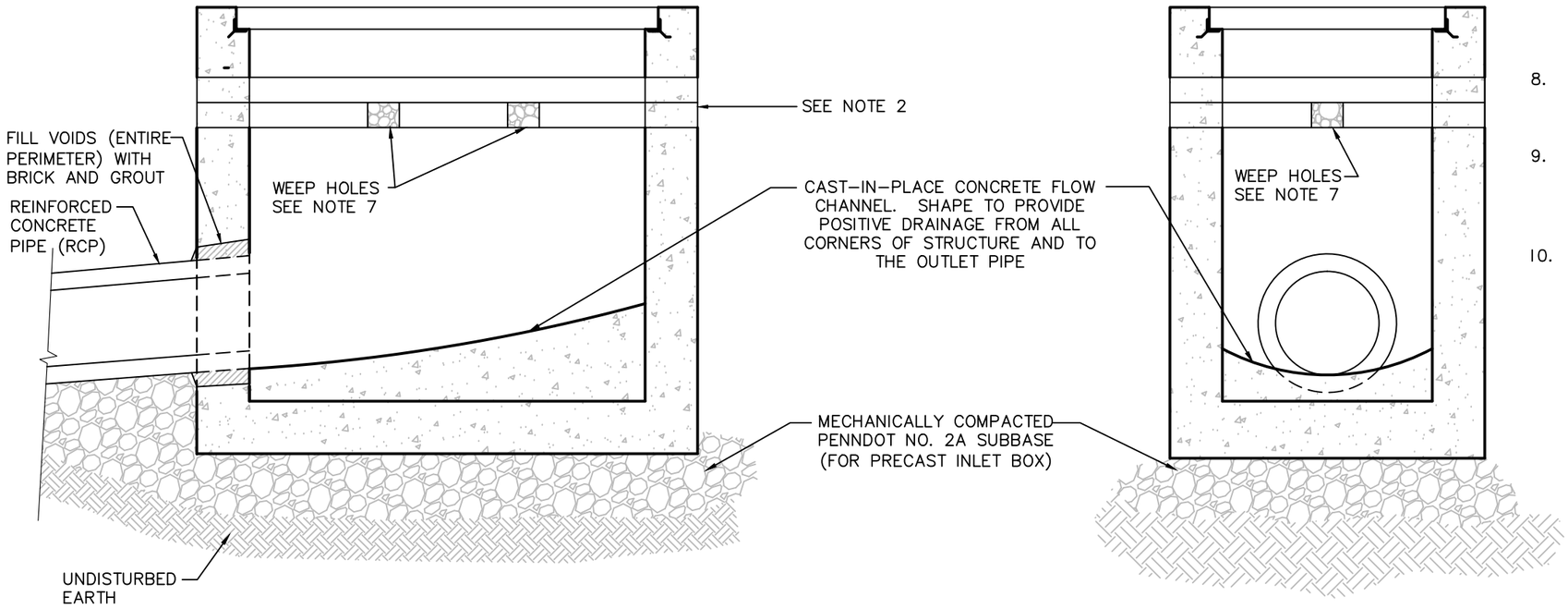


NO SCALE

TROUT LOGO PLATE

NOTES:

1. CONCRETE INLET AND TOP UNITS SHALL BE AS DETAILED IN PENNDOT STANDARDS FOR ROADWAY CONSTRUCTION, CURRENT EDITION (PDT PUB #72M) RC–34M, "INLETS, CONCRETE TOP UNITS CAST–IN–PLACE AND PRECAST".
2. PROVIDE A MINIMUM OF 4 INCHES AND MAXIMUM OF 8 INCHES VERTICALLY OF PRECAST CONCRETE COLLARS WITH THROUGH–WALL OPENINGS ADJACENT TO SUBGRADE TO SERVE AS WEEP HOLES.
3. ALL EXPOSED EDGES SHALL BE CHAMFERED 1"x1".
4. STEPS SHALL BE PROVIDED WHENEVER STRUCTURE EXCEEDS 4 FEET IN DEPTH.
5. STEP DIMENSIONS AND CONFIGURATION SHALL BE IN ACCORDANCE WITH PENNDOT STANDARDS FOR ROADWAY CONSTRUCTION, CURRENT EDITION (PDT PUB #72M), RC–39M.
6. PROVIDE STRUCTURAL STEEL GRATE – BICYCLE SAFE, AS DETAILED IN PENNDOT STANDARDS FOR ROADWAY CONSTRUCTION, CURRENT EDITION (PDT PUB #72M) RC–45M, "INLET GRATES".
7. THE BACKFILL AROUND THE WEEPHOLES SHALL NOT CONTAIN SCREENINGS; i.e., PLACE PENNDOT NO. 3 OR LARGER STONES AS REQUIRED BY ENGINEER, WITHOUT SCREENINGS TO ALLOW WATER TO ENTER WEEPHOLES. PLACE GEOTEXTILE FABRIC AROUND BACKFILL TO PREVENT MIGRATION OF SURROUNDING MATERIAL INTO VOIDS OF BACKFILL.
8. THE MANUFACTURER OF THE INLETS SHALL BE INCLUDED ON THE PENNDOT LIST OF APPROVED MANUFACTURERS OF PRECAST CONCRETE PRODUCTS (BULLETIN 15).
9. TOP UNITS MUST CONTAIN THE 24–INCH BY 3–INCH TROUT LOGO PLATE AND TAGS DISPLAYING A DUMPING WARNING AS MANUFACTURED BY EAST JORDAN IRON WORKS INC. (CATALOG NO. 7003PL1).
10. REFER TO PDT PUB #72M, RC–46M FOR ADDITIONAL REQUIREMENTS.



TYPE M INLET

NO SCALE

REVISIONS
1 APRIL 2014 GENERAL REVISIONS

PALMER TOWNSHIP

STANDARD CONSTRUCTION DETAILS

NORTHAMPTON COUNTY, PENNSYLVANIA

STORM DRAINAGE

PRECAST CONCRETE TYPE M INLET

THE PIDCOCK COMPANY

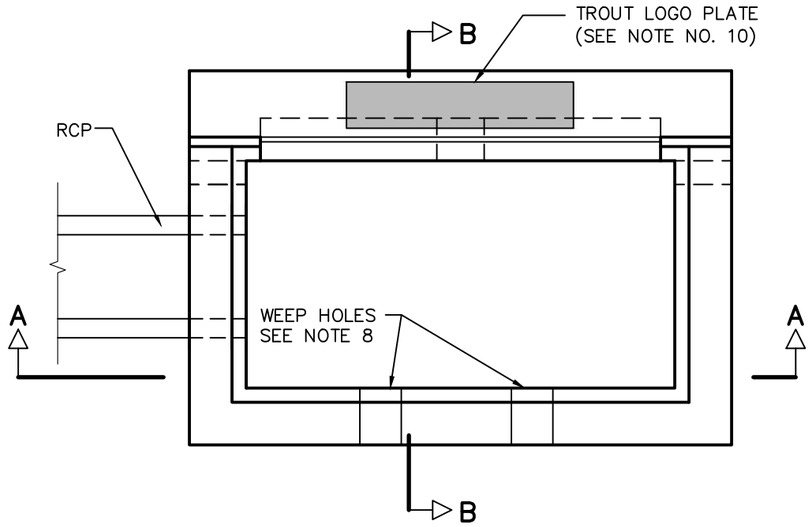
CIVIL ENGINEERING AND LAND PLANNING ARCHITECTURE LAND SURVEYING

OXFORD DRIVE AT FISH HATCHERY ROAD ALLENTOWN, PENNSYLVANIA

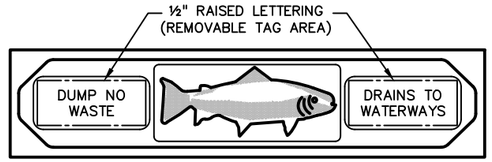
DATE: MARCH 2008
CHKD BY: RJG
SCALE: NO SCALE

TP–D–3

Drawing name: S:\Municipalities\MUNICIPAL STANDARD CONSTRUCTION DOCUMENTS\PALMER TOWNSHIP\TP–WORKING DOCUMENTS\TP–2014 DETAILS\TP–D–03.dwg Last Modified: Apr 29, 2014 – 3:22pm



PLAN

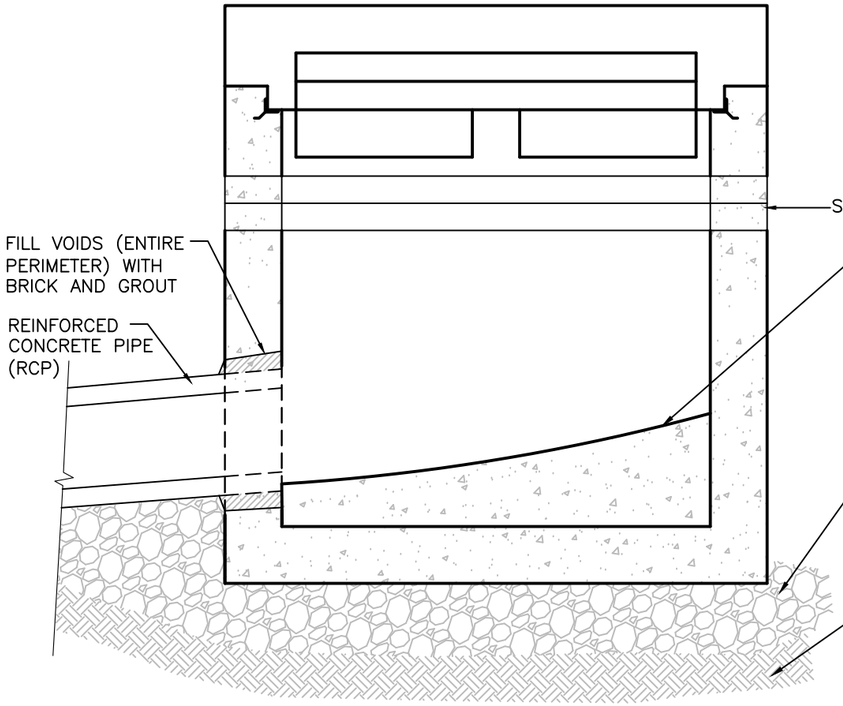


NO SCALE

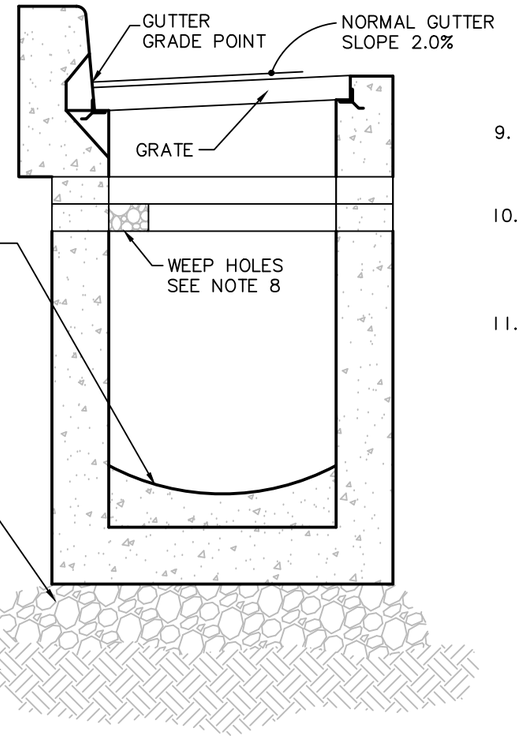
TROUT LOGO PLATE

NOTES:

1. CONCRETE INLET AND TOP UNITS SHALL BE AS DETAILED IN PENNDOT STANDARDS FOR ROADWAY CONSTRUCTION, CURRENT EDITION (PDT PUB #72M) RC–34M, "INLETS, CONCRETE TOP UNITS CAST–IN–PLACE AND PRECAST".
2. PROVIDE A MINIMUM OF 4 INCHES AND MAXIMUM OF 8 INCHES VERTICALLY OF PRECAST CONCRETE COLLARS WITH THROUGH–WALL OPENINGS ADJACENT TO SUBGRADE TO SERVE AS WEEP HOLES.
3. ALL EXPOSED EDGES SHALL BE CHAMFERED 1"x1".
4. STEPS SHALL BE PROVIDED WHENEVER STRUCTURE EXCEEDS 4 FEET IN DEPTH.
5. STEP DIMENSIONS AND CONFIGURATION SHALL BE IN ACCORDANCE WITH PENNDOT STANDARDS FOR ROADWAY CONSTRUCTION, CURRENT EDITION (PDT PUB #72M), RC–39M.
6. THE CENTERLINE OF AN INLET SHALL BE NO CLOSER THAN 8 FEET TO THE EDGE OF A DRIVEWAY.
7. PROVIDE STRUCTURAL STEEL GRATE – BICYCLE SAFE, AS DETAILED IN PENNDOT STANDARDS FOR ROADWAY CONSTRUCTION, CURRENT EDITION (PDT PUB #72M), RC–45M, "INLET GRATES".
8. THE BACKFILL AROUND THE WEEPHOLES SHALL NOT CONTAIN SCREENINGS; i.e., PLACE PENNDOT NO. 3 OR LARGER STONES AS REQUIRED BY ENGINEER, WITHOUT SCREENINGS TO ALLOW WATER TO ENTER WEEPHOLES. PLACE GEOTEXTILE FABRIC AROUND BACKFILL TO PREVENT MIGRATION OF SURROUNDING MATERIAL INTO VOIDS OF BACKFILL.
9. THE MANUFACTURER OF THE INLETS SHALL BE INCLUDED ON THE PENNDOT LIST OF APPROVED MANUFACTURERS OF PRECAST CONCRETE PRODUCTS (BULLETIN 15).
10. TOP UNITS MUST CONTAIN THE 24–INCH BY 5–INCH TROUT LOGO PLATE AND TAGS DISPLAYING A DUMPING WARNING AS MANUFACTURED BY EAST JORDAN IRON WORKS INC. (CATALOG NO. 7001PL1).
11. REFER TO PDT PUB #72M, RC–46M FOR ADDITIONAL REQUIREMENTS.



SECTION A–A



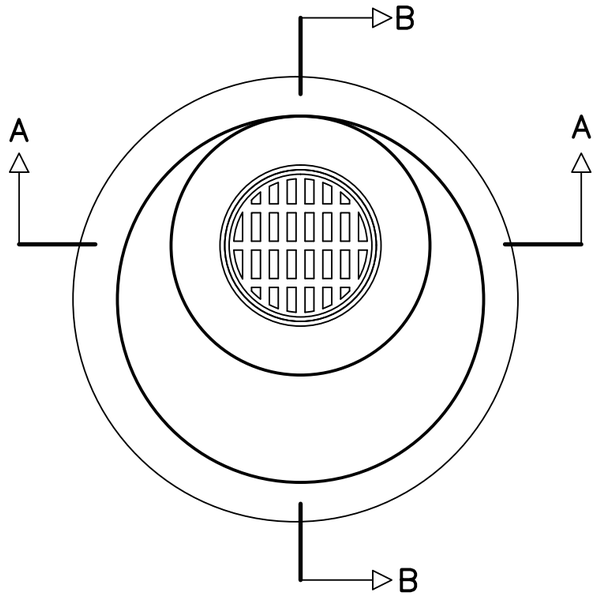
SECTION B–B

TYPE C INLET

NO SCALE

REVISIONS	PALMER TOWNSHIP
1 APRIL 2014 GENERAL REVISIONS	**STANDARD CONSTRUCTION DETAILS** NORTHAMPTON COUNTY, PENNSYLVANIA
	STORM DRAINAGE **PRECAST CONCRETE TYPE C INLET**
	THE PIDCOCK COMPANY CIVIL ENGINEERING AND LAND PLANNING ARCHITECTURE LAND SURVEYING OXFORD DRIVE AT FISH HATCHERY ROAD ALLENTOWN, PENNSYLVANIA
	DATE: MARCH 2008 CHKD BY: RJG SCALE: NO SCALE
	TP–D–4

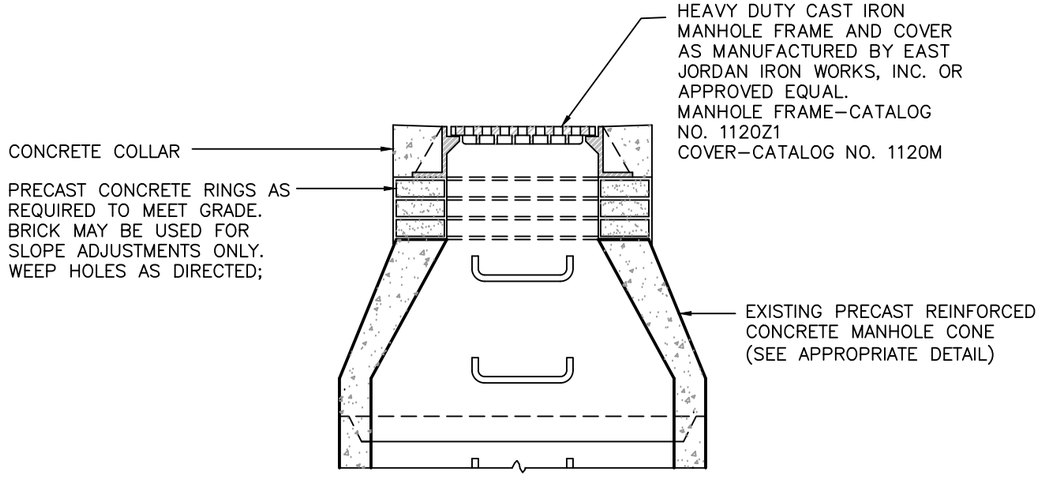
Drawing name: S:\Municipalities\MUNICIPAL STANDARD CONSTRUCTION DOCUMENTS\PALMER TOWNSHIP\TP–WORKING DOCUMENTS\TP–2014 DETAILS\TP–D–04.dwg Last Modified: Apr 29, 2014 – 3:16pm



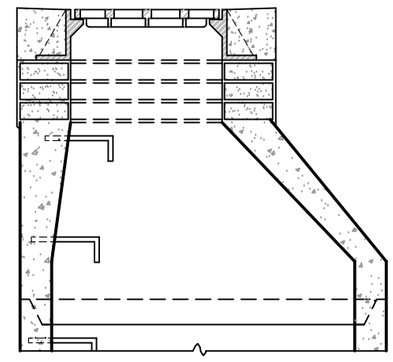
PLAN

NOTE:

1. REFER TO PDT PUB #72M, RC-46M FOR ADDITIONAL REQUIREMENTS.



SECTION A-A



SECTION B-B

MANHOLE TO INLET CONVERSION

NO SCALE

REVISIONS
1 APRIL 2014 GENERAL REVISIONS

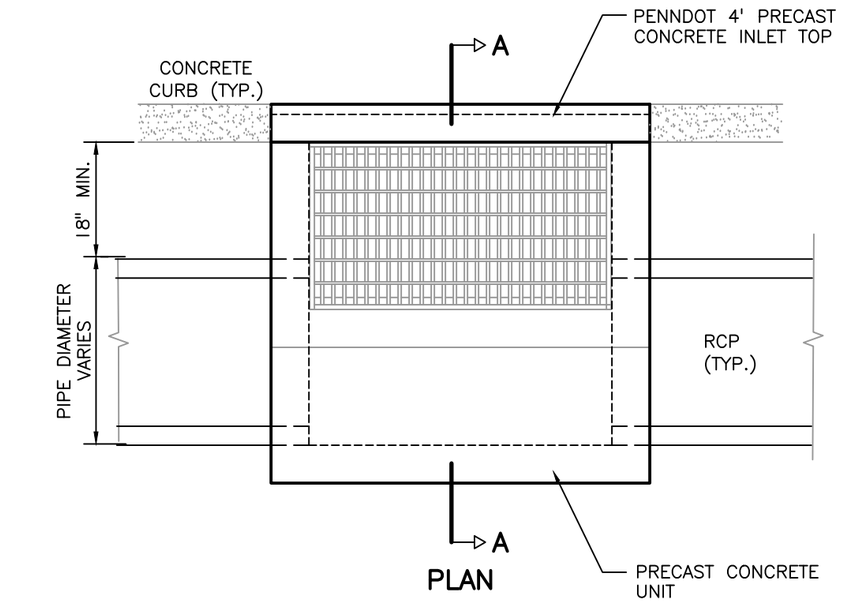
PALMER TOWNSHIP
STANDARD CONSTRUCTION DETAILS
NORTHAMPTON COUNTY, PENNSYLVANIA

STORM DRAINAGE
MANHOLE TO INLET CONVERSION DETAIL

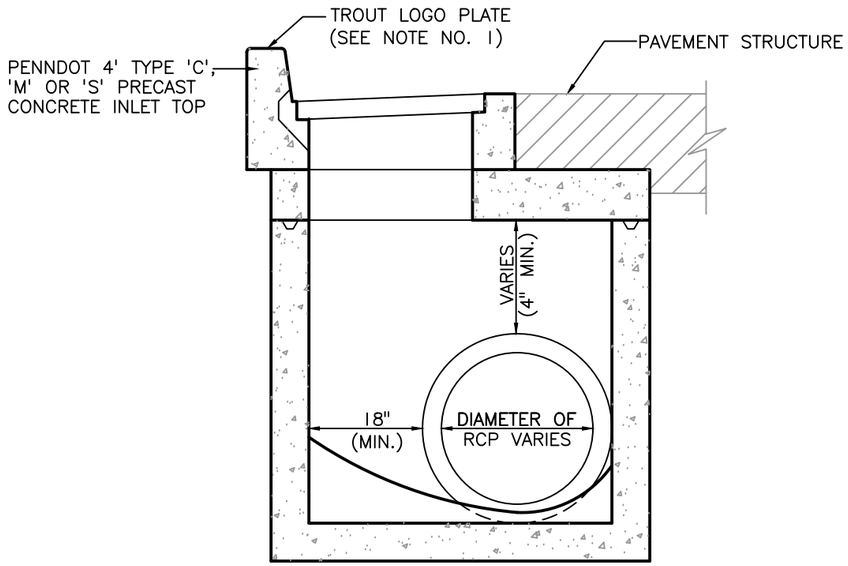
THE PIDCOCK COMPANY
CIVIL ENGINEERING AND LAND PLANNING ARCHITECTURE LAND SURVEYING
OXFORD DRIVE AT FISH HATCHERY ROAD
ALLENTOWN, PENNSYLVANIA

DATE: MARCH 2008
CHKD BY: RJG
SCALE: NO SCALE

TP-D-5



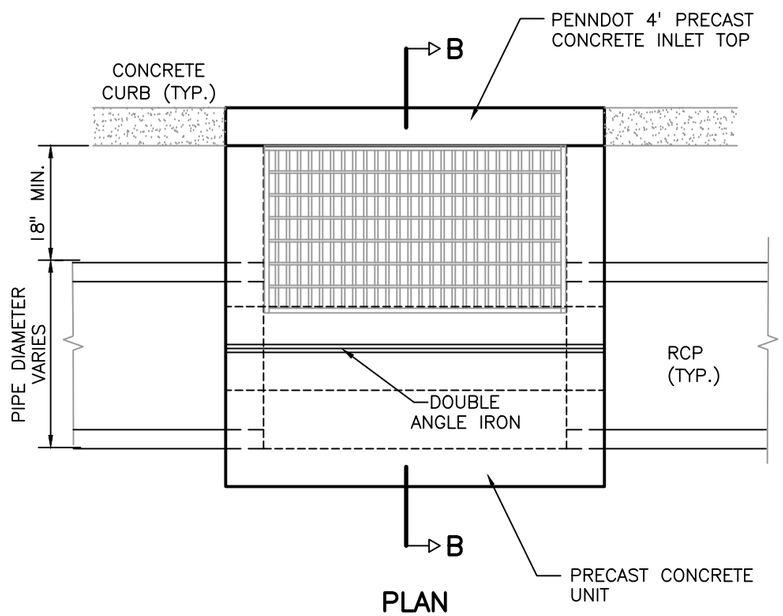
PLAN



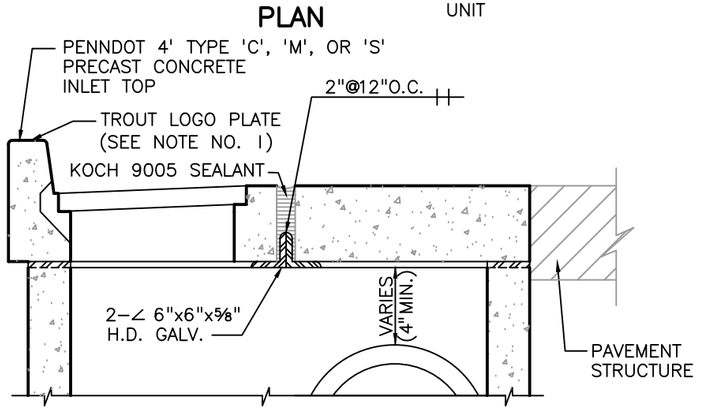
SECTION A–A

MODIFIED INLET

NO SCALE



PLAN



SECTION B–B

ALTERNATIVE STEEL SUPPORT TO RECEIVE PENNDOT TYPE 'C', 'M', OR 'S' INLET

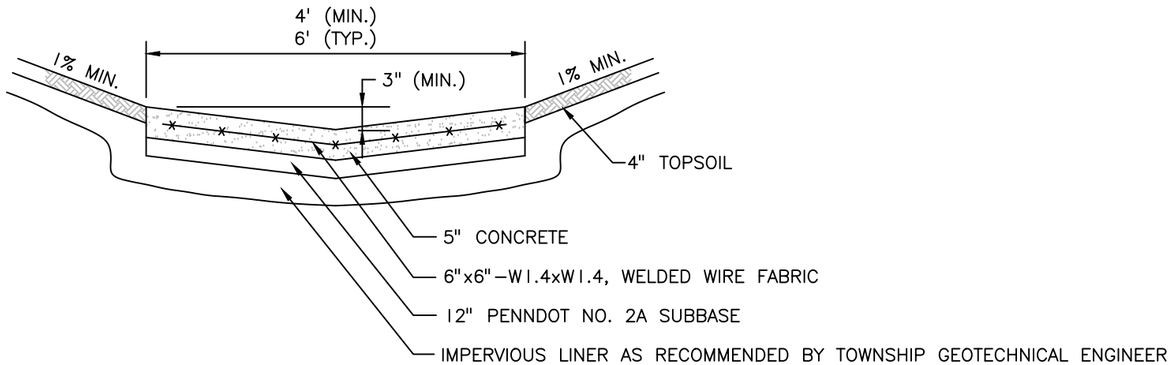
NO SCALE

NOTES:

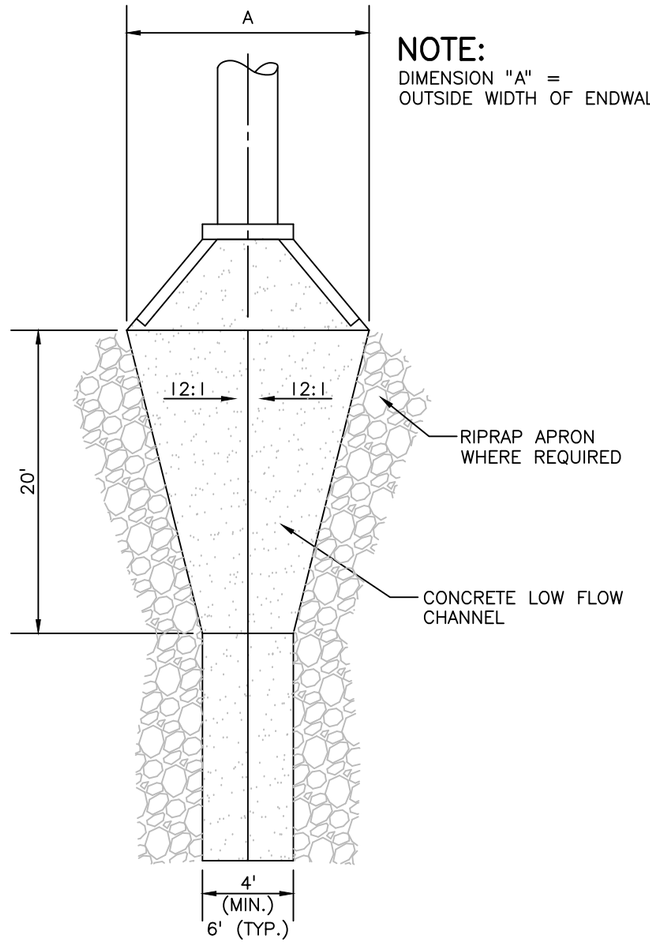
1. TYPE 'C' AND TYPE 'M' TOP UNITS MUST CONTAIN THE TROUT LOGO PLATE AND TAGS DISPLAYING A DUMPING WARNING. SEE DETAILS TP–D–3 AND TP–D–4.
2. THE MANUFACTURER OF THE INLETS SHALL BE INCLUDED ON THE PENNDOT LIST OF APPROVED MANUFACTURERS OF PRECAST CONCRETE PRODUCTS (BULLETIN 15).
3. REFER TO PDT PUB #72M, RC–46M FOR ADDITIONAL REQUIREMENTS.

REVISIONS	PALMER TOWNSHIP
1 APRIL 2014 GENERAL REVISIONS	**STANDARD CONSTRUCTION DETAILS** NORTHAMPTON COUNTY, PENNSYLVANIA
	STORM DRAINAGE
	MODIFIED INLET
	THE PIDCOCK COMPANY — CIVIL ENGINEERING AND LAND PLANNING ARCHITECTURE LAND SURVEYING — OXFORD DRIVE AT FISH HATCHERY ROAD ALLENTOWN, PENNSYLVANIA
	DATE: MARCH 2008 · CHKD BY: RJG · SCALE: NO SCALE
	TP–D–6

Drawing name: S:\Municipalities\MUNICIPAL STANDARD CONSTRUCTION DOCUMENTS\TP–2014 DETAILS\TP–D–06.dwg Last Modified: Apr 29, 2014 – 2:59pm



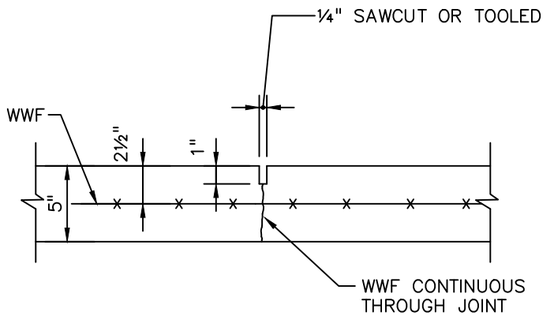
TYPICAL SECTION



NOTE:
DIMENSION "A" =
OUTSIDE WIDTH OF ENDWALL

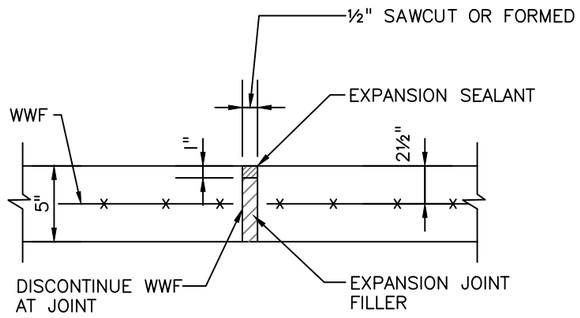
REINFORCED CONCRETE LOW FLOW CHANNEL TRANSITION

NO SCALE



NOTE:
CONTROL JOINT SPACING SHALL BE 10' (TYP.).

TYPICAL CONTROL JOINT DETAIL



NOTE:
EXPANSION JOINT SPACING SHALL BE 90' (TYP.).

TYPICAL EXPANSION JOINT DETAIL

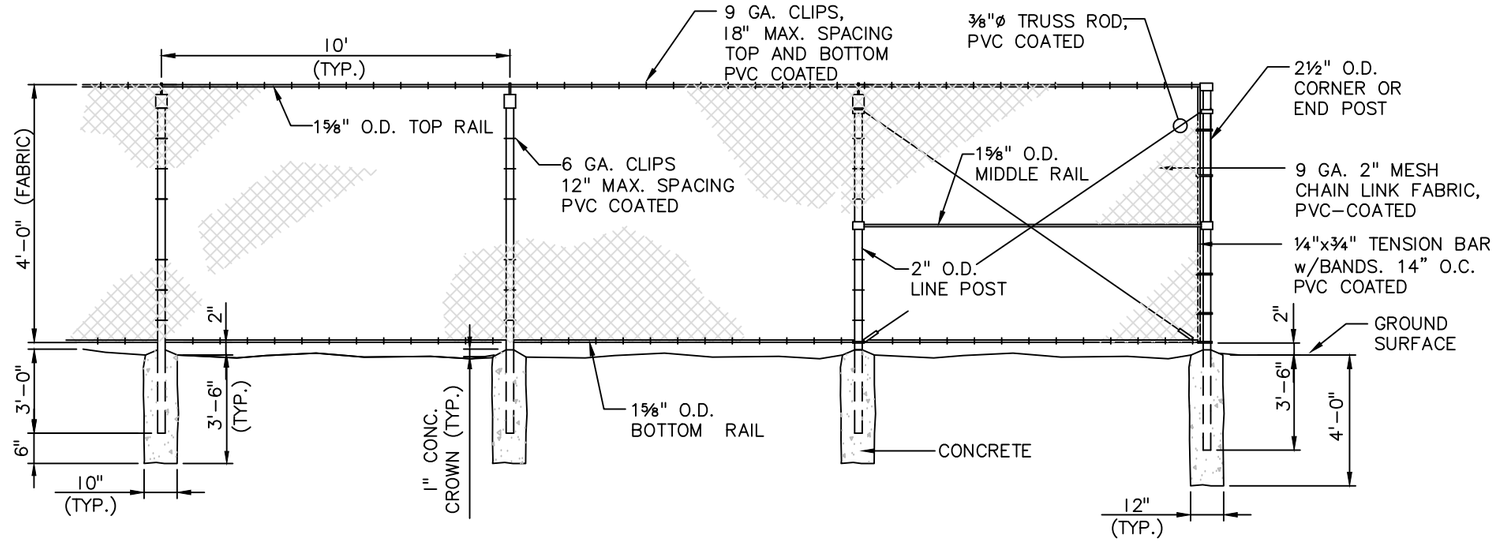
REINFORCED CONCRETE LOW FLOW CHANNEL

NO SCALE

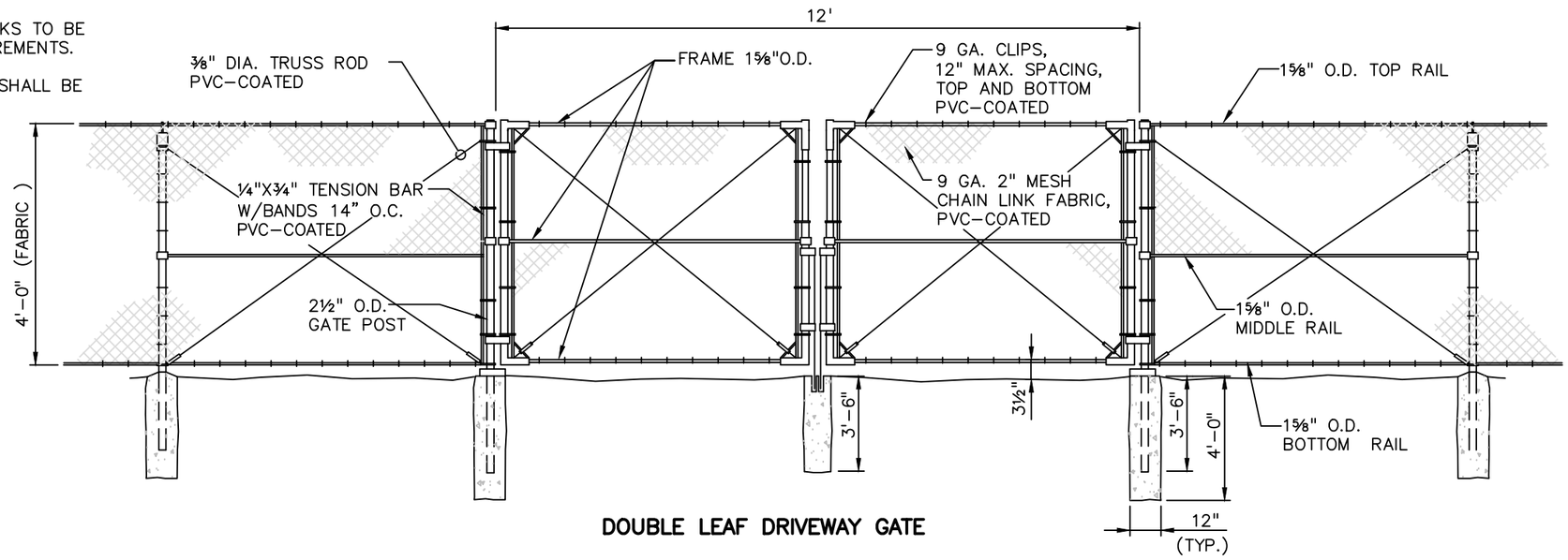
REVISIONS	PALMER TOWNSHIP **STANDARD CONSTRUCTION DETAILS** NORTHAMPTON COUNTY, PENNSYLVANIA
	STORM DRAINAGE **CONCRETE LOW FLOW CHANNEL**
	THE PIDCOCK COMPANY CIVIL ENGINEERING AND LAND PLANNING ARCHITECTURE LAND SURVEYING OXFORD DRIVE AT FISH HATCHERY ROAD ALLENTOWN, PENNSYLVANIA
	DATE: MARCH 2008 CHKD BY: RJG SCALE: NO SCALE TP–D–7

NOTES:

1. THE FENCE FABRIC FOR TANGENT SECTION AND GATES SHALL BE 6-GAUGE THICKNESS (9 GAUGE CORE) PVC COATED WIRE, 2-INCH MESH IN BROWN COLOR AS REVIEWED BY THE TOWNSHIP. ALTERNATE FABRIC SHALL BE 2-INCH MESH, #9 GAUGE WIRE WITH A MINIMUM OF 1.2 OUNCES OF ZINC PER SQUARE FOOT (REQUIRES PRIOR REVIEW AND APPROVAL BY TOWNSHIP).
2. 1⅝" O.D. MIDDLE RAIL AND ⅜" DIA. TRUSS ROD ADJACENT TO BOTH SIDES OF CORNER AND END POSTS ONLY ON FENCE LINE.
3. TOP AND BOTTOM SELVAGES AT TANGENT SECTION AND GATES SHALL BE KNUCKLED.
4. AT THE TANGENT SECTION, ALTERNATE POST SETTING MAY BE PERMITTED BY THE TOWNSHIP. SEE THE SPECIFICATIONS. ALTERNATE POST SETTING NOT PERMITTED AT GATE POSTS, END POSTS OR CORNER POSTS.
5. PROVIDE A LOCKABLE (PADLOCK THROUGH A LATCH) ASSEMBLY (NO CHAINING) ON ALL GATES. ALL LOCKS TO BE KEYED ALIKE IN ACCORDANCE WITH TOWNSHIP REQUIREMENTS.
6. ALL MATERIALS NOT IDENTIFIED TO BE PVC-COATED SHALL BE HOT DIPPED GALVANIZED.



