

EPHRATA TOWNSHIP

Street and Roadway Specifications

November 5, 2019



OFFICE

**265 AKRON ROAD
EPHRATA, PA 17522
(717) 733-1044**

Prepared by:

RETTEWSM

1. GENERAL PROVISIONS

- A. The following specifications shall apply to all projects within any existing or proposed Township right-of-way.
- B. The owner and contractor performing the work pursuant to this article shall be jointly and severally responsible for obtaining any and all permits. The owner and contractor performing the work are also jointly and severally responsible for complying with the provisions of this article and all conditions of the approved plans and any permit.
- C. The owner and contractor performing the work are responsible for causing their agents, employees, subcontractors, successors, personal representatives and assigns to comply with the provisions of this article and the conditions of the plans and permit, and each of them shall be bound thereby.
- D. All construction performed under the plan and/or permit shall be performed in accordance with the requirements of PennDOT 408, Roadway Construction Drawings and other requirements.
- E. The work authorized under the plan and/or permit shall also be subject to all other applicable specifications, rules, laws, and regulations of the United States and the Commonwealth of Pennsylvania and all other applicable Township ordinances.
- F. The work authorized under the plans and/or permit shall be done at such time and in such manner as to be consistent with the safety of the public and shall conform to all requirements and standards of the Township.
- G. Maintenance and protection of traffic on Township and State Highways shall be in strict accordance with PennDOT Publication 408, Section 900, and Publication No. 213, Temporary Traffic Control Guidelines, or as directed by PennDOT or Borough authorities.
- H. The following general guidelines shall be used during the installation of bituminous paving mixtures:
 - (1) Bituminous paving mixtures shall not be placed between November 1 and March 31, unless allowed in writing by the Township.
 - (2) Bituminous paving mixtures shall not be placed when surfaces are wet or frozen.
 - (3) Bituminous paving mixtures shall not be placed when the air or surface temperature is forty (40) degrees Fahrenheit or lower.
- I. The following general guidelines shall be used during the Installation of cement concrete when the temperature is forty (40) degrees Fahrenheit or lower:
 - (1) Concrete shall be protected from freezing for the first twenty-four (24) to forty-eight (48) hours or until it achieves a compressive strength of at least 500 psi.
 - (2) Concrete that is saturated with water shall not be exposed to cycles of freezing and thawing until it achieves a compressive strength of at least 4000 psi.
 - (3) Surfaces in contact with the concrete shall be above freezing and free from snow, ice, and frost prior to placement.

2. Street System Observations

- A. For existing or proposed public (dedicated) streets/right-of-way, the entire street shall be subject to the following observations.
- B. Observations of private streets and access drive shall be limited to one hundred (100) feet from its connection with the existing or proposed public (dedicated) right-of-way.
- C. The following general guidelines shall be used during the installation of bituminous paving mixtures:
 - (1) Bituminous paving mixtures shall not be placed between November 1 and March 31, unless allowed in writing by the Township.
 - (2) Bituminous paving mixtures shall not be placed when surfaces are wet or frozen.
 - (3) Bituminous paving mixtures shall not be placed when the air or surface temperature is forty (40) degrees Fahrenheit or lower.
- D. The following general guidelines shall be used during the Installation of cement concrete when the temperature is forty (40) degrees Fahrenheit or lower:
 - (1) Concrete shall be protected from freezing for the first twenty-four (24) to forty-eight (48) hours or until it achieves a compressive strength of at least 500 psi.
 - (2) Concrete that is saturated with water shall not be exposed to cycles of freezing and thawing until it achieves a compressive strength of at least 4000 psi.
 - (3) Surfaces in contact with the concrete shall be above freezing and free from snow, ice, and frost prior to placement.
- E. The following observations shall be conducted during the Installation of curb:
 - (1) Verify stone base depth.
 - (2) Visually verify alignment of curb string line and/or forms.
 - (3) Verify the location and length of depressed curb segments.
 - (4) Visually verify constructability.
- F. The following observations shall be conducted during the Installation of the street subgrade:
 - (1) The subgrade shall be proof rolled with a fully loaded tri-axel dump truck.
 - (2) The cross slope, crown and grade shall be verified.
 - (3) This observation shall occur prior to placing the street subbase.
 - (4) In the event unstable soil conditions are observed and the Township Engineer determines the unstable soil conditions may affect the long-term integrity of the proposed street, Rapho Township reserves the right to require the developer to conduct a geotechnical evaluation of the soils in the proposed street right-of-way.
 - a. The scope of the geotechnical evaluation, including testing methodologies, shall be prepared and submitted to the Township for approval.

- b. The results of the geotechnical evaluation shall be submitted in a report signed and sealed by the developer's geotechnical consultant and include recommendations to correct unstable soil conditions that may affect the long-term integrity of the proposed street.
 - c. The geotechnical evaluation report shall be submitted to the Township for review and approval.
 - d. The developer shall be responsible for implementing the recommendations in the approved geotechnical evaluation report.
- (5) See Figure A-1 for street subbase course requirements.
- 2. The following observations shall be conducted during the Installation of the street subbase:
 - (1) The depth of subbase after compaction shall be verified.
 - (2) The subgrade shall be proof rolled with a fully loaded tri-axel dump truck.
 - (3) The cross slope, crown and grade shall be verified,
 - (4) This observation shall occur prior to placing binder or base paving course.
 - (5) See Figure A-1 for street subbase course requirements.
- 3. The following observations shall be conducted during the Installation of the street binder/base paving course:
 - (1) The depth of the binder/base paving course after compaction shall be verified.
 - (2) The ambient (air) and bituminous material temperatures shall be monitored.
 - (3) Weight slips shall be provided for each delivery of binder/base paving.
 - (4) The cross slope, crown and grade shall be verified.
 - (5) This observation shall occur prior to placing the wearing paving course.
 - (6) See Figure A-1 for street binder course requirements.
- 4. The following observations shall be conducted during the Installation of the street wearing paving course:
 - (1) The final storm sewer observation shall be conducted prior to placing the wearing course.
 - (2) Written evidence of approval of acceptance of water and sewer facilities located within the cartway, from the appropriate Authority or agency, shall be provided prior to placing the wearing course.
 - (3) The depth of the wearing paving course after compaction shall be verified.
 - (4) The ambient (air) and bituminous material temperatures shall be monitored.
 - (5) Weight slips shall be provided for each delivery of binder/base paving.
 - (6) The cross slope, crown and grade shall be verified.
 - (7) See Figure A-1 for street wearing course requirements.

3. STREET OPENING/EXCAVATION.

A. Drilling, boring, driving or tunneling across improved area. Drilling, boring, driving or tunneling across improved areas shall comply with the following conditions:

- (1) When crossing under an improved area, the excavation for a utility facility shall be drilled, bored, driven or tunnel a minimum depth of 3 feet from the surface to the top of the excavation.
- (2) No excavations for the purpose of placing utility facilities or other structures under the improved area by drilling, boring, driving or tunneling may be made closer than 3 feet to the edge of the shoulder, unless the permit authorizes a lesser clearance.
- (3) A facility or other structure crossing under the improved area shall be constructed to assure the safety of the traveling public and to preclude the necessity of entering upon the improved area to affect future maintenance or replacement.

B. Trenching across the improved area.

- 1) The top of every utility facility shall be installed at least 3 feet beneath the surface.
- (2) Trenching across the improved area may be authorized by the permit where drilling, boring, driving or tunneling are:

(a) Not feasible because:

- [1] The subsurface is solid rock, as documented with satisfactory evidence such as drill records, or where boring was attempted without success.
- [2] There are other facilities located longitudinally under the improved area and their location precludes methods other than trenching, as documented within a detailed plan.
- [3] Adjacent development in a very congested urban area makes the construction of a tunneling or boring shaft impossible.

(b) Not required because of one or more of the following:

- [1] The street is unpaved.
- [2] The Township's wearing course is older than 10 years.

(3) When trenching is authorized by the permit, the trenching operation shall be performed by one of the following methods:

(a) Utility facility placed in one piece across street.

- [1] Traffic shall be routed over one-half of the pavement width.
- [2] The closed half of the pavement shall be opened to the required depth and bridged with steel plates.
- [3] Traffic shall be shifted to the bridged half of the pavement.
- [4] The remaining half of the pavement shall be opened to the required depth.
- [5] The facility shall be placed full width.
- [6] The open trench shall be backfilled and restored half-width in accordance

with this section.

[7] Traffic shall be shifted to the restored half of the pavement.

[8] The bridging shall be removed, and the remaining half of the trench shall be backfilled and restored in accordance with this section.

(b) Utility facility placed in more than one piece across street.

[1] Traffic shall be routed over one-half of the pavement width.

[2] The closed half of the pavement shall be opened to the required depth, the facility placed, and the trench backfilled and restored in accordance with this section.

[3] Traffic shall be shifted to the restored half of the pavement.

[4] The remaining half of the pavement shall be opened to the required depth, the facility placed, and the trench backfilled and restored in accordance with the provisions of this section.

(4) No more than 250 feet measured longitudinally shall be opened or excavated in any street at any one time, except by special permission of the Township. At the end of the work day, all trenches shall be either backfilled or plated.

(5) Pipe drains, pipe culverts, or other facilities encountered shall be protected by the permittee.

(6) Monuments of concrete, iron, or other lasting material set for the purpose of locating or preserving the lines of any street or property subdivision or a precise survey reference point or a permanent survey benchmark within the Township shall not be removed or disturbed or caused to be *removed* or disturbed unless permission to do so is first obtained in writing from the Township Engineer. Permission shall only be granted upon the condition that the permittee shall pay all expenses incident to the proper replacement of the monument.

(7) All utility facilities shall be exposed sufficiently, or definite location determined ahead of trench excavation work to avoid damage to those facilities and to permit their relocation, if necessary.

(8) When any earth, gravel, or other excavated material is caused to flow, roll, or wash upon any street, the permittee shall cause removal of same from the street within four hours after deposit to permit safe flow of traffic. In the *event* the earth, gravel, or other excavated material so deposited is not removed as specified, the Township shall cause such removal and the cost incurred shall be paid by the permittee or deducted from his deposit.

(9) Access to private driveways shall be coordinated with abutting property owners and shall be provided to said abutting property owners during working construction operations.

(10) The permittee shall protect its excavations to provide for the safety of the traveling public, including motorists, bicyclists and pedestrians.

(11) The permit may authorize the placement at depths less than 3 feet of traffic signal detectors or other street facilities which are not capable of operating more than 3 feet below the surface.

C. Excavations parallel to the street. Requirements for excavations parallel to the street are as follows:

- (1) A utility facility shall be placed outside the pavement and shoulder unless there is no feasible space outside the pavement and shoulder for placing the facility, in which case occupancy of within the pavement or shoulder may be authorized by the permit.
- (2) The top of a utility facility shall be installed at least 3 feet beneath the surface.
- (3) No excavation may be made for more than 200 linear feet at one time, unless authorized by the permit.
- (4) The permittee shall protect its excavations to provide for the safety of the traveling public, including motorists, bicyclists and pedestrians.

D. Daily stoppage of work requirements. At the end of each workday, an excavation in the right-of-way shall be one of the following:

- (1) Covered with steel plates or bridging over excavations which are less than 6 feet in either length or width. The plates or bridging shall be extended a minimum of 18 inches from each edge of the excavation and shall be secured in a safe manner.
- (2) Backfilled under 3.F to the bottom elevation of the pavement or base course, or to the original surface elevation if outside the pavement and shoulder, and protected under Publication 213 and an approved traffic control plan until the surface is restored to its former condition.
- (3) Protected under Publication 213 and an approved traffic control plan, if the permittee has delivered certificates of insurance.

E. Direct burial operations. Direct burial of a utility by means of a plow-type mechanism which breaks the ground, places the utility line and closes the break in the ground in a single operation shall comply with the following:

- (1) No direct burial operations will be permitted within the right-of-way, unless authorized by a permit.
- (2) Direct burial operations will not be authorized in the pavement or paved shoulders.
- (3) Direct burial operations in unpaved shoulders are not allowed from December through March inclusive or at other times when there is frost in the top 3 feet beneath the surface.
- (4) No direct burial is authorized within 3 feet from the edge of pavement. A greater distance shall be attained wherever possible.
- (5) The excavation shall be a minimum depth of 3 feet. If this depth cannot be consistently maintained, the proper depth shall be achieved by trenching.
- (6) The utility facility shall be installed under any structures which are less than 3 feet deep. Disturbed structures shall be repaired or replaced by the permittee.
- (7) The disturbed area shall be restored in conjunction with the direct burial operation.

Heaved surface shall be scarified to a depth of at least 4 inches, extending at least 1 foot on either side of the heaved area for the entire length of the heaved area. The disturbed area shall then be graded, backfilled where necessary, and compacted until the disturbed area is restored to a condition at least equal to that which existed before the direct burial operation. Disturbed shoulders shall also be restored under 3.H.