TANGENT SECTION



DOUBLE LEAF DRIVEWAY GATE

DETENTION BASIN FENCE

(CHAIN LINK)

NO SCALE

REVISIONS

PALMER TOWNSHIP

STANDARD CONSTRUCTION DETAILS

NORTHAMPTON COUNTY, PENNSYLVANIA

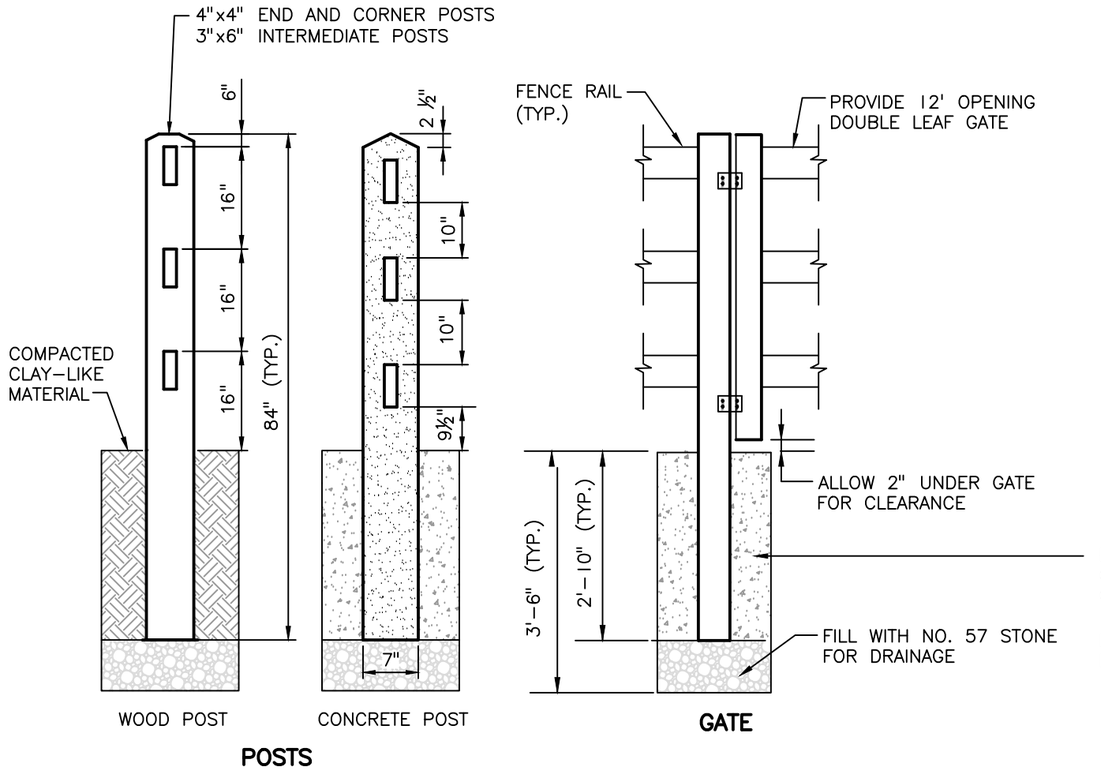
STORM DRAINAGE

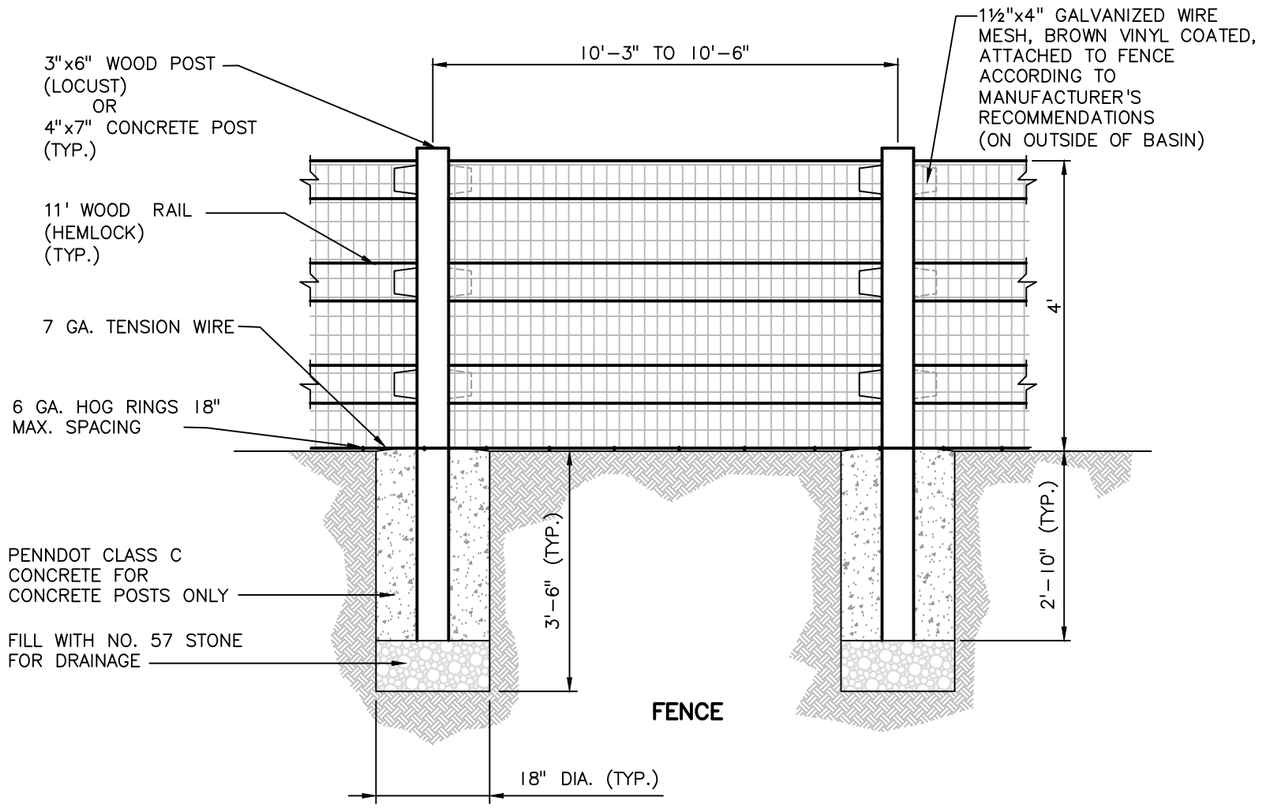
DETENTION BASIN FENCE – CHAIN LINK

THE PIDCOCK COMPANY
CIVIL ENGINEERING AND LAND PLANNING ARCHITECTURE LAND SURVEYING
OXFORD DRIVE AT FISH HATCHERY ROAD
ALLENTOWN, PENNSYLVANIA

DATE: MARCH 2008
CHKD BY: RJG
SCALE: NO SCALE

TP-D-8





NOTES:

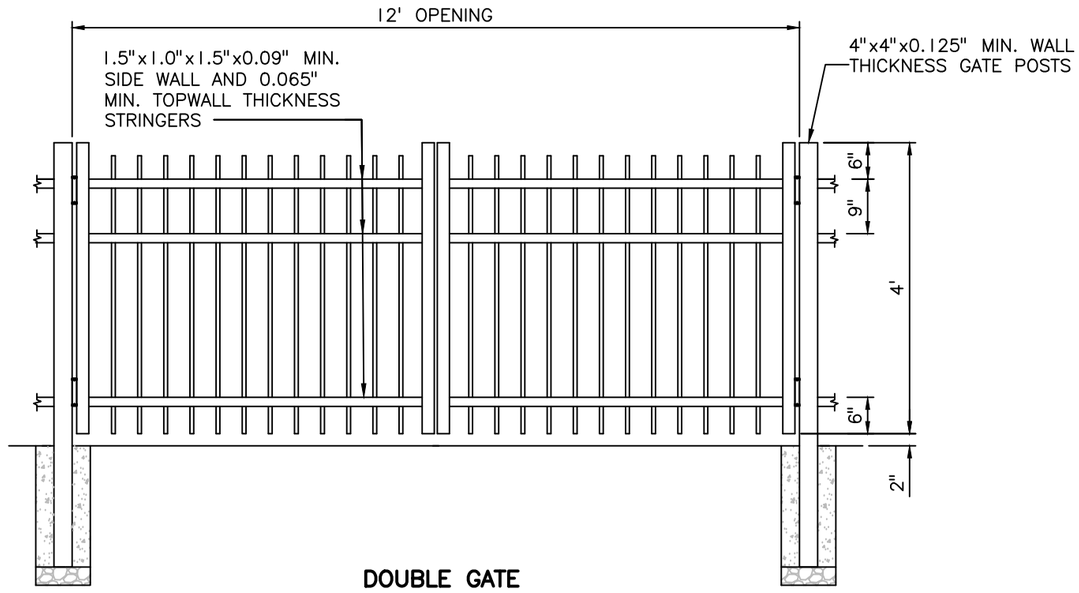
1. FOLLOW MANUFACTURER'S SPECIFICATIONS FOR INSTALLATION.
2. ALL POSTS SHALL BE EITHER WOOD OR CONCRETE.
3. WIRE MESH ON GATE DETAIL NOT SHOWN FOR CLARITY.
4. ALL HARDWARE SHALL BE PER MANUFACTURER'S SPECIFICATIONS AND BE HOT DIPPED GALVANIZED
5. PROVIDE A LOCKABLE (PADLOCK THROUGH A LATCH) ASSEMBLY (NO CHAINING) ON ALL GATES. ALL LOCKS TO BE KEYED ALIKE IN ACCORDANCE WITH TOWNSHIP REQUIREMENTS.

DETENTION BASIN FENCE

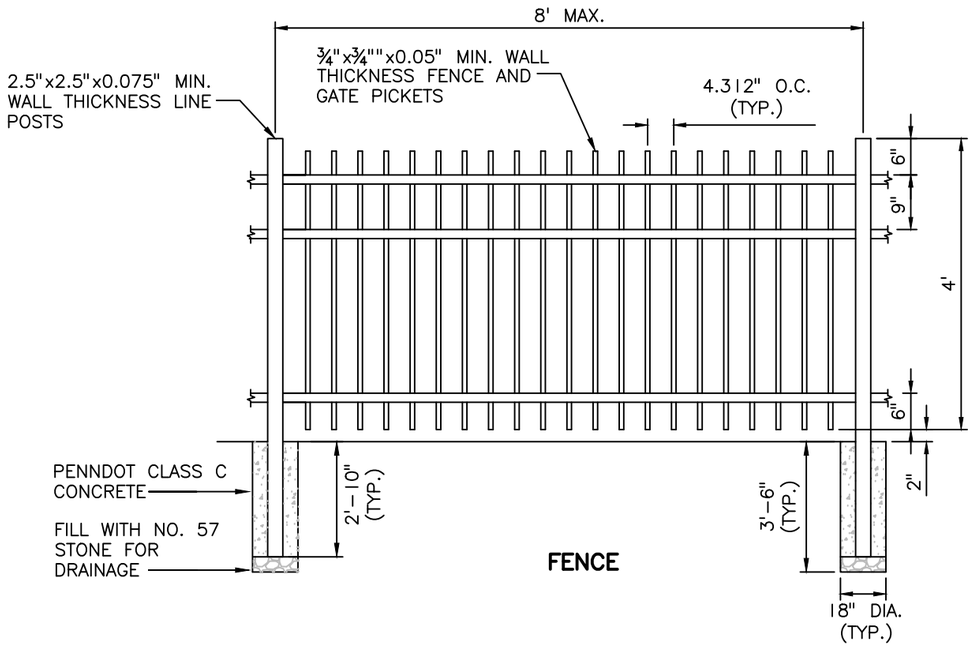
(WOOD SPLIT RAIL FENCE WITH WIRE MESH)

NO SCALE

REVISIONS	PALMER TOWNSHIP
1 APRIL 2014 GENERAL REVISIONS	**STANDARD CONSTRUCTION DETAILS** NORTHAMPTON COUNTY, PENNSYLVANIA
	STORM DRAINAGE **DETENTION BASIN FENCE – WOOD SPLIT RAIL**
	THE PIDCOCK COMPANY CIVIL ENGINEERING AND LAND PLANNING ARCHITECTURE LAND SURVEYING — OXFORD DRIVE AT FISH HATCHERY ROAD ALLENTOWN, PENNSYLVANIA
	DATE: MARCH 2008 · CHKD BY: RJG · SCALE: NO SCALE · TP-D-9



DOUBLE GATE



FENCE

NOTES:

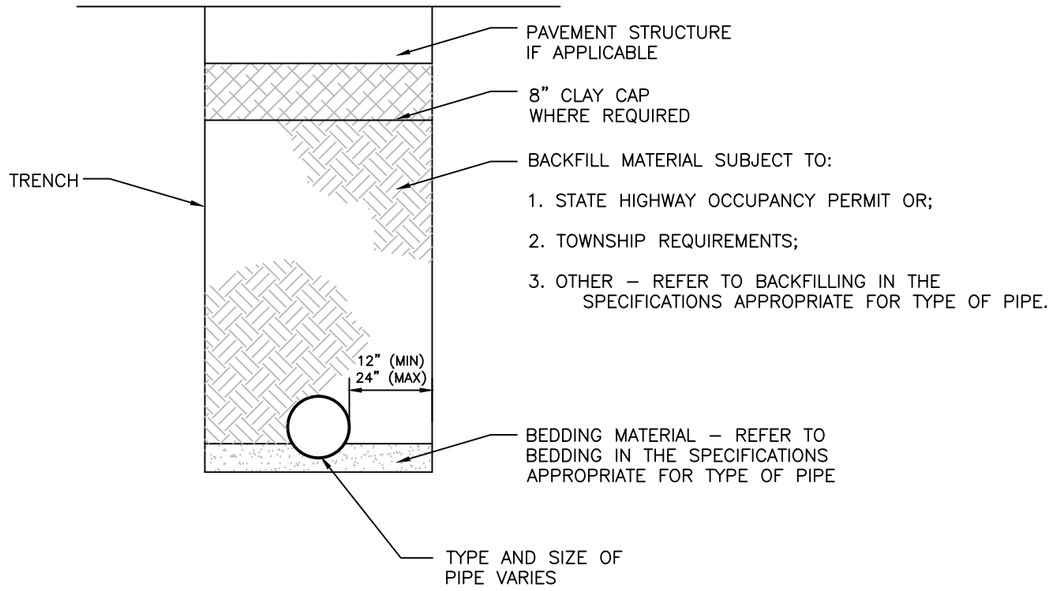
1. ALUMINUM FENCE MATERIAL TO BE ALUMINUM ALLOY 6105-T5 WITH HIGH -SOLIDS ACRYLIC FINISH (BLACK) MEETING REQUIREMENTS OF AAMA 603.8 SPECIFICATIONS.
2. FOLLOW MANUFACTURER'S SPECIFICATIONS FOR INSTALLATION.
3. ALL HARDWARE SHALL BE PER MANUFACTURER'S SPECIFICATIONS AND SHALL BE HOT DIPPED GALVANIZED.
4. PROVIDE A LOCKABLE (PADLOCK THROUGH A LATCH) ASSEMBLY (NO CHAINING) ON ALL GATES. ALL LOCKS TO BE KEYED ALIKE IN ACCORDANCE WITH TOWNSHIP REQUIREMENTS.

DETENTION BASIN FENCE

(ALUMINUM FENCE)

NO SCALE

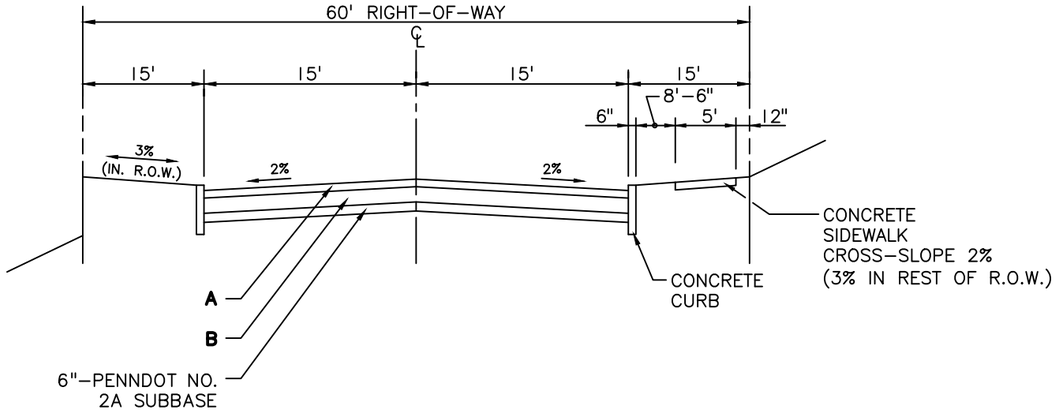
REVISIONS	PALMER TOWNSHIP **STANDARD CONSTRUCTION DETAILS** NORTHAMPTON COUNTY, PENNSYLVANIA
	STORM DRAINAGE **DETENTION BASIN FENCE-ALUMINUM**
	THE PIDCOCK COMPANY CIVIL ENGINEERING AND LAND PLANNING ARCHITECTURE LAND SURVEYING OXFORD DRIVE AT FISH HATCHERY ROAD ALLENTOWN, PENNSYLVANIA
	DATE: MARCH 2008 CHKD BY: RJG SCALE: NO SCALE TP-D-10



STANDARD TRENCH

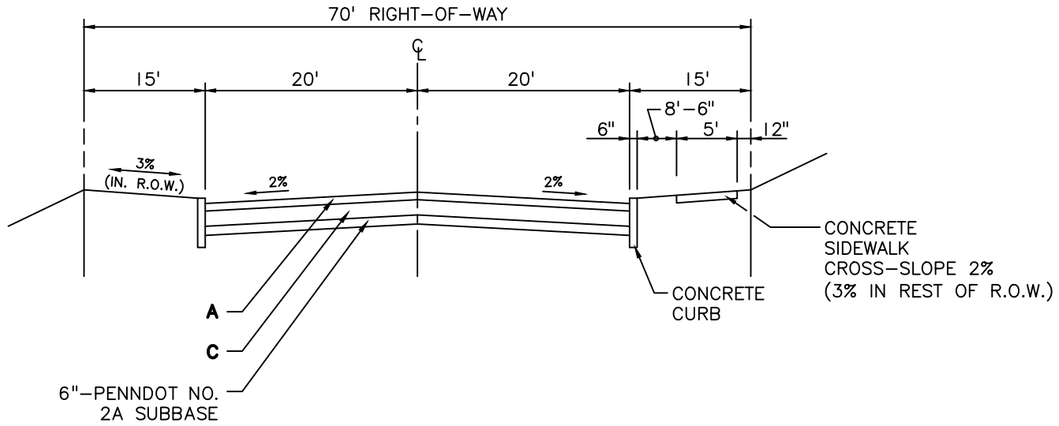
NO SCALE

REVISIONS	PALMER TOWNSHIP **STANDARD CONSTRUCTION DETAILS** NORTHAMPTON COUNTY, PENNSYLVANIA
	GENERAL CONSTRUCTION **STANDARD TRENCH**
	THE PIDCOCK COMPANY CIVIL ENGINEERING AND LAND PLANNING ARCHITECTURE LAND SURVEYING OXFORD DRIVE AT FISH HATCHERY ROAD ALLENTOWN, PENNSYLVANIA
	DATE: MARCH 2008 CHKD BY: RJG SCALE: NO SCALE
	TP–G–1



TYPICAL CROSS SECTION
(LOCAL STREETS)

NO SCALE



TYPICAL CROSS SECTION
(COLLECTOR STREETS)

NO SCALE

PRIMARY PAVEMENT:

A– 1½" SUPERPAVE ASPHALT 9.5mm, PG 64–22, 0.0 TO 0.3 MILLION ESAL, SRL–L, HMA WEARING COURSE.

B– 3½" SUPERPAVE ASPHALT, 25.0mm, PG 64–22, 0.0 TO 0.3 MILLION ESAL, HMA BASE COURSE.

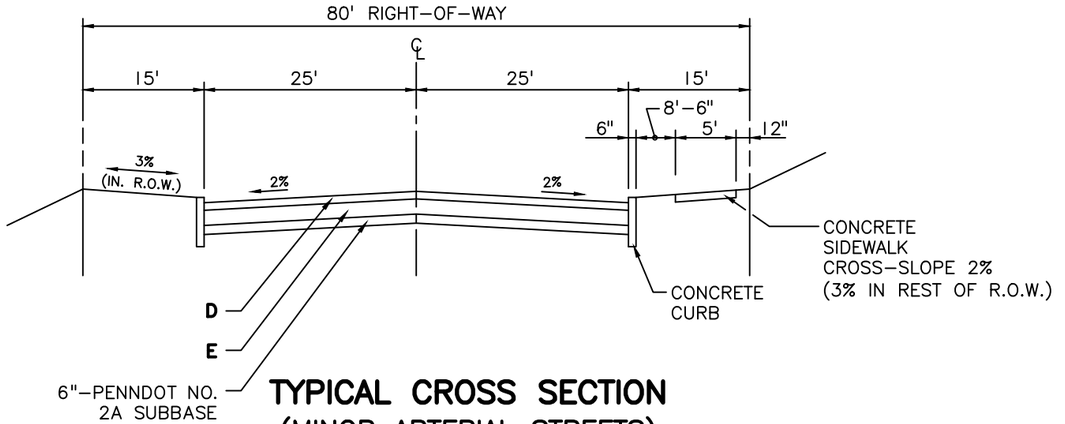
C– 4½" SUPERPAVE ASPHALT AS DEFINED IN **B**.

D– 1½" SUPERPAVE ASPHALT 9.5mm, PG 64–22, 0.3 TO 3.0 MILLION ESAL, SRL–M, HMA WEARING COURSE

E– 5½" SUPERPAVE ASPHALT, 25mm, PG 64–22, 0.3 TO 3.0 MILLION ESAL, HMA BASE COURSE.

NOTES:

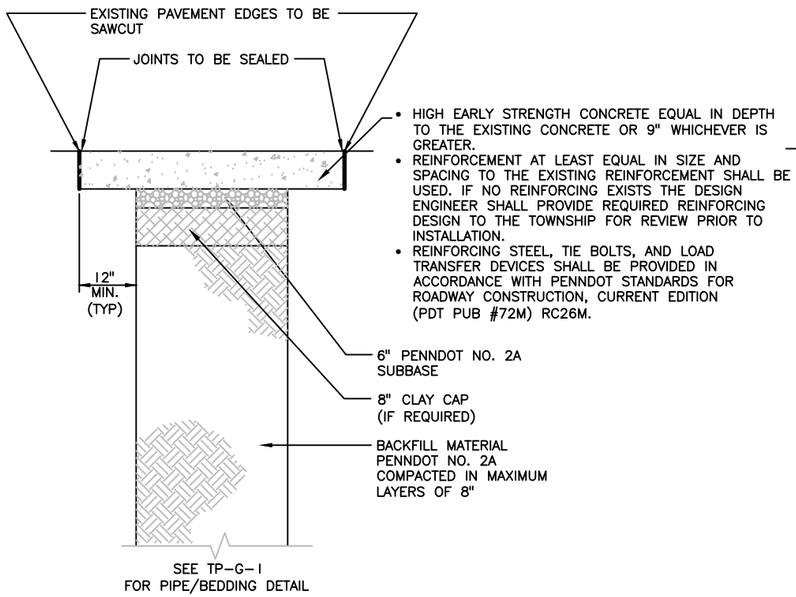
1. PROVIDE MATERIALS AND CONSTRUCTION MEETING THE REQUIREMENT FOR PUBLICATION 408 SPECIFICATIONS 203, 204, 205, 206, 210, 350, 309 (OR 305), 409 (OR 420) 630 AND 676.
2. SEAL CURB IN ACCORDANCE WITH CONCRETE CURB DETAILS TP–R–5
3. THE FOLLOWING ABBREVIATIONS APPEAR ON THIS SHEET:
   a. ESAL – EQUIVALENT SINGLE AXLE LOAD
   b. SRL – SKID RESISTANCE LEVEL
   c. HMA – HOT MIXED ASPHALT
   d. PG – PERFORMANCE GRADE
4. DIMENSIONS FOR MAJOR ARTERIAL STREETS (RT22/RT33) SUBJECT TO PENNDOT REQUIREMENTS.
5. REQUIRED RIGHT–OF–WAY AND CARTWAY WIDTHS SHOWN ARE MINIMUM REQUIREMENTS AND SUBJECT TO MODIFICATIONS AS MAY BE IDENTIFIED IN TOWNSHIP ORDINANCES OR NORTHERN TIER TRAFFIC STUDY.



TYPICAL CROSS SECTION
(MINOR ARTERIAL STREETS)

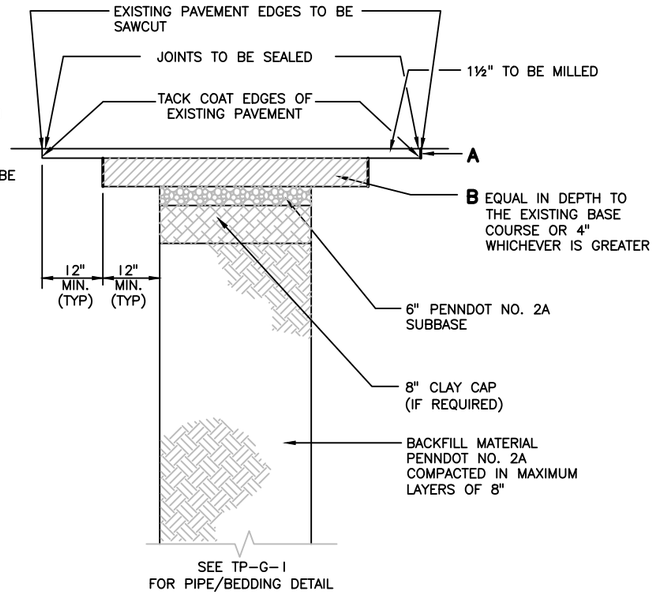
NO SCALE

REVISIONS	PALMER TOWNSHIP
1 APRIL 2014 GENERAL REVISIONS	**STANDARD CONSTRUCTION DETAILS** NORTHAMPTON COUNTY, PENNSYLVANIA
	ROAD CONSTRUCTION **TYPICAL ROADWAY CROSS SECTIONS**
	THE PIDCOCK COMPANY — CIVIL ENGINEERING AND LAND PLANNING ARCHITECTURE LAND SURVEYING — OXFORD DRIVE AT FISH HATCHERY ROAD ALLENTOWN, PENNSYLVANIA
	DATE: MARCH 2008 · CHKD BY: RJG · SCALE: NO SCALE · TP–R–1



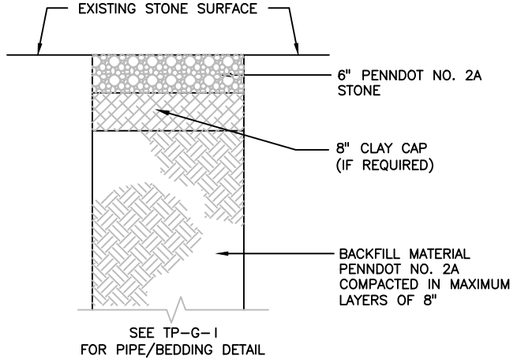
PERMANENT TYPE "C"

REINFORCED CEMENT CONCRETE PAVEMENT



PERMANENT TYPE "D"

BITUMINOUS PAVEMENT



TYPE "E"

STONE SURFACE

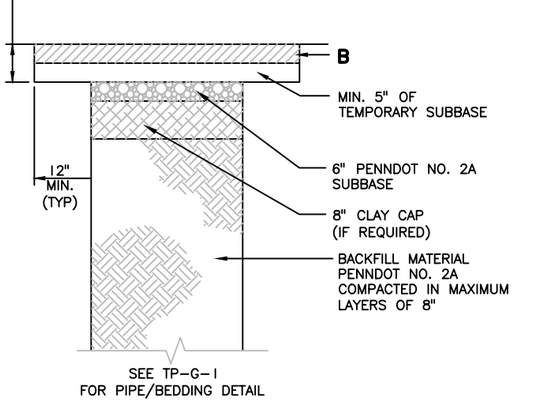
NOTES:

1. PROVIDE MATERIALS AND CONSTRUCTION MEETING THE REQUIREMENTS OF PENNDOT SPECIFICATIONS, PUBLICATION 408, CURRENT EDITION, SECTIONS 203, 204, 205, 206, 210, 350, 309 AND 409
2. PERMANENT BITUMINOUS PAVING TYPE IN TRENCH SHALL MATCH EXISTING TYPE OF PAVING IN THE ROAD.
3. WARNING TAPE SHALL BE PLACED AT A MINIMUM OF 2' ABOVE ANY MAINLINE PIPE OR LATERAL.

A– 1½" SUPERPAVE ASPHALT 9.5mm, PG 64–22, 0.0 TO 0.3 MILLION ESAL, SRL–L, HMA WEARING COURSE.

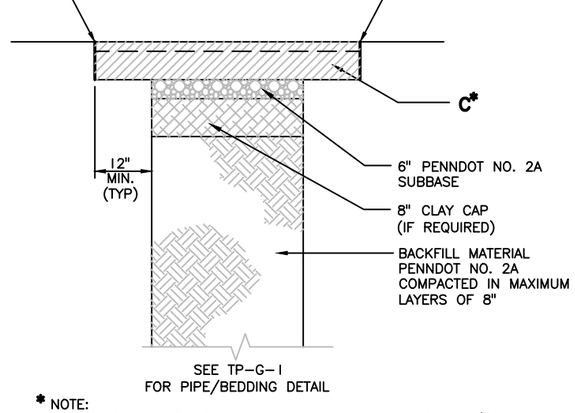
B– 4" SUPERPAVE ASPHALT, 25.0mm, PG 64–22, 0.0 TO 0.3 MILLION ESAL, HMA BASE COURSE.

C– 5½" SUPERPAVE ASPHALT AS DEFINED IN **B**.



TEMPORARY FOR TYPE "C"

REINFORCED CEMENT CONCRETE PAVEMENT



* NOTE:
EMERGENCY TEMPORARY PAVING FOR TRENCH RESTORATION (2" COLD BITUMINOUS MATERIAL WITH 3½" PENNDOT NO. 2A) MAY BE UTILIZED SUBJECT TO TOWNSHIP REVIEW, ONLY UNTIL MATERIAL AS REFERENCED IN **C** BECOMES AVAILABLE FOR INSTALLATION.

TEMPORARY FOR TYPE "D"

BITUMINOUS PAVEMENT

NOTES

1. SEAL CURB IN ACCORDANCE WITH CONCRETE CURB DETAILS TP–R–5
2. THE FOLLOWING ABBREVIATIONS APPEAR ON THIS SHEET:

a. ESAL – EQUIVALENT SINGLE AXLE LOAD

b. SRL – SKID RESISTANCE LEVEL

c. HMA – HOT MIXED ASPHALT

d. PG – PERFORMANCE GRADE

NON–STATE HIGHWAY PAVEMENT RESTORATION

NO SCALE

REVISIONS	PALMER TOWNSHIP
⚠1 APRIL 2014 GENERAL REVISIONS	**STANDARD CONSTRUCTION DETAILS** NORTHAMPTON COUNTY, PENNSYLVANIA
	ROADWAY CONSTRUCTION **NON–STATE HIGHWAY PAVEMENT RESTORATION**
	THE PIDCOCK COMPANY — CIVIL ENGINEERING AND LAND PLANNING ARCHITECTURE LAND SURVEYING — OXFORD DRIVE AT FISH HATCHERY ROAD ALLENTOWN, PENNSYLVANIA
	DATE: MARCH 2008 · CHKD BY: RJG · SCALE: NO SCALE · TP–R–2

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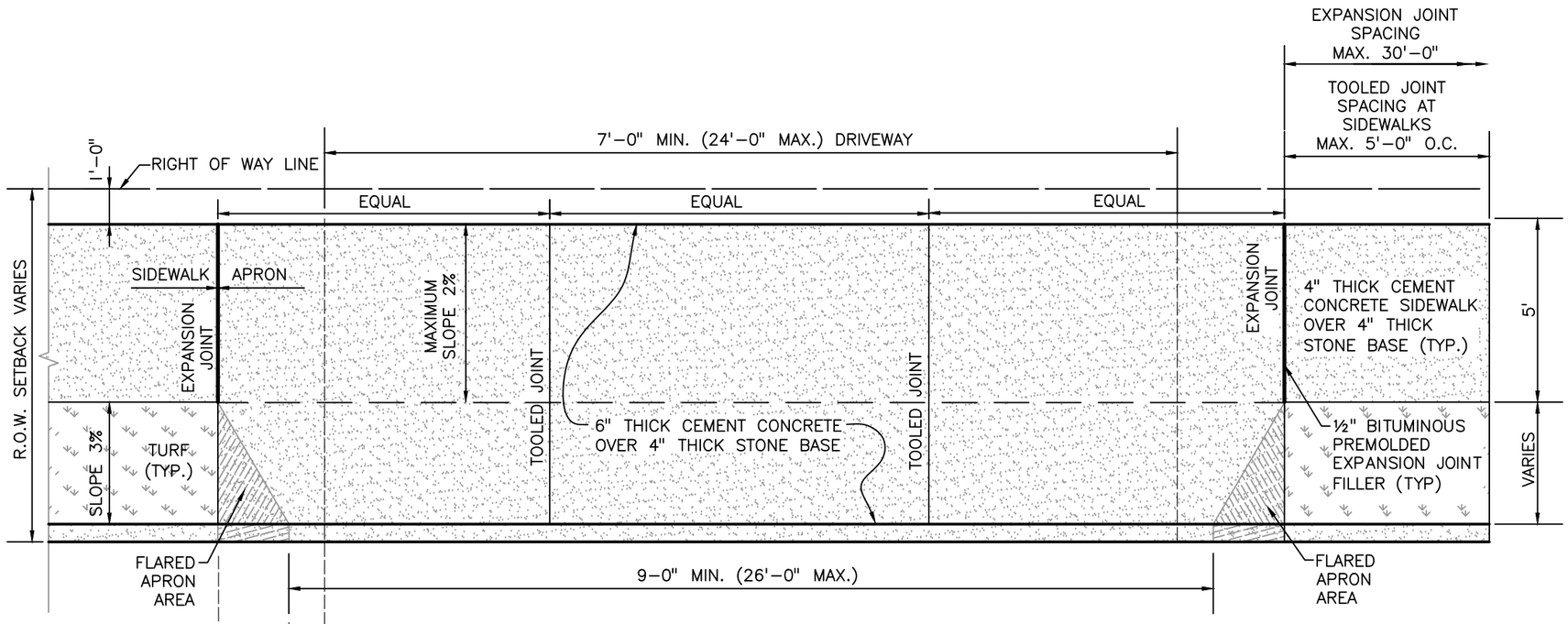


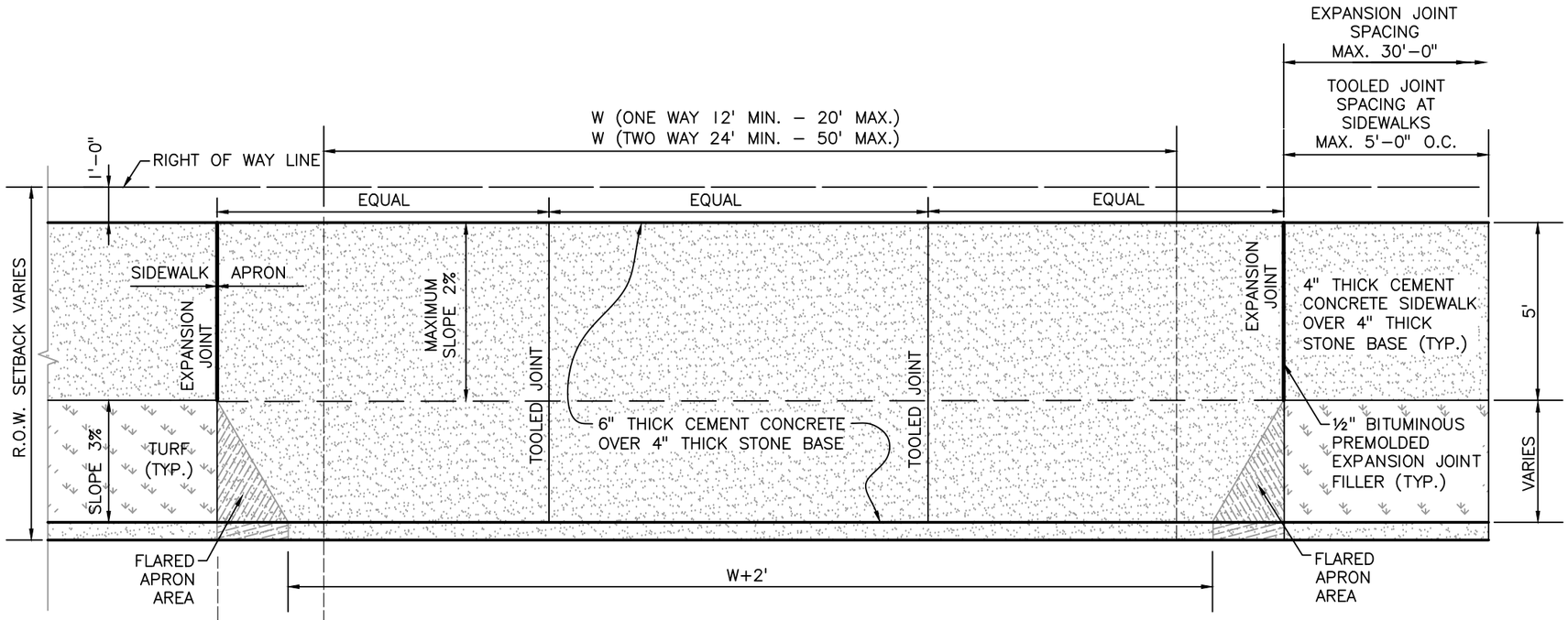
RESIDENTIAL
SIDEWALK AND DRIVEWAY APRON PLAN

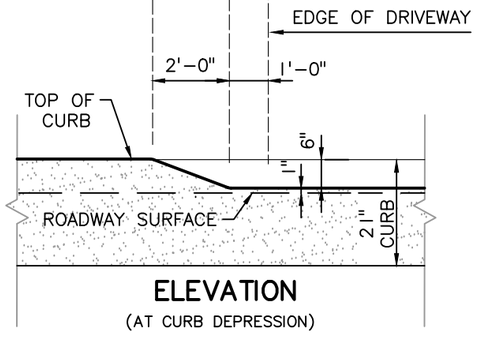
NO SCALE

NOTES:

1. BASE SHALL BE PENNDOT NO. 2A MECHANICALLY COMPACTED ON A PREPARED SUBGRADE.
2. CONCRETE DRIVEWAY APRONS SHALL BE INSTALLED WHERE CONCRETE CURB DEPRESSIONS HAVE BEEN INSTALLED.
3. THE EDGE OF A DRIVEWAY SHALL BE NO CLOSER THAN 8 FEET FROM THE CENTERLINE OF AN INLET.

REVISIONS	PALMER TOWNSHIP
1 APRIL 2014 GENERAL REVISIONS	**STANDARD CONSTRUCTION DETAILS** NORTHAMPTON COUNTY, PENNSYLVANIA
	ROADWAY CONSTRUCTION **RESIDENTIAL SIDEWALK AND DRIVEWAY APRON**
	THE PIDCOCK COMPANY — CIVIL ENGINEERING AND LAND PLANNING ARCHITECTURE LAND SURVEYING — OXFORD DRIVE AT FISH HATCHERY ROAD ALLENTOWN, PENNSYLVANIA
	DATE: MARCH 2008 · CHKD BY: RJG · SCALE: NO SCALE · TP-R-3





ELEVATION
(AT CURB DEPRESSION)

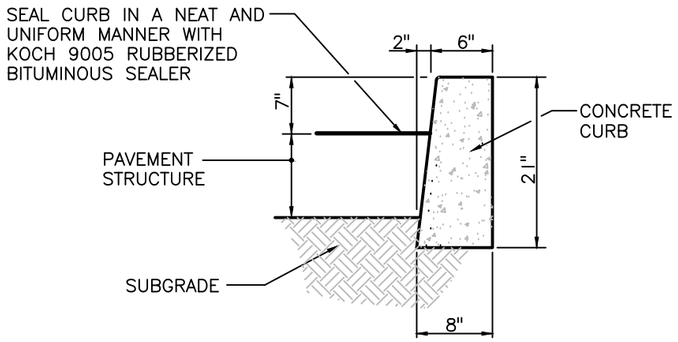
NON-RESIDENTIAL SIDEWALK AND DRIVEWAY APRON PLAN

NO SCALE

NOTES:

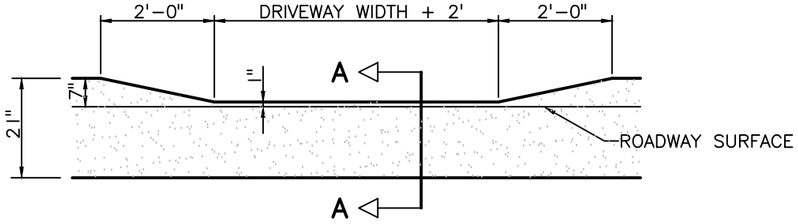
1. BASE SHALL BE PENNDOT NO. 2A MECHANICALLY COMPACTED ON A PREPARED SUBGRADE.
2. CONCRETE DRIVEWAY APRONS SHALL BE INSTALLED WHERE CONCRETE CURB DEPRESSIONS HAVE BEEN INSTALLED.
3. NON-RESIDENTIAL DRIVEWAY APRON SHALL BE REINFORCED WITH A MINIMUM 6x6-W2.9xW2.9 WELDED WIRE FABRIC. TERMINATE REINFORCING AT EXPANSION JOINTS. REINFORCING SHALL BE AS SPECIFIED BY DESIGN ENGINEER BASED ON SPECIFIC USE/LOADING REQUIREMENTS.
4. PROVIDE DRIVEWAY APRONS AT ACCESS POINTS TO UTILITY EASEMENTS AT LOCATIONS AS DIRECTED BY THE TOWNSHIP.
5. THE EDGE OF A DRIVEWAY SHALL BE NO CLOSER THAN 8 FEET FROM THE CENTERLINE OF AN INLET.