F. Backfilling and restoration. An excavation shall be backfilled by the permittee in accordance with the following:

- (1) Fine aggregate. The excavation may first be backfilled with fine aggregate material, meeting the requirements of section 703.1 of Publication 408, or granular material to protect the facility, placed to a height not to exceed one (1) foot over the top of the facility, if the material is compacted in not more than 4-inch loose layers or as authorized under Publication 408.
- (2) Underground facility marking. To help protect its facility from future excavations, the permittee shall place a permanent ribbon colored under 3.J. at least 1 foot above its facility. If the facility is nonmetallic, the permittee shall place a metallic ribbon at a depth from which the ribbon can be sensed by typical metal locating equipment.
- (3) Backfill materials. The excavation shall then be backfilled with select granular material, unless retained suitable material, is authorized or other coarse aggregate material meeting the requirements of section 703.2 of Publication 408 is specified in the permit. Select granular material or other aggregate material will be required for use as backfill of excavations in pavements, paved shoulders and improved shoulders as well as unimproved shoulders within 3 feet of the edge of pavement. Retained suitable material will normally be authorized for use as backfill of excavations outside shoulders and in unimproved shoulders more than 3 feet outside the edge of pavement and up to within 3 feet of the surface.
- (4) Backfill compaction. Backfill shall be compacted as follows:
 - (a) General rule. Except as provided in subparagraph (b) backfill material shall be placed in loose layers not to exceed eight (8) inches if vibratory compaction equipment is used or as authorized under Publication 408. Each layer shall be thoroughly compacted to preclude subsidence, under section 601.3(f) of Publication 408.
 - (b) Compaction outside pavement and shoulders. At least 15 days prior to the start of work, the applicant may submit its written compaction plan to the Township requesting backfill in an excavation outside the pavement and shoulder to be placed in layers thicker than 8 inches prior to compaction. The compaction plan shall include full details on equipment, materials and work methods as well as the permittee's acknowledgment of its obligation and commitment to regularly monitor the restored surface until 2 years after the acknowledged completion of the permitted work and to promptly correct failure of subsidence of the street. The Township may condition its approval of a compaction plan on the execution of a bond, if a part of the excavation is within the improved area.
 - (c) Existing pavement elevation. Compaction shall be completed to the bottom elevation of the existing pavement.
- (5) Test holes shall be backfilled, as soon as safely possible, with existing type material and other material authorized by the Township, and sealed under 3 .M. The Township may authorize test holes in the pavement or shoulder to be restored within a 1-foot cutback of the surrounding surface.
- (6) The Township shall be notified by the permittee during the 48-hour period preceding beginning of backfilling of the date and approximate time at which backfilling will begin.

G. Pavement restoration. Base and surface pavement restoration shall be performed under this subsection and as specified in the permit.

(1) Prior to replacement of the base course, one (1) foot outside of each edge of the excavation shall be sawed, in a neat straight line, to the top elevation of the existing aggregate subbase or stone base course, and the detached material shall be removed. Other surface excavation methods such as cutting may be authorized if the methods result in the opened pavement having a neat straight vertical line.

(2) Exposed vertical and horizontal surfaces shall be prepared under section 409.3(g) of Publication 408.

(1) The pavement specifications shall be in accordance with the following:

a. Subbase material shall be 2A Coarse Aggregate as specified in PennDOT 408, Section 350. Placement shall conform to PennDOT 408, Section 350.

b. The bituminous base course shall be a minimum of 4" depth of Superpave Asphalt Mixture Design, HMA Base Course, PG-64-22, 0 to 0.3 million ESAL, 25 mm mix and shall conform to PennDOT 408, Section 309.

c. The bituminous wearing course shall be a minimum of 1 1/2" depth of Superpave Asphalt Mixture Design, HMA Wearing Course, PG-64-22, 0 to 0.3 million ESAL, 9.5 mm, SRL-L mix and shall conform to PennDOT 408, Section 409.

d. Depths of the material courses shall be as indicated above, or a depth equal to the existing pavement, whichever is greater.

(4) If the Township finds that paving surfaces adjacent to the street excavations may be damaged where trenches are made parallel to the street, or where a number of cross trenches are laid in proximity to one another, or where the equipment used may cause such damage, the Township shall, if the total linear length of the trench repair exceeds 100 lineal feet or exceeds 25% of the length of the street, require a full-width overlay of the affected area. The Board of Supervisors may authorize a contribution from the permittee for the resurfacing of the entire roadway in lieu of patching or restoration. Such negotiations shall be carried on and contributions agreed upon prior to issuance of a permit.

H. Shoulder restoration. Shoulder restoration shall be performed under this subsection and as specified in the permit.

(1) Paved shoulders. Paved shoulder shall be reconstructed and restored to a serviceable condition, of the same type as existed before the start of work, under section 651, 653, 654, 656, 657 or 658 of Publication 408 and Roadway Construction Standard RC-25.

(2) Other shoulders. Other shoulders shall be restored as follows:

(a) The surface shall be restored with at least 2 inches of select granular material or as authorized by the Township.

(b) If the length of the open shoulder exceeds 100 linear feet, the shoulder shall be graded and rolled.

(3) Outside existing shoulder. If the disturbed area extends outside the existing shoulder, the disturbed area outside the restored shoulder shall be properly graded and a ditch line

shall be constructed wherever necessary to maintain street drainage.

I. Temporary pavement restoration. Temporary pavement restoration is permitted for emergency excavations and when weather conditions are such as to prevent the completion of permanent restoration of the street surface at the time backfilling is completed. When temporary pavement restoration is permitted, the permittee shall install temporary surface and maintain the temporary surface in accordance with the following:

- (1) The base shall consist of compacted select granular material with a surface of 2-inch bituminous material. If the existing pavement structure includes a course of subbase material, it shall be required to a depth equal to the existing course depth with material meeting the requirements of section 350.2 of Publication 408.
- (2) Temporary paving shall consist of a layer of bituminous patching material from and approved manufacturer in PennDOT Bulletin 15, having a minimum thickness after compaction of two (2) inches, and the top surface shall be flush with the surface of the adjacent existing pavement.
- (3) All temporary paving shall be continuously maintained by a permittee until it can be replaced by the permanent paving.
- (2) Temporary pavement shall be completed before traffic is allowed to travel on the disturbed area. The temporary pavement may be kept in place for up to six months or a specified in the permit, if it is properly maintained.
- (3) When weather conditions permit, the temporary pavement shall be removed and permanent restoration performed under subsection G or H.

J. Paint identification.

- (1) Upon completion of pavement or paved shoulder restoration, the restoration date shall be painted immediately adjacent to the restored cut but not in an area where t i r e d normally contact the pavement.
- (2) The painted date shall indicate the month and year numerically. The numerals shall be 6 to 9 inches in height.
- (3) The paint shall be color coded as follows: blue (water), yellow (gas-petroleum), red (electric), orange (communications) and green (sewer).
- (4) The paint shall be maintained for 2 years after the acknowledged completion of the permitted work.
- (5) If the pavement or shoulder is being overlaid for more than 100 linear feet, the Township may, upon request, exempt the permittee from complying with this subsection.

K. Additional restoration. Disturbed portions of the street, including, but not limited to, slopes and appurtenances and structures such as guide rails, curbs, signs, markings, drain pipes, driveways and vegetation, shall be restored by the permittee to a condition at least equal to that which existed before the start of work authorized by the permit. Additional restoration may be required, upon written notification, to restore the structural integrity of the pavement or shoulder.

- (1) If any settlement in a restored area occurs within a period of one year from the date of

completion of the permanent restoration, and permittee fails to make such correction after notification, any expense incurred by the Township in correcting such settlement shall be paid by the permittee, or recovered from his bond, unless the permittee submits proof satisfactory to the Township that the settlement was not due to defective backfilling.

L. Repairs prior to resurfacing or reconstruction.

- (1) When the Township shall propose to reconstruct or resurface any street, the Township may give written notice of such improvement to all persons owning property abutting the road about to be improved and to all public utility companies and municipal authorities operating in the Township.
- (2) If the Township gives notice under paragraph (1), the following shall apply:
 - (a) All notified persons shall complete or cause to be completed all necessary repairs and replacement of utility mains, service under the street and designated curb and sidewalk areas within 90 calendar days from receipt of such notice
 - (b) Notified persons shall also complete any new installation under the street and designated curb and sidewalk areas required for use within a five-year period thereafter. All repairs, replacement and new installations shall be in first-class condition so that the same cannot reasonably be expected to require repairs or renewal within a period of at least five years thereafter.
 - (c) Upon failure of any notified person or persons to comply with the notice from the Township to place the same in first-class condition as hereinbefore provided, the Township shall cause existing utility mains, service connections and/or laterals to be placed in first-class condition as aforesaid or to be entirely removed if not used or necessary for public convenience, whereupon the Township shall be entitled to collect the cost of such renewals, repairs, removal or other work from the aforesaid responsible person or persons, either by invoicing the person or persons or, in case of water or sewer house connections, by filing municipal liens therefor against the abutting properties benefited by such connections.
 - (d) This section shall not forbid, however, the installation by tunneling, after successful petition to the Board of Supervisors, of new pipes, conduits or other services or structures or the repair, replacement or removal of those already existing in or under the portions of such streets improved as aforesaid, in accordance with applicable rules and regulations, upon obtaining a permit and payment to the Township of the same fees as prescribed by the provisions of this ordinance for making a surface excavation in the street.

M. Sealing. Restored openings in the pavement or paved shoulder shall be sealed under section 409.3(k)3. of Publication 408.

N. Abandoned facilities. Whenever any pipe, conduit, duct, tunnel, or other structure located under the surface of any street is abandoned, or the use thereof abandoned, the person owning, using, controlling, or having an interest therein shall, within 30 days after such abandonment, file with the Township a statement in writing giving in detail the location of the structure so abandoned. Whenever there are manholes or tunnels associated with any abandoned underground facilities, such manholes or tunnels shall be

capped at the time of abandonment and the Township notified thereof in writing.

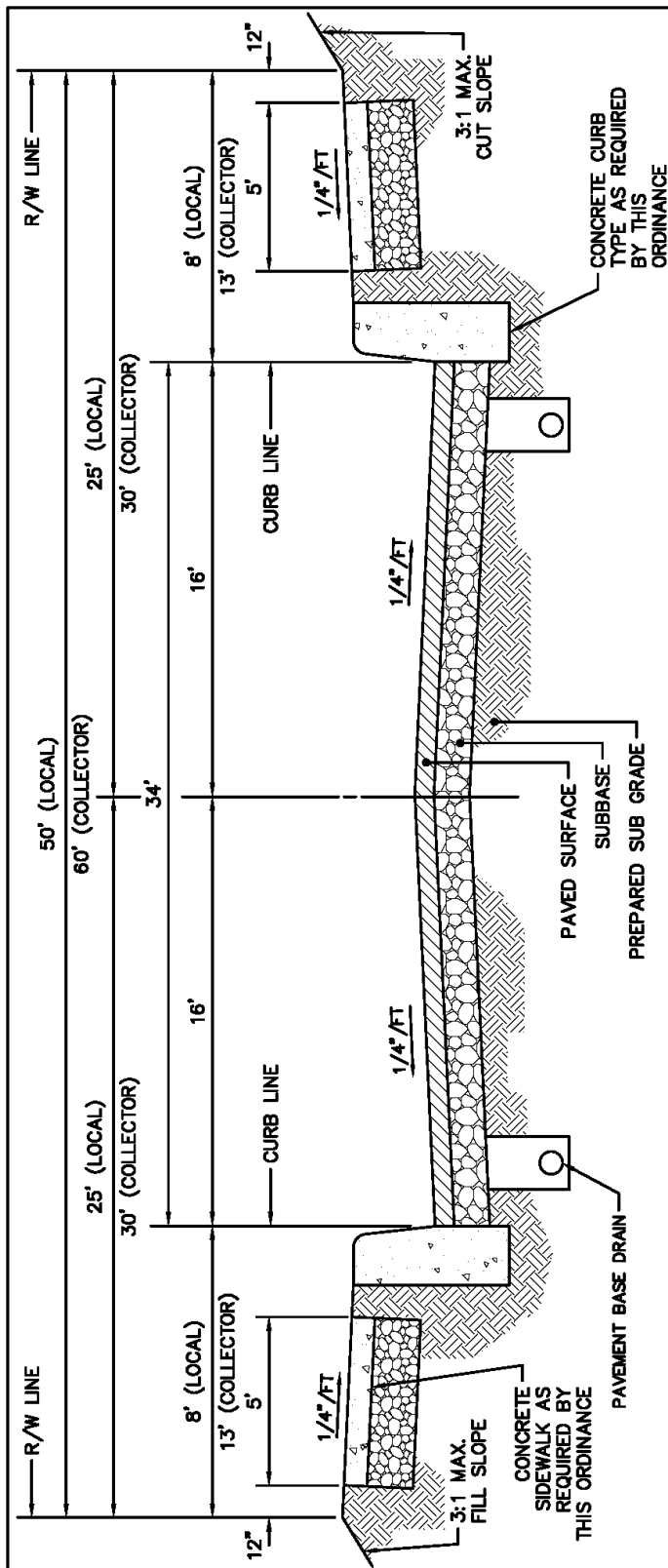
5. Above-ground facility requirements.