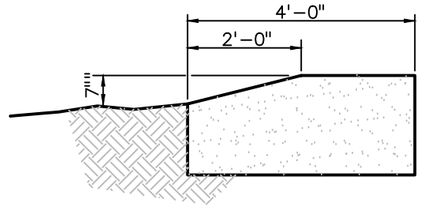
REVISIONS	PALMER TOWNSHIP **STANDARD CONSTRUCTION DETAILS** NORTHAMPTON COUNTY, PENNSYLVANIA
1 APRIL 2014 GENERAL REVISIONS	ROADWAY CONSTRUCTION **NON-RESIDENTIAL SIDEWALK AND DRIVEWAY APRON**
	THE PIDCOCK COMPANY CIVIL ENGINEERING AND LAND PLANNING ARCHITECTURE LAND SURVEYING OXFORD DRIVE AT FISH HATCHERY ROAD ALLENTOWN, PENNSYLVANIA
	DATE: MARCH 2008 CHKD BY: RJG SCALE: NO SCALE **TP-R-4**



TYPICAL CURB

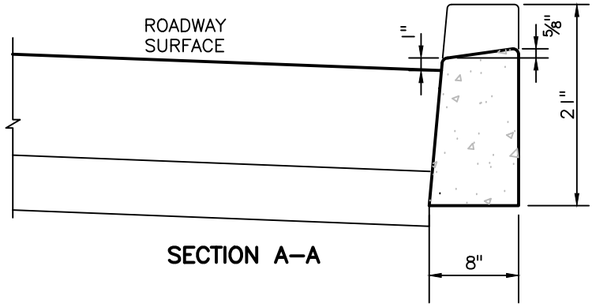
NO SCALE





TAPERED END

NO SCALE



DEPRESSED CURB

NO SCALE

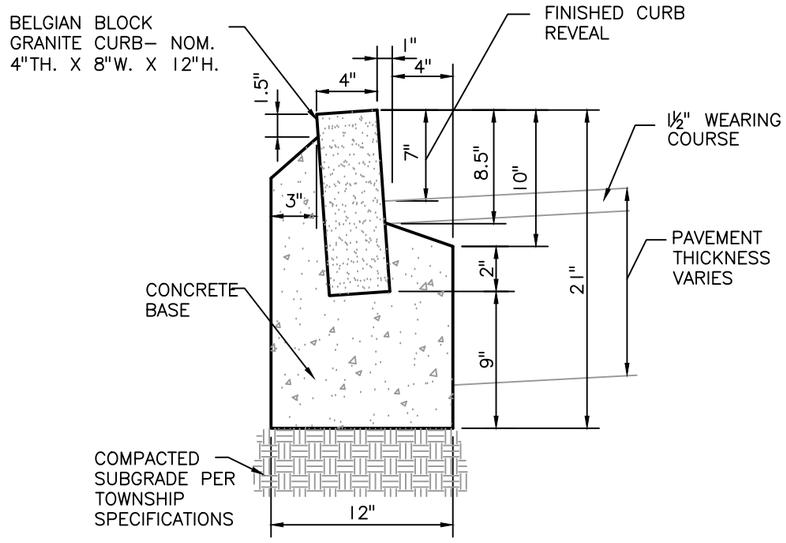
NOTES:

1. EXISTING CURB REMOVAL SHALL BE IN COMPLETE SECTIONS (JOINT TO JOINT), NOT PARTIAL SECTIONS.
2. PROVIDE MATERIALS AND CONSTRUCTION MEETING THE REQUIREMENTS OF PENNDOT SPECIFICATIONS, PUBLICATION 408, CURRENT EDITION, SECTION 630.
3. SPACE CONTRACTION JOINTS IN UNIFORM LENGTHS OR SECTIONS, 10'–0" MAX. TO 4'–0" MIN.
4. PLACE ½ INCH BITUMINOUS PREMOLDED EXPANSION JOINT FILLER MATERIAL AT STRUCTURES AND AT THE END OF THE WORK DAY. CUT MATERIAL TO CONFORM TO AREA ADJACENT TO CURB OR TO CONFORM TO CROSS SECTIONAL AREA OF CURB.
5. EXPANSION JOINTS SHALL BE SPACED AS REQUIRED BY THE TOWNSHIP – TYPICALLY 30' O. C.
6. EXISTING FULL HEIGHT CURB CANNOT BE MODIFIED INTO DEPRESSED CURB.

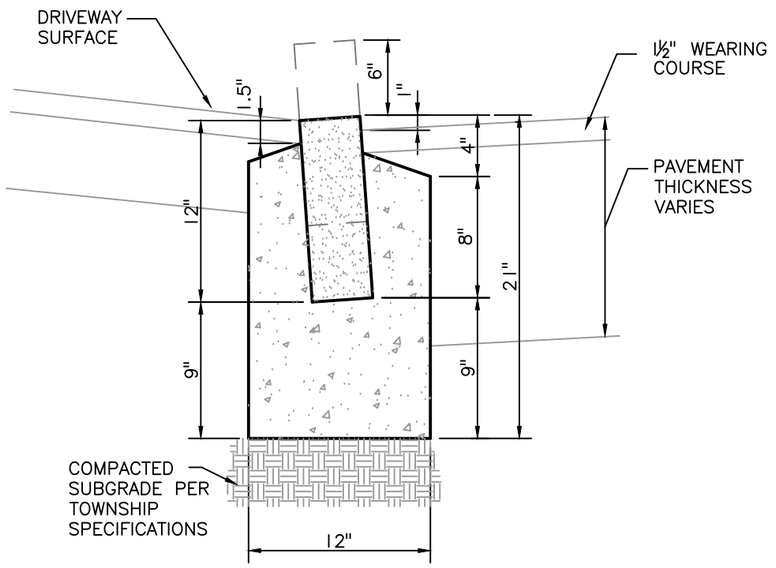
REVISIONS	PALMER TOWNSHIP **STANDARD CONSTRUCTION DETAILS** NORTHAMPTON COUNTY, PENNSYLVANIA
	ROADWAY CONSTRUCTION **CONCRETE CURB**
	THE PIDCOCK COMPANY CIVIL ENGINEERING AND LAND PLANNING ARCHITECTURE LAND SURVEYING OXFORD DRIVE AT FISH HATCHERY ROAD ALLENTOWN, PENNSYLVANIA
	DATE: MARCH 2008 CHKD BY: RJG SCALE: NO SCALE **TP–R–5**

DETAIL DELETED

REVISIONS	PALMER TOWNSHIP **STANDARD CONSTRUCTION DETAILS** NORTHAMPTON COUNTY, PENNSYLVANIA	
1 APRIL 2014 GENERAL REVISIONS	ROADWAY CONSTRUCTION **SIDEWALK AND CURB RAMP**	
	THE PIDCOCK COMPANY CIVIL ENGINEERING AND LAND PLANNING ARCHITECTURE LAND SURVEYING OXFORD DRIVE AT FISH HATCHERY ROAD ALLENTOWN, PENNSYLVANIA	DATE: MARCH 2008 CHKD BY: RJG SCALE: NO SCALE **TP-R-6**



TYPICAL
BELGIAN BLOCK
GRANITE CURB



TYPICAL
BELGIAN BLOCK
GRANITE CURB AT
DRIVEWAY APRON

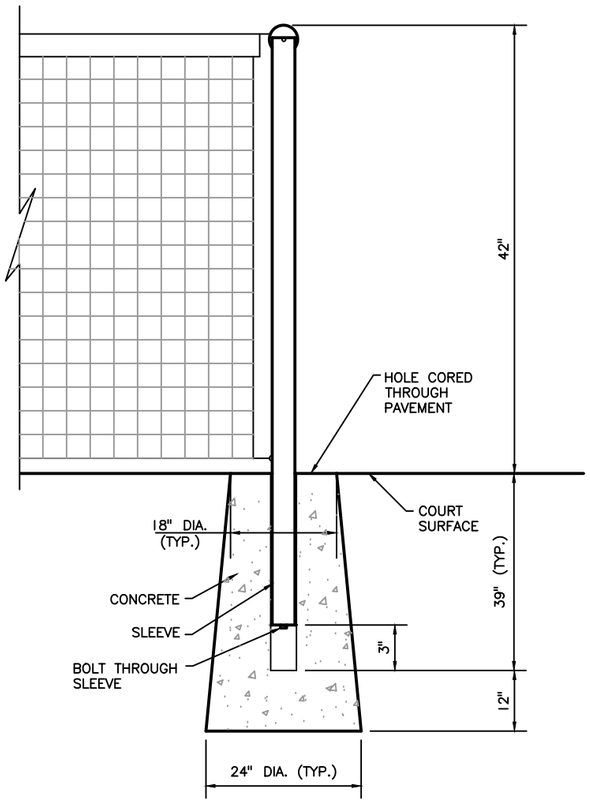
NOTES:

1. 1:1 CEMENT–SAND MORTAR JOINTS SHALL NOT BE MORE THAN ⅜" WIDE.
2. TRANSVERSE JOINTS ½" WIDE SHALL BE INSTALLED IN THE CURB A MAXIMUM OF 60' APART, AND ON BOTH SIDES AT ALL INLETS, AND SHALL BE FILLED WITH PREFORMED BITUMINOUS–IMPREGNATED FIBER JOINT FILLER RECESSED ¼" IN FROM FRONT FACE AND TOP OF CURB.

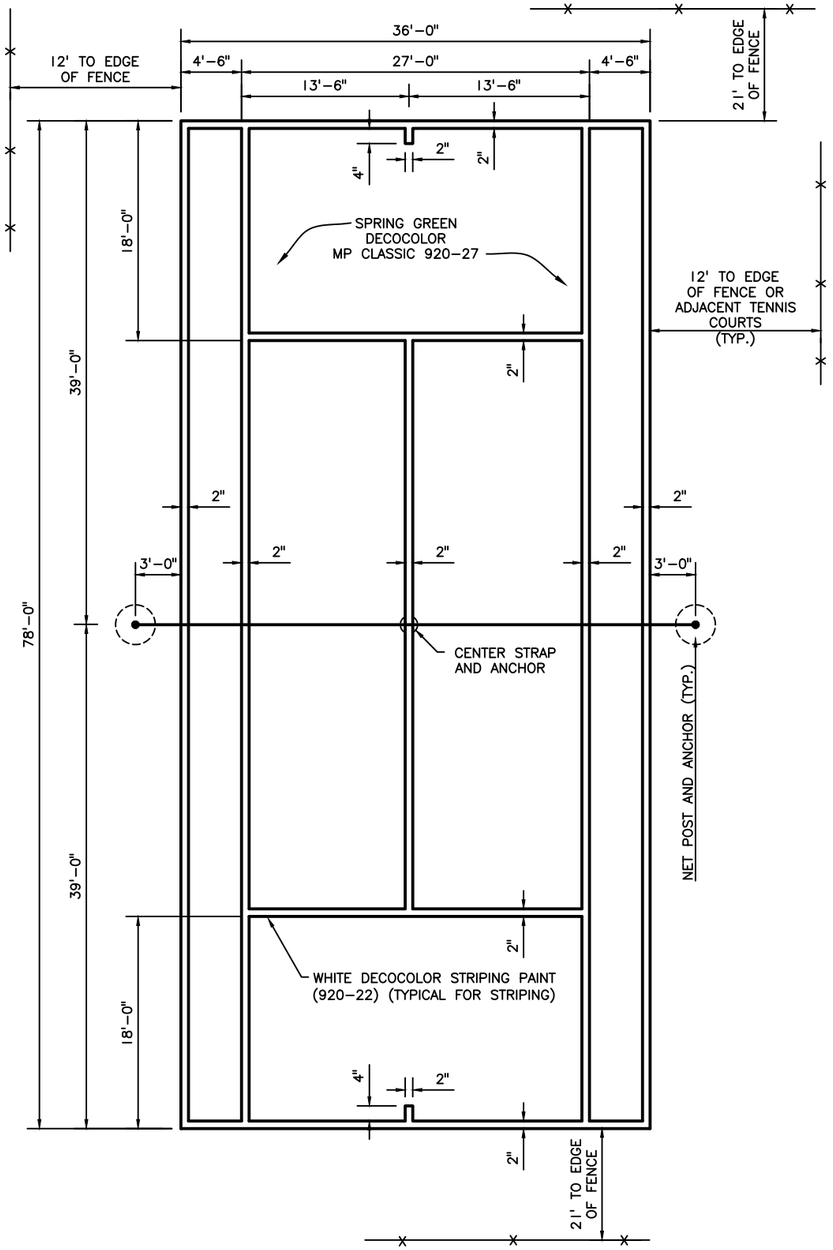
BELGIAN BLOCK GRANITE CURB

NO SCALE

REVISIONS	PALMER TOWNSHIP **STANDARD CONSTRUCTION DETAILS** NORTHAMPTON COUNTY, PENNSYLVANIA
	ROADWAY CONSTRUCTION **BELGIAN BLOCK GRANITE CURB**
	THE PIDCOCK COMPANY CIVIL ENGINEERING AND LAND PLANNING ARCHITECTURE LAND SURVEYING OXFORD DRIVE AT FISH HATCHERY ROAD ALLENTOWN, PENNSYLVANIA
	DATE: MARCH 2008 CHKD BY: RJG SCALE: NO SCALE
	TP–R–7



TENNIS NET POST AND ANCHOR
NO SCALE



TYPICAL TENNIS COURT MARKINGS
NO SCALE

GENERAL PLANNING NOTES

1. LONG AXIS– NORTH/SOUTH.
2. DRAIN END TO END – 0.8 TO 1 PERCENT.
3. DO NOT BREAK GRADE AT CENTER COURT.

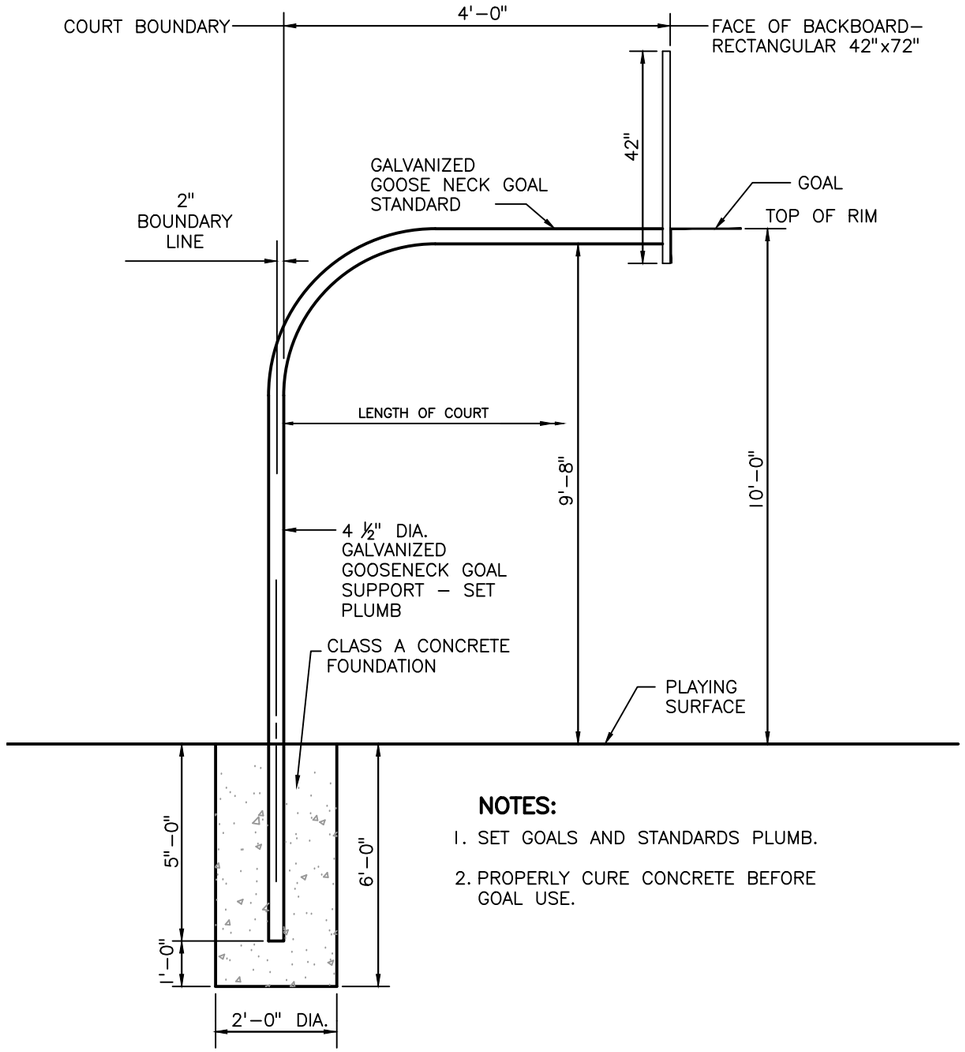
REVISIONS	PALMER TOWNSHIP **STANDARD CONSTRUCTION DETAILS** NORTHAMPTON COUNTY, PENNSYLVANIA RECREATIONAL FACILITIES **TENNIS COURT**

THE PIDCOCK COMPANY
CIVIL ENGINEERING AND LAND PLANNING ARCHITECTURE LAND SURVEYING
OXFORD DRIVE AT FISH HATCHERY ROAD
ALLENTOWN, PENNSYLVANIA

DATE: MARCH 2008
CHKD BY: RJG
SCALE: NO SCALE

TP–REC–1

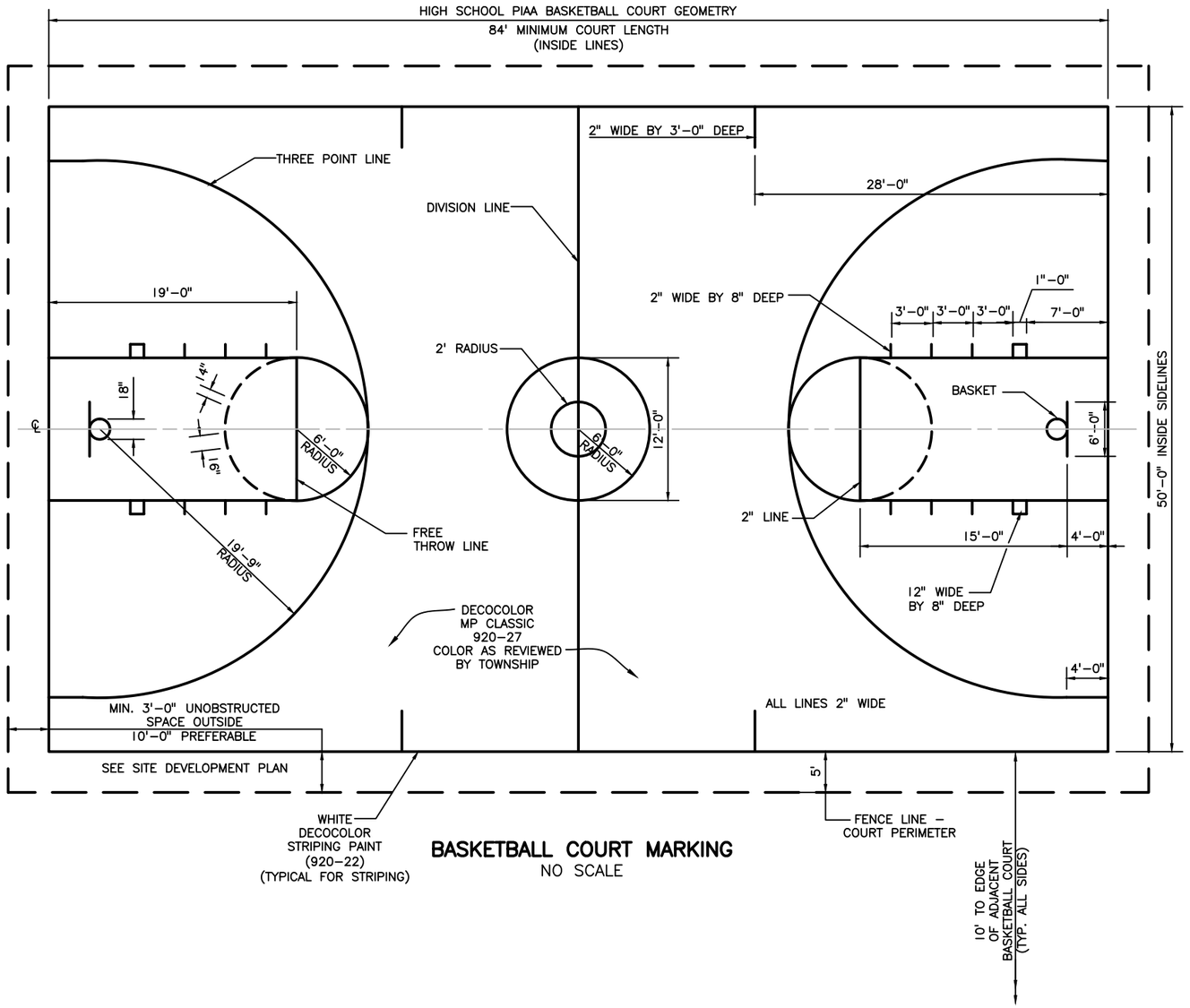
Drawing name: S:\Municipalities\MUNICIPAL STANDARD CONSTRUCTION DOCUMENTS\TP-2014 DETAILS\TP-REC-01.dwg Last Modified: Apr 29, 2014 – 3:01pm



NOTES:

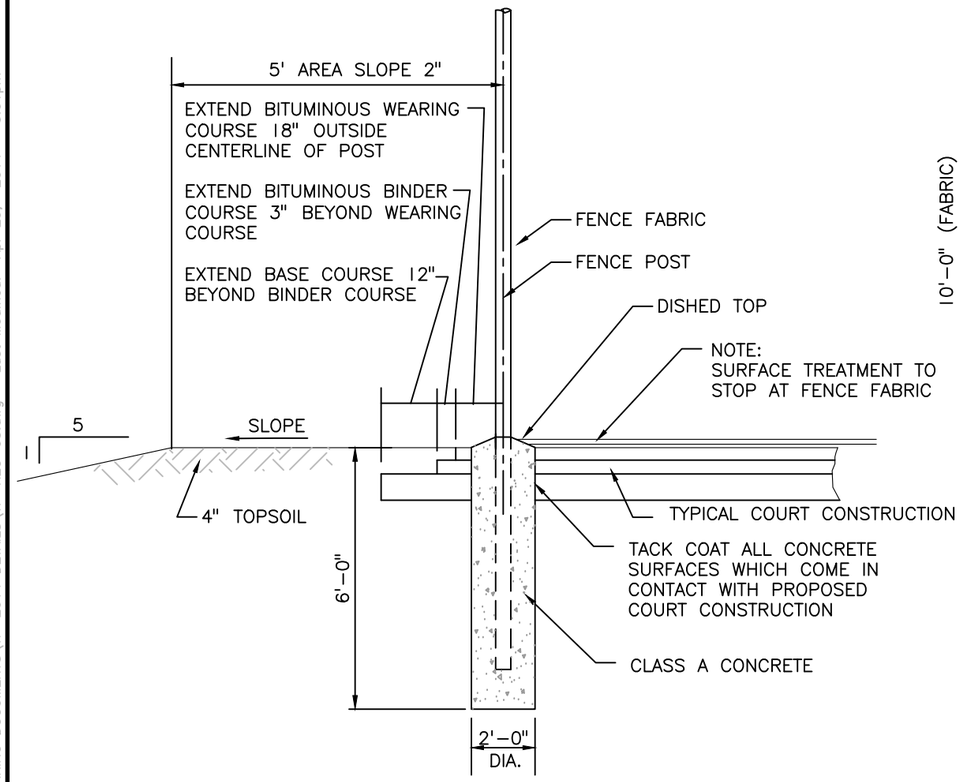
1. SET GOALS AND STANDARDS PLUMB.
2. PROPERLY CURE CONCRETE BEFORE GOAL USE.

INSTALLATION OF BASKETBALL COURT APPURTENANCES
TYPICAL BASKETBALL GOAL – TWO PER COURT
NO SCALE



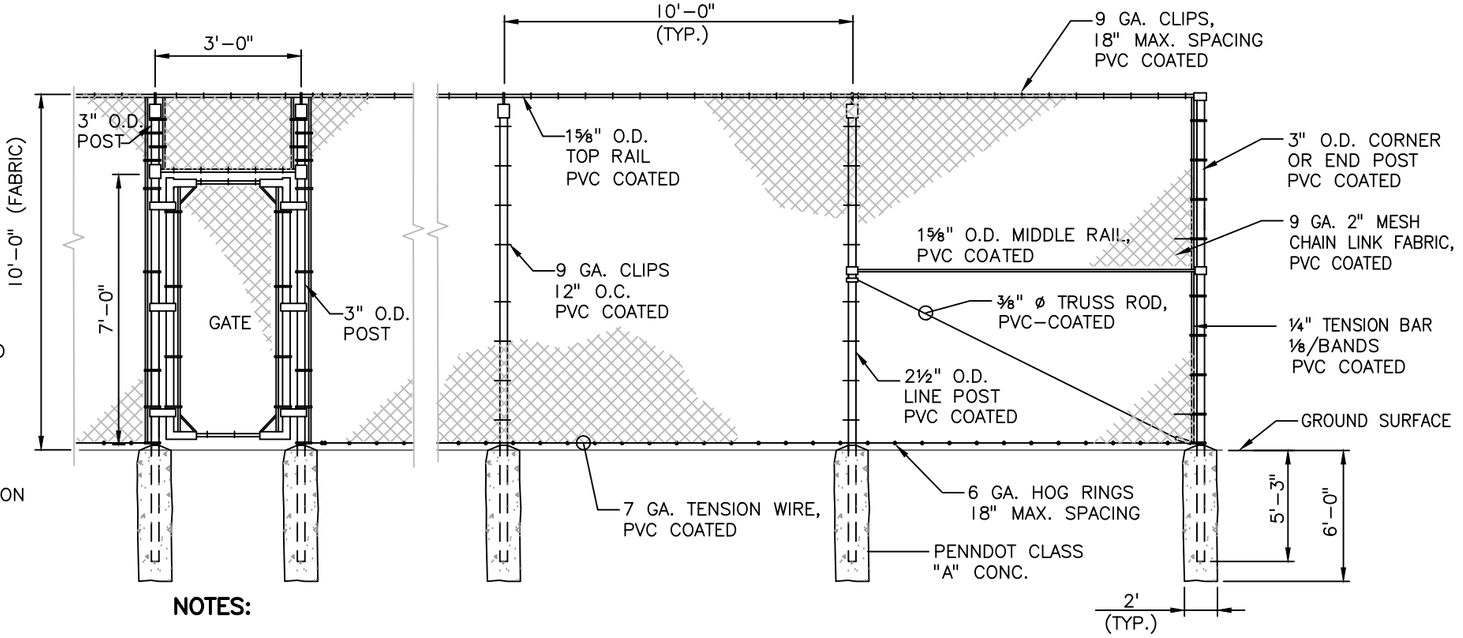
BASKETBALL COURT MARKING
NO SCALE

REVISIONS	PALMER TOWNSHIP **STANDARD CONSTRUCTION DETAILS** NORTHAMPTON COUNTY, PENNSYLVANIA RECREATIONAL FACILITIES **BASKETBALL COURT**	
	THE PIDCOCK COMPANY CIVIL ENGINEERING AND LAND PLANNING ARCHITECTURE LAND SURVEYING OXFORD DRIVE AT FISH HATCHERY ROAD ALLENTOWN, PENNSYLVANIA	DATE: MARCH 2008 CHKD BY: RJG SCALE: NO SCALE **TP–REC–2**



FENCE POST DETAIL

NO SCALE

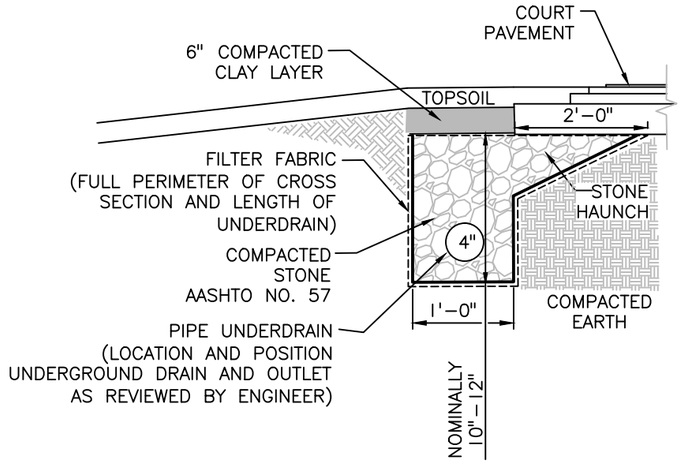


NOTES:

1. 1⅝" O.D. MIDDLE RAIL AND ⅜" ø TRUSS ROD ADJACENT TO BOTH SIDES OF CORNER AND END POSTS ONLY ON FENCE LINE.
2. PROVIDE A LOCKABLE LATCH ASSEMBLY ON THE GATE.
3. THE FENCE FABRIC SHALL BE 9 GA. PERMAFUSED ® PVC COATED, 2" MESH STEEL FABRIC IN WOODLAND GREEN AS MANUFACTURED BY ANCHOR FENCE, INC. OR REVIEWED EQUAL.

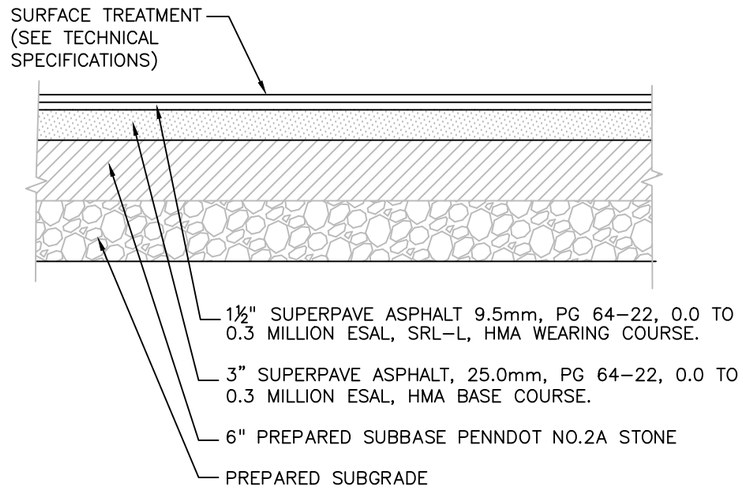
CHAIN LINK FENCE DETAILS

NO SCALE



PAVEMENT BASE DRAIN

NO SCALE



PAVEMENT CROSS SECTION

NO SCALE

REVISIONS
1 APRIL 2014 GENERAL REVISIONS

PALMER TOWNSHIP

STANDARD CONSTRUCTION DETAILS

NORTHAMPTON COUNTY, PENNSYLVANIA

RECREATIONAL FACILITIES

COURT FENCE AND PAVEMENT

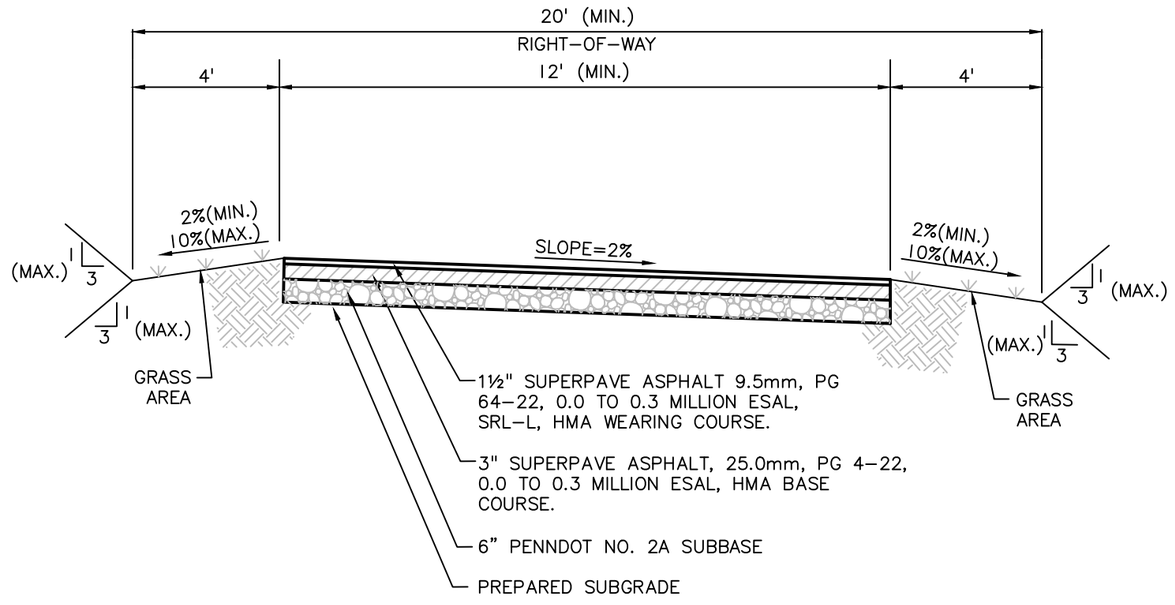
THE PIDCOCK COMPANY
CIVIL ENGINEERING AND LAND PLANNING ARCHITECTURE LAND SURVEYING
OXFORD DRIVE AT FISH HATCHERY ROAD
ALLENTOWN, PENNSYLVANIA

DATE: MARCH 2008
CHKD BY: RJG
SCALE: NO SCALE

TP-REC-3

NOTES:

1. BIKEWAY MAY BE REQUIRED TO BE ILLUMINATED TO TOWNSHIP STANDARDS.
2. BIKEWAY SHALL HAVE A CROSS SLOPE OF TWO (2) PERCENT AND A MAXIMUM LONGITUDINAL SLOPE OF FIVE (5) PERCENT.
3. A TURFED AREA SHALL BE MAINTAINED 4 FEET ON EACH SIDE OF THE 12–FOOT WIDE BIKEWAY.
4. GUIDE RAIL OR OTHER SUITABLE PROTECTIVE BARRIER SHALL BE INSTALLED AT THE EDGE OF RIGHT–OF–WAY AS DETERMINED BY THE TOWNSHIP.

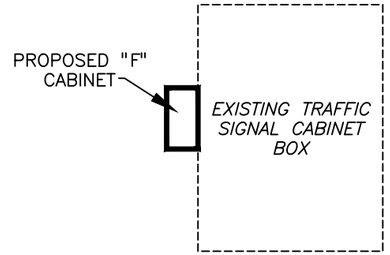


BICYCLE PATH CROSS SECTION

NO SCALE

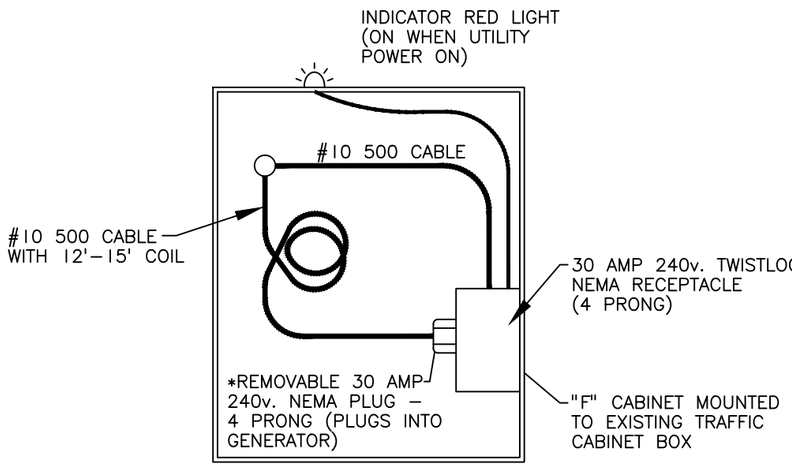
REVISIONS	PALMER TOWNSHIP
1 APRIL 2014 GENERAL REVISIONS	**STANDARD CONSTRUCTION DETAILS** NORTHAMPTON COUNTY, PENNSYLVANIA
	RECREATIONAL FACILITIES
	BICYCLE PATH
	THE PIDCOCK COMPANY — CIVIL ENGINEERING AND LAND PLANNING ARCHITECTURE LAND SURVEYING — OXFORD DRIVE AT FISH HATCHERY ROAD ALLENTOWN, PENNSYLVANIA
	DATE: MARCH 2008 CHKD BY: RJG SCALE: NO SCALE
	TP–REC–4

Drawing name: S:\Municipalities\MUNICIPAL STANDARD CONSTRUCTION DOCUMENTS\PALMER TOWNSHIP\TP–WORKING DOCUMENTS\TP–2014 DETAILS\TP–REC–04.dwg Last Modified: Apr 29, 2014 – 3:01pm

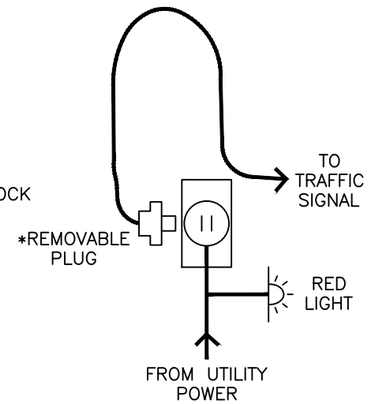


SUPPLY LIST NEEDED FOR GENERATOR HOOK UP

ONE "F" CABINET
INSULATED CONNECTERS TAP
20' 10/4 BLACK SOW WIRE
30 AMP NEMA PLUG – 4 PRONG
30 AMP NEMA RECEPTACLE 4 PRONG (TWISTLOCK)
1 REG BOX, COVER
2" NIPPLES, LOCKING RING
ONE 1" PVC Lb
ONE 1" TERMINAL ADAPTER
BANDING AND BRACKETS



PROPOSED "F" CABINET



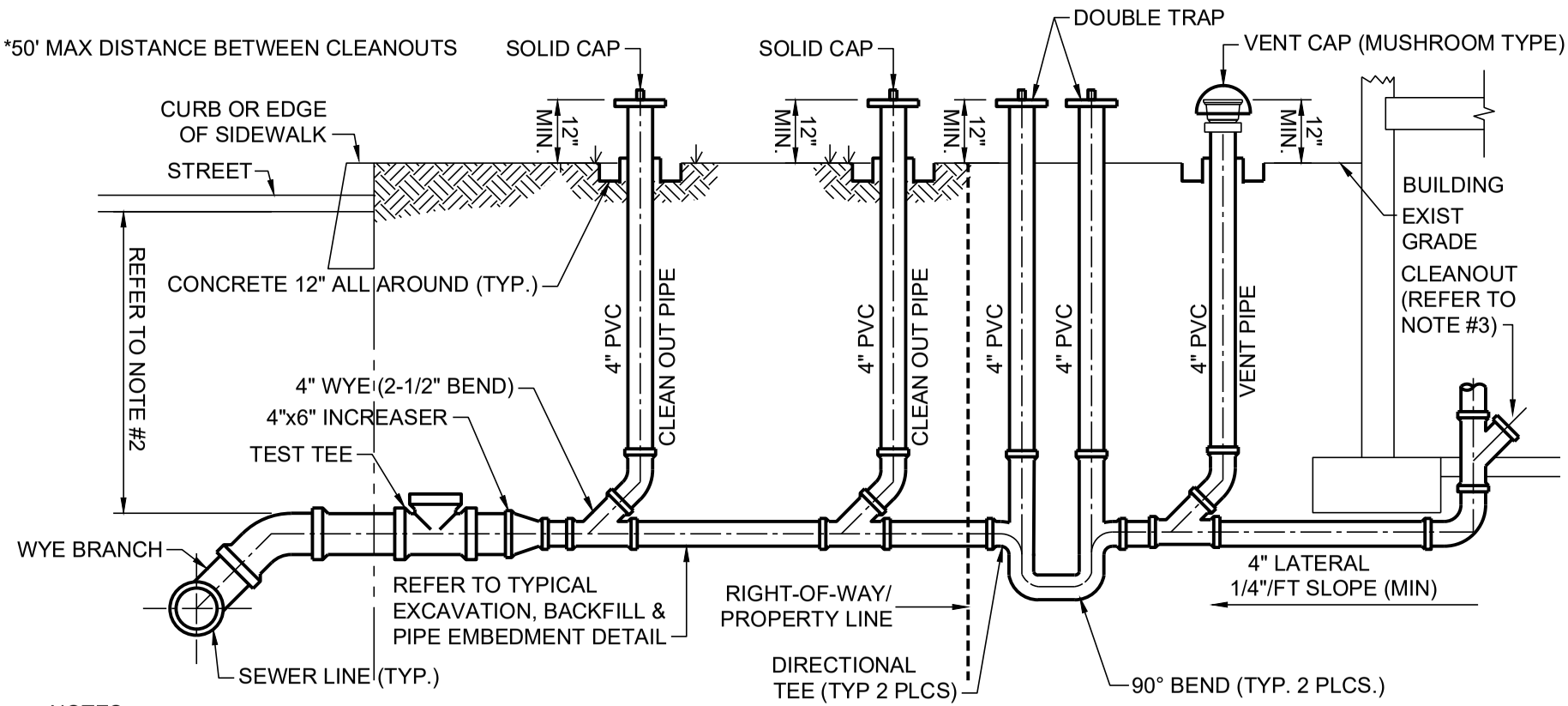
SCHEMATIC

NOTE:
ALL WORK AND MATERIALS SHALL COMPLY WITH ALL APPLICABLE TRAFFIC SIGNAL INDUSTRY, LOCAL, STATE AND NATIONAL ELECTRIC CODE REQUIREMENTS

TRAFFIC SIGNAL CABINET BYPASS GENERATOR HOOK UP

NO SCALE

REVISIONS	PALMER TOWNSHIP
1 APRIL 2014 ADD SHEET TO SET	**STANDARD CONSTRUCTION DETAILS** NORTHAMPTON COUNTY, PENNSYLVANIA
	TRAFFIC SIGNAL FACILITIES
	CABINET BYPASS GENERATOR HOOK UP
	THE PIDCOCK COMPANY — CIVIL ENGINEERING AND LAND PLANNING ARCHITECTURE LAND SURVEYING — OXFORD DRIVE AT FISH HATCHERY ROAD ALLENTOWN, PENNSYLVANIA
	DATE: MARCH 2008 · CHKD BY: RJG · SCALE: NO SCALE · TP–TS–1



NOTES:

1. 4" SINGLE RUNNING TRAP WILL BE INSTALLED WITHIN ONE PIPE LENGTH OF THE END OF THE 6" LATERAL.
2. MINIMUM DEPTH OF 4" LATERAL WILL BE 48" BELOW FINISHED GRADE UNLESS APPROVED BY ENGINEER.
3. IF THERE IS NOT A CLEANOUT LOCATED INSIDE OF DWELLING AN ADDITIONAL CLEANOUT SHALL BE INSTALLED IMMEDIATELY OUTSIDE OF THE BUILDING PRIOR TO RUNNING TRAP
4. LOCATE VENT CAP AND CLEANOUT IN LAWN AREA. MUSHROOM CAP SHALL BE USED ON VENT.
5. IN GENERAL, SANITARY SEWERS SHOULD BE LOCATED AT LEAST 10 FEET FROM PUBLIC WATER SUPPLY SOURCES AND 50 FEET FROM PRIVATE WATER SUPPLY SOURCES, UNLESS THE SANITARY LINES ARE ENCASED IN CONCRETE OR APPROVED EQUIVALENT.
6. REFER TO DRAWING S-3 FOR LATERAL NOTES.

1

TYPICAL BUILDING SEWER

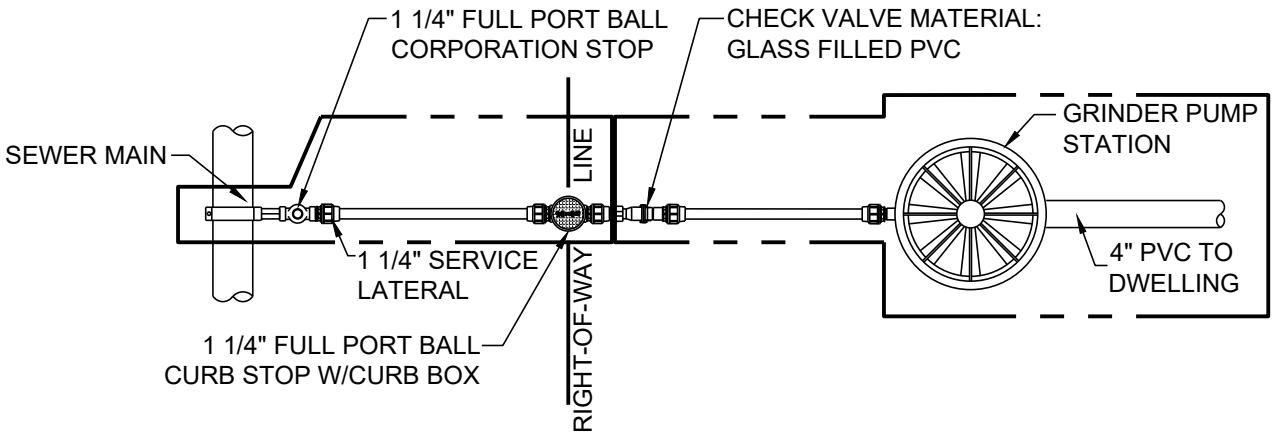
SCALE: NONE

ENTECH ENGINEERING
1.800.825.1372
www.entecheng.com

PALMER TOWNSHIP
3 WELLER PLACE, PALMER, PA, 18045

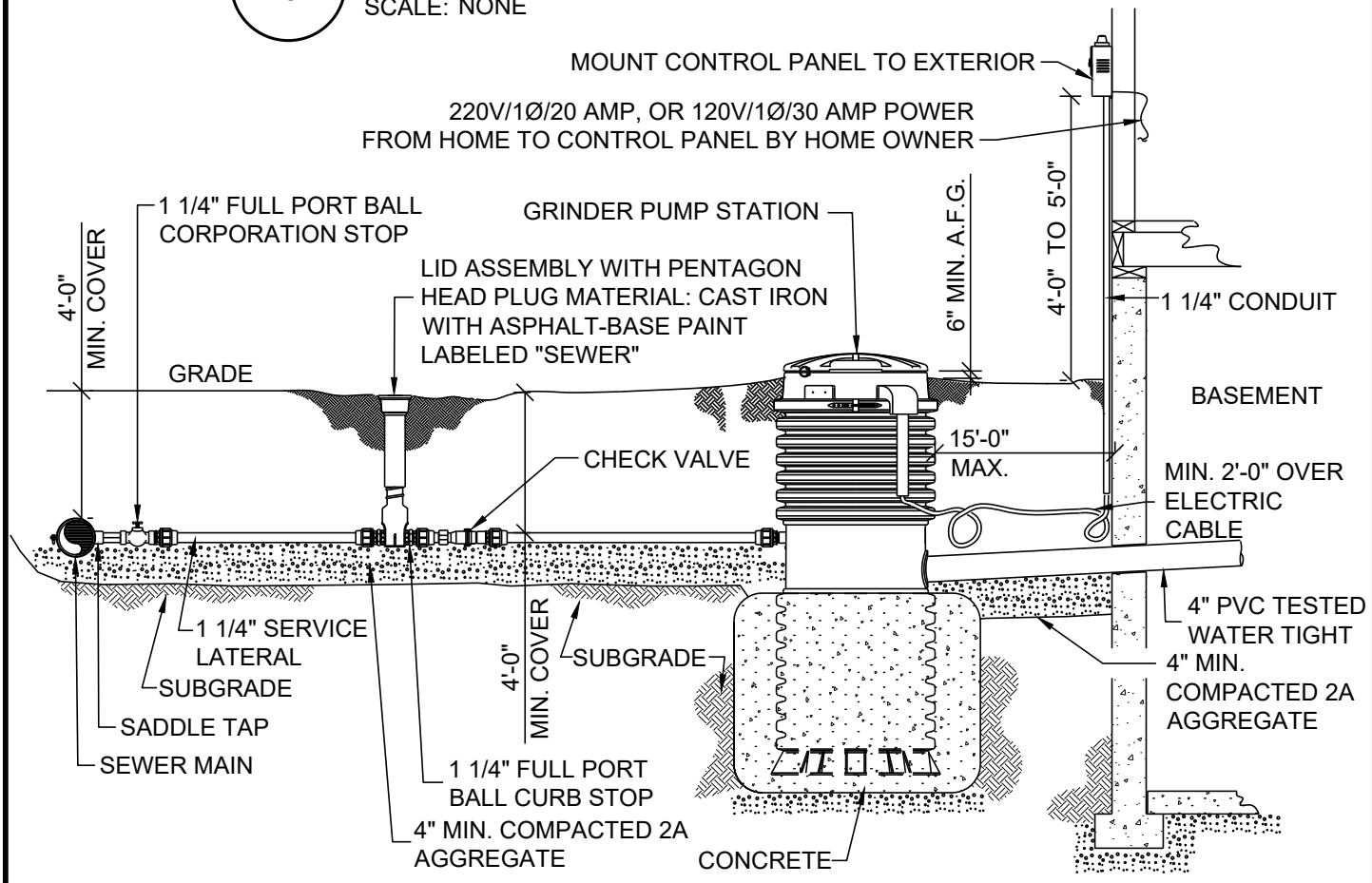
TYPICAL BUILDING SEWER

DATE: MAR 2025
PREPARED BY: EDM
CHECKED BY: -
APPROVED BY: -
SCALE: AS NOTED
PROJECT NO. 4660.036
DRAWING NO. S-1



1 TYPICAL GRINDER PUMP LATERAL INSTALLATION - PLAN

SCALE: NONE



1. REFER TO DRAWING S-3 FOR LATERAL NOTES.
2. GRINDER SELECTION TO BE PROVORE 380, XYLEM - FLYGT, OR ENVIRONMENT ONE MODELS.

2 TYPICAL GRINDER PUMP INSTALLATION - ELEVATION

SCALE: NONE

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www.entecheng.com

PALMER TOWNSHIP
3 WELLER PLACE, PALMER, PA, 18045

TYPICAL GRINDER PUMP INSTALLATION

DATE: MAR 2025	SCALE: AS NOTED
PREPARED BY: EDM	PROJECT NO. 4660.036
CHECKED BY: --	DRAWING NO. S-2
APPROVED BY: --	

LATERAL NOTES:

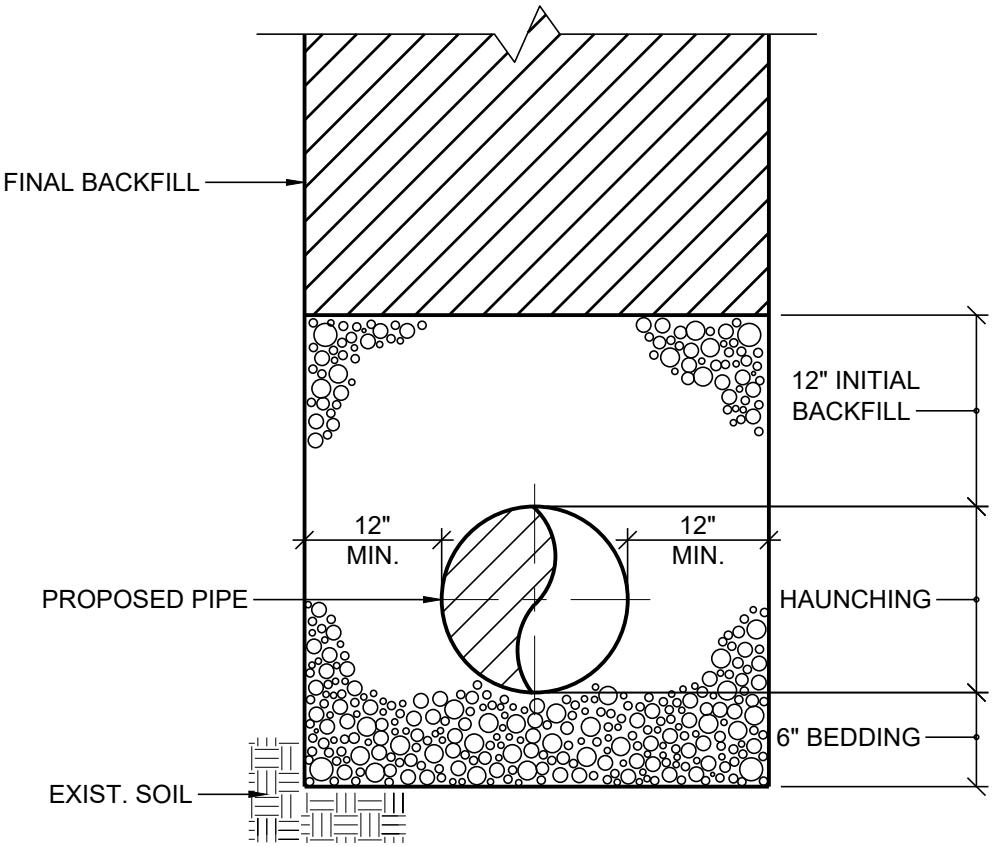
1. ALL MATERIAL USED FOR LATERAL INSTALLATIONS SHALL BE NEW, FREE FROM DEFECTS AND CONFORM TO ALL STANDARDS SET FORTH BY THE TOWNSHIP.

2. ALL LATERALS MUST BE INSPECTED BEFORE BACKFILLING. COMPLETED DRAWINGS SHOWING THE EXACT LOCATION AND DEPTH OF LINE SHALL BE SUBMITTED TO THE TOWNSHIP DURING FINAL INSPECTION OR THE LATERAL WILL NOT BE AUTHORIZED TO USE.

3. ALL FEES MUST BE PAID IN PROPER AMOUNT BEFORE A CONNECTION PERMIT WILL BE ISSUED.

MATERIAL ALLOWED BY TOWNSHIP FOR BUILDING GRAVITY AND LOW PRESSURE SEWERS

1. GRAVITY BUILDING SEWER: SCH 80 PVC, MINIMUM DIAMETER 4 INCH.
2. GRAVITY SEWER LATERAL: SDR 26 PVC, MINIMUM DIAMETER 6 INCH.
3. GRAVITY SEWER MAIN: SDR 26 PVC, MINIMUM DIAMETER 8 INCH.
4. MINIMUM SLOPE FOR GRAVITY SEWERS AND LATERALS:
   a. 4 INCH BUILDING SEWER: 2% (1/4 INCH PER FOOT).
   b. 6 INCH LATERAL: 1.0% (1/8 INCH PER FOOT).
   c. 8 INCH MAIN: 0.4%.
5. LOW PRESSURE SEWER MAIN: DR 11 HDPE, MINIMUM DIAMETER 1-1/4 INCH.
6. LOW PRESSURE SEWER LATERAL: DR11 HDPE, DIAMETER 1-1/4 INCH UNLESS SPECIAL APPROVAL PROVIDED BY TOWNSHIP.



NOTES:

1. PIPE TO BE ENVELOPED IN, AND INITIAL 12" BACKFILL ON TOP TO BE 1B STONE.
2. BEDDING AND HAUNCHING TO BE 1B STONE (#8 AGGREGATE) AND REMAINING BACKFILL TO BE 2A LIMESTONE.

1

TYPICAL EXCAVATION, BACKFILL & PIPE EMBEDMENT DETAIL

SCALE: NONE

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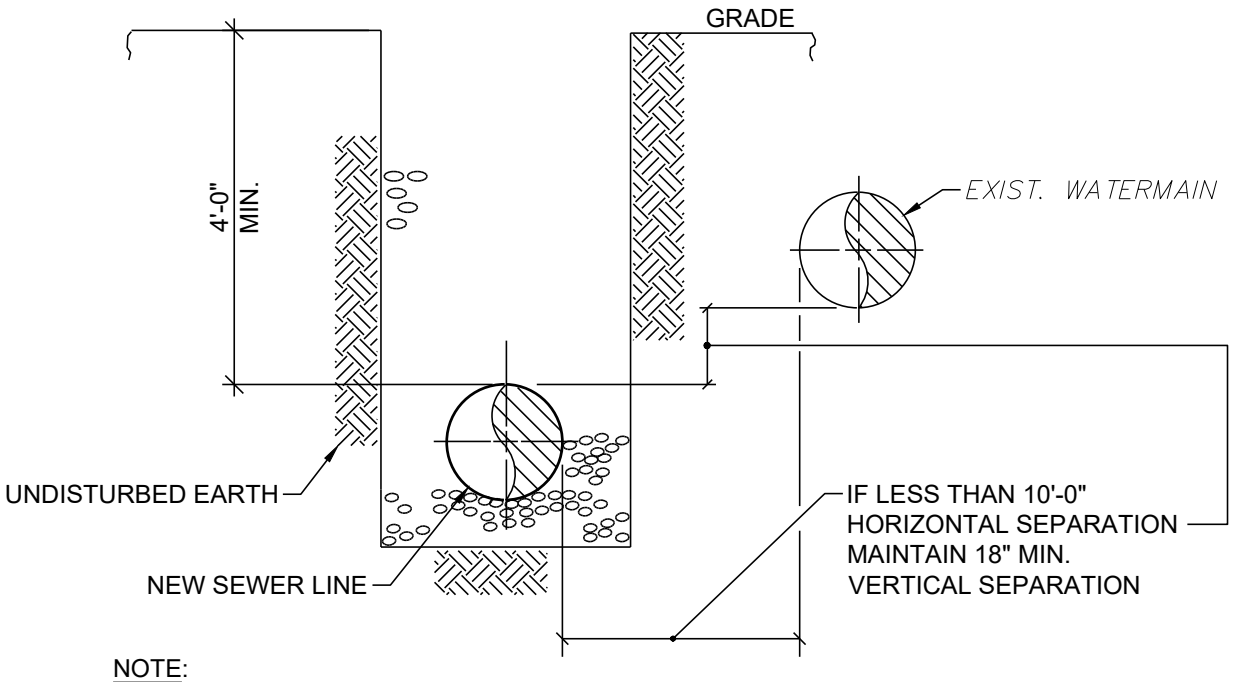
3 WELLER PLACE, PALMER, PA, 18045

TYPICAL EXCAVATION, BACKFILL & PIPE EMBEDMENT DETAIL

DATE: MAR 2025	SCALE: AS NOTED
PREPARED BY: EDM	PROJECT NO. 4660.036
CHECKED BY: --	DRAWING NO. S-4
APPROVED BY: --	



NOTE:

WHEN VERTICAL SEPARATION IS LESS THAN 18" PROVIDE CONCRETE ENCASEMENT ON UNDISTURBED GROUND. THE LENGTH OF THE ENCASEMENT SHALL BE EXTENDED A MINIMUM OF 10 FEET BEYOND THE CENTERLINE OF THE WATER MAIN IN BOTH DIRECTIONS.

1 NEW SEWER LINE PARALLEL TO EXISTING WATER MAIN DETAIL

SCALE: NONE

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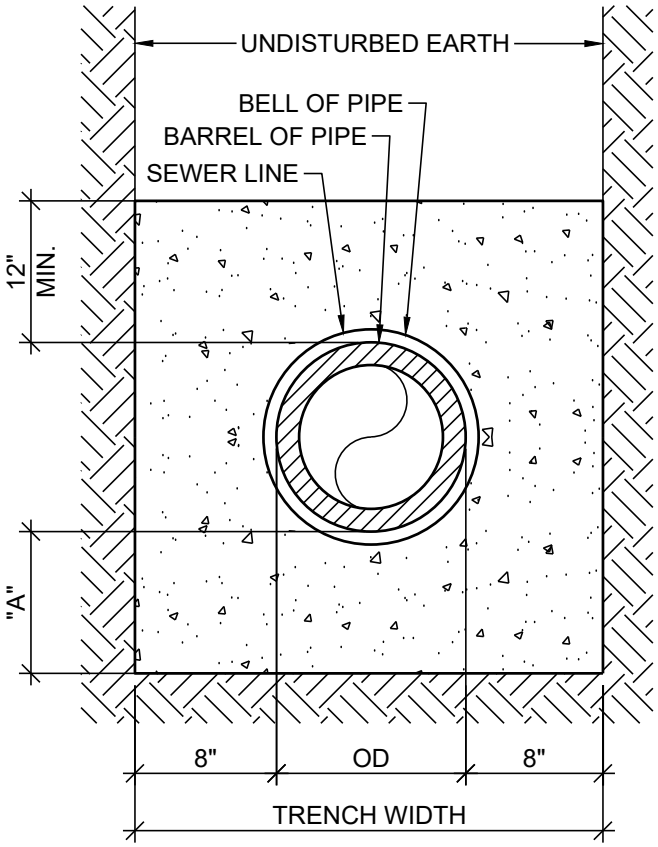
PALMER TOWNSHIP
3 WELLER PLACE, PALMER, PA, 18045

NEW SEWER LINE PARALLEL TO EXISTING WATER MAIN

DATE: MAR 2025	SCALE: AS NOTED
PREPARED BY: EDM	PROJECT NO. 4660.036
CHECKED BY: --	DRAWING NO. S-5
APPROVED BY: --	



PIPE SIZE	"A"
4" - 16"	6"
18" - 48"	6"
54" - 84"	10"

NOTE:

1. ALL CONCRETE SHALL HAVE MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI AT THE END OF 28 DAYS.

1

CONCRETE ENCASEMENT DETAIL

SCALE: NONE

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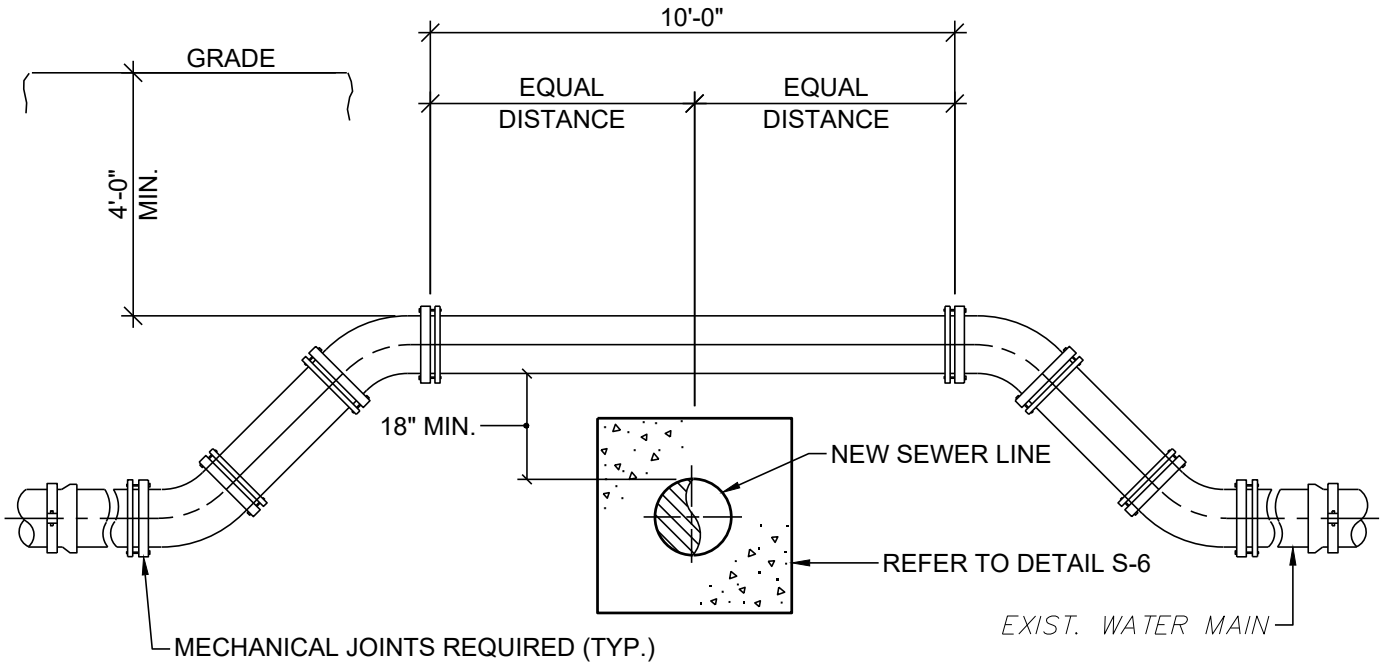
CONCRETE ENCASEMENT DETAIL

DATE: MAR 2025	SCALE: AS NOTED
PREPARED BY: EDM	PROJECT NO. 4660.036
CHECKED BY: --	DRAWING NO. S-6
APPROVED BY: --	



NOTES :

1. WHEN VERTICAL SEPARATION IS LESS THAN 18" PROVIDE CONCRETE ENCASEMENT ON UNDISTURBED GROUND. THE LENGTH OF THE ENCASEMENT SHALL BE EXTENDED A MINIMUM OF 10 FEET BEYOND THE CENTERLINE OF THE WATER MAIN IN BOTH DIRECTIONS.
2. ALL CONCRETE SHALL HAVE MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI AT THE END OF 28 DAYS.

1

NEW SEWER LINE CROSSING UNDER EXISTING WATER MAIN DETAIL

SCALE: NONE

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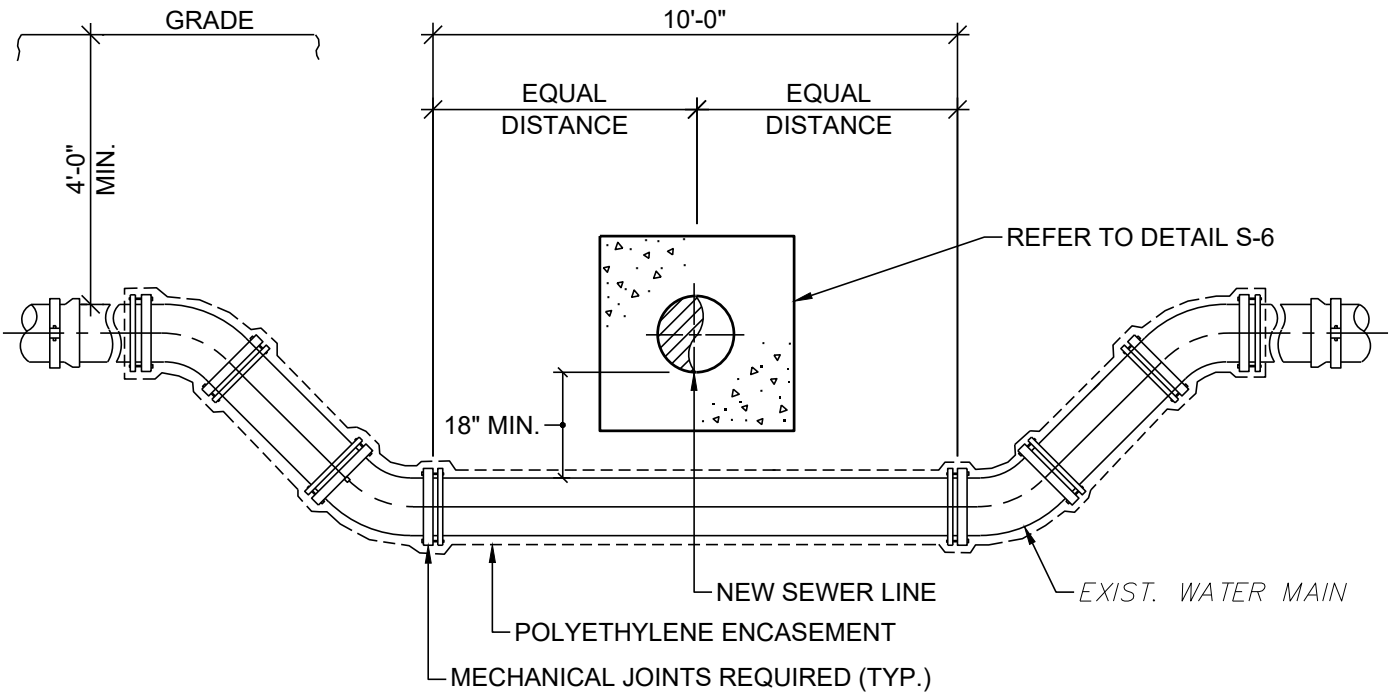
PALMER TOWNSHIP
3 WELLER PLACE, PALMER, PA, 18045

NEW SEWER LINE CROSSING UNDER EXISTING WATER MAIN DETAIL

DATE: MAR 2025	SCALE: AS NOTED
PREPARED BY: EDM	PROJECT NO. 4660.036
CHECKED BY: --	DRAWING NO. S-7
APPROVED BY: --	



NOTES :

1. WHEN VERTICAL SEPARATION IS LESS THAN 18" PROVIDE CONCRETE ENCASEMENT ON UNDISTURBED GROUND. THE LENGTH OF THE ENCASEMENT SHALL BE EXTENDED A MINIMUM OF 10 FEET BEYOND THE CENTERLINE OF THE WATER MAIN IN BOTH DIRECTIONS.
2. ALL CONCRETE SHALL HAVE MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT THE END OF 28 DAYS.

NEW SEWER LINE CROSSING OVER EXISTING WATER MAIN DETAIL

1

SCALE: NONE

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PALMER TOWNSHIP
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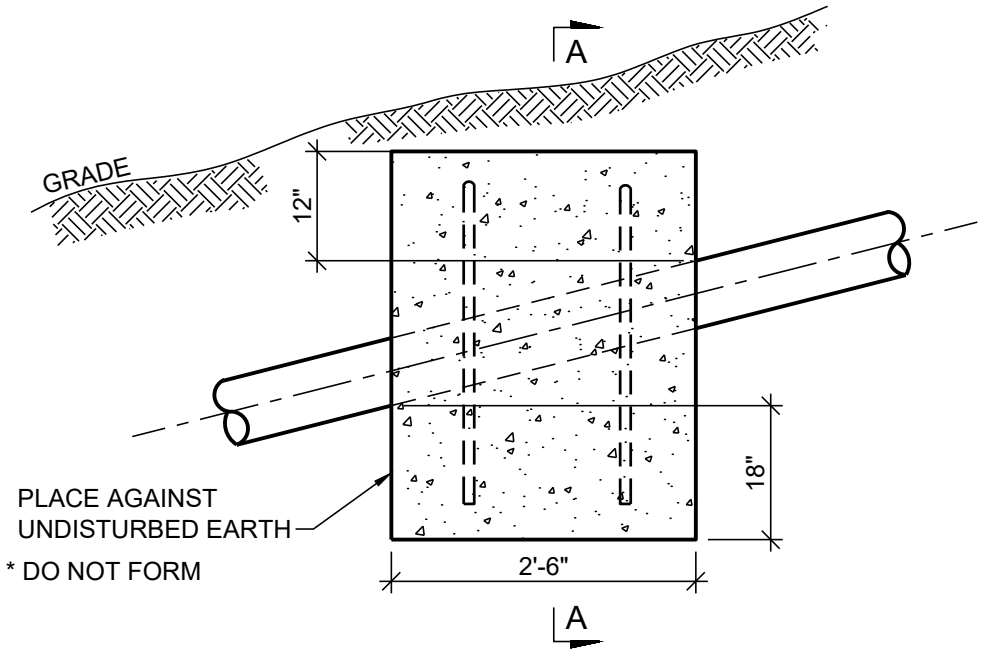
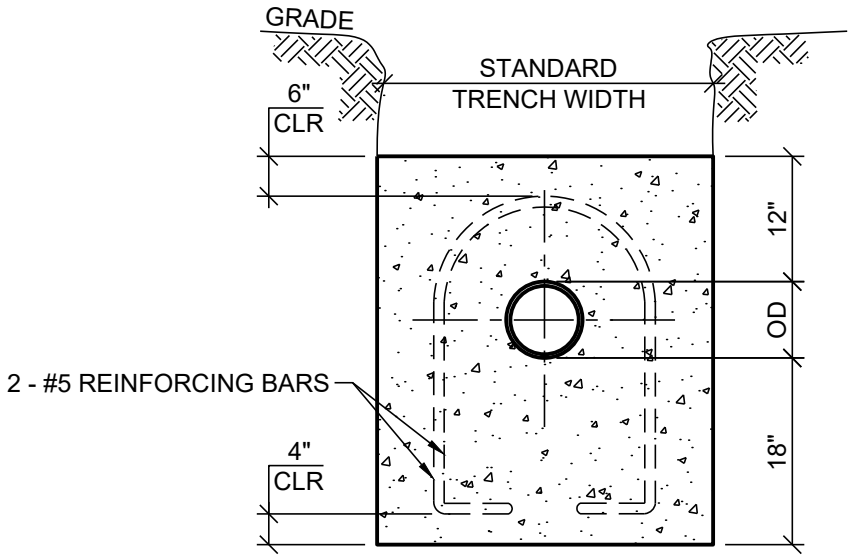
NEW SEWER LINE CROSSING OVER EXISTING WATER MAIN DETAIL

DATE: MAR 2025	SCALE: AS NOTED
PREPARED BY: EDM	PROJECT NO. 4660.036
CHECKED BY: --	DRAWING NO. S-8
APPROVED BY: --	



ELEVATION



SECTION A-A

CONCRETE ANCHOR NOTES :

1. ANCHORS ARE NOT REQUIRED ON SLOPES LESS THAN 20% UNLESS NOTED ON DRAWINGS.
2. PROVIDE ANCHORS ON 36' CENTERS FOR SLOPES BETWEEN 20% TO 34%.
3. PROVIDE ANCHORS ON 24' CENTERS FOR SLOPES BETWEEN 35% TO 50%.
4. PROVIDE ANCHORS ON 16' CENTERS FOR SLOPES BETWEEN 51% TO 70%.
5. ALL CONCRETE SHALL HAVE MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT THE END OF 28 DAYS.

1

CONCRETE ANCHORS - SLOPE BREAKERS

SCALE: NONE

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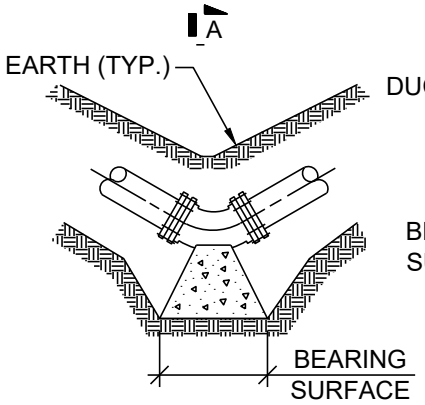
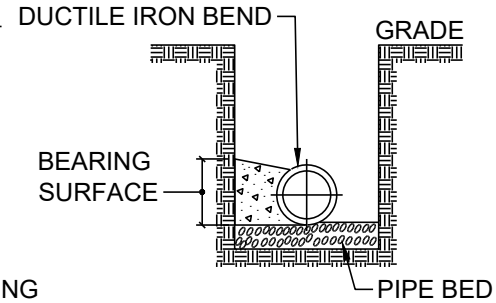
PALMER TOWNSHIP
3 WELLER PLACE, PALMER, PA, 18045

CONCRETE ANCHORS - SLOPE BREAKERS

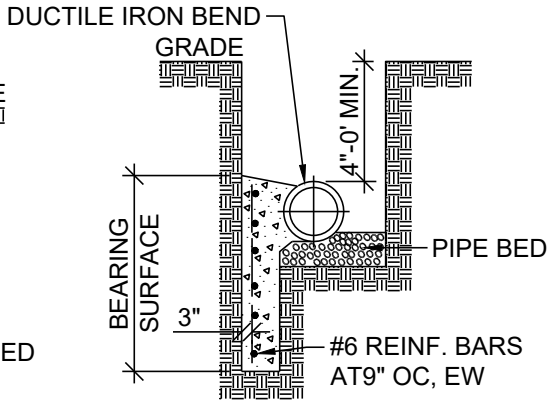
DATE: MAR 2025	SCALE: AS NOTED
PREPARED BY: EDM	PROJECT NO. 4660.036
CHECKED BY: --	DRAWING NO. S-9
APPROVED BY: --	



PLAN

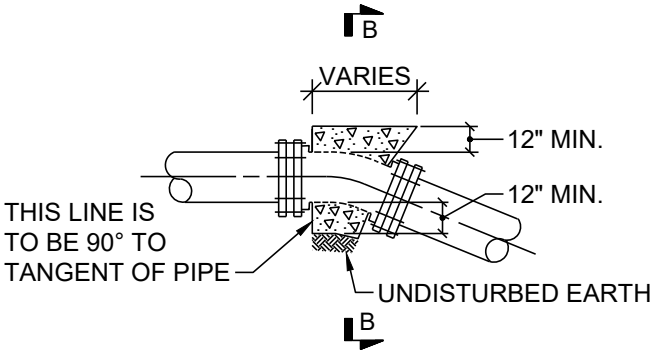


SECTION A-A

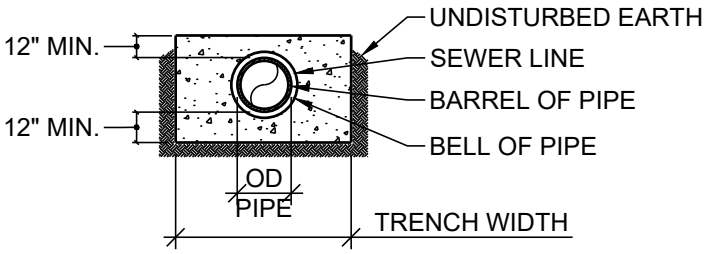


ALTERNATE SECTION A-A

THRUST BLOCKING FOR HORIZONTAL BENDS



ELEVATION



SECTION B-B

THRUST BLOCKING FOR VERTICAL BENDS

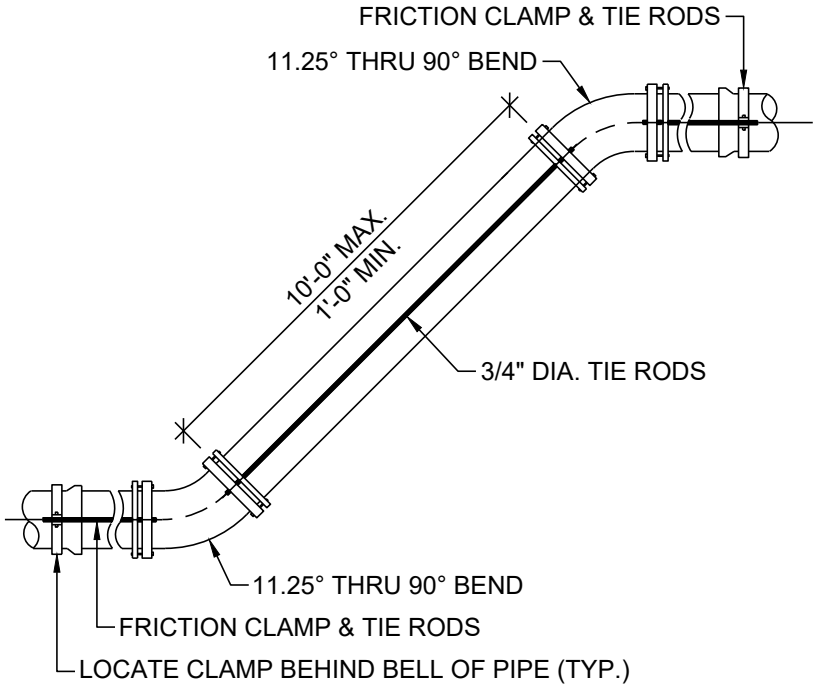
NOTES :

1. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT THE END OF 28 DAYS.
2. ALL REINFORCING STEEL SHALL BE DEFORMED BARS.
3. NO COUPLING OR JOINTS SHALL BE COVERED WITH CONCRETE.
4. INSTALL CONCRETE THRUST BLOCKS AT EACH ELBOW, TEE AND CAPPED END FITTINGS LOCATED IN THE HORIZONTAL PLANE.
5. HARNESS PIPE IF ORDERED BY BUILDER/DEVELOPER ENGINEER.
6. SIZE OF THRUST BLOCKS TO BE DETERMINED INDIVIDUALLY AT THE TIME OF CONSTRUCTION BY BUILDER/DEVELOPER ENGINEER.

1

THRUST BLOCKING DETAILS

SCALE: NONE



NOTE :

1. PROVIDE THRUST CLAMPS AND RODS AT EACH ELBOW LOCATED IN THE VERTICAL PLANE.

1

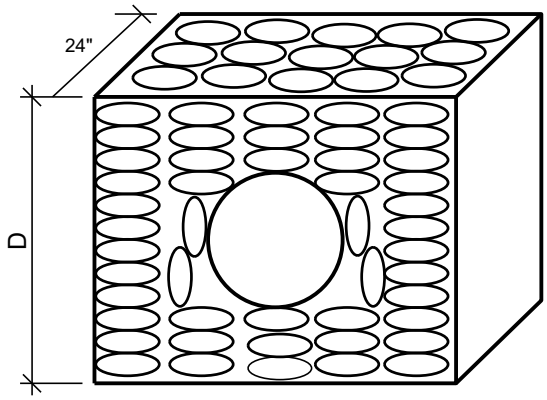
THRUST CLAMPING DETAIL

SCALE: NONE

REQUIRED SPACING AND MATERIALS FOR TRENCH PLUGS		
TRENCH SLOPE (%)	SPACING (FT)	PLUG MATERIAL
<5	*	*
5-15	500	** EARTH FILLED SACKS
15-25	300	** EARTH FILLED SACKS
25-35	200	** EARTH FILLED SACKS
35-100	100	** EARTH FILLED SACKS
>100	50	CEMENT FILLED BAGS (WETTED) OR MORTARED STONE

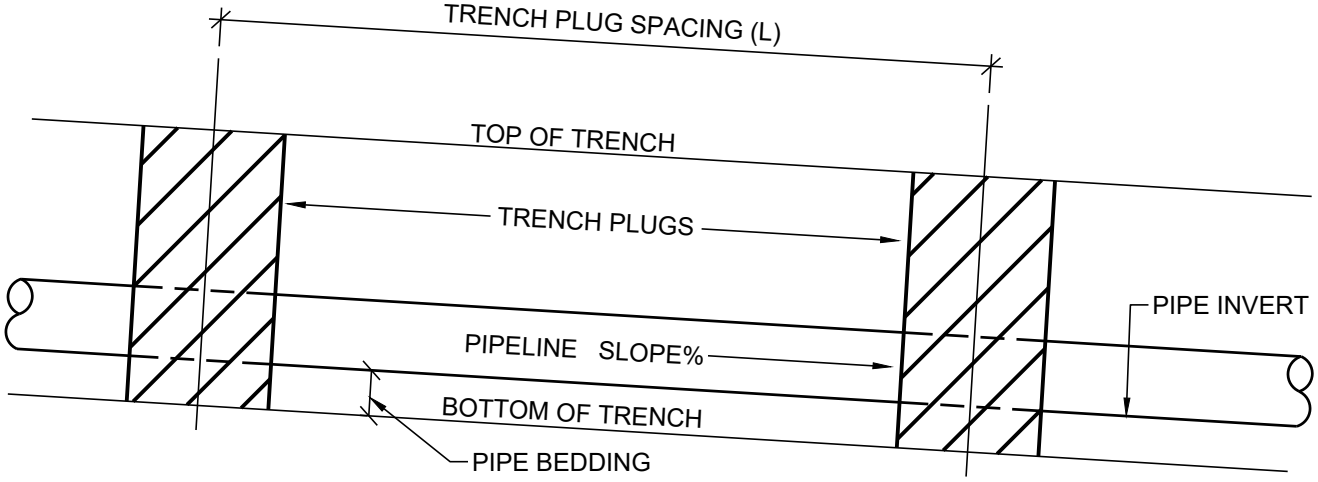
* TRENCH PLUGS ARE REQUIRED AT ALL STREAM, RIVER, OR WATER-BODY CROSSINGS REGARDLESS OF TRENCH SLOPE. OTHERWISE NOT REQUIRED.