- A. General rule. The Township shall not issue a permit to install aboveground facilities at a location which the Township determines to have a high crash potential.
- B. Location of aboveground facilities. New poles and other aboveground facilities shall be installed outside the street clear zone as near the right-of-way line as practicable.
- C. Location of wires, cables or conductors. A wire, cable or conductor which overhangs a portion of the right-of-way shall be placed to provide a minimum vertical clearance of 18 feet over the pavement and shoulder, except where the National Electrical Safety Code requires vertical clearances in excess of 18 feet due to voltage or span lengths.
- D. Guys. A guy shall be placed and insulated as follows:
 - (1) A guy shall be placed to avoid interference with vehicular or pedestrian traffic.
 - (2) A guy shall be insulated and grounded in compliance with the National Electrical Safety Code.
- E. Identification of poles. A pole shall bear the name or initials of the facility owner and the pole numbers assigned by the facility owner.

4. STREET SYSTEM OBSERVATION.

- A. The following observations shall be conducted during the Installation of curb:
 - (1) Verify stone base depth.
 - (2) Visually verify alignment of curb string line and/or forms.
 - (3) Verify the location and length of depressed curb segments.
 - (4) Visually verify constructability.
- B. The following observations shall be conducted during the Installation of the street subgrade:
 - (1) The subgrade shall be proof rolled with a fully loaded tri-axel dump truck.
 - (2) The cross slope, crown and grade shall be verified.
 - (3) This observation shall occur prior to placing the street subbase.
 - (4) In the event unstable soil conditions are observed and the Township Engineer determines the unstable soil conditions may affect the long-term integrity of the proposed street, Ephrata Township reserves the right to require the developer to conduct a geotechnical evaluation of the soils in the proposed street right-of-way.
 - a. The scope of the geotechnical evaluation, including testing methodologies, shall be prepared and submitted to the Township for approval.
 - b. The results of the geotechnical evaluation shall be submitted in a report signed and sealed by the developer's geotechnical consultant and include recommendations to correct unstable soil conditions that may affect the long-term integrity of the proposed street.

- c. The geotechnical evaluation report shall be submitted to the Township for review and approval.
 - d. The developer shall be responsible for implementing the recommendations in the approved geotechnical evaluation report.
- C. The following observations shall be conducted during the Installation of the street subbase:
 - (1) The depth of subbase after compaction shall be verified.
 - (2) The subgrade shall be proof rolled with a fully loaded tri-axel dump truck.
 - (3) The cross slope, crown and grade shall be verified.
 - (4) This observation shall occur prior to placing binder or base paving course.
- D. The following observations shall be conducted during the Installation of the street binder/base paving course:
 - (1) The depth of the binder/base paving course after compaction shall be verified.
 - (2) The ambient (air) and bituminous material temperatures shall be monitored.
 - (3) Weight slips shall be provided for each delivery of binder/base paving.
 - (4) The cross slope, crown and grade shall be verified.
 - (5) This observation shall occur prior to placing the wearing paving course.
- E. The following observations shall be conducted during the Installation of the street wearing paving course:
 - (1) The final storm sewer observation shall be conducted prior to placing the wearing course.
 - (2) Written evidence of approval of acceptance of water and sewer facilities located within the cartway, from the appropriate Authority or agency, shall be provided prior to placing the wearing course.
 - (3) The depth of the wearing paving course after compaction shall be verified.
 - (4) The ambient (air) and bituminous material temperatures shall be monitored.
 - (5) Weight slips shall be provided for each delivery of binder/base paving.
 - (6) The cross slope, crown and grade shall be verified.



TYPICAL STREET CROSS SECTION

NOT TO SCALE

- NOTES:**
1. ALL AREAS ADJACENT TO CURBS, INLETS, MANHOLE COVERS ETC., ARE TO BE SEALED WITH AC-20 FOR A DISTANCE OF TWELVE (12) INCHES FROM THE CURB, ETC. THE TOWNSHIP OR THEIR AGENT SHALL INSPECT ALL WORK IN ACCORDANCE WITH THIS ORDINANCE.
 3. MATERIALS, EQUIPMENT AND METHODS SHALL CONFORM TO PennDOT PUBL. 408, CURRENT VERSION.
 4. VIBRATORY ROLLER REQUIRED FOR COMPACTION OF BITUMINOUS MATERIAL.
 5. STORM SEWER INLETS SHALL BE PennDOT TYPE-C IN ALL CURBED STREETS.

STREET CONSTRUCTION MATERIALS

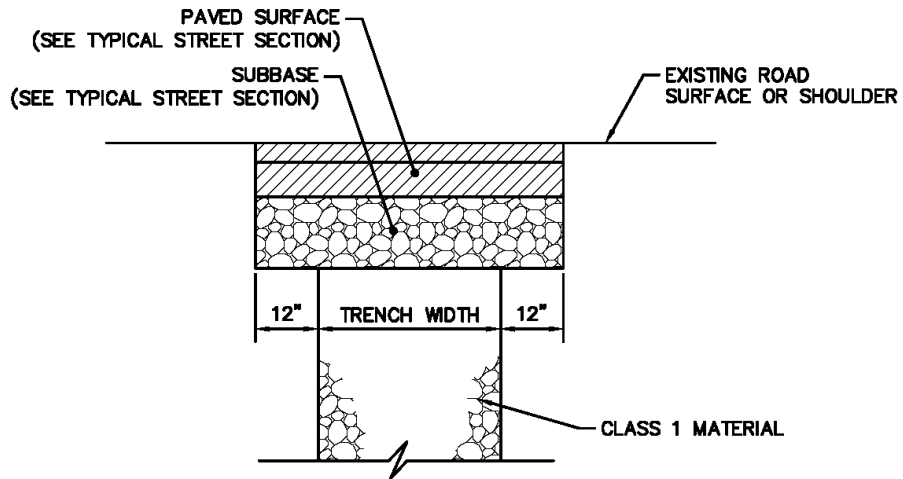
CLASSIFICATION	AGGREGATE COURSE	PAVED SECTION
LOCAL	10" CRUSHED AGGREGATE BASE COURSE CONSISTING OF 2" 2A MODIFIED AGGREGATE BASE OVER 8" 3A MODIFIED AGGREGATE BASE	SAND BINDER COURSE, PG 64-22, 0.0 TO 0.3 MILLION ESAL'S, 19.0 MM MIX, 3" MIN. DEPTH SAND WEARING COURSE, PG 64-22, 0.0 TO 0.3 MILLION ESAL'S, 9.5 MM MIX, SRL L, 1.5" MIN. DEPTH
COLLECTOR	10" CRUSHED AGGREGATE BASE COURSE CONSISTING OF 2" 2A MODIFIED AGGREGATE BASE OVER 8" 3A MODIFIED AGGREGATE BASE	SAND BASE COURSE, PG 64-22, 0.0 TO 0.3 MILLION ESAL'S, 25.0 MM MIX, 4" MIN. DEPTH SAND WEARING COURSE, PG 64-22, 0.0 TO 0.3 MILLION ESAL'S, 9.5 MM MIX, SRL L, 1.5" MIN. DEPTH