** TOPSOIL MAY NOT BE USED TO FILL SACKS



D = DEPTH TO BOTTOM OF TRENCH

SECTION VIEW



ELEVATION

1

TRENCH PLUG DETAIL

SCALE: NONE

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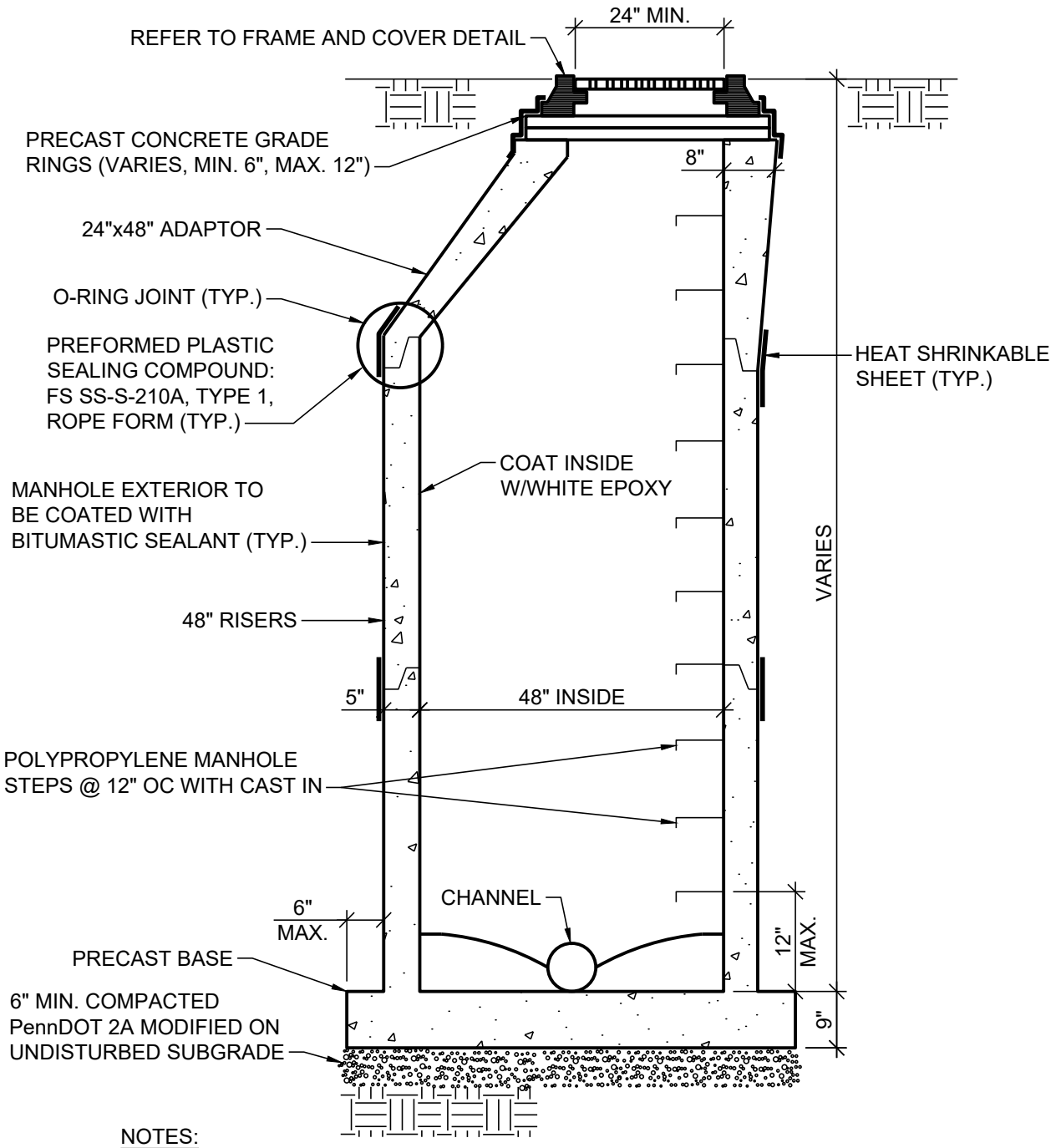
PALMER TOWNSHIP
3 WELLER PLACE, PALMER, PA, 18045

TRENCH PLUG DETAIL

DATE: MAR 2025	SCALE: AS NOTED
PREPARED BY: EDM	PROJECT NO. 4660.036
CHECKED BY: --	DRAWING NO. S-12
APPROVED BY: --	



NOTES:

1. ALL PIPE TO MANHOLE CONNECTIONS SHALL BE MADE WITH A CAST-IN-PLACE GASKET. (TYP) (A-LOK OR APPROVED EQUAL)

2. MANHOLES EXCEEDING A DEPTH OF 16 FEET SHALL PROVIDE PRE-CAST LANDING PLATFORM.

1

TYPICAL MANHOLE DETAIL

SCALE: NONE

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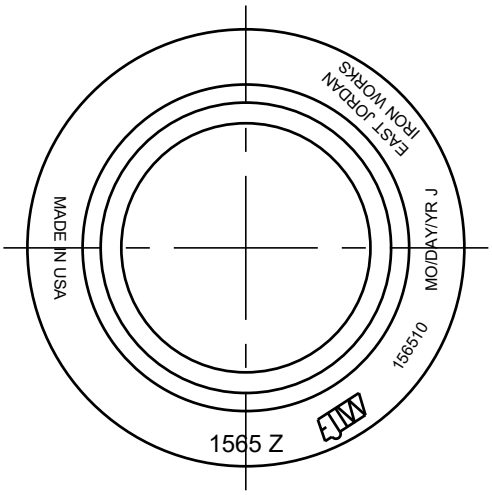
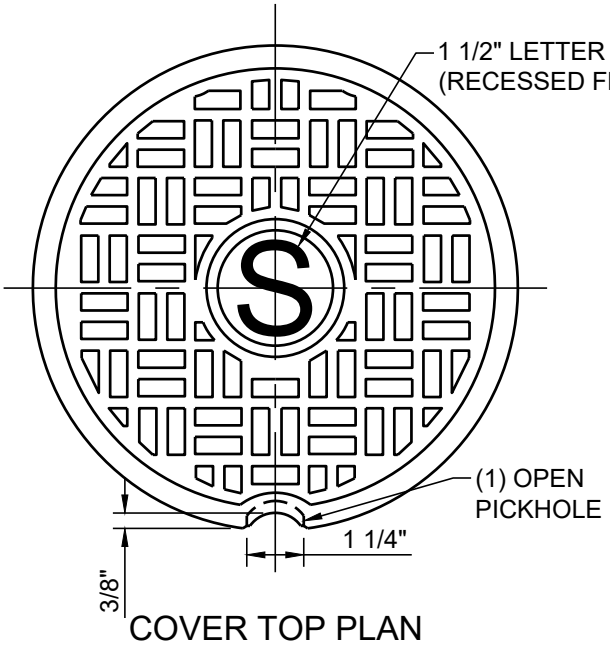
PALMER TOWNSHIP
3 WELLER PLACE, PALMER, PA, 18045

TYPICAL MANHOLE DETAIL

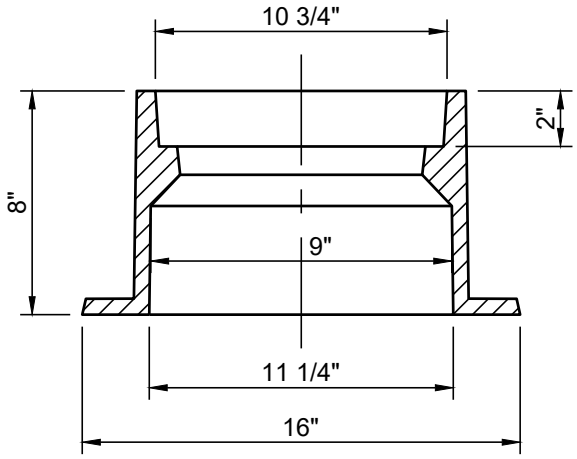
DATE: MAR 2025	SCALE: AS NOTED
PREPARED BY: EDM	PROJECT NO. 4660.036
CHECKED BY: --	DRAWING NO. S-13
APPROVED BY: --	



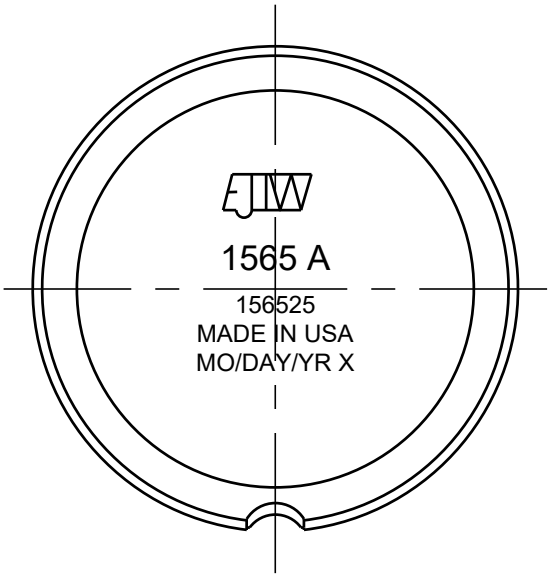
FRAME PLAN



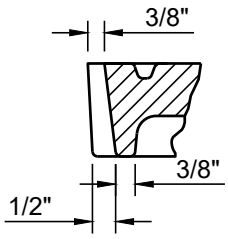
COVER TOP PLAN



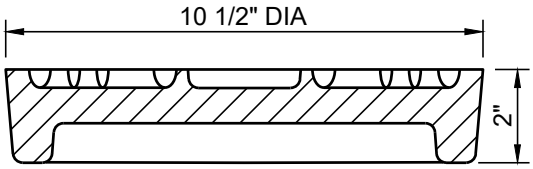
FRAME SECTION



COVER BOTTOM PLAN



PICK HOLE DETAIL



COVER SECTION

1

CAST IRON CLEANOUT FRAME & COVER

SCALE: NONE

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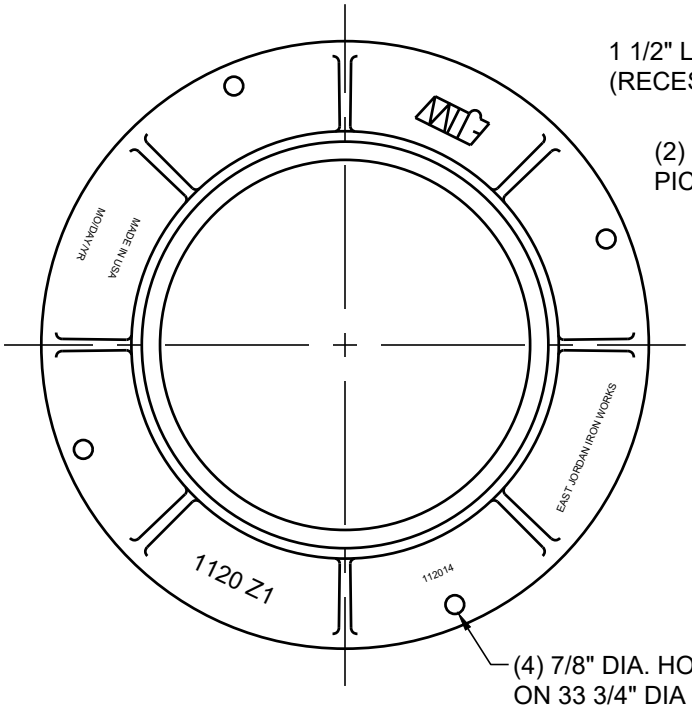
PALMER TOWNSHIP
3 WELLER PLACE, PALMER, PA, 18045

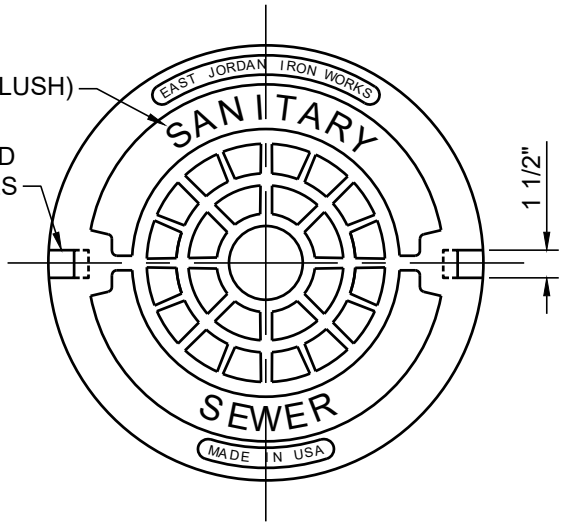
CAST IRON CLEANOUT FRAME AND COVER

DATE: MAR 2025	SCALE: AS NOTED
PREPARED BY: EDM	PROJECT NO. 4660.036
CHECKED BY: --	DRAWING NO. S-14
APPROVED BY: --	

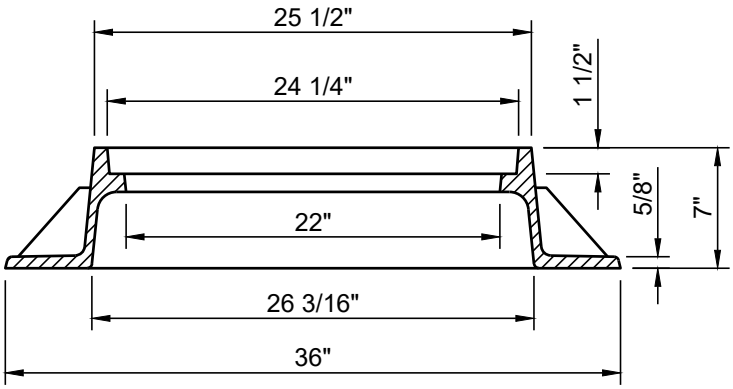


(4) 7/8" DIA. HOLES
ON 33 3/4" DIA B.C.

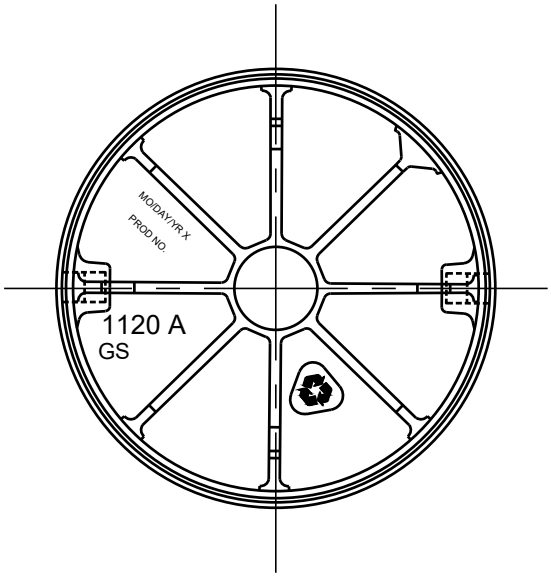
FRAME PLAN



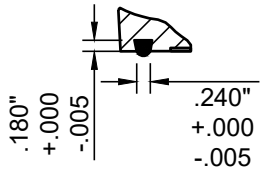
COVER TOP PLAN



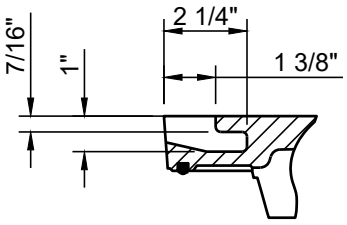
FRAME SECTION



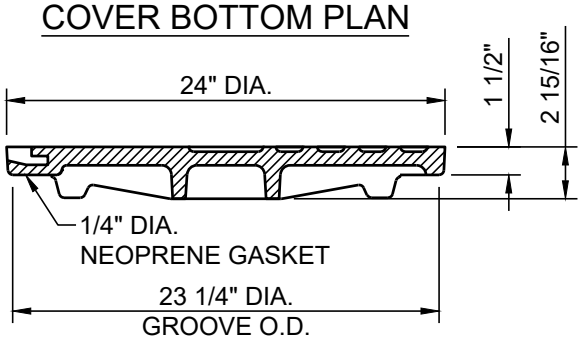
COVER BOTTOM PLAN



GROOVE DETAIL



PICKHOLE DETAIL



COVER SECTION

CAST IRON STANDARD MANHOLE FRAME & COVER

1

SCALE: NONE

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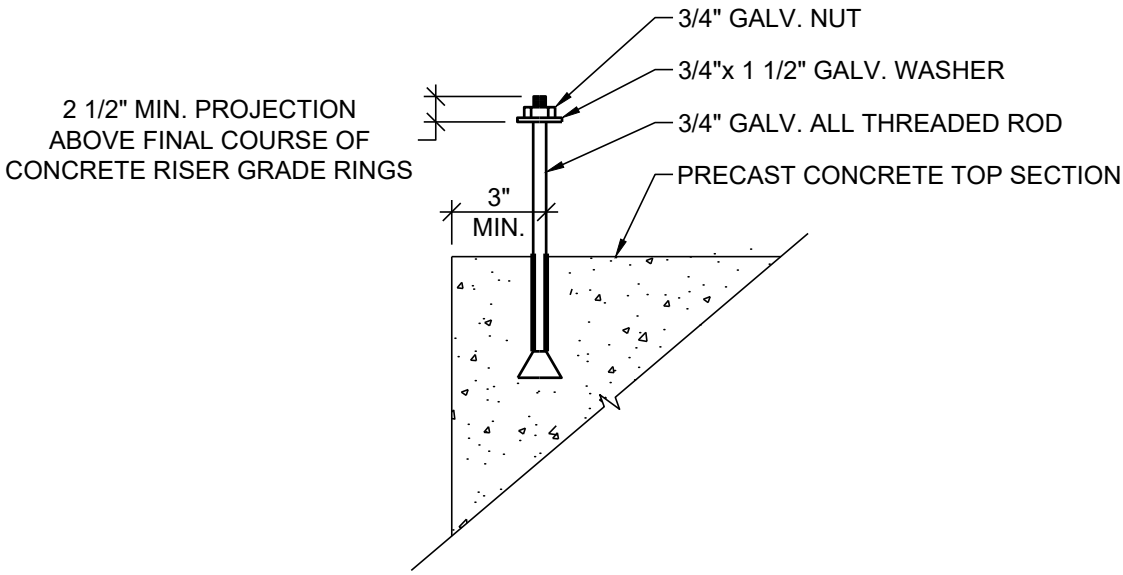
PALMER TOWNSHIP
3 WELLER PLACE, PALMER, PA, 18045

CAST IRON STANDARD MANHOLE
FRAME & COVER

DATE: MAR 2025	SCALE: AS NOTED
PREPARED BY: EDM	PROJECT NO. 4660.036
CHECKED BY: --	DRAWING NO. S-15
APPROVED BY: --	



NOTE: FOUR (4) BOLTS REQUIRED PER MANHOLE.

1

MANHOLE FRAME - ANCHOR BOLT DETAIL

SCALE: NONE

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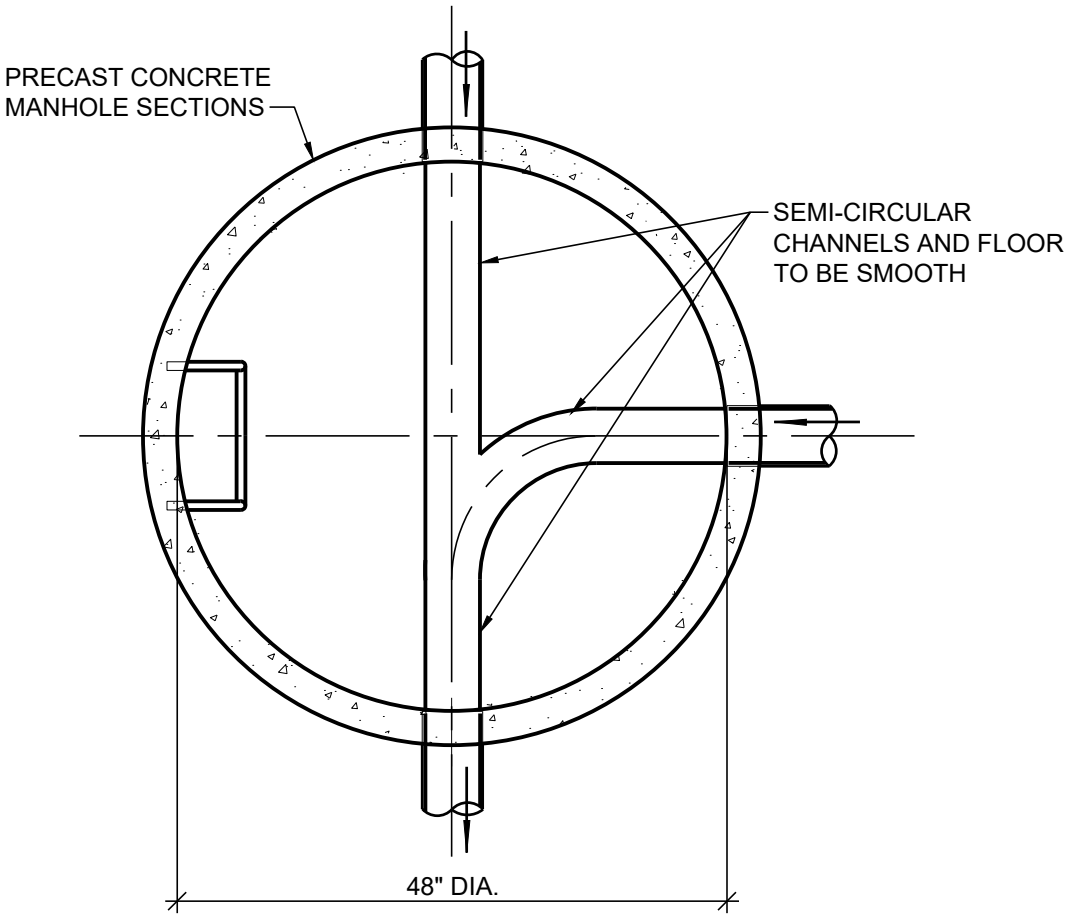
PALMER TOWNSHIP
3 WELLER PLACE, PALMER, PA, 18045

MANHOLE FRAME - ANCHOR BOLT DETAIL

DATE: MAR 2025	SCALE: AS NOTED
PREPARED BY: EDM	PROJECT NO. 4660.036
CHECKED BY: --	DRAWING NO. S-16
APPROVED BY: --	



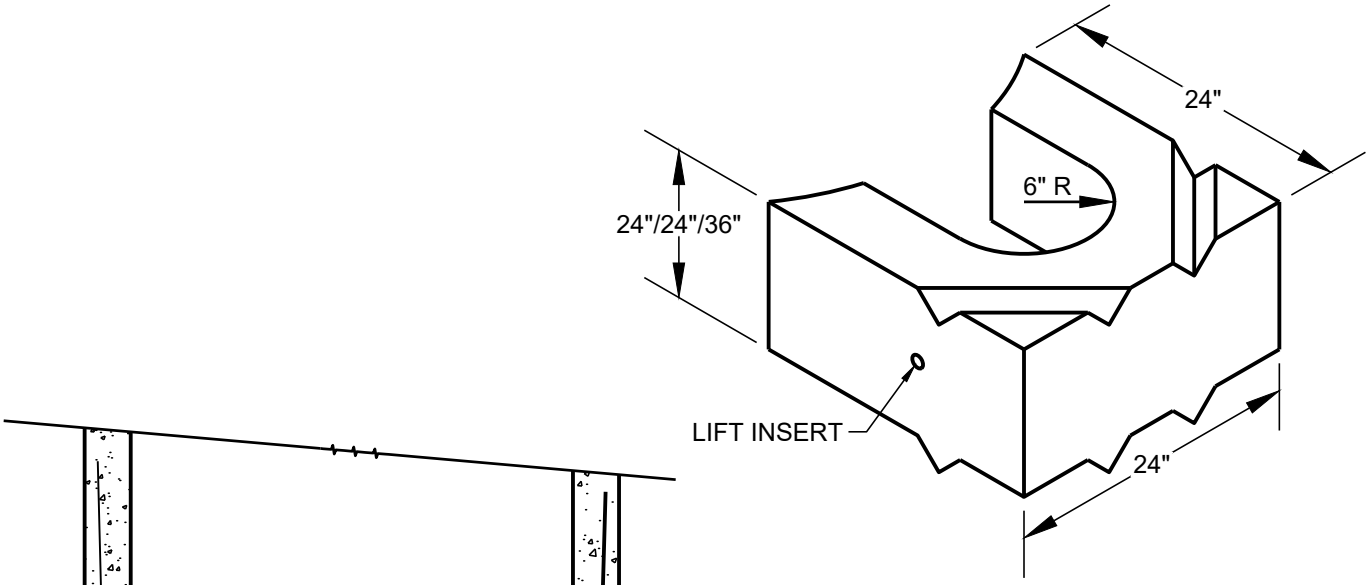
NOTE:

1. ALL FLOW CHANNELS SHALL BE PRE-CAST BY MANUFACTURER UNLESS AUTHORIZED BY ENGINEER/TOWNSHIP.

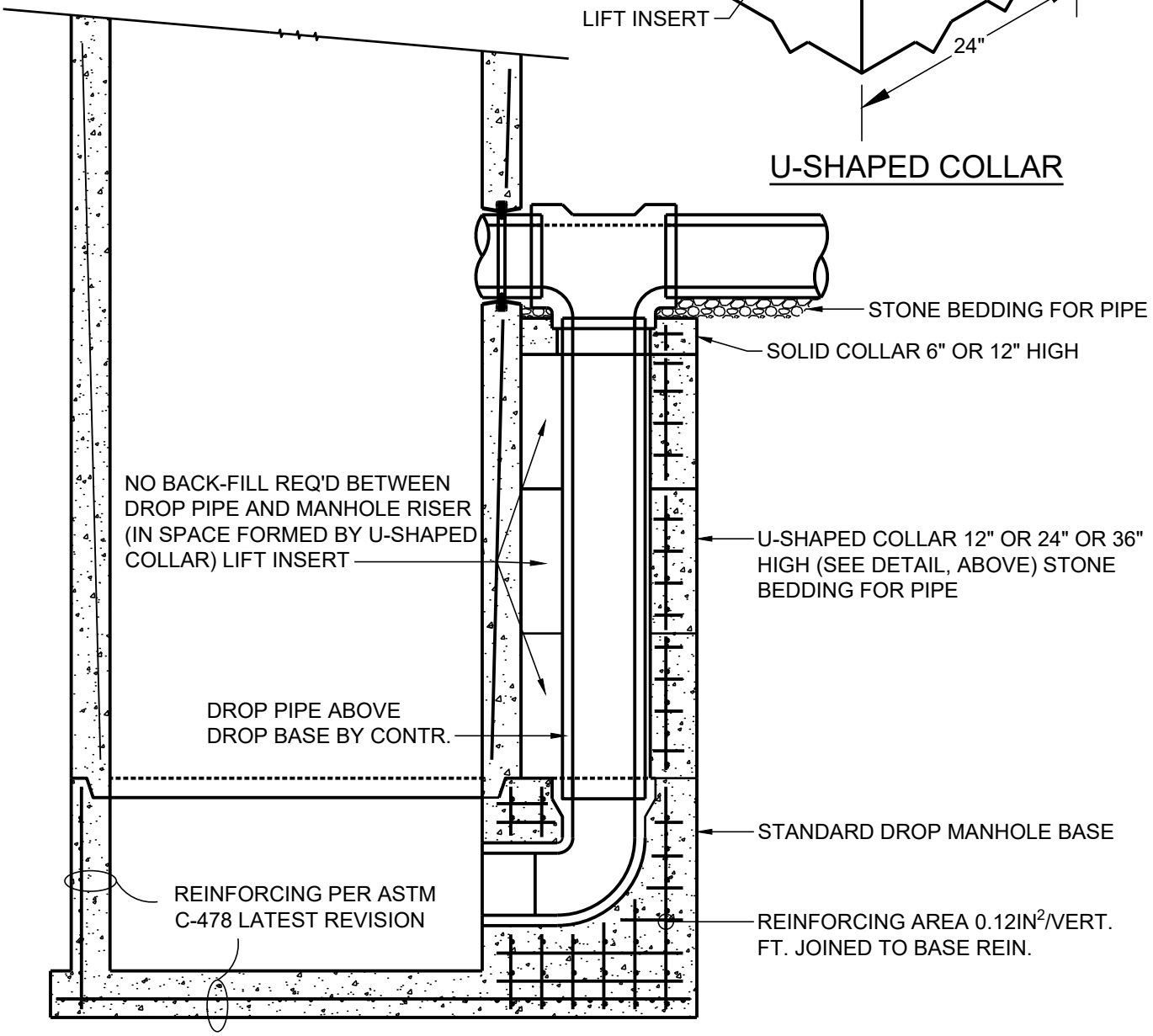
MANHOLE BASE TYPICAL CHANNEL CONFIGURATION

1

SCALE: NONE



U-SHAPED COLLAR



DROP MANHOLE

1 TYPICAL OUTSIDE DROP MANHOLE DETAIL

SCALE: NONE

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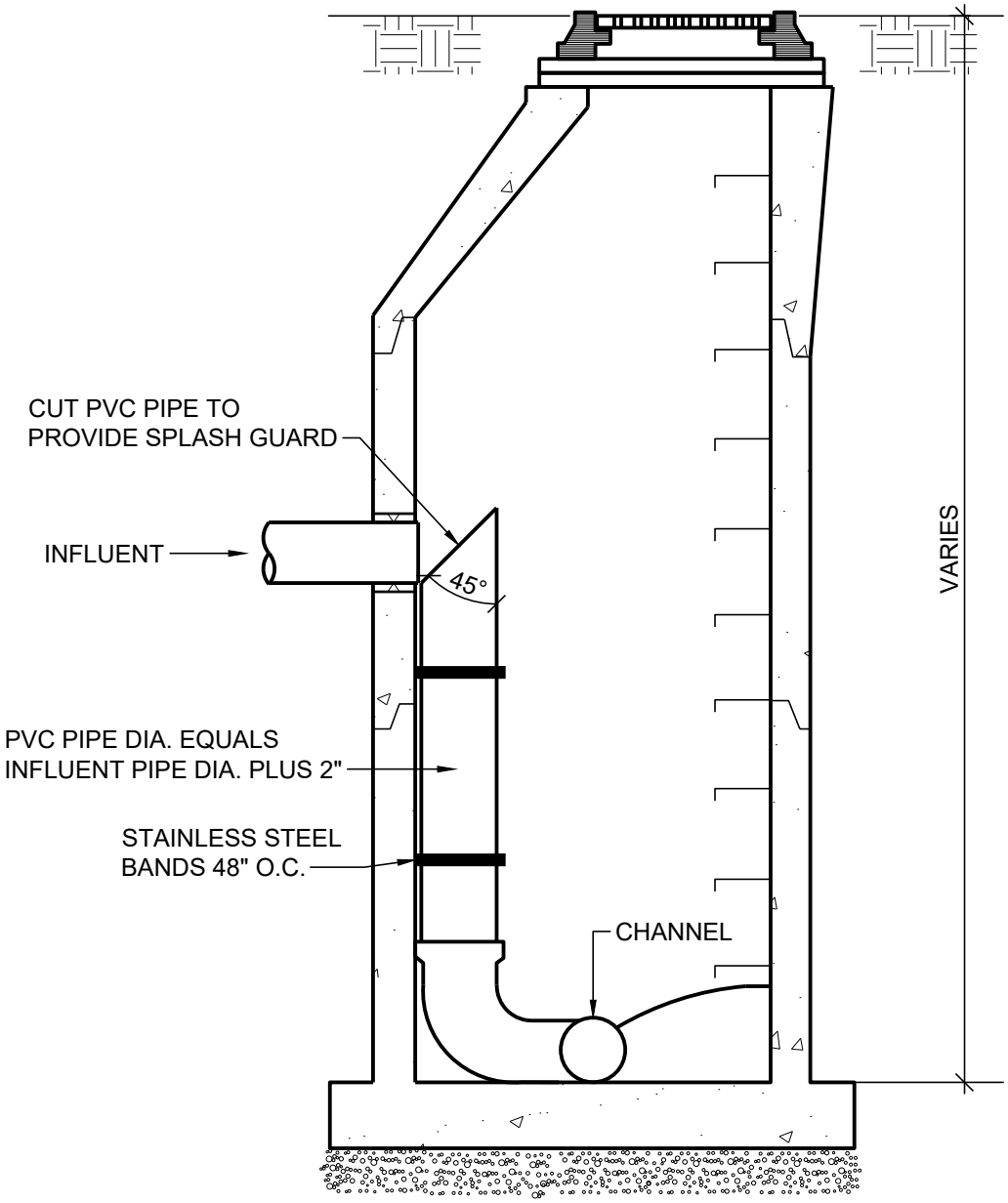
PALMER TOWNSHIP
3 WELLER PLACE, PALMER, PA, 18045

TYPICAL OUTSIDE DROP MANHOLE

DATE: MAR 2025	SCALE: AS NOTED
PREPARED BY: EDM	PROJECT NO. 4660.036
CHECKED BY: --	DRAWING NO. S-18
APPROVED BY: --	



NOTE: MAX 12" Ø DROP FOR MANHOLE 48" AND UNDER.

1

TYPICAL INSIDE DROP MANHOLE DETAIL

SCALE: NONE

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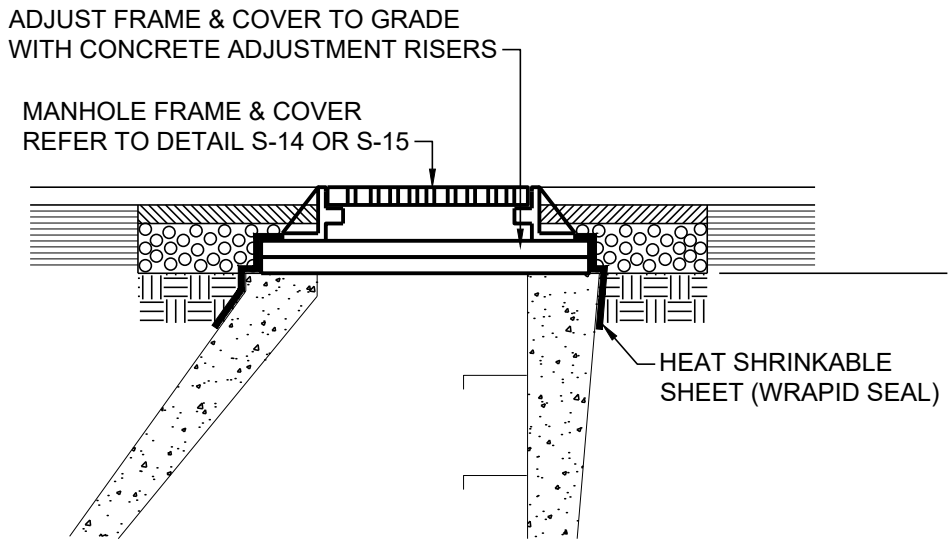
www.entecheng.com

PALMER TOWNSHIP
3 WELLER PLACE, PALMER, PA, 18045

TYPICAL INSIDE DROP MANHOLE DETAIL

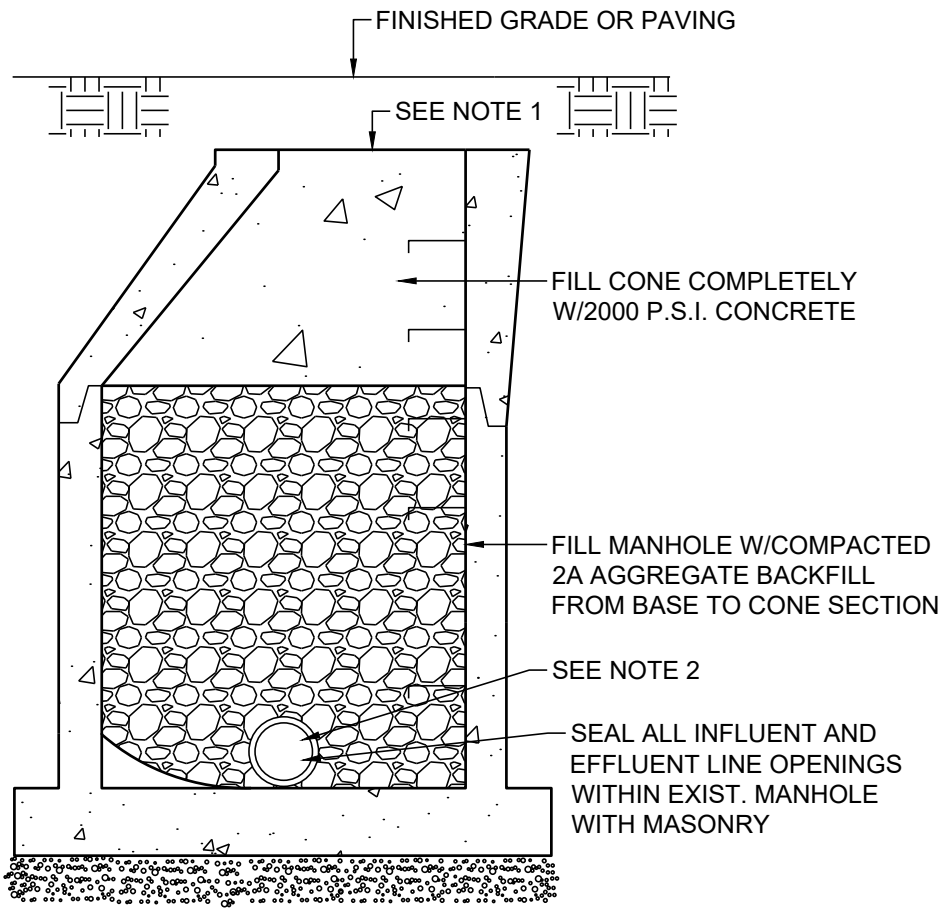
DATE: MAR 2025	SCALE: AS NOTED
PREPARED BY: EDM	PROJECT NO. 4660.036
CHECKED BY: --	DRAWING NO. S-19
APPROVED BY: --	



1

MANHOLE FRAME AND COVER ADJUSTMENT DETAIL

SCALE: NONE



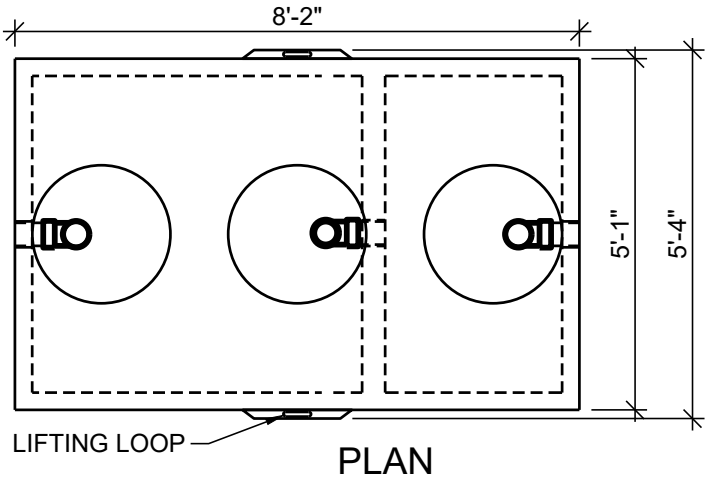
NOTES:

1. EXISTING MANHOLE FRAME AND COVER AND ANY BRICK WORK/RISER RINGS SHALL BE REMOVED TO A DEPTH OF APPROXIMATELY 2' BELOW GRADE.
2. EXISTING SEWER LINES TO BE FILLED WITH FLOWABLE FILL OR CELLULAR CONCRETE AFTER LINES ARE FLUSHED & TELEVISED TO THE SATISFACTION OF THE TOWNSHIP.

1

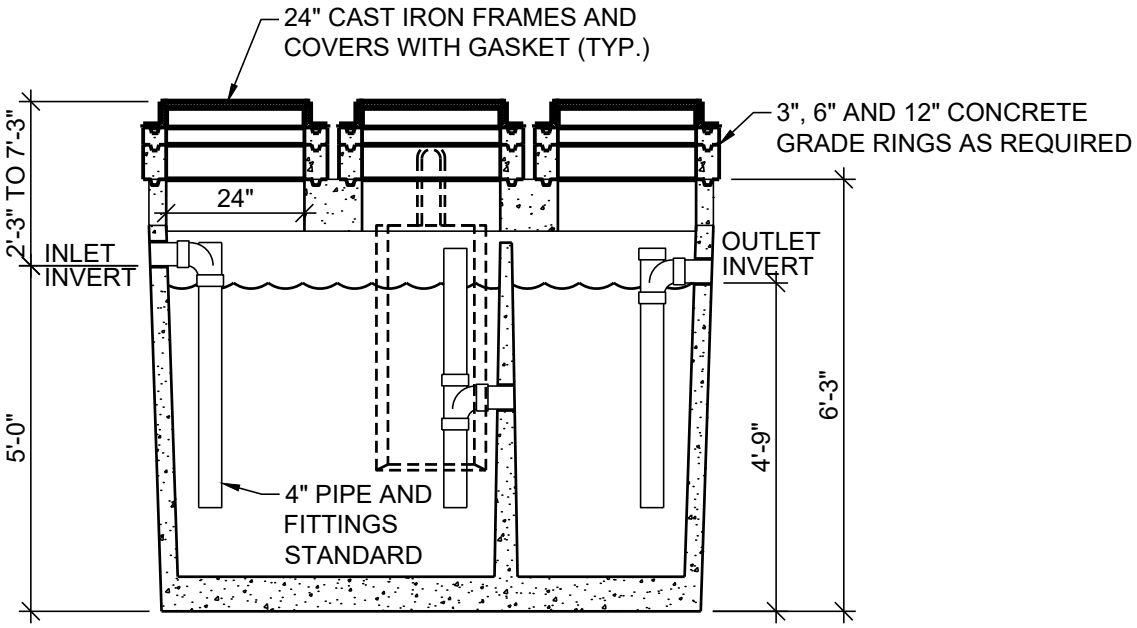
MANHOLE ABANDONMENT DETAIL

SCALE: NONE



PLAN

(COVERS & RINGS REMOVED)



ELEVATION VIEW

NOTES:

1. DETAIL DEPICTS A 1,000 GALLON OPERATING CAPACITY GREASE INTERCEPTOR. THE ACTUAL TYPE AND CAPACITY MUST BE DETERMINED BY OWNER AND APPROVED BY TOWNSHIP.
2. DESIGN LOAD: H-20 TRAFFIC WITH DRY SOIL CONDITIONS (WATER LEVEL BELOW TANK) AND 1'-6' EARTH COVER.
3. SUITABLE SUB-BASE BEDDED WITH GRANULAR MATERIAL SHALL BE PREPARED TO HANDLE ANTICIPATED LOADS.
4. FOR KITCHEN USE ONLY NOT TO BE USED WITH SEWAGE SYSTEM.
5. INTERCEPTOR TO CONTAIN WATER TIGHT JOINTS.