EPHRATA TOWNSHIP

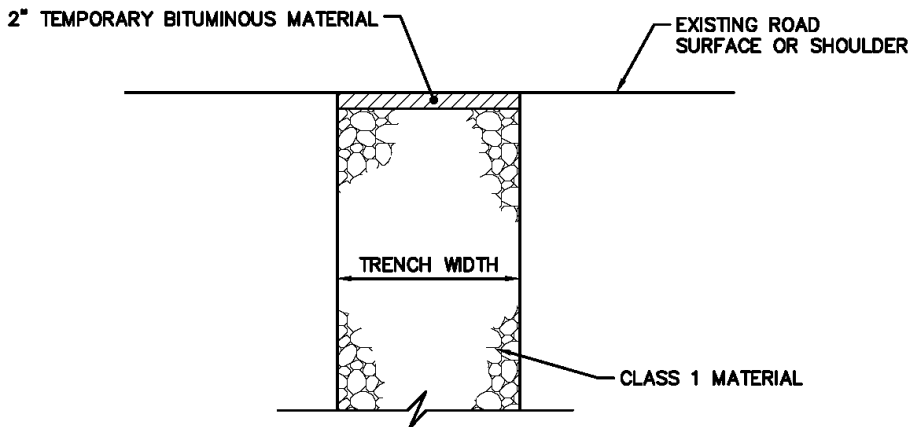
DATE: NOVEMBER 5, 2019

PROJ: # 011142000

SUPERPAVE ASPHALT MIXTURE DESIGN (SAMD)



PERMANENT



TEMPORARY

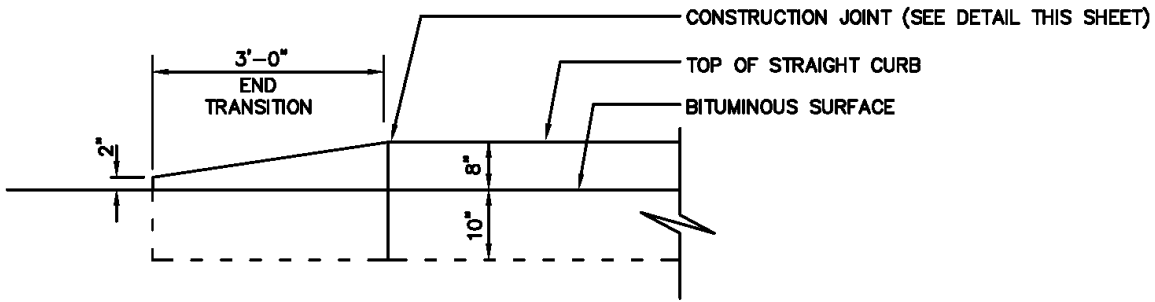

TOWNSHIP ROADWAY AND SHOULDER RESTORATION DETAIL
 NOT TO SCALE

NOTES:

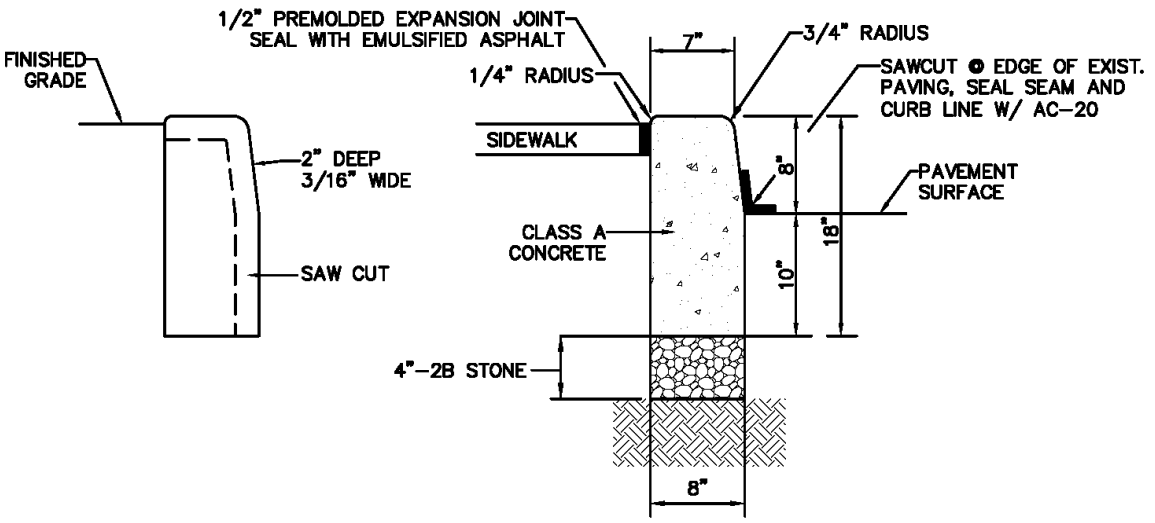
1. ALL VERTICAL CUTS SHALL BE SAWCUT ONLY.
2. MATERIAL AND PLACEMENT FOR COURSE AND FINE AGGREGATES SHALL BE IN ACCORDANCE THE PennDOT PUBL. 408, CURRENT VERSION.