1

1000 GALLON GREASE INTERCEPTOR

SCALE: NONE

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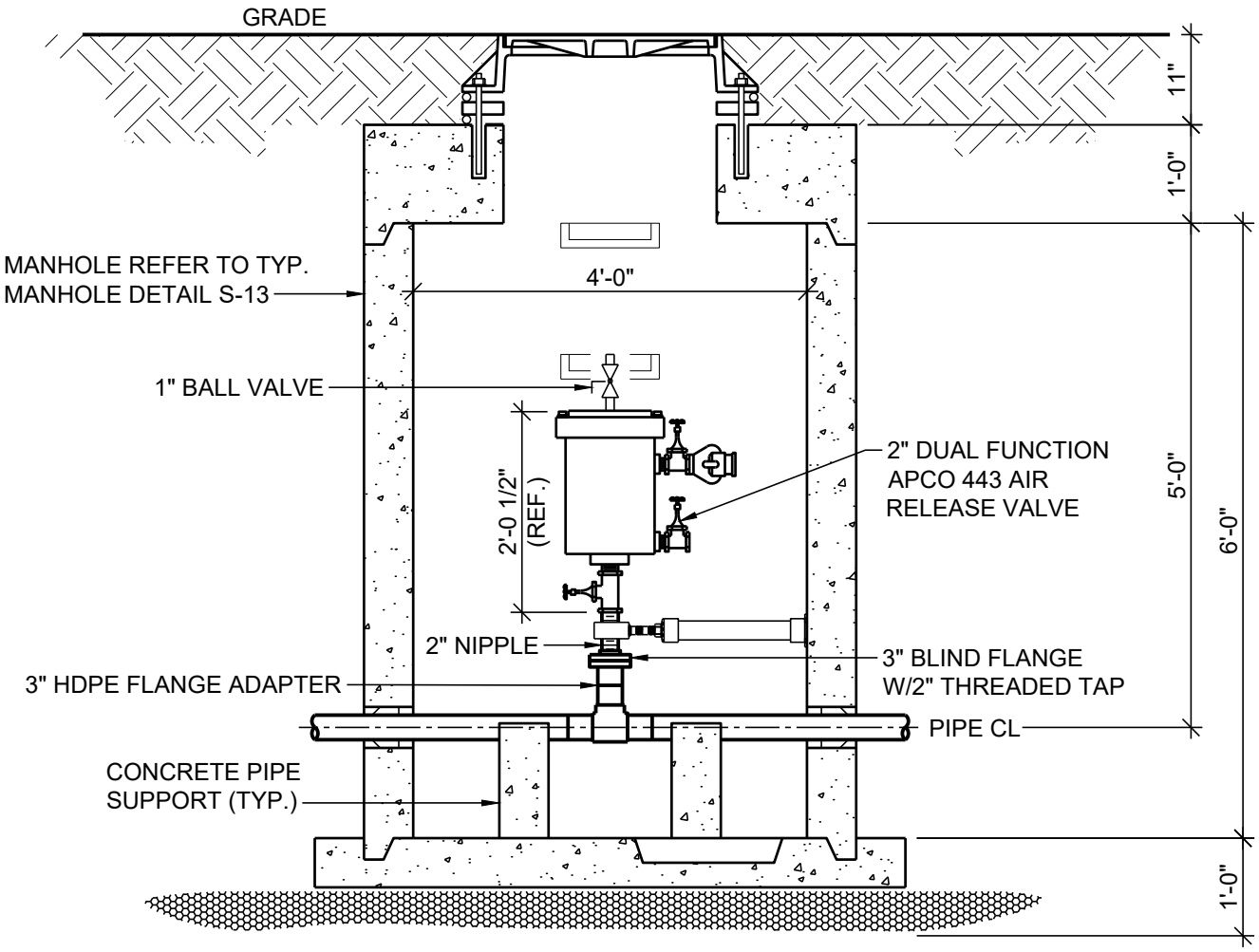
PALMER TOWNSHIP
3 WELLER PLACE, PALMER, PA, 18045

1000 GALLON GREASE INTERCEPTOR

DATE: MAR 2025	SCALE: AS NOTED
PREPARED BY: EDM	PROJECT NO. 4660.036
CHECKED BY: --	DRAWING NO. S-22
APPROVED BY: --	



NOTE:

1. PROVIDE MUSHROOM VENT WITH INSECT SCREEN AT LOCATION INDICATED BY AUTHORITY

1

AIR RELEASE VALVE MANHOLE

SCALE: NONE

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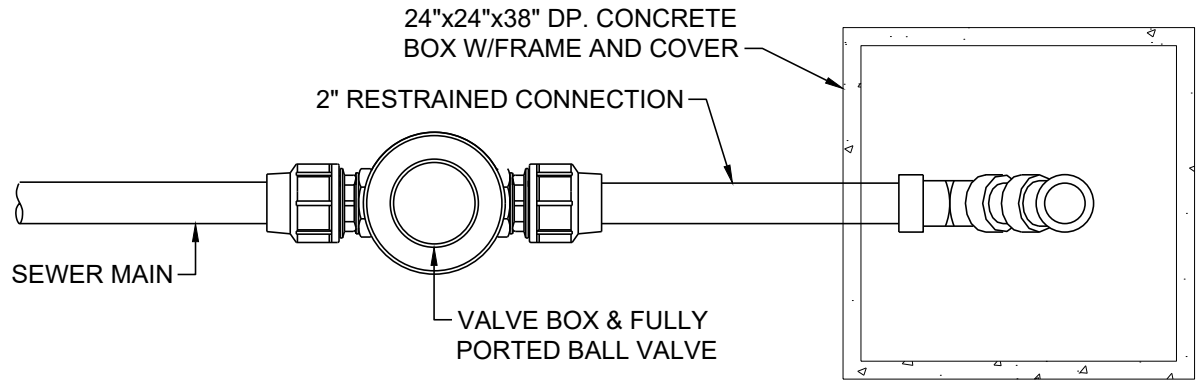
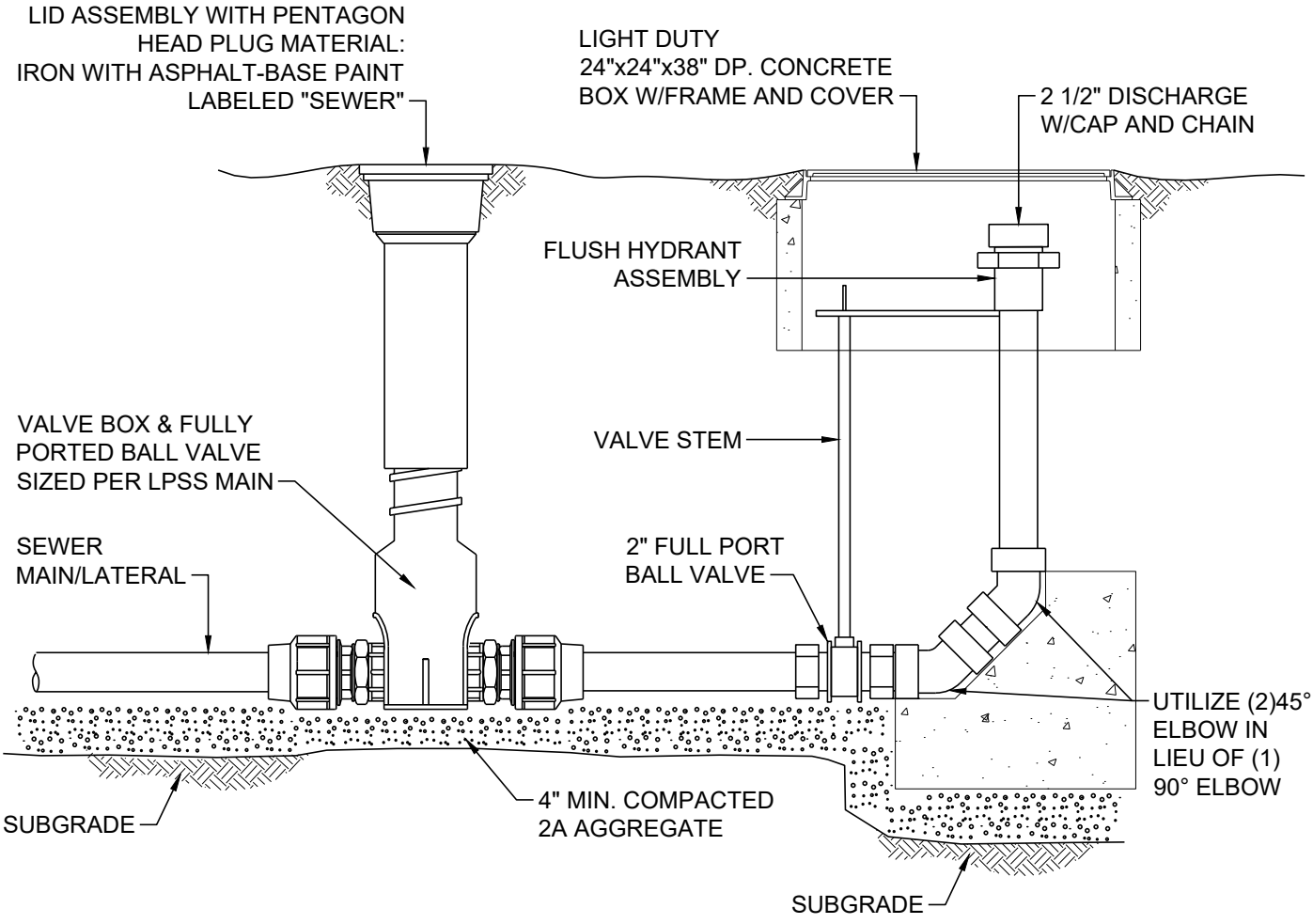
PALMER TOWNSHIP
3 WELLER PLACE, PALMER, PA, 18045

AIR RELEASE VALVE MANHOLE

DATE: MAR 2025	SCALE: AS NOTED
PREPARED BY: EDM	PROJECT NO. 4660.036
CHECKED BY: --	DRAWING NO. S-23
APPROVED BY: --	



PLAN VIEW



ELEVATION VIEW

1

TERMINAL CLEANOUT ASSEMBLY

SCALE: NONE

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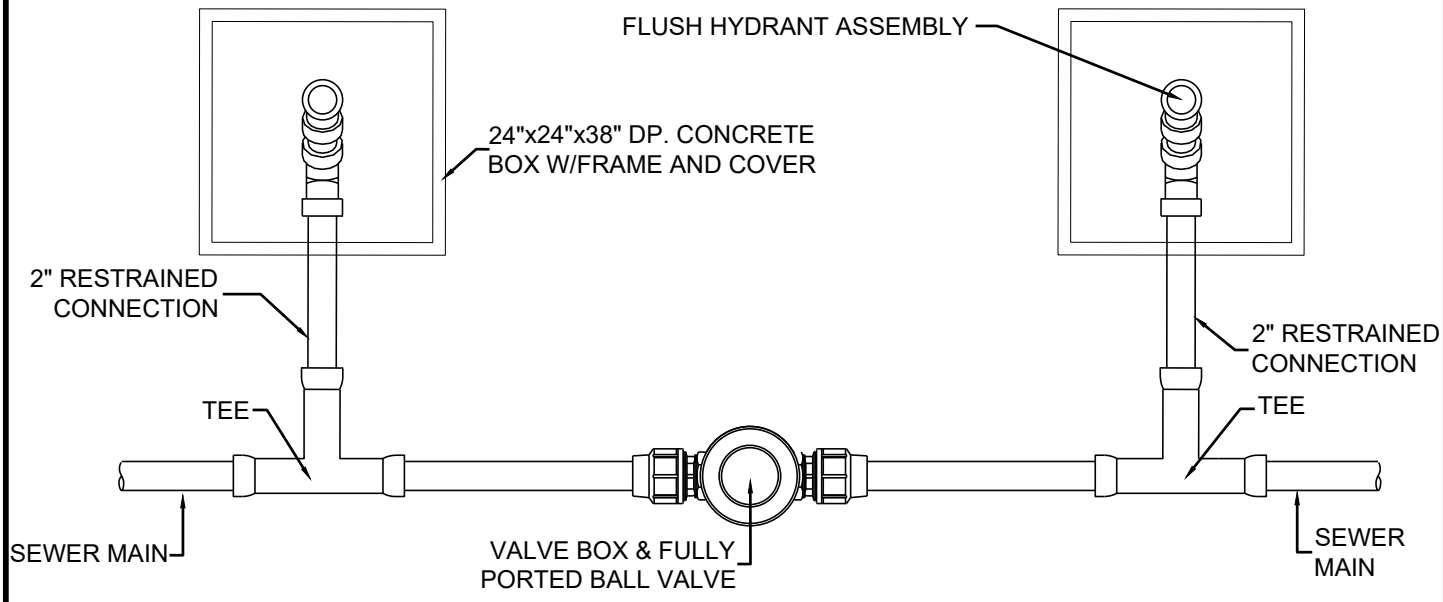
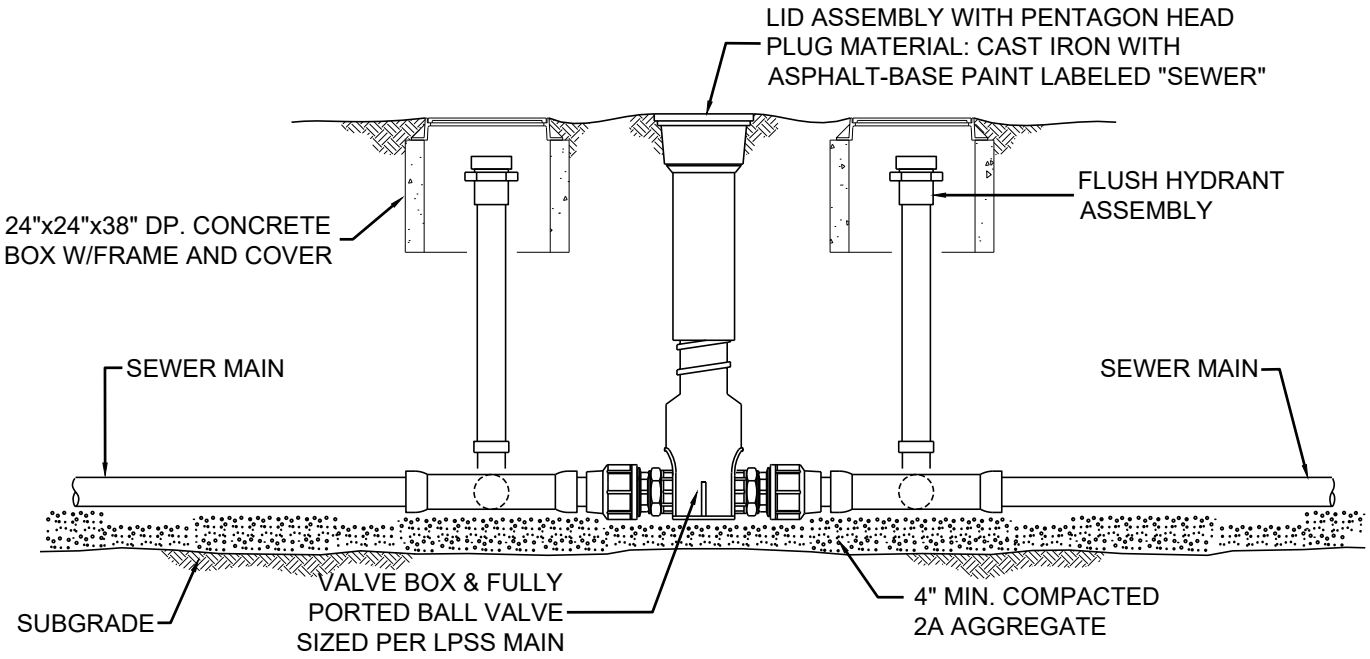
PALMER TOWNSHIP
3 WELLER PLACE, PALMER, PA, 18045

TERMINAL CLEANOUT ASSEMBLY

DATE: MAR 2025	SCALE: AS NOTED
PREPARED BY: EDM	PROJECT NO. 4660.036
CHECKED BY: --	DRAWING NO. S-24
APPROVED BY: --	



PLAN VIEW



ELEVATION VIEW

1 LOW PRESSURE CLEANOUT ASSEMBLY

SCALE: NONE

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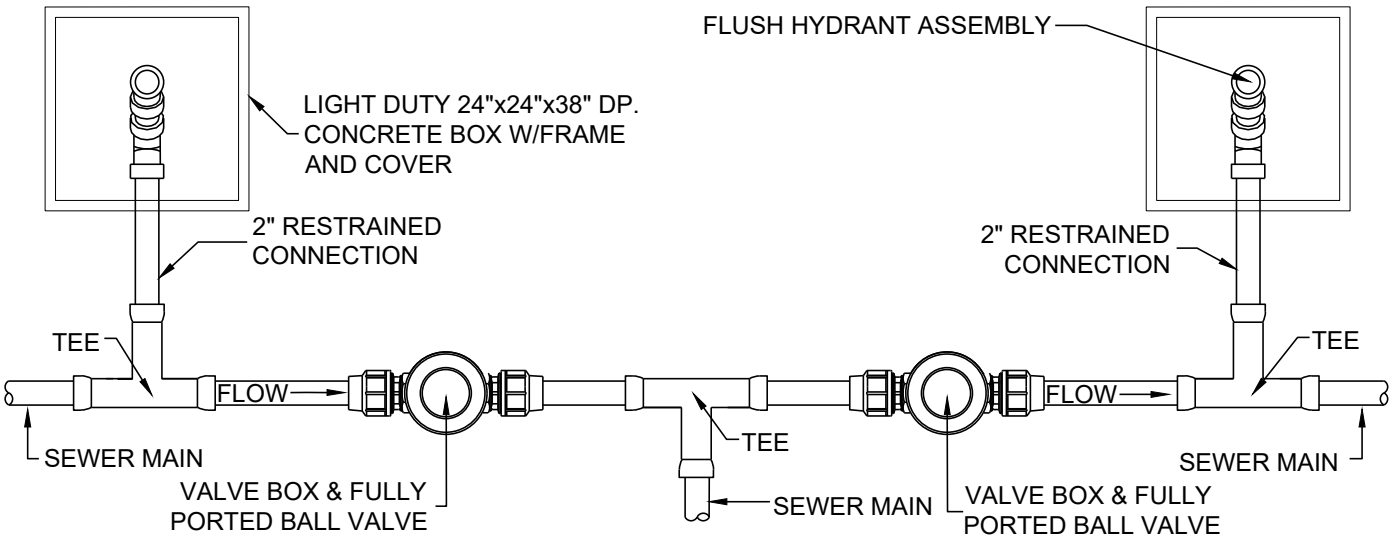
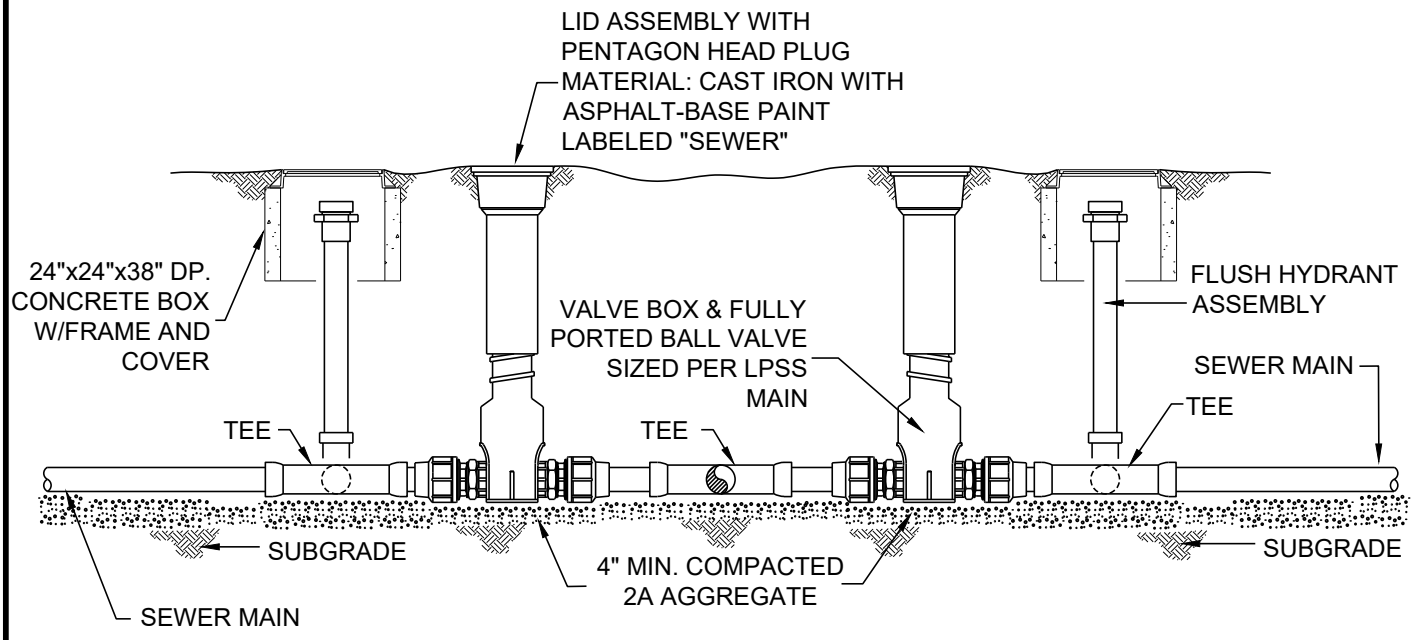
PALMER TOWNSHIP
3 WELLER PLACE, PALMER, PA, 18045

LOW PRESSURE CLEANOUT ASSEMBLY

DATE: MAR 2025	SCALE: AS NOTED
PREPARED BY: EDM	PROJECT NO. 4660.036
CHECKED BY: --	DRAWING NO. S-25
APPROVED BY: --	



PLAN VIEW



ELEVATION VIEW

1

LOW PRESSURE FLUSHING ASSEMBLY

SCALE: NONE

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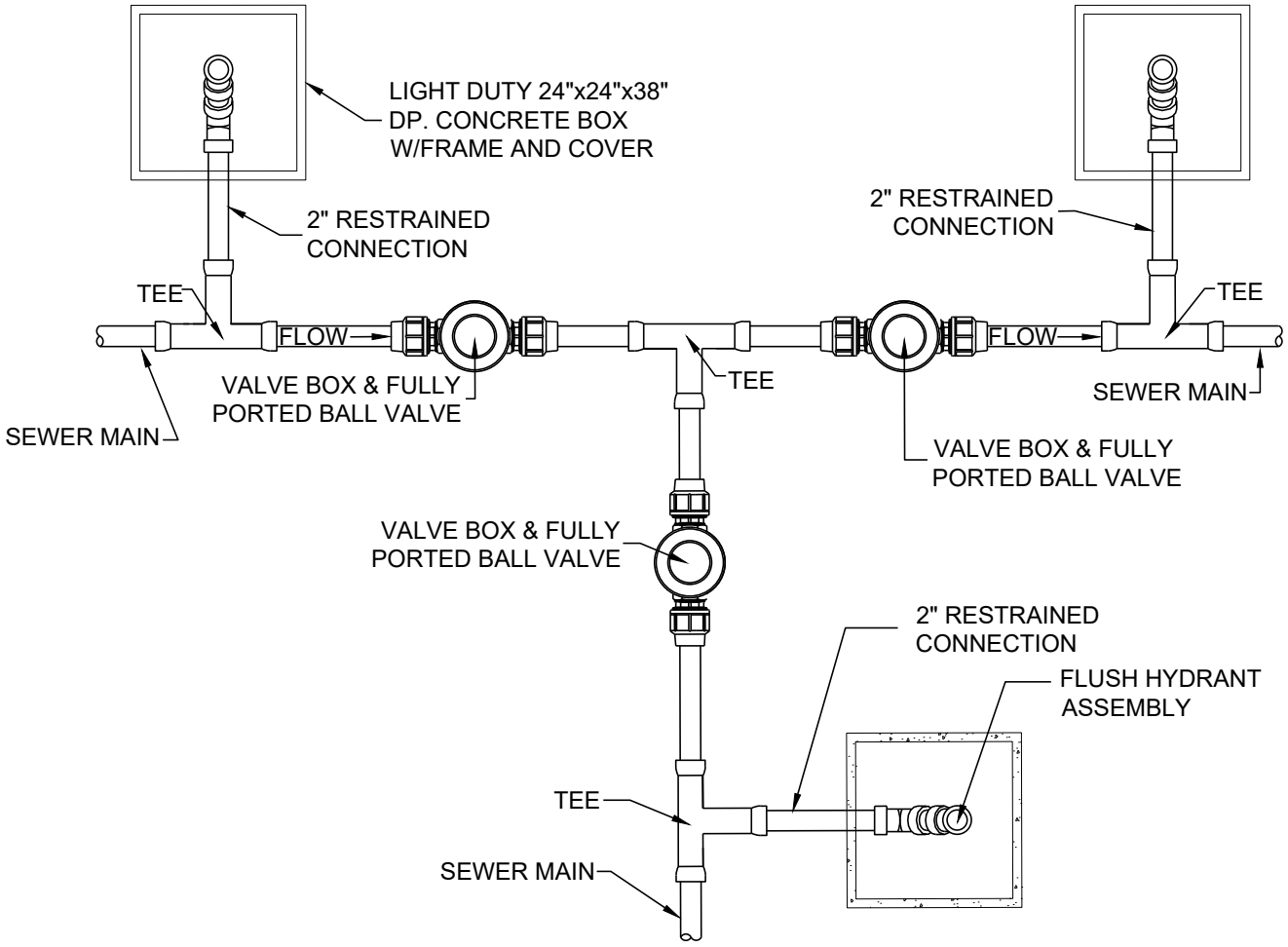
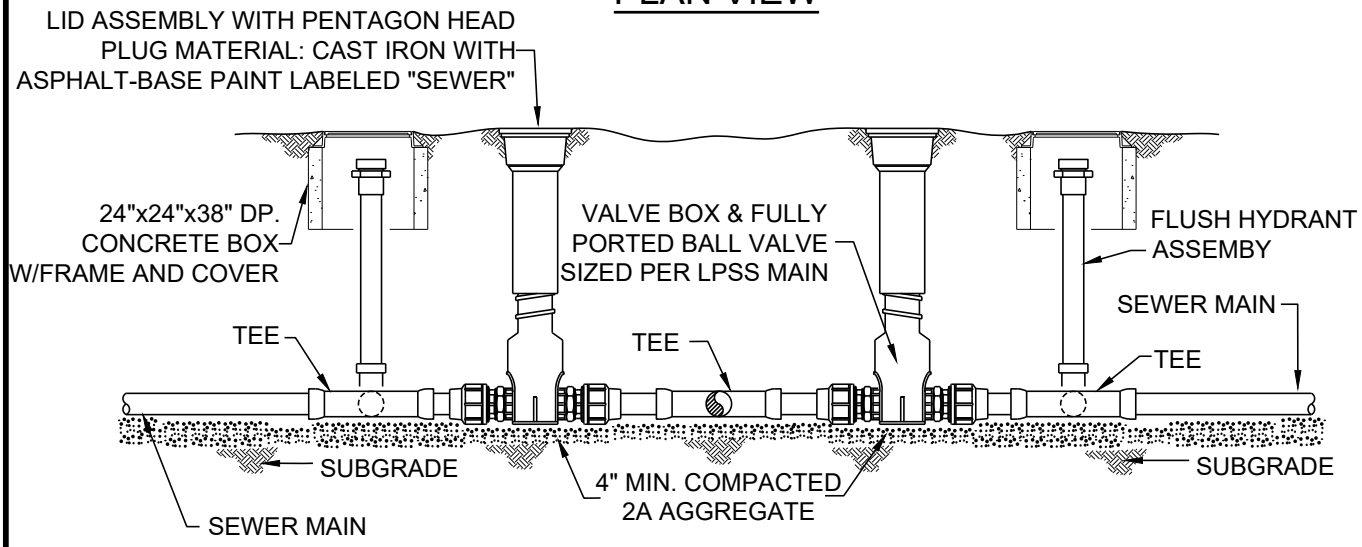
PALMER TOWNSHIP
3 WELLER PLACE, PALMER, PA, 18045

LOW PRESSURE FLUSHING ASSEMBLY

DATE: MAR 2025	SCALE: AS NOTED
PREPARED BY: EDM	PROJECT NO. 4660.036
CHECKED BY: --	DRAWING NO. S-26
APPROVED BY: --	



PLAN VIEW



ELEVATION VIEW

1 LOW PRESSURE FLUSHING ASSEMBLY

SCALE: NONE

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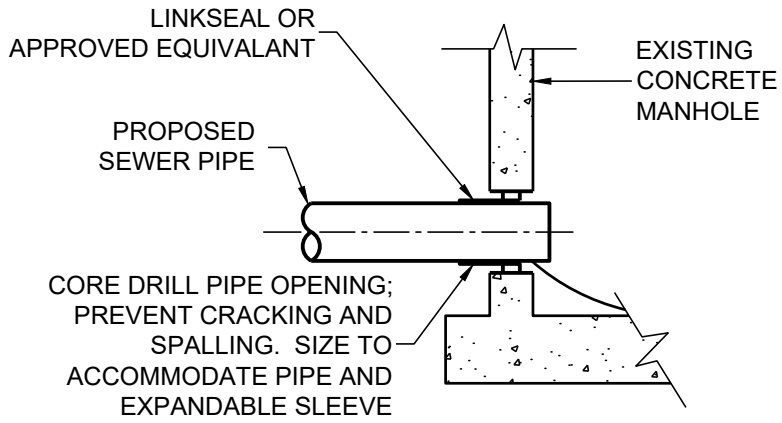
PALMER TOWNSHIP
3 WELLER PLACE, PALMER, PA, 18045

LOW PRESSURE FLUSHING ASSEMBLY

DATE: MAR 2025	SCALE: AS NOTED
PREPARED BY: EDM	PROJECT NO. 4660.036
CHECKED BY: --	DRAWING NO. S-27
APPROVED BY: --	



NOTES:

1. PROPOSED SEWER PIPE INVERT ELEVATION SHALL NOT BE BELOW EXISTING SEWER INVERT ELEVATION.
2. PROPOSED SEWER PIPE SHALL BE LOCATED A MINIMUM OF 8" ABOVE OR BELOW EXISTING MANHOLE JOINT.
3. AFTER CONNECTION OF PIPE TO MANHOLE, REMOVE CONCRETE CHANNEL AS REQUIRED AND RECONSTRUCT CHANNEL.
4. KEEP GROUNDWATER, SURFACE WATER AND DEBRIS FROM ENTERING EXISTING FACILITIES.
5. MAINTAIN EXISTING FLOW DURING CONSTRUCTION.
6. DROPS OVER 2 FT WILL REQUIRE AN INSIDE DROP CONNECTION.

1

TYPICAL TIE-IN TO EXISTING MANHOLE DETAIL

SCALE: NONE

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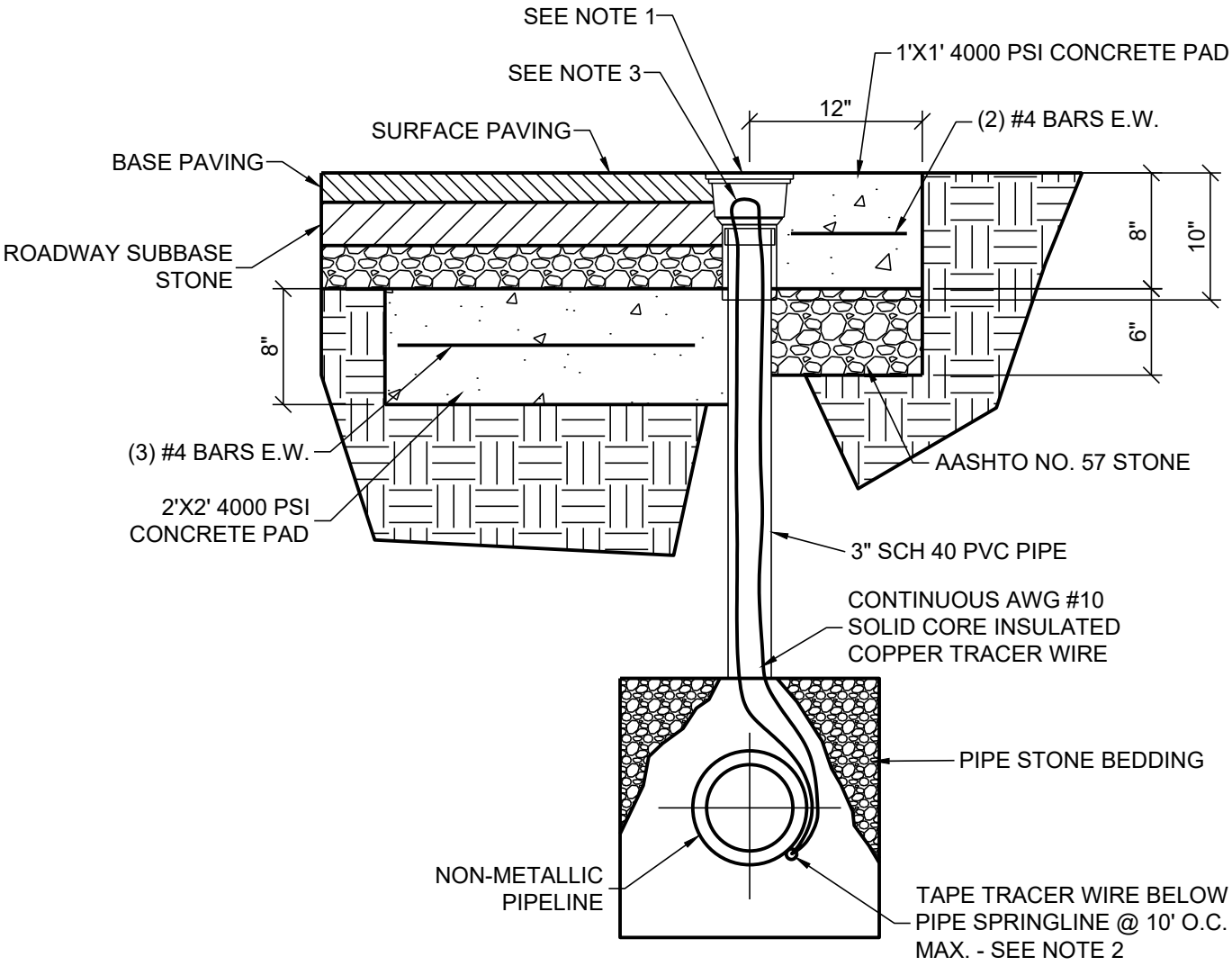
PALMER TOWNSHIP
3 WELLER PLACE, PALMER, PA, 18045

TYPICAL TIE-IN TO EXISTING MANHOLE DETAIL

DATE: MAR 2025	SCALE: AS NOTED
PREPARED BY: EDM	PROJECT NO. 4660.036
CHECKED BY: --	DRAWING NO. S-28
APPROVED BY: --	



NOTES:

1. C.I. BOX SHALL BE TYLER 10" C.I. VALVE BOX TOP SECTION SLIP MODEL 10T-A WITH 5 1/4" DROP LID MODEL 14549 MARKED "SEWER"
2. DO NOT SPLICE TRACER WIRE UNDERGROUND.
3. PROVIDE 3 FEET OF LOOPED WIRE WITHIN TEST STATION BOX.
4. SPACE TEST STATIONS 500 FEET MAX. AND AT ALL CHANGES IN FORCE MAIN DIRECTIONS
5. PROVIDE METALLIC CAUTION TAPE CENTERED ON FORCE MAIN 12" BELOW FINISHED GRADE.

1

FORCE MAIN TRACER WIRE TEST STATION

SCALE: NONE

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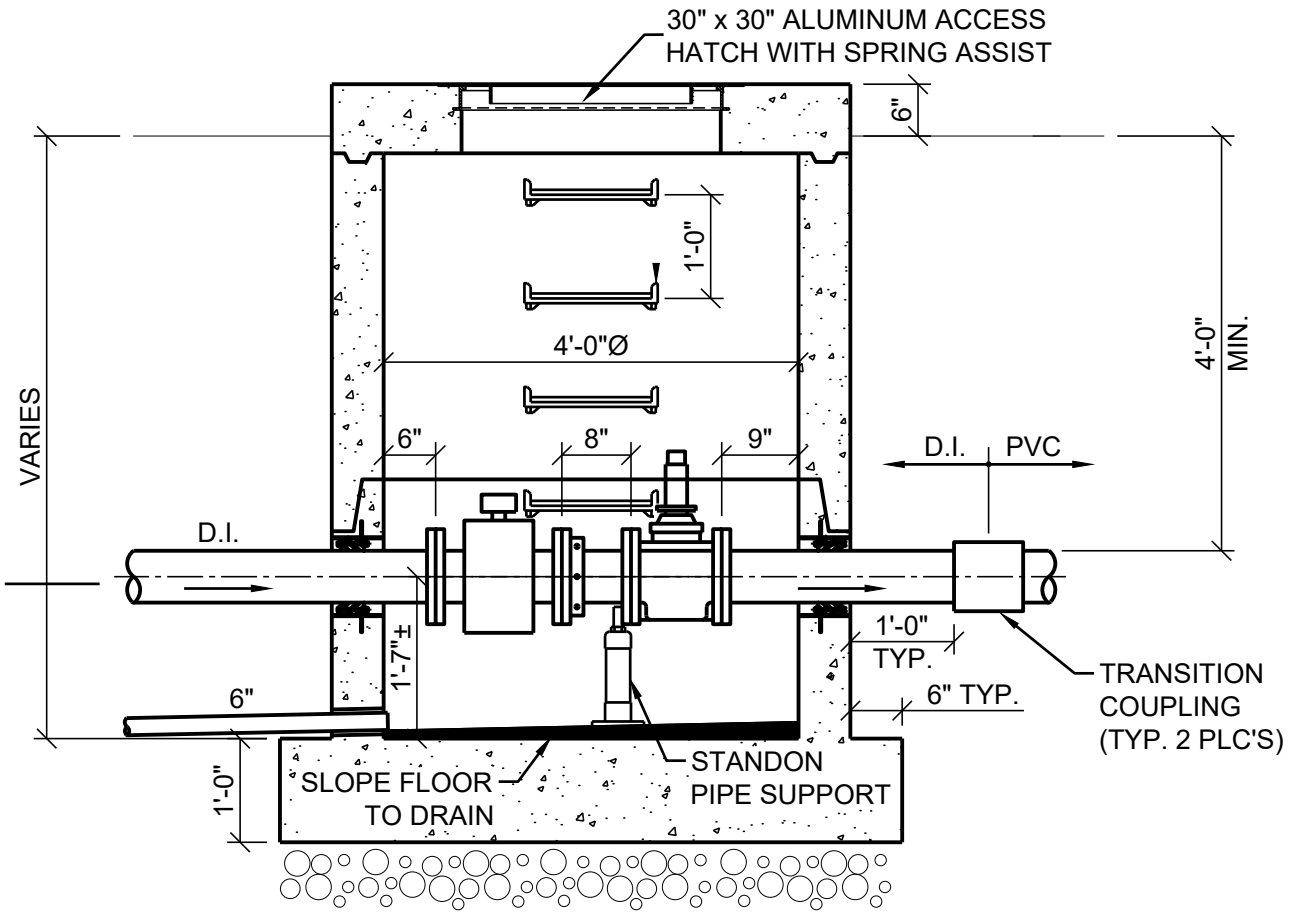
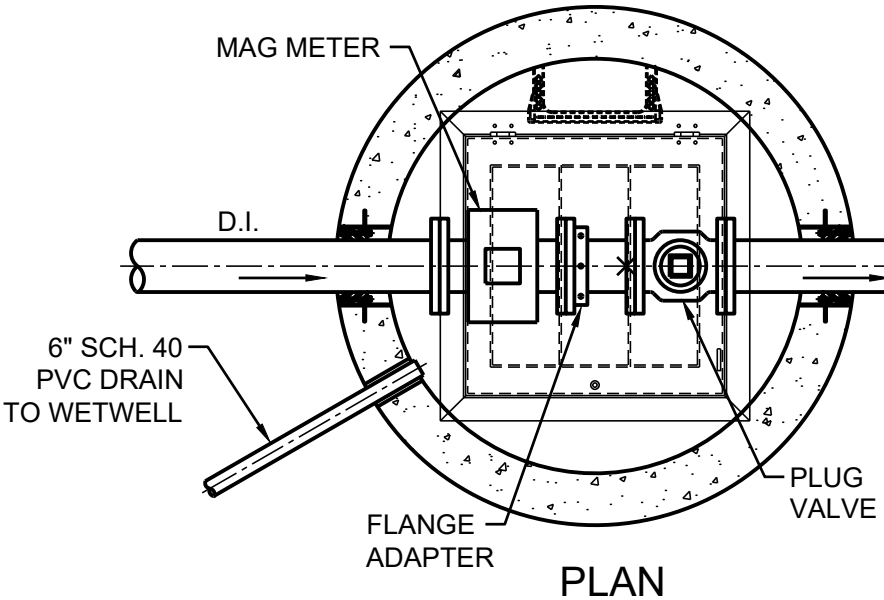
PALMER TOWNSHIP
3 WELLER PLACE, PALMER, PA, 18045

FORCE MAIN TRACER WIRE TEST STATION

DATE: MAR 2025	SCALE: AS NOTED
PREPARED BY: EDM	PROJECT NO. 4660.036
CHECKED BY: --	DRAWING NO. S-29
APPROVED BY: --	



SECTION



PLAN

NOTE:

1. CONTRACTOR IS RESPONSIBLE TO VERIFY EXISTING DIMENSIONS AND PROVIDE FOR ADEQUATE WORKING SPACE.
2. VERIFY METER CONFIGURATION WITH MANUFACTURER.
3. MAG METER TO BE NFPA C1/D1 COMPLIANT.

1 FORCE MAIN METERING MANHOLE DETAIL

SCALE: NONE

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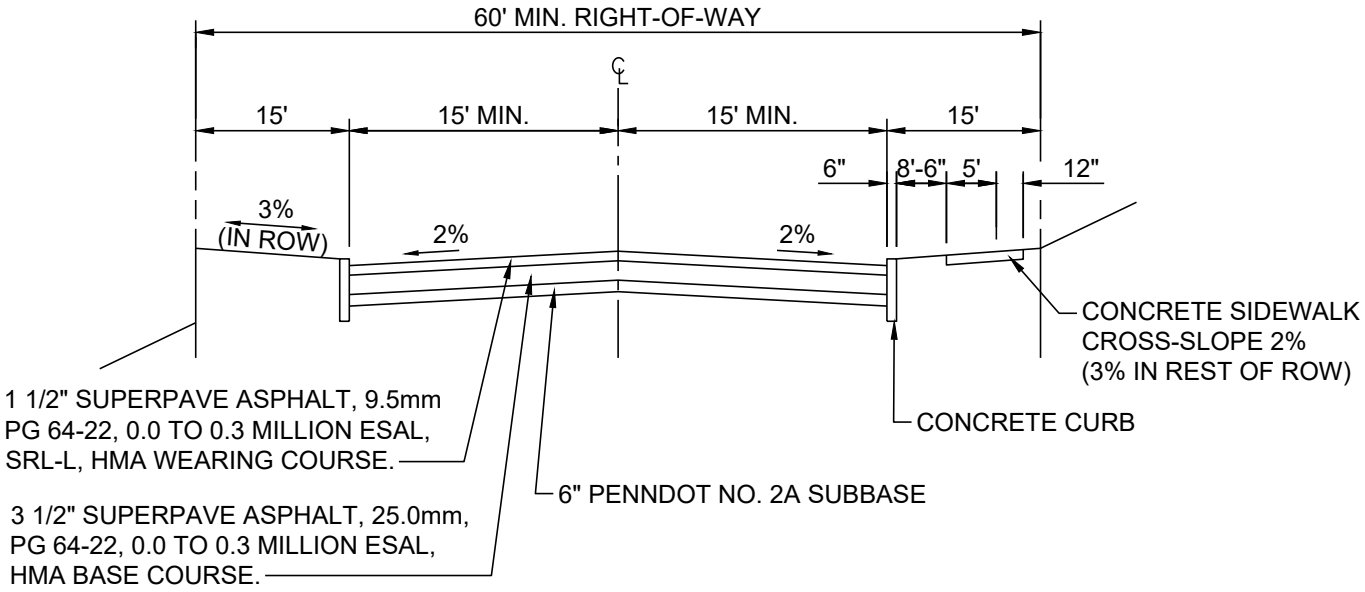
PALMER TOWNSHIP
3 WELLER PLACE, PALMER, PA, 18045

FORCE MAIN METERING MANHOLE DETAIL

DATE: MAR 2025	SCALE: AS NOTED
PREPARED BY: EDM	PROJECT NO. 4660.036
CHECKED BY: --	DRAWING NO. S-30
APPROVED BY: --	



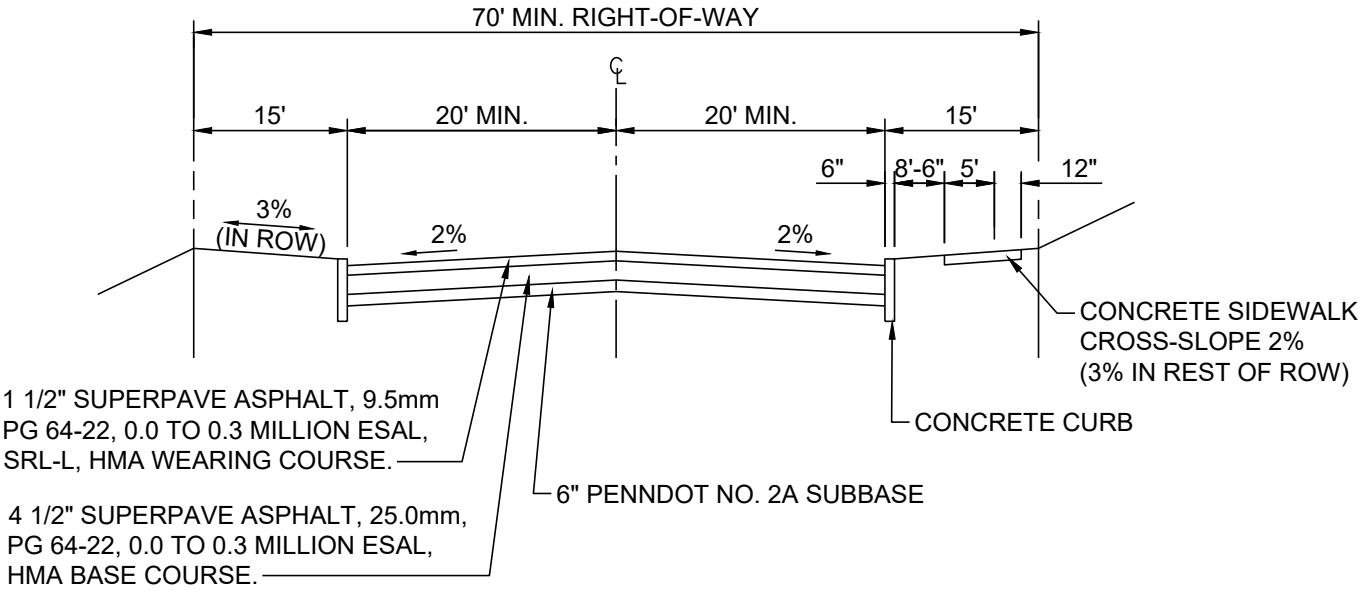
NOTES:

1. PROVIDE MATERIALS AND CONSTRUCTION MEETING THE REQUIREMENT FOR PUBLICATION 408 SPECIFICATIONS 203, 204, 205, 206, 210, 350, 309 (OR 305), 409 (OR 420), 630, AND 676.
2. SEAL CURB IN ACCORDANCE WITH CONCRETE CURB DETAIL X.
3. THE FOLLOWING ABBREVIATIONS APPEAR IN THIS DETAIL:
   a. ESAL EQUIVALENT SINGLE AXLE LOAD
   b. SRL SKID RESISTANCE LEVEL
   c. HMA HOT MIXED ASPHALT
   d. PG PERFORMANCE GRADE
4. DIMENSIONS FOR MAJOR ARTERIAL STREETS (RTXX) SUBJECT TO PENNDOT REQUIREMENTS.
5. REQUIRED RIGHT-OF-WAY AND CARTWAY WIDTHS SHOWN ARE MINIMUM REQUIREMENTS AND SUBJECT TO MODIFICATIONS AS MAY BE IDENTIFIED IN TOWNSHIP ORDINANCES OR NORTHERN TIER TRAFFIC STUDY.

1

TYPICAL ROADWAY CROSS SECTION (LOCAL STREETS)

SCALE: NONE

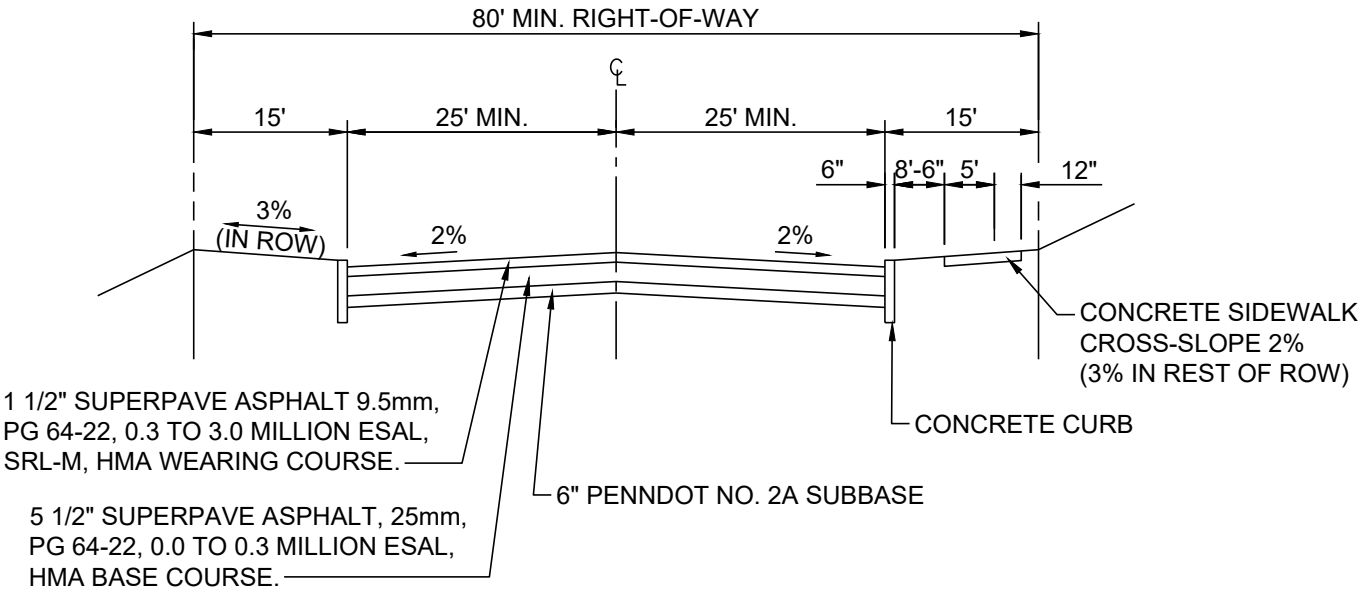


NOTES:

1. PROVIDE MATERIALS AND CONSTRUCTION MEETING THE REQUIREMENT FOR PUBLICATION 408 SPECIFICATIONS 203, 204, 205, 206, 210, 350, 309 (OR 305), 409 (OR 420), 630, AND 676.
2. SEAL CURB IN ACCORDANCE WITH CONCRETE CURB DETAIL X.
3. THE FOLLOWING ABBREVIATIONS APPEAR IN THIS DETAIL:
   a. ESAL EQUIVALENT SINGLE AXLE LOAD
   b. SRL SKID RESISTANCE LEVEL
   c. HMA HOT MIXED ASPHALT
   d. PG PERFORMANCE GRADE
4. DIMENSIONS FOR MAJOR ARTERIAL STREETS (RTXX) SUBJECT TO PENNDOT REQUIREMENTS.
5. REQUIRED RIGHT-OF-WAY AND CARTWAY WIDTHS SHOWN ARE MINIMUM REQUIREMENTS AND SUBJECT TO MODIFICATIONS AS MAY BE IDENTIFIED IN TOWNSHIP ORDINANCES OR NORTHERN TIER TRAFFIC STUDY.

1 TYPICAL ROADWAY CROSS SECTION (COLLECTOR STREETS)

SCALE: NONE

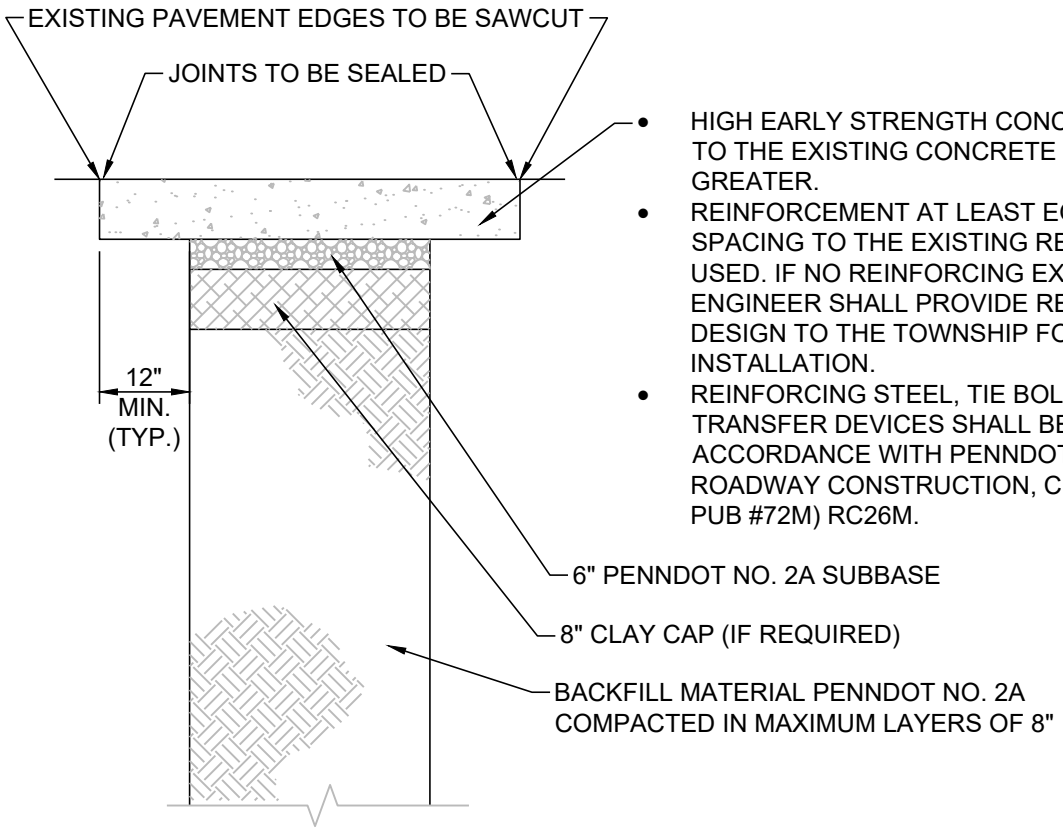


NOTES:

1. PROVIDE MATERIALS AND CONSTRUCTION MEETING THE REQUIREMENT FOR PUBLICATION 408 SPECIFICATIONS 203, 204, 205, 206, 210, 350, 309 (OR 305), 409 (OR 420), 630, AND 676.
2. SEAL CURB IN ACCORDANCE WITH CONCRETE CURB DETAIL X.
3. THE FOLLOWING ABBREVIATIONS APPEAR IN THIS DETAIL:
   a. ESAL EQUIVALENT SINGLE AXLE LOAD
   b. SRL SKID RESISTANCE LEVEL
   c. HMA HOT MIXED ASPHALT
   d. PG PERFORMANCE GRADE
4. DIMENSIONS FOR MAJOR ARTERIAL STREETS (RTXX) SUBJECT TO PENNDOT REQUIREMENTS.
5. REQUIRED RIGHT-OF-WAY AND CARTWAY WIDTHS SHOWN ARE MINIMUM REQUIREMENTS AND SUBJECT TO MODIFICATIONS AS MAY BE IDENTIFIED IN TOWNSHIP ORDINANCES OR NORTHERN TIER TRAFFIC STUDY.

1 TYPICAL ROADWAY CROSS SECTION (MINOR ARTERIAL STREETS)

SCALE: NONE



- HIGH EARLY STRENGTH CONCRETE EQUAL IN DEPTH TO THE EXISTING CONCRETE OR 9" WHICHEVER IS GREATER.
- REINFORCEMENT AT LEAST EQUAL IN SIZE AND SPACING TO THE EXISTING REINFORCEMENT SHALL BE USED. IF NO REINFORCING EXISTS THE DESIGN ENGINEER SHALL PROVIDE REQUIRED REINFORCING DESIGN TO THE TOWNSHIP FOR REVIEW PRIOR TO INSTALLATION.
- REINFORCING STEEL, TIE BOLTS, AND LOAD TRANSFER DEVICES SHALL BE PROVIDED IN ACCORDANCE WITH PENNDOT STANDARDS FOR ROADWAY CONSTRUCTION, CURRENT EDITION (PDT PUB #72M) RC26M.

SEE TYPICAL EXCAVATION, BACKFILL & PIPE EMBEDMENT DETAIL FOR PIPE/BEDDING DETAIL

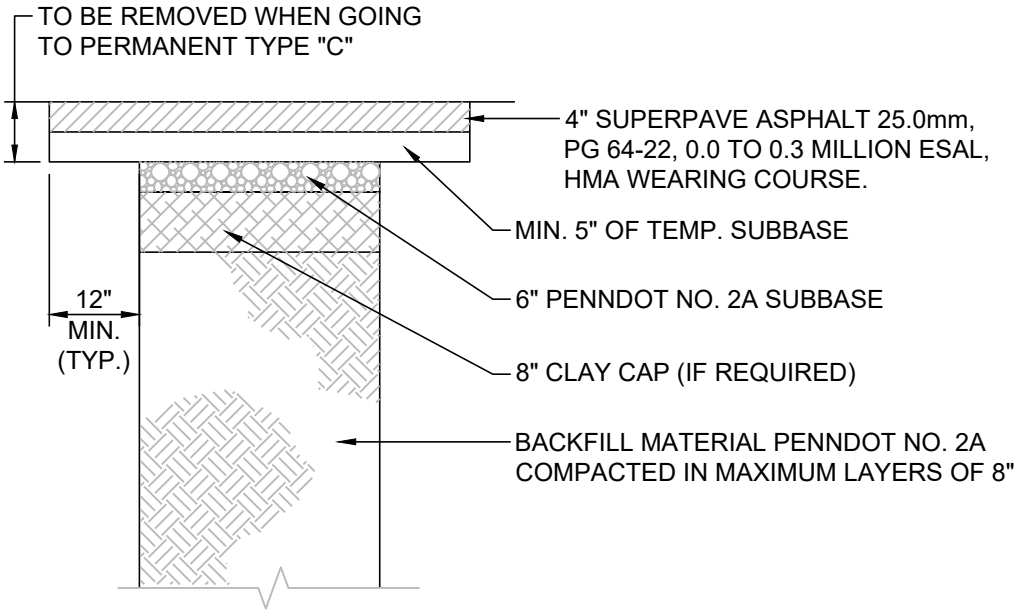
NOTES:

1. PROVIDE MATERIALS AND CONSTRUCTION MEETING THE REQUIREMENTS OF PENNDOT SPECIFICATIONS, PUBLICATION 408 CURRENT EDITION, SECTIONS 203, 204, 205, 206, 210, 350, 309 AND 409.
2. PERMANENT BITUMINOUS PAVING TYPE IN TRENCH SHALL MATCH EXISTING TYPE OF PAVING IN THE ROAD.
3. WARNING TAPE SHALL BE PLACED AT A MINIMUM OF 2' ABOVE ANY MAINLINE PIPE OR LATERAL.

1

NON-STATE HIGHWAY PAVEMENT RESTORATION (PERMANENT TYPE "C")

SCALE: NONE



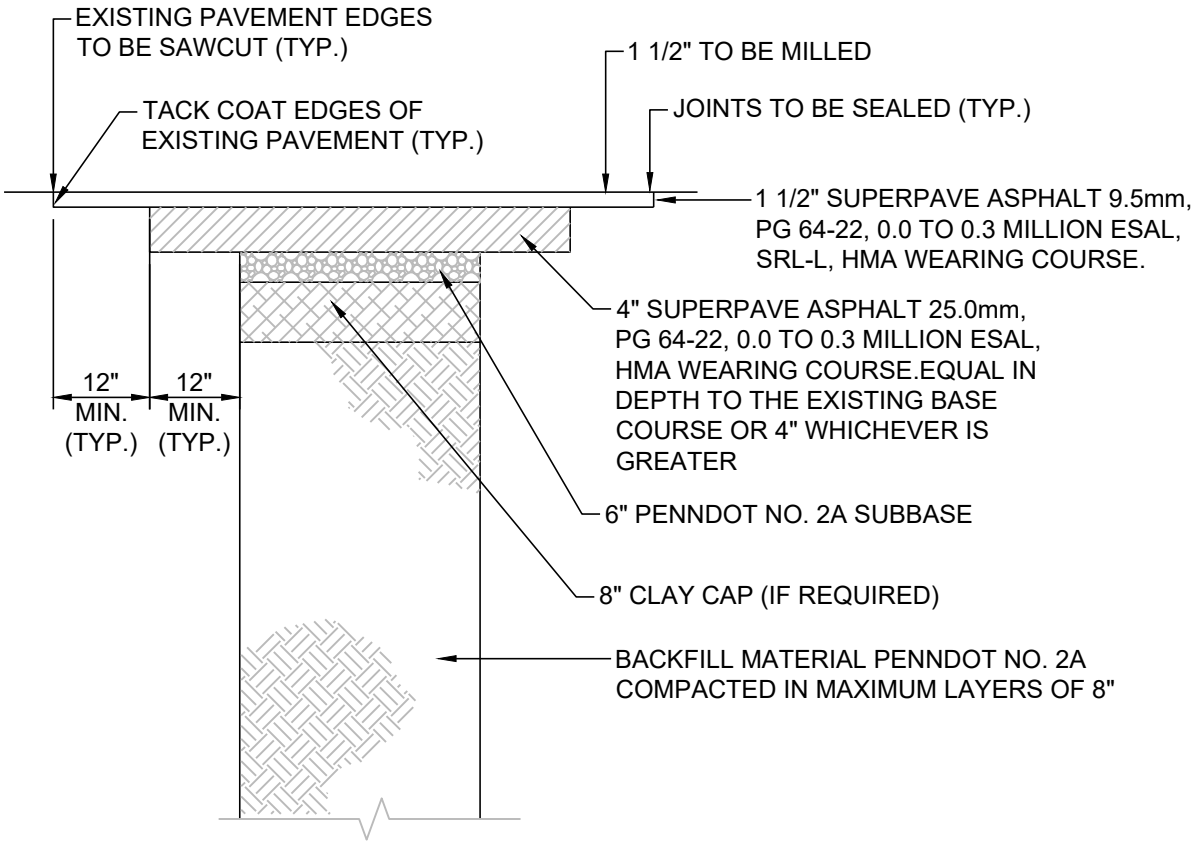
SEE TYPICAL EXCAVATION, BACKFILL & PIPE
EMBEDMENT DETAIL FOR PIPE/BEDDING DETAIL

NOTES:

1. PROVIDE MATERIALS AND CONSTRUCTION MEETING THE REQUIREMENTS OF PENNDOT SPECIFICATIONS, PUBLICATION 408 CURRENT EDITION, SECTIONS 203, 204, 205, 206, 210, 350, 309 AND 409.
2. PERMANENT BITUMINOUS PAVING TYPE IN TRENCH SHALL MATCH EXISTING TYPE OF PAVING IN THE ROAD.
3. WARNING TAPE SHALL BE PLACED AT A MINIMUM OF 2' ABOVE ANY MAINLINE PIPE OR LATERAL.

1 NON-STATE HIGHWAY PAVEMENT RESTORATION (TEMPORARY TYPE "C")

SCALE: NONE



SEE TYPICAL EXCAVATION, BACKFILL & PIPE
EMBEDMENT DETAIL FOR PIPE/BEDDING DETAIL

NOTES:

1. PROVIDE MATERIALS AND CONSTRUCTION MEETING THE REQUIREMENTS OF PENNDOT SPECIFICATIONS, PUBLICATION 408 CURRENT EDITION, SECTIONS 203, 204, 205, 206, 210, 350, 309 AND 409.
2. PERMANENT BITUMINOUS PAVING TYPE IN TRENCH SHALL MATCH EXISTING TYPE OF PAVING IN THE ROAD.
3. WARNING TAPE SHALL BE PLACED AT A MINIMUM OF 2' ABOVE ANY MAINLINE PIPE OR LATERAL.

1 NON-STATE HIGHWAY PAVEMENT RESTORATION (PERMANENT TYPE "D")

SCALE: NONE

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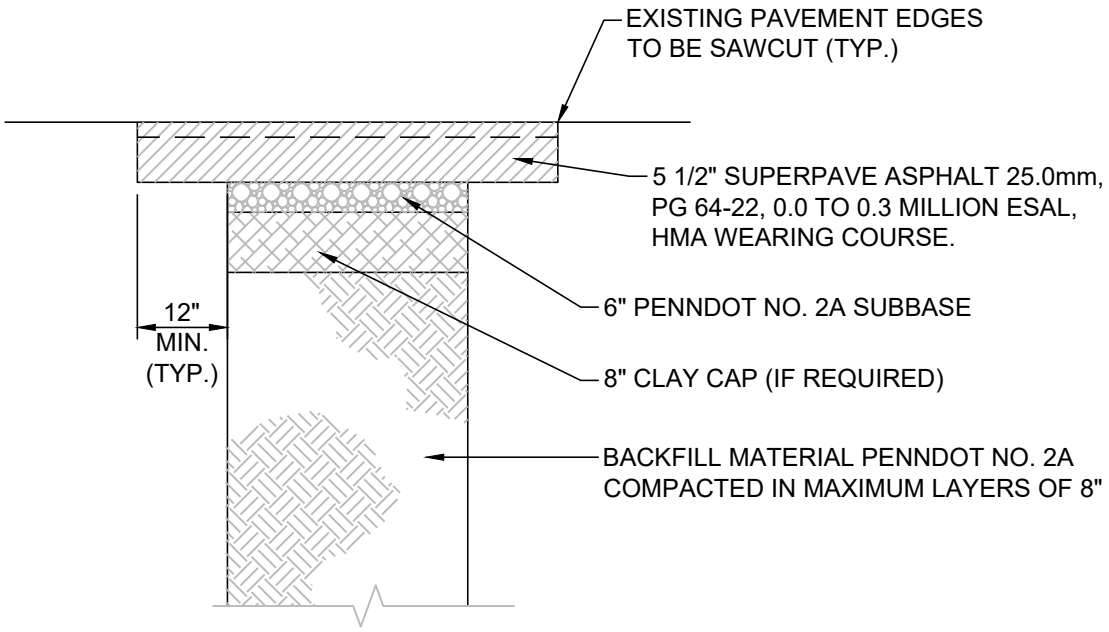
PALMER TOWNSHIP
3 WELLER PLACE, PALMER, PA, 18045

NON-STATE HIGHWAY PAVEMENT
RESTORATION (PERMANENT TYPE "D")

DATE: MAR 2025	SCALE: AS NOTED
PREPARED BY: EDM	PROJECT NO. 4660.036
CHECKED BY: --	DRAWING NO. S-36
APPROVED BY: --	



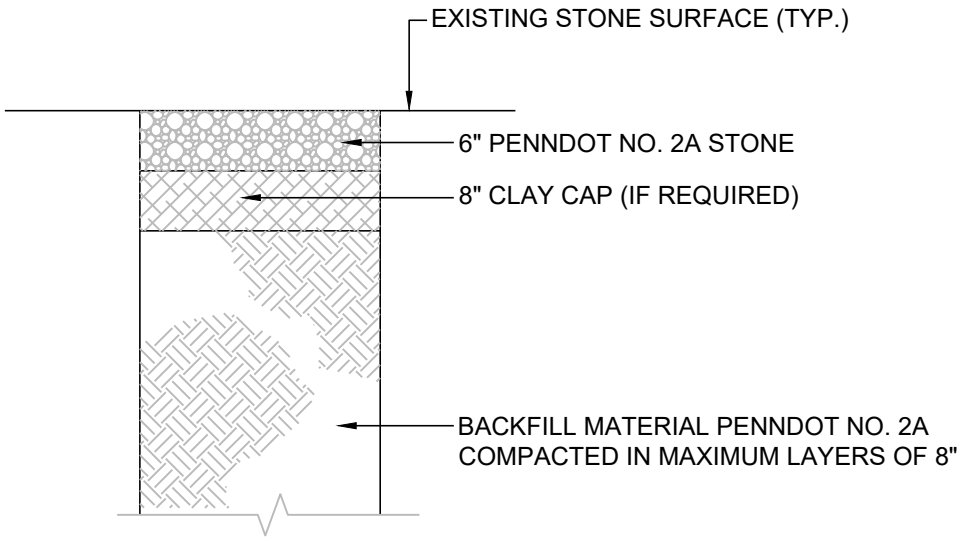
SEE TYPICAL EXCAVATION, BACKFILL & PIPE
EMBEDMENT DETAIL FOR PIPE/BEDDING DETAIL

NOTES:

1. PROVIDE MATERIALS AND CONSTRUCTION MEETING THE REQUIREMENTS OF PENNDOT SPECIFICATIONS, PUBLICATION 408 CURRENT EDITION, SECTIONS 203, 204, 205, 206, 210, 350, 309 AND 409.
2. PERMANENT BITUMINOUS PAVING TYPE IN TRENCH SHALL MATCH EXISTING TYPE OF PAVING IN THE ROAD.
3. WARNING TAPE SHALL BE PLACED AT A MINIMUM OF 2' ABOVE ANY MAINLINE PIPE OR LATERAL.
4. EMERGENCY TEMPORARY PAVING FOR TRENCH RESTORATION (2" COLD BITUMINOUS MATERIAL WITH 3 1/2" PENNDOT NO. 2A) MAY BE UTILIZED SUBJECT TO TOWNSHIP REVIEW, ONLY UNTIL MATERIAL AS REFERENCED IN DETAIL.

1 NON-STATE HIGHWAY PAVEMENT RESTORATION (TEMPORARY TYPE "D")

SCALE: NONE



SEE TYPICAL EXCAVATION, BACKFILL & PIPE
EMBEDMENT DETAIL FOR PIPE/BEDDING DETAIL

NOTES:

1. PROVIDE MATERIALS AND CONSTRUCTION MEETING THE REQUIREMENTS OF PENNDOT SPECIFICATIONS, PUBLICATION 408 CURRENT EDITION, SECTIONS 203, 204, 205, 206, 210, 350, 309 AND 409.
2. PERMANENT BITUMINOUS PAVING TYPE IN TRENCH SHALL MATCH EXISTING TYPE OF PAVING IN THE ROAD.
3. WARNING TAPE SHALL BE PLACED AT A MINIMUM OF 2' ABOVE ANY MAINLINE PIPE OR LATERAL.

1

NON-STATE HIGHWAY PAVEMENT RESTORATION (TYPE "E")

SCALE: NONE

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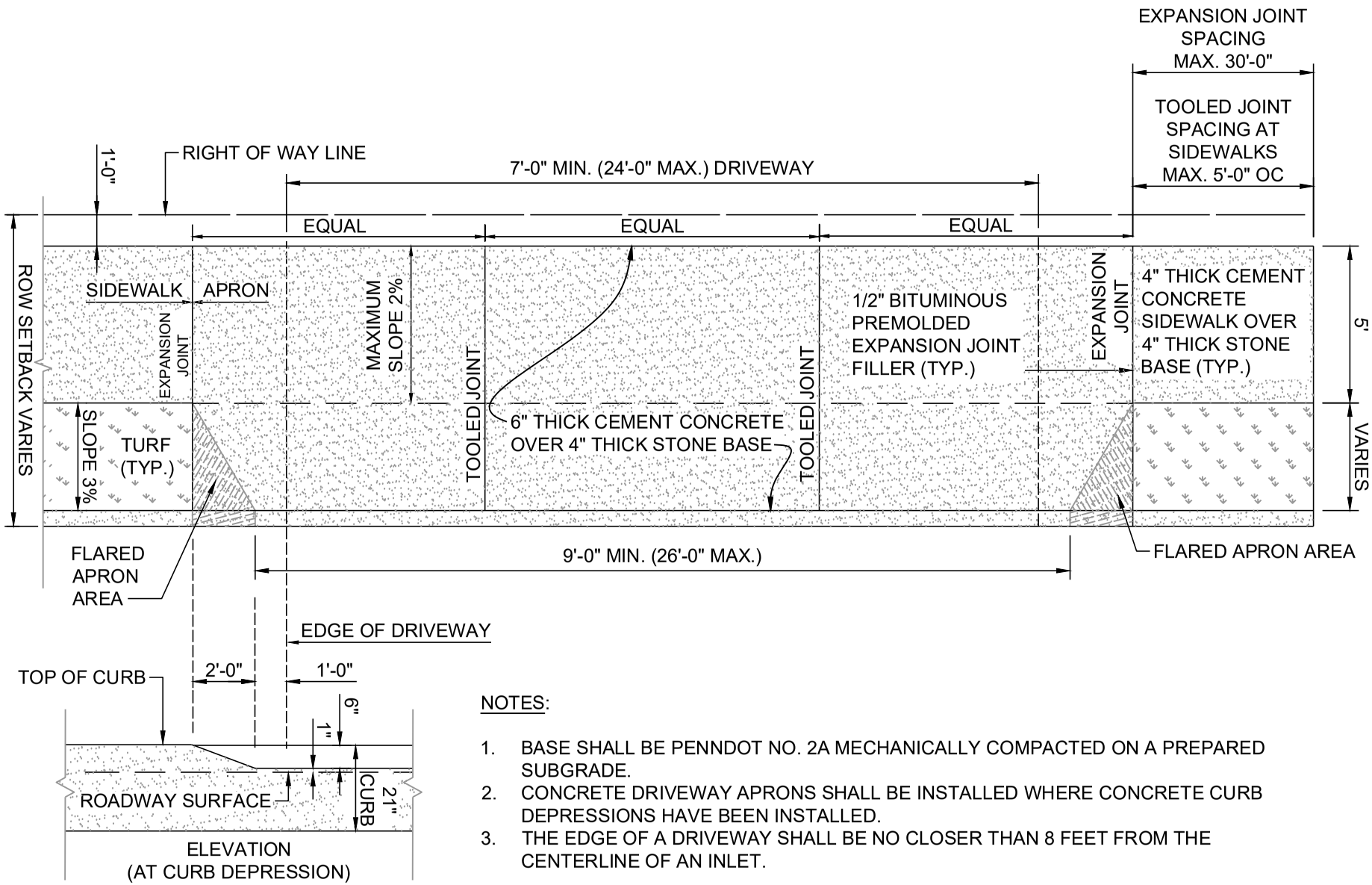
www.entecheng.com

PALMER TOWNSHIP
3 WELLER PLACE, PALMER, PA, 18045

RESIDENTIAL SIDEWALK AND DRIVEWAY
APRON PLAN DETAIL



NOTES:

1. BASE SHALL BE PENNDOT NO. 2A MECHANICALLY COMPACTED ON A PREPARED SUBGRADE.
2. CONCRETE DRIVEWAY APRONS SHALL BE INSTALLED WHERE CONCRETE CURB DEPRESSIONS HAVE BEEN INSTALLED.
3. THE EDGE OF A DRIVEWAY SHALL BE NO CLOSER THAN 8 FEET FROM THE CENTERLINE OF AN INLET.

1 RESIDENTIAL SIDEWALK AND DRIVEWAY APRON PLAN DETAIL

SCALE: NONE

DATE:	SCALE:
MAR 2025	AS NOTED
PREPARED BY: EDM	PROJECT NO. 4660.036
CHECKED BY: –	DRAWING NO. S-39
APPROVED BY: –	

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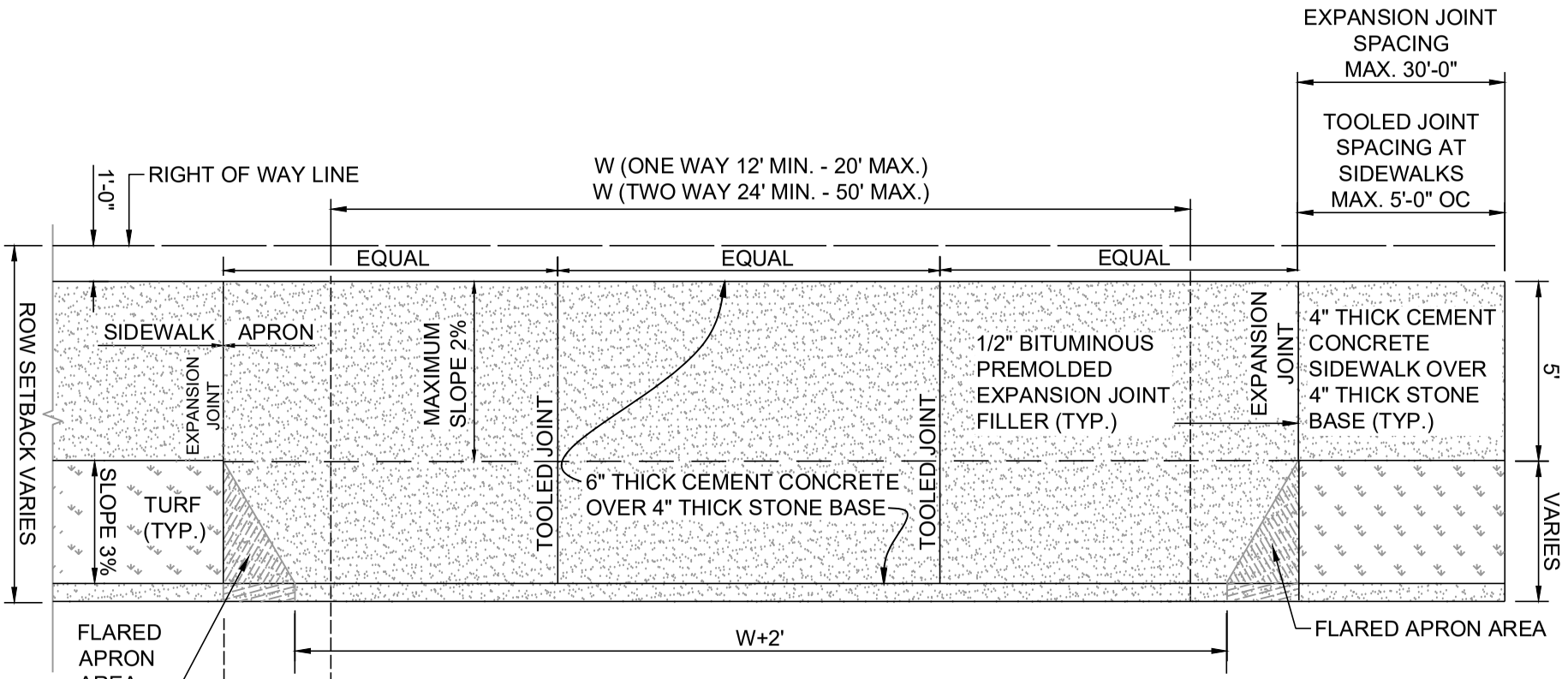
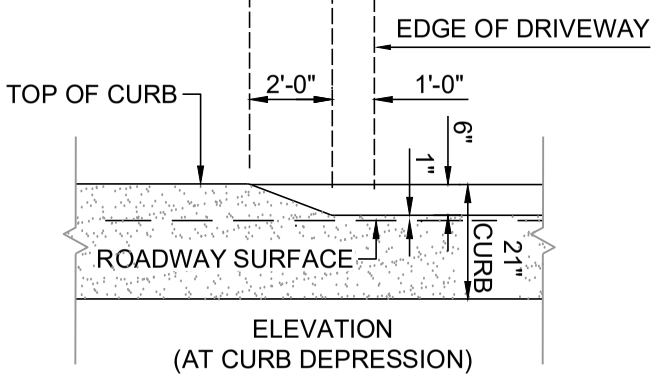
PALMER TOWNSHIP
3 WELLER PLACE, PALMER, PA, 18045

NON-RESIDENTIAL SIDEWALK AND DRIVEWAY APRON PLAN DETAIL





NOTES:

1. BASE SHALL BE PENNDOT NO. 2A MECHANICALLY COMPACTED ON A PREPARED SUBGRADE.
2. CONCRETE DRIVEWAY APRONS SHALL BE INSTALLED WHERE CONCRETE CURB DEPRESSIONS HAVE BEEN INSTALLED.
3. NON-RESIDENTIAL DRIVEWAY APRON SHALL BE REINFORCED WITH A MINIMUM 6x6 - W2.9xW2.9 WELDED WIRE FABRIC. TERMINATE REINFORCING AT EXPANSION JOINTS. REINFORCING SHALL BE AS SPECIFIED BY DESIGN ENGINEER BASED ON SPECIFIC USE/LOADING REQUIREMENTS.
4. THE EDGE OF A DRIVEWAY SHALL BE NO CLOSER THAN 8 FEET FROM THE CENTERLINE OF AN INLET.

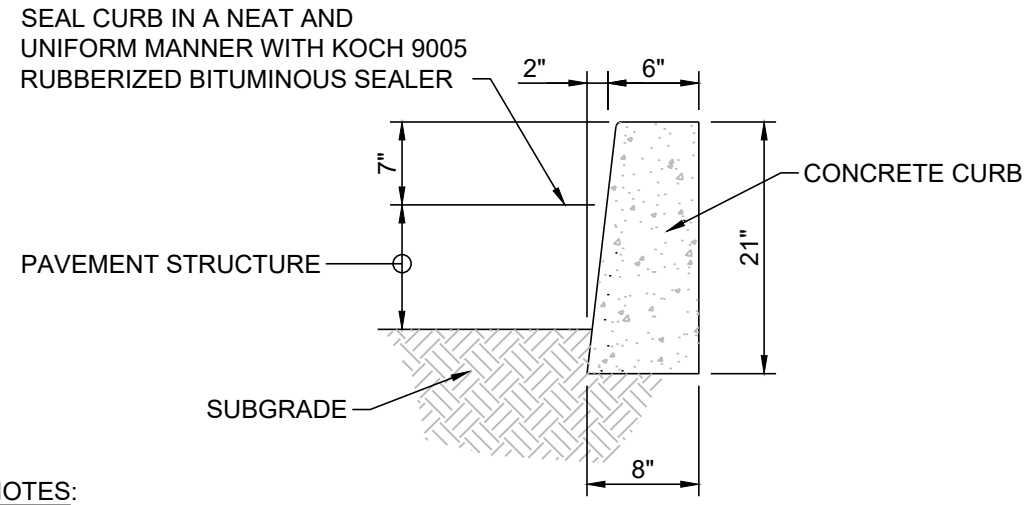
1

NON-RESIDENTIAL SIDEWALK AND DRIVEWAY APRON PLAN DETAIL

SCALE: NONE

DATE: MAR 2025
SCALE: AS NOTED
PREPARED BY: EDM
PROJECT NO. 4660.036
CHECKED BY: –
DRAWING NO. –
APPROVED BY: –

S-40



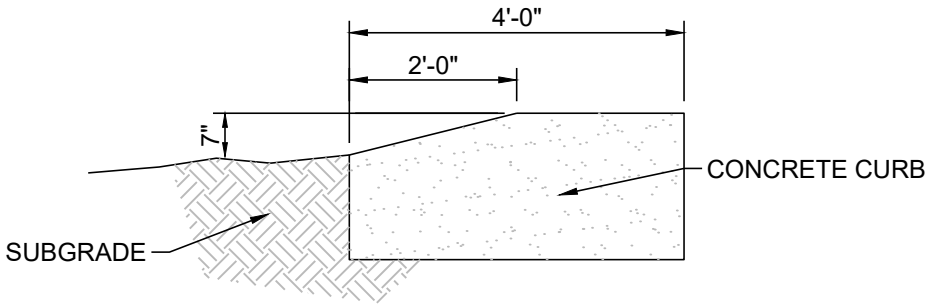
NOTES:

1. EXISTING CURB REMOVAL SHALL BE IN COMPLETE SECTIONS (JOINT TO JOINT), NOT PARTIAL SECTIONS.
2. PROVIDE MATERIALS AND CONSTRUCTION MEETING THE REQUIREMENTS OF PENNDOT SPECIFICATIONS, PUBLICATION 408, CURRENT EDITION, SECTION 630.
3. SPACE CONTRACTION JOINTS IN UNIFORM LENGTHS OR SECTIONS, 10'-0" MAX. TO 4'-0" MIN.
4. PLACE 1/2" BITUMINOUS PREMOLDED EXPANSION JOINT FILLER MATERIAL AT STRUCTURES AND AT THE END OF THE WORK DAY. CUT MATERIAL TO CONFORM TO AREA ADJACENT TO CURB OR TO CONFORM TO CROSS SECTIONAL AREA OF CURB.
5. EXPANSION JOINTS SHALL BE SPACED AS REQUIRED BY THE TOWNSHIP - TYPICALLY 30' OC.
6. EXISTING FULL HEIGHT CURB CANNOT BE MODIFIED INTO DEPRESSED CURB.