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TYPICAL CURB END
NOT TO SCALE



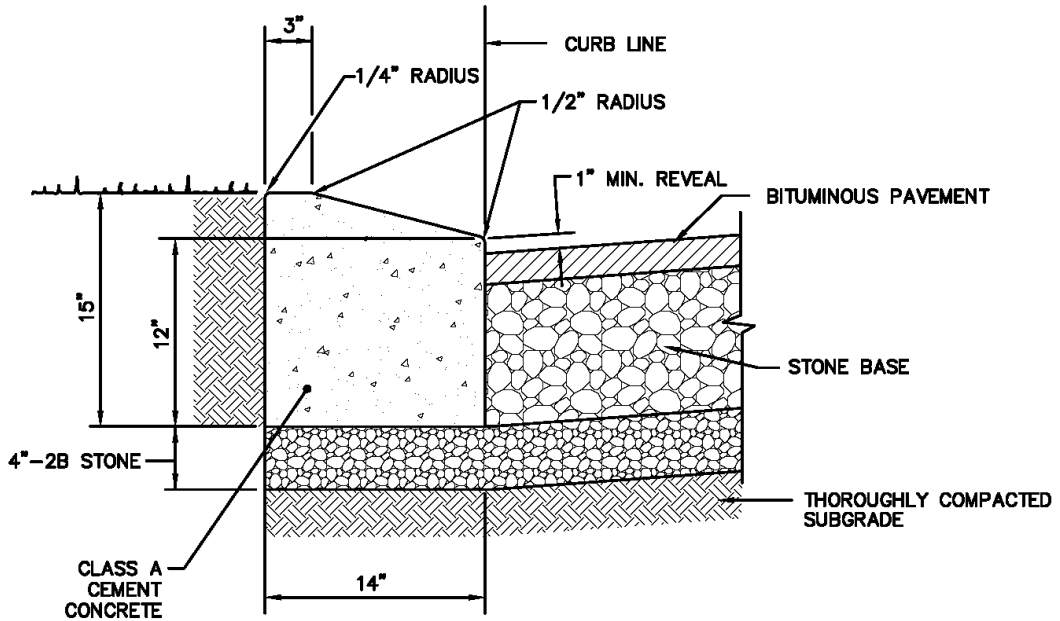
CONTRACTION JOINT **TYPICAL CROSS SECTION**

NOTES:

1. A SMOOTH CURB TRANSITION SHALL BE PROVIDED AT THE INTERSECTIONS OF VERTICAL CURBS AND ROADWAY INLETS. TRANSITION DETAILS SHALL BE PROVIDED BY THE TOWNSHIP.
2. PROVIDE CONTRACTION JOINTS, 10' ON-CENTER, MIN/MAX.
3. PROVIDE 3/4" EXPANSION JOINT FILLER MATERIAL 100' ON CENTER, MIN/MAX, AT STRUCTURES, AND AT ALL COLD JOINTS. CUT MATERIAL TO AREA ADJACENT TO CURB OR TO CONFORM TO CROSS SECTIONAL AREA OF CURB OR STRUCTURE.
4. DRILL HOLES AND INSERT DOWEL BARS WITH NON SHRINK MORTAR, AS REQUIRED. TWO (2) NO. 5 DOWELS SHALL BE USED AND SHALL BE PROVIDED AT STRUCTURES AND AT ALL COLD JOINTS.

TYPICAL VERTICAL CURB DETAIL
NOT TO SCALE

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NOTES:

1. A SMOOTH CURB TRANSITION SHALL BE PROVIDED AT THE INTERSECTIONS OF VERTICAL CURBS AND ROADWAY INLETS. TRANSITION DETAILS SHALL BE PROVIDED BY THE TOWNSHIP.
2. PROVIDE CONTRACTION JOINTS, 10' ON-CENTER, MIN/MAX.
3. PROVIDE 3/4" EXPANSION JOINT FILLER MATERIAL 100' ON CENTER, MIN/MAX, AT STRUCTURES, AND AT ALL COLD JOINTS. CUT MATERIAL TO AREA ADJACENT TO CURB OR TO CONFORM TO CROSS SECTIONAL AREA OF CURB OR STRUCTURE.
4. DRILL HOLES AND INSERT DOWEL BARS WITH NON SHRINK MORTAR, AS REQUIRED. TWO (2) NO. 5 DOWELS SHALL BE USED AND SHALL BE PROVIDED AT STRUCTURES AND AT ALL COLD JOINTS.



MODIFIED SLANT CURB DETAIL

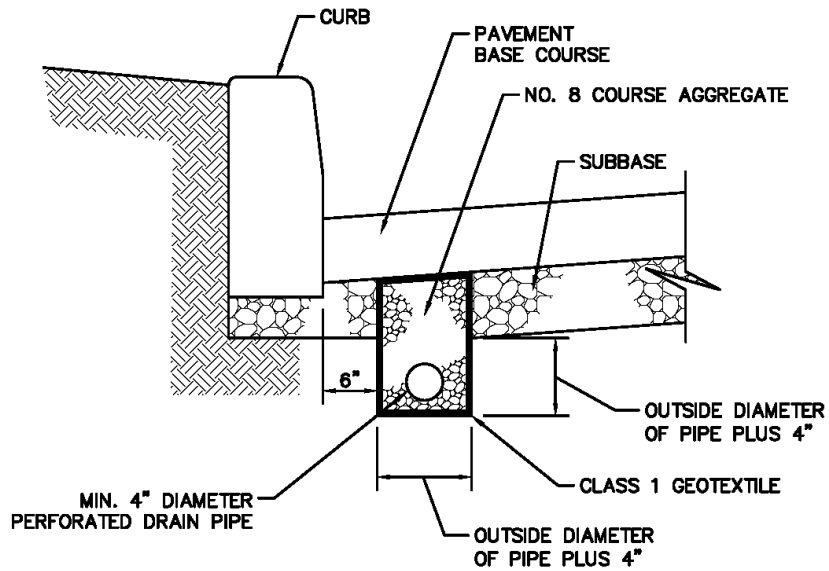
NOT TO SCALE

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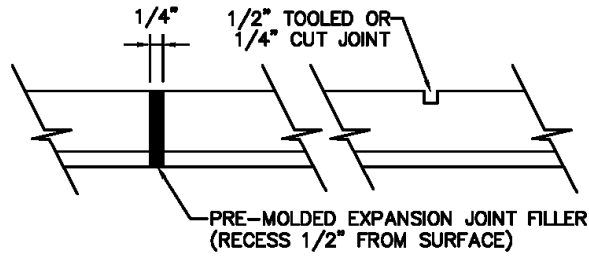
NOTES:

1. PAVEMENT BASE DRAIN TO BE INSTALLED ON BOTH SIDES OF THE CARTWAY.
2. THE DEVELOPER TO PROVIDE ADDITIONAL UNDERDRAINS AT LOCATIONS SPECIFIED BY THE TOWNSHIP.