1

TYPICAL CONCRETE CURB DETAIL

SCALE: NONE



NOTES:

1. EXISTING CURB REMOVAL SHALL BE IN COMPLETE SECTIONS (JOINT TO JOINT), NOT PARTIAL SECTIONS.
2. PROVIDE MATERIALS AND CONSTRUCTION MEETING THE REQUIREMENTS OF PENNDOT SPECIFICATIONS, PUBLICATION 408, CURRENT EDITION, SECTION 630.
3. SPACE CONTRACTION JOINTS IN UNIFORM LENGTHS OR SECTIONS, 10'-0" MAX. TO 4'-0" MIN.
4. PLACE 1/2" BITUMINOUS PREMOLDED EXPANSION JOINT FILLER MATERIAL AT STRUCTURES AND AT THE END OF THE WORK DAY. CUT MATERIAL TO CONFORM TO AREA ADJACENT TO CURB OR TO CONFORM TO CROSS SECTIONAL AREA OF CURB.
5. EXPANSION JOINTS SHALL BE SPACED AS REQUIRED BY THE TOWNSHIP - TYPICALLY 30' OC.
6. EXISTING FULL HEIGHT CURB CANNOT BE MODIFIED INTO DEPRESSED CURB.

1

TAPERED END CONCRETE CURB DETAIL

SCALE: NONE

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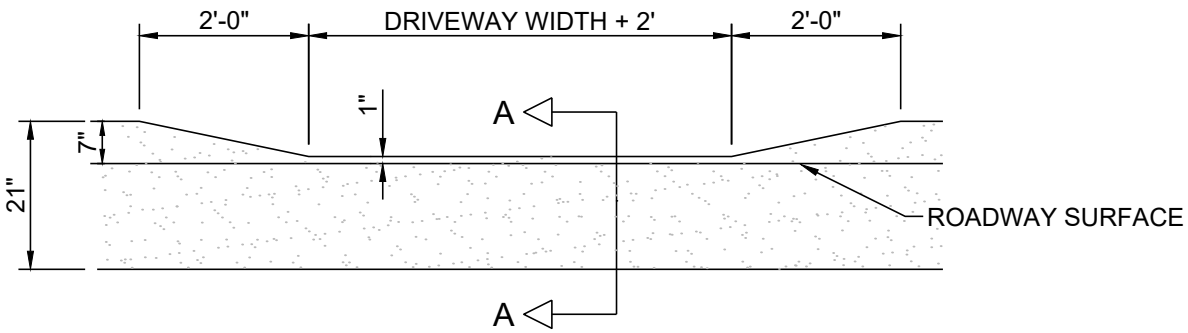
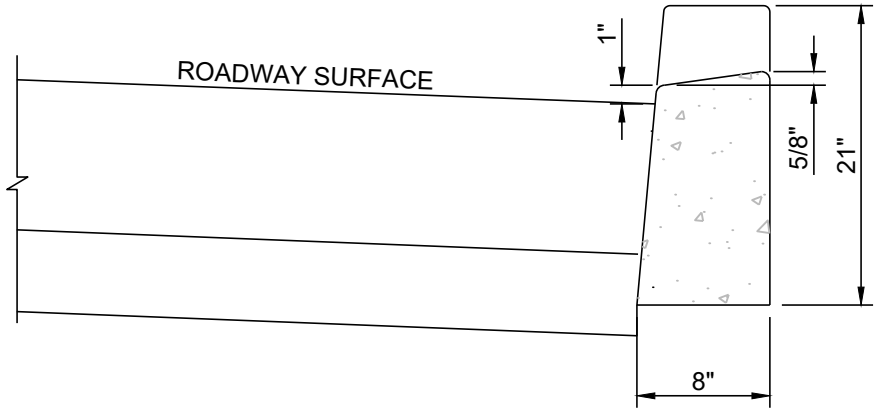
PALMER TOWNSHIP
3 WELLER PLACE, PALMER, PA, 18045

TAPERED END CONCRETE CURB DETAIL

DATE: MAR 2025	SCALE: AS NOTED
PREPARED BY: EDM	PROJECT NO. 4660.036
CHECKED BY: --	DRAWING NO. S-42
APPROVED BY: --	



ELEVATION



SECTION A-A

NOTES:

1. EXISTING CURB REMOVAL SHALL BE IN COMPLETE SECTIONS (JOINT TO JOINT), NOT PARTIAL SECTIONS.
2. PROVIDE MATERIALS AND CONSTRUCTION MEETING THE REQUIREMENTS OF PENNDOT SPECIFICATIONS, PUBLICATION 408, CURRENT EDITION, SECTION 630.
3. SPACE CONTRACTION JOINTS IN UNIFORM LENGTHS OR SECTIONS, 10'-0" MAX. TO 4'-0" MIN.
4. PLACE 1/2" BITUMINOUS PREMOLDED EXPANSION JOINT FILLER MATERIAL AT STRUCTURES AND AT THE END OF THE WORK DAY. CUT MATERIAL TO CONFORM TO AREA ADJACENT TO CURB OR TO CONFORM TO CROSS SECTIONAL AREA OF CURB.
5. EXPANSION JOINTS SHALL BE SPACED AS REQUIRED BY THE TOWNSHIP - TYPICALLY 30' OC.
6. EXISTING FULL HEIGHT CURB CANNOT BE MODIFIED INTO DEPRESSED CURB.

1

DEPRESSED CONCRETE CURB DETAIL

SCALE: NONE

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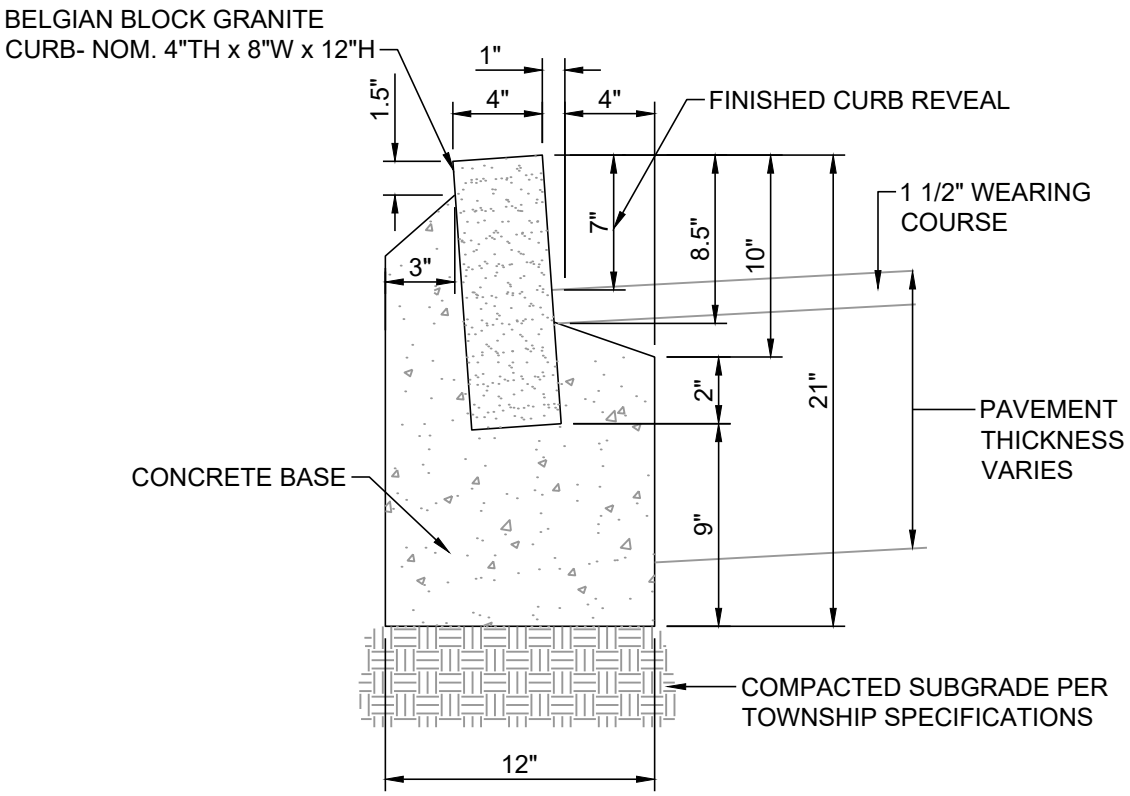
PALMER TOWNSHIP
3 WELLER PLACE, PALMER, PA, 18045

DEPRESSED CONCRETE CURB DETAIL

DATE: MAR 2025	SCALE: AS NOTED
PREPARED BY: EDM	PROJECT NO. 4660.036
CHECKED BY: --	DRAWING NO. S-43
APPROVED BY: --	



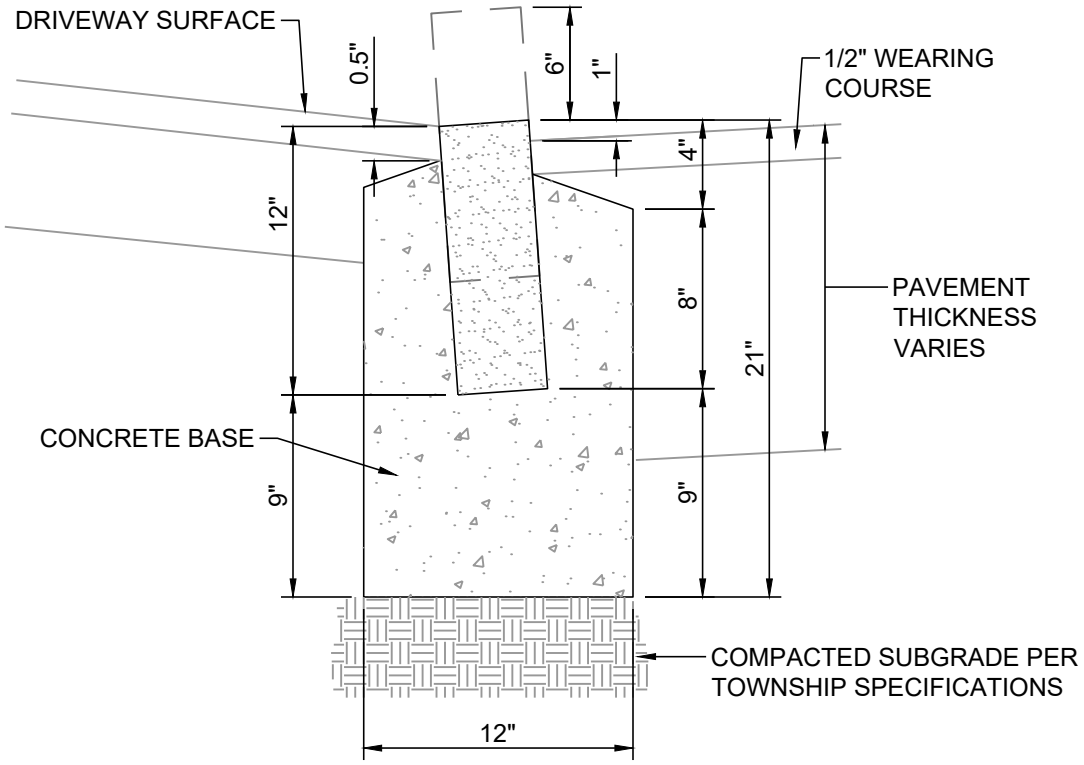
NOTES:

1. 1:1 CEMENT-SAND MORTAR JOINTS SHALL NOT BE MORE THAN 3/8" WIDE.
2. TRANSVERSE JOINTS 1/2" WIDE SHALL BE INSTALLED IN THE CURB A MAXIMUM OF 60' APART, AND ON BOTH SIDES AT ALL INLETS, AND SHALL BE FILLED WITH PREFORMED BITUMINOUS-IMPREGNATED FIBER JOINT FILLER RECESSED 1/4" IN FROM FRONT FACE AND TOP OF CURB.

1

TYPICAL BELGIAN BLOCK GRANITE CURB

SCALE: NONE



NOTES:

1. 1:1 CEMENT-SAND MORTAR JOINTS SHALL NOT BE MORE THAN 3/8" WIDE.
2. TRANSVERSE JOINTS 1/2" WIDE SHALL BE INSTALLED IN THE CURB A MAXIMUM OF 60' APART, AND ON BOTH SIDES AT ALL INLETS, AND SHALL BE FILLED WITH PREFORMED BITUMINOUS-IMPREGNATED FIBER JOINT FILLER RECESSED 1/4" IN FROM FRONT FACE AND TOP OF CURB.

TYPICAL BELGIAN BLOCK GRANITE CURB AT DRIVEWAY APRON

1

SCALE: NONE

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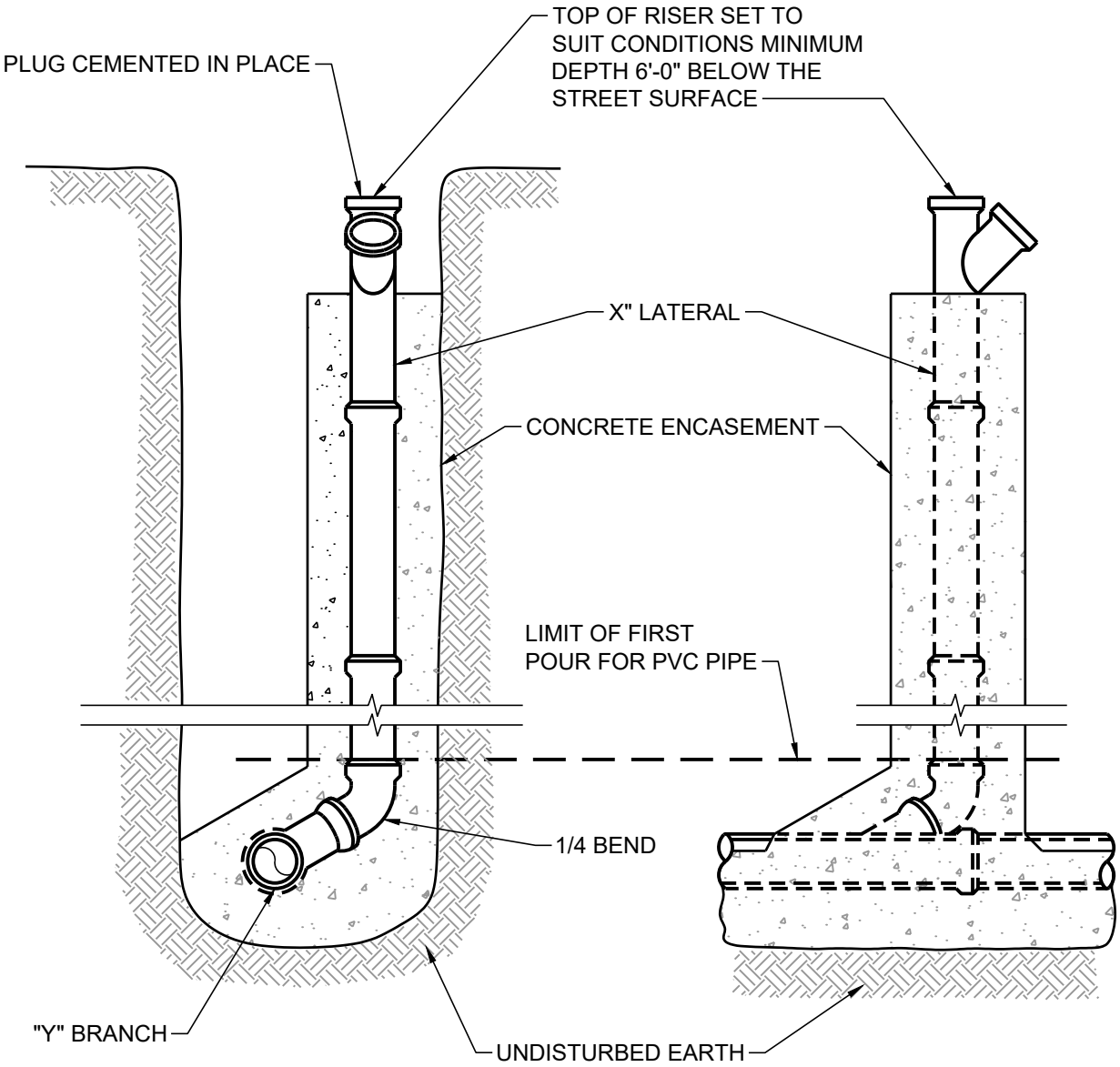
PALMER TOWNSHIP
3 WELLER PLACE, PALMER, PA, 18045

TYPICAL BELGIAN BLOCK GRANITE CURB AT DRIVEWAY APRON

DATE: MAR 2025	SCALE: AS NOTED
PREPARED BY: EDM	PROJECT NO. 4660.036
CHECKED BY: --	DRAWING NO. S-45
APPROVED BY: --	



NOTES:

1. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI AT THE END OF 28 DAYS.
2. CONCRETE ENCASEMENT TO BE MINIMUM 4" THICKNESS AT ALL POINTS.

X

DEEP CUT LATERAL DETAIL

Scale: NONE

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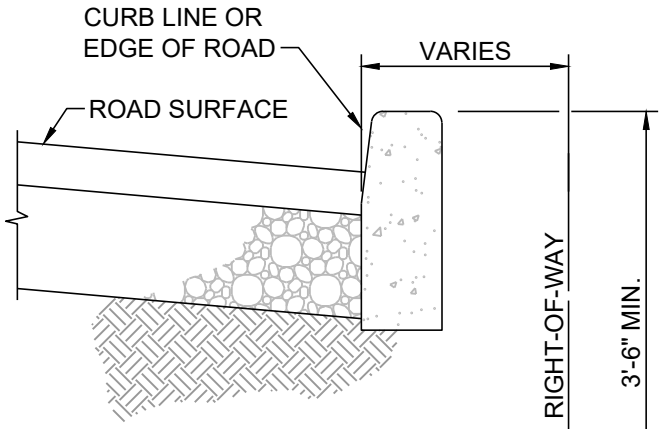
PALMER TOWNSHIP
3 WELLER PLACE, PALMER, PA, 18045

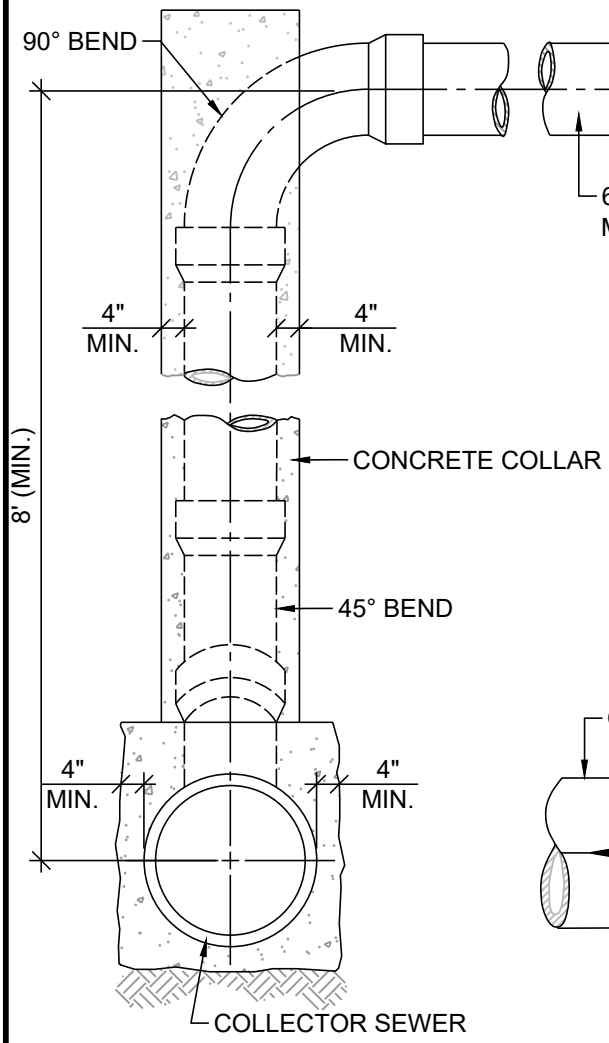
DEEP CUT LATERAL DETAIL

DATE: MAR 2025	SCALE: AS NOTED
PREPARED BY: EDM	PROJECT NO. 4660.036
CHECKED BY: --	DRAWING NO. S-46
APPROVED BY: --	

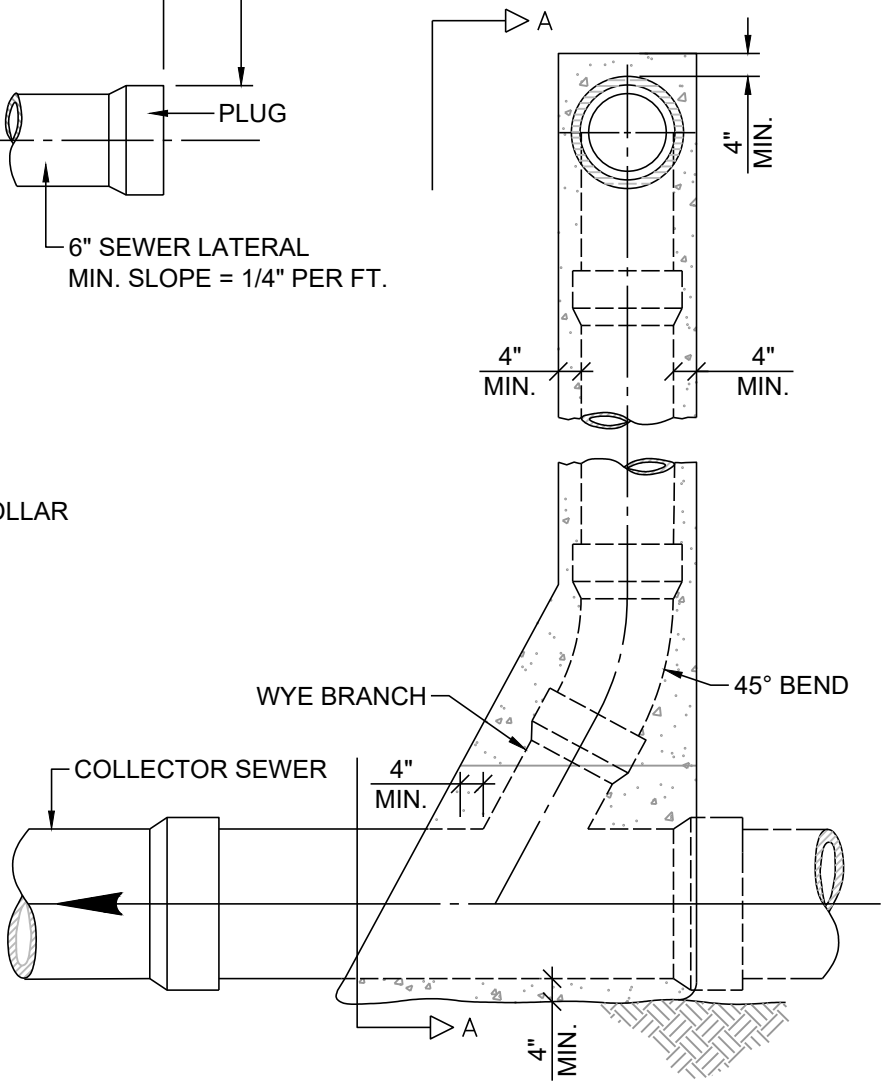


NOTES:

1. WARNING TAPE SHALL BE PLACED AT A MINIMUM 2 FT. ABOVE ANY MAINLINE PIPE OR LATERAL.
2. TYPE OF DEEP SEWER SERVICE CONNECTION TO BE USED SHALL BE DETERMINED BY THE TOWNSHIP.
3. CONCRETE ENCASEMENT TO BE MINIMUM 4" THICKNESS AT ALL POINTS.



SECTION A-A



ELEVATION

X SERVICE CONNECTION DEEP SEWER - TYPE A

Scale: NONE

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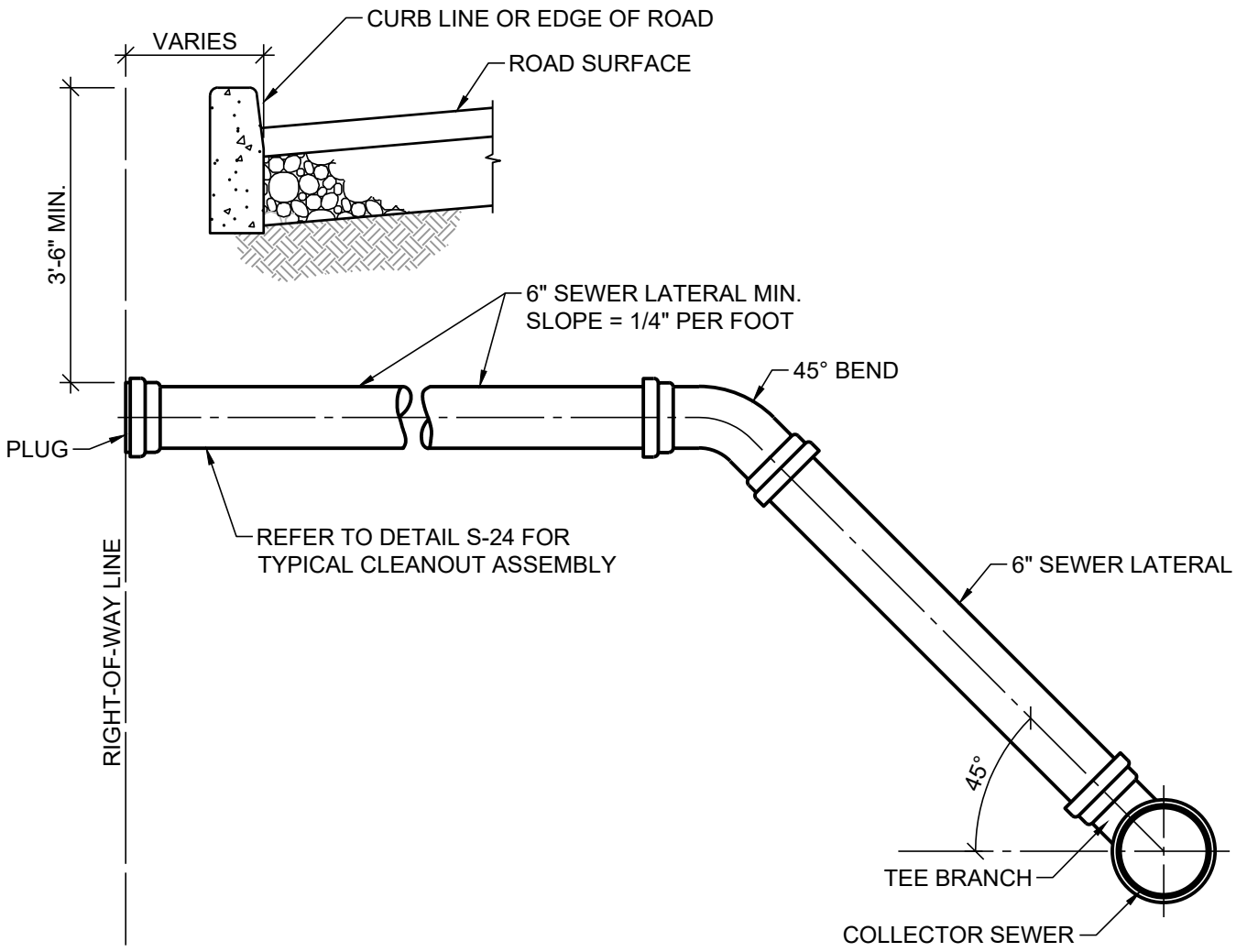
PALMER TOWNSHIP
3 WELLER PLACE, PALMER, PA, 18045

SERVICE CONNECTION DEEP SEWER - TYPE A

DATE: MAR 2025	SCALE: AS NOTED
PREPARED BY: EDM	PROJECT NO. 4660.036
CHECKED BY: --	DRAWING NO. S-47
APPROVED BY: --	



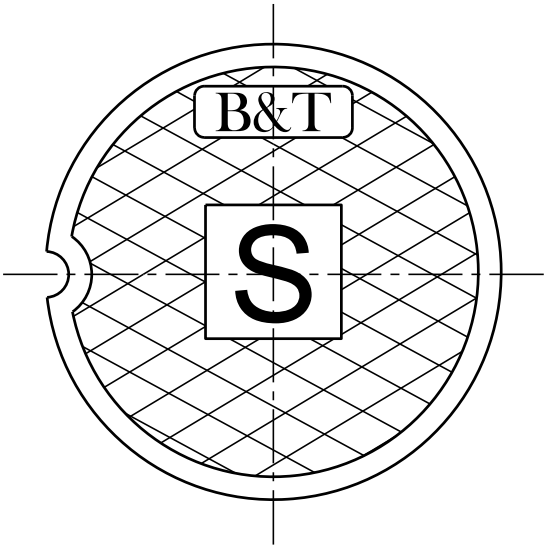
NOTES:

1. TYPE OF DEEP SEWER SERVICE CONNECTION TO BE USED SHALL BE DETERMINED BY THE TOWNSHIP
2. WARNING TAPE SHALL BE PLACED AT A MINIMUM OF 2' ABOVE ANY MAINLINE OR LATERAL

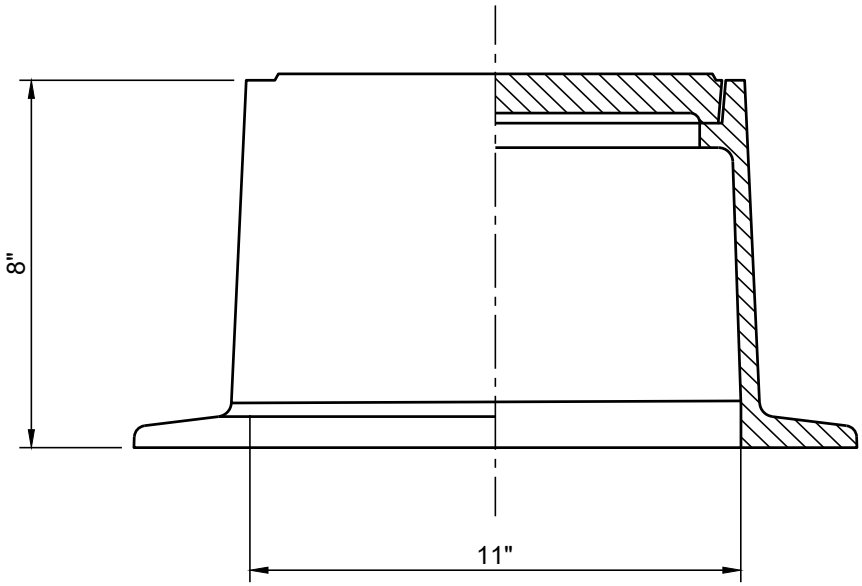
X

SERVICE CONNECTION DEEP SEWER - TYPE B

Scale: NONE



PLAN



SECTION

NOTES:

1. CLEAN BOX AS PER BINGHAM & TAYLOR OR EQUAL.
2. STYLE SHOWN IS B&T 1975LS - THIS MODEL HAS AN "S" IN THE COVER FOR SEWER.

X **CLEANOUT BOX**

Scale: NONE

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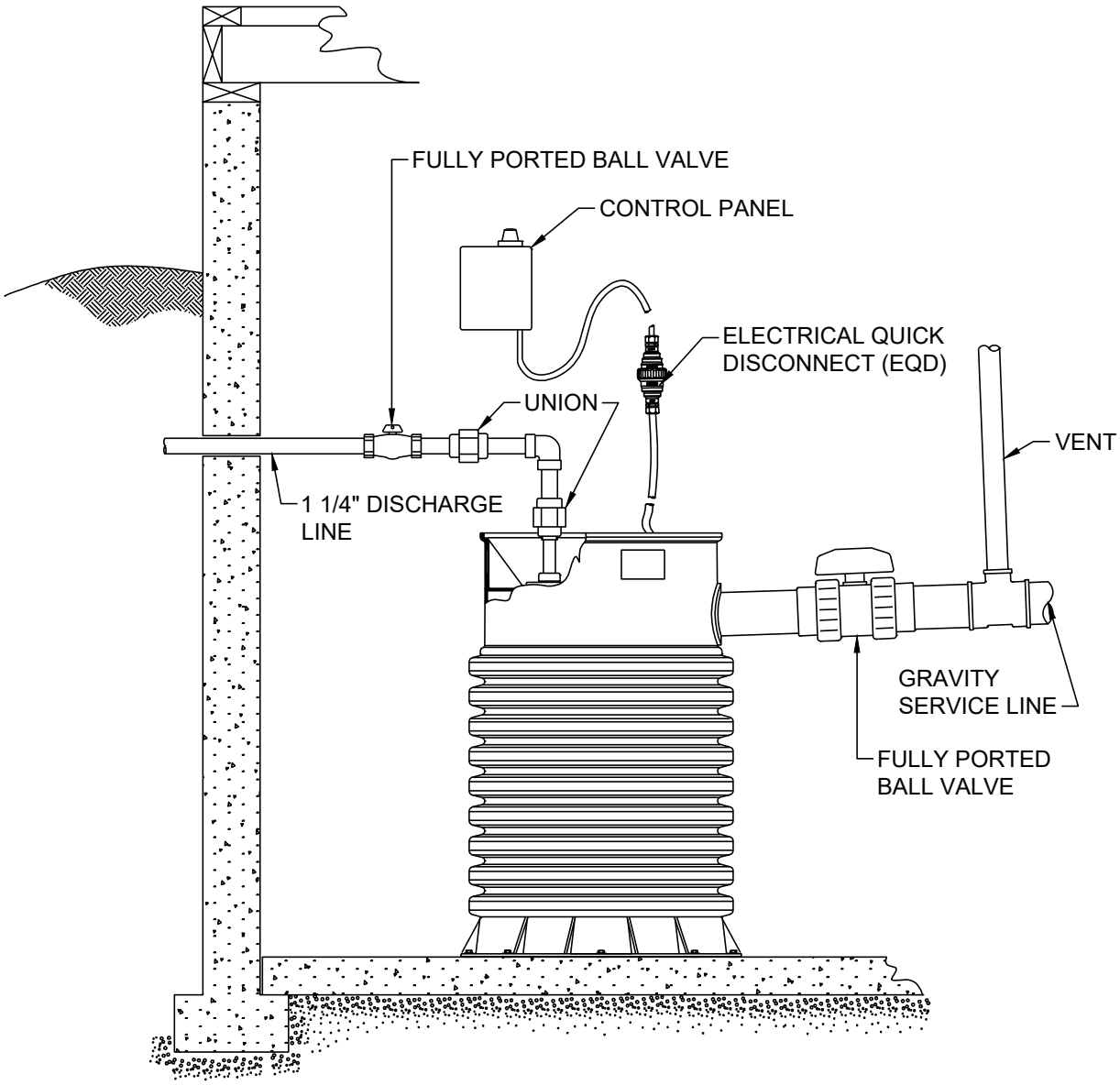
PALMER TOWNSHIP
3 WELLER PLACE, PALMER, PA, 18045

CLEANOUT BOX

DATE: MAR 2025	SCALE: AS NOTED
PREPARED BY: EDM	PROJECT NO. 4660.036
CHECKED BY: --	DRAWING NO. S-49
APPROVED BY: --	



LOW PRESSURE GRINDER PUMP TYPICAL INDOOR INSTALLATION

X

Scale: NONE

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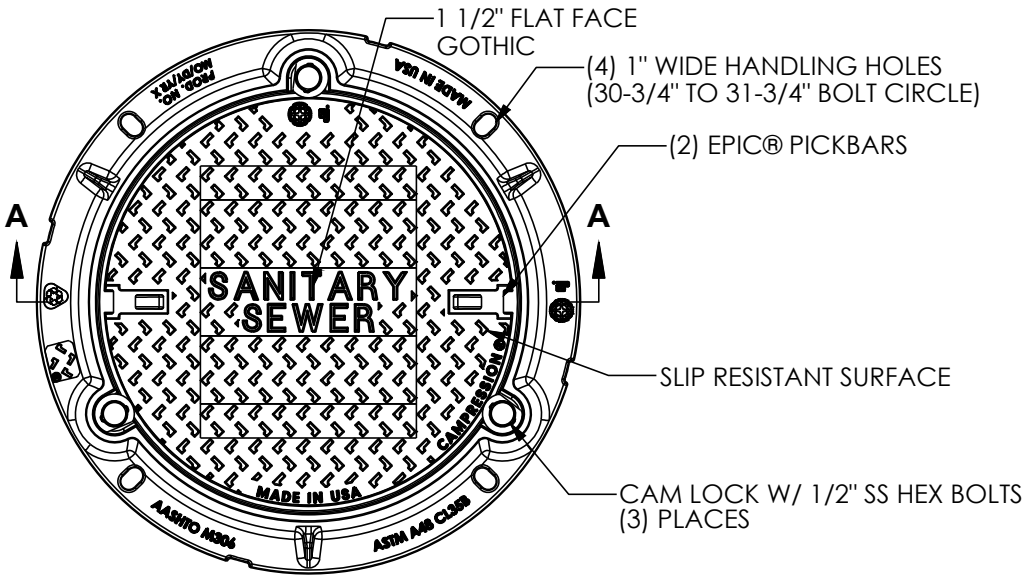
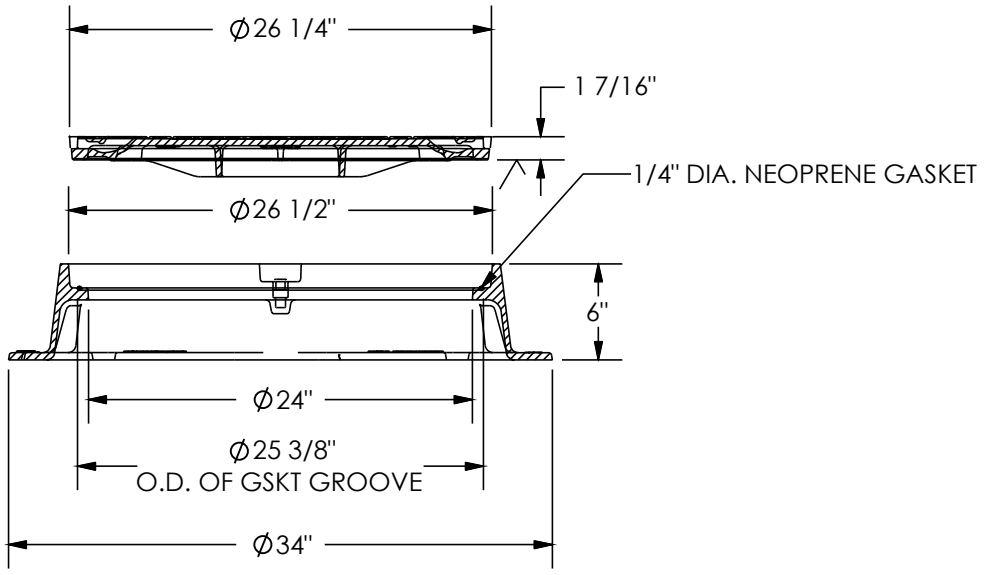
PALMER TOWNSHIP
3 WELLER PLACE, PALMER, PA, 18045

LOW PRESSURE GRINDER PUMP TYPICAL INDOOR INSTALLATION

DATE: MAR 2025	SCALE: AS NOTED
PREPARED BY: EDM	PROJECT NO. 4660.036
CHECKED BY: --	DRAWING NO. S-50
APPROVED BY: --	





SECTION A-A

CAST IRON WATERTIGHT MANHOLE FRAME & COVER

1

SCALE: NONE

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PALMER TOWNSHIP
3 WELLER PLACE, PALMER, PA, 18045

CAST IRON WATERTIGHT
MANHOLE FRAME & COVER

DATE: MAR 2025	SCALE: AS NOTED
PREPARED BY: EDM	PROJECT NO. 4660.036
CHECKED BY: --	DRAWING NO. S-51
APPROVED BY: --	