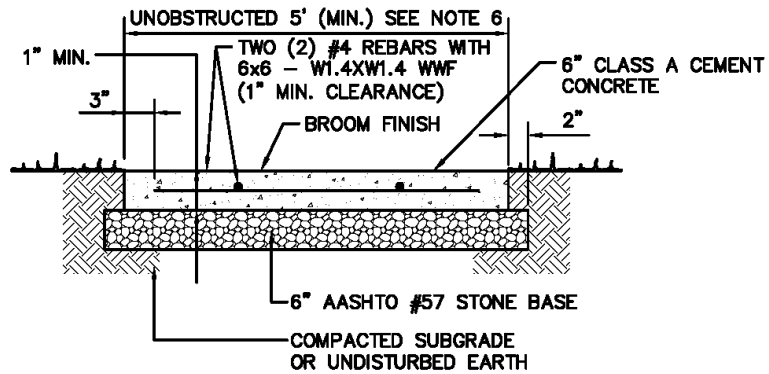


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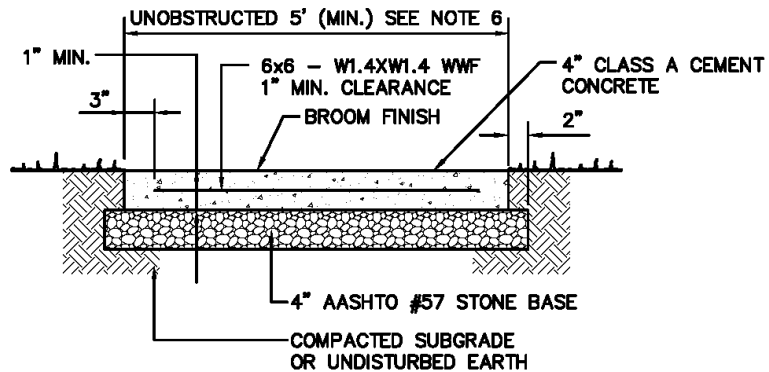
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TYPICAL EXPANSION & CONTRACTION JOINTS



CONCRETE SIDEWALK AT DRIVEWAY CROSSINGS



TYPICAL CONCRETE SIDEWALK



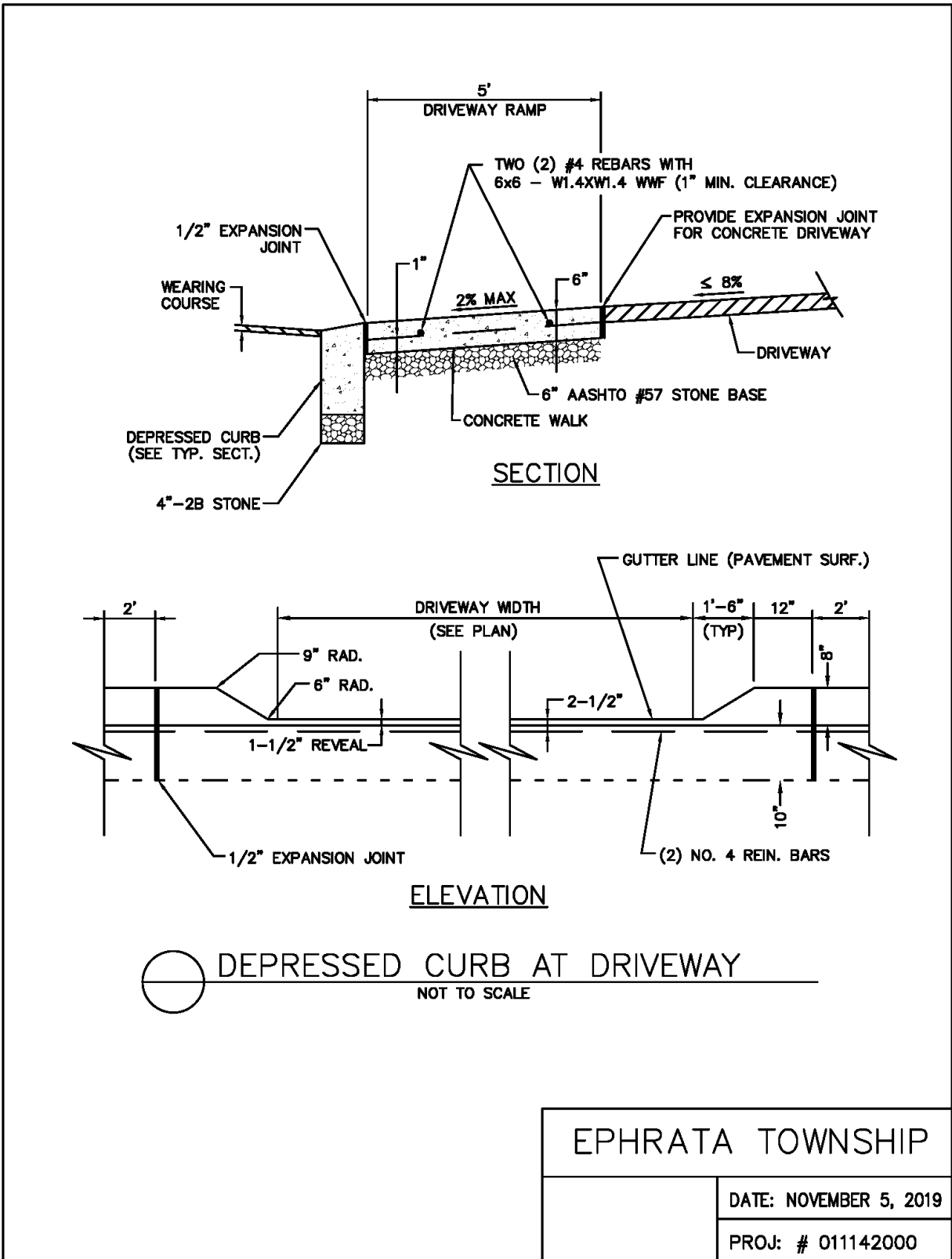
CONCRETE SIDEWALK DETAIL

NOT TO SCALE

NOTES:

1. EXPANSION JOINTS LOCATED AT 30' O.C.
2. TOOLED JOINTS LOCATED AT 5' O.C.
3. SIDEWALK IS TO BE LIGHT BROOM FINISHED IN DIRECTION OF SIDEWALK WIDTH.
4. ALL SIDEWALKS TO HAVE A 2% CROSS SLOPE.
5. CHAIRS NEED TO BE SPACED AT A MAXIMUM 3' APART IN ALL DIRECTIONS.
6. UNOBSTRUCTED WIDTH SHALL BE IN ACCORDANCE WITH THE AMERICANS WITH DISABILITIES ACT, AS AMENDED.

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