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Porter County, Indiana

Supplemental Design and Construction Standards / Specifications

Ordinance No. 13-15
Adopted by the Porter County Board of Commissioners
this 19th **day of** November, **2013**

John A. Evans

Nancy A. Adams

Laura Blaney

ORDINANCE NO. 13- 15
PORTER COUNTY BOARD OF COMMISSIONERS

AN ORDINANCE OF PORTER COUNTY, INDIANA, FOR THE SUPPLEMENTAL DESIGN AND CONSTRUCTION STANDARDS/SPECIFICATIONS. SAID SPECIFICATION ARE TO REGULATE THE CONSTRUCTION WITH LAND DEVELOPMENT ACTIVITIES WITHIN THE UNINCORPORATED AREA OF PORTER COUNTY.

WHEREAS, the Board of County Commissioners believes it to be in the best interests of the residents of Porter County, Indiana, to regulate the construction activities for land development activities with standards and specifications.

WHEREAS, in order to achieve such goals, the Board of County Commissioners has deemed it to be in furtherance of the health, safety and general welfare of the citizens of Porter County to regulate the construction activities with the Supplemental Design and Construction Standards/Specifications. Said standards and specifications set out material, and construction requirements necessary for land improvements within Porter County.

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WHEREAS, the Porter County Board of Commissioners adopted the Porter County Municipal Code on Tuesday, December 2, 1997, pursuant to Ordinance No. 97-38; and,

WHEREAS, the Porter County Board of Commissioners has deemed it necessary to add an Ordinance to the Porter County Unified Development Ordinance that is for Supplemental Design and Construction Standards/Specifications. Said ordinance shall be enforceable by the Porter County Highway Department, Porter County Highway Engineering, Porter County Storm Water Quality/MS4 and the Porter County Plan Commission;

2008-004335

NOW, THEREFORE, BE IT AND IT IS HEREBY ORDAINED THAT:

Chapter 8 (Supplemental Design and Construction Standards/Specifications) shall be added to the Porter County Unified Development ordinance with the following:

Section 8.01: Purpose and Intent

The intent of this Chapter is for construction standards and specifications which are regulations involving quality engineering and construction practices. The construction standards/specifications assure public infrastructure and facilities to be deeded to the County and those that are privately maintained will be constructed in a manner that meets the County's requirements. The construction standards/specifications apply to all lots and parcels in the unincorporated areas of the County.

Said amendment to the Unified Development Ordinance shall be subject to review on an annual basis by the plan commission and their sub-committee hereby referred to as the UDO Committee.

This ordinance passed and adopted this 19th day of November, 2013.

PORTER COUNTY BOARD OF COMMISSIONERS

John A. Evans, President

Nancy A. Adams

Laura Blaney

Attest: _____
Robert J. Wichlinski, Auditor

I affirm, under the penalties for perjury, that I have taken reasonable care to redact each social security number in this document, unless required by law.

_____
Robert W. Thompson, Jr., AICP
Executive Director/County Planner

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Section 8.02: Definitions

The following definitions shall apply to Chapter 8; Supplemental Design and Construction Standards/Specifications only:

Whenever the following abbreviations and terms appear, the intent and meaning shall be interpreted as provided under this Section.

AASHTO: Shall mean the "American Association of State Highway and Transportation Officials."

ADA: Shall mean the Americans With Disabilities Act

ANSI: Shall mean the "American National Standards Institute."

ASTM: Shall mean the "American Society for Testing and Materials."

AWWA: Shall mean the "American Water Works Association."

Alley: A public right-of-way, other than a street, road, crosswalk, or easement that provides secondary access for abutting property.

Approach: Portion of roadway adjoining the traveled way including tapers for recovery lane, deceleration, speed change, turning movements or other purposes supplementary to the through traffic movement. The auxiliary lane may be existing or proposed to be constructed by the applicant.

Board: Porter County Board of Commissioners.

Boulevard Street: A boulevard street is defined as two (2) or more distinct lanes of traffic, flowing in opposite directions, which are separated by a physical barrier, grassed median, or landscaped island.

Commercial Driveway / Commercial Entrance: A driveway or driveways by which a street is connected to public or private property which is R-3 Zoned, Commercial Zone, or Industrial Zone.

Commercial Use: Areas zoned for certain residential uses, commercial use, business use, and/or an industrial use as those terms are set forth and defined in the Master Plan, including and not limited to the following uses: R2, R3, RMH, C1, C2, C3, C4, 11, 12, and 13.

Commission: The Porter County, Indiana Plan Commission.

Construction Access Road: A temporary, non dedicated, unplatted right-of-way, other than a street, alley or easement designed to provide sole ingress and egress for all development and construction equipment as well as all laborers and materials in connection with the improvements of a platted subdivision of land including but no limited to the construction of dwellings, buildings, and other improvements which right-of-way is constructed and maintained by the developer and owner at either's sole expense or their cumulative expense and continuously in the absolute ownership and/or exclusive control of the developer and owner until such time as ninety percent (90%) of the record lots have dwelling completed for occupancy or other buildings located thereon, and/or unless by prior release by the Porter County Plan Commission.

County: Shall mean Porter County and/or designee as assigned by the issuing/permitting authority.

Cul-De-Sac Street: A street having one end open to traffic and being permanently terminated by a vehicular turnaround at the other end.

Dead End Street: A street having one (1) of its termini closed.

Department of Engineering: Shall mean the Porter County Highway Engineer or any representative of the Porter County Highway Engineering Department.

Developer: The person who is responsible for organizing the development of land that is proposed to be subdivided or residentially/commercially/industrially utilized.

Driveway: Every way or place not in the right-of-way of any public highway and which is used for vehicular traffic.

Easements: A grant by a property owner ("grantor") to a specific person, the general public, corporations, utilities, or others ("grantee" or "easement holder"), for the purpose of providing services or access to the property.

Engineer: Shall mean the Porter County Highway Engineer or any representative of the Porter County Highway Engineering Department.

Entrance: The connecting line of the driveway and the approach.

Excavate: Shall mean to dig into or in any way remove or physically disturb or penetrate any part of a Right-of-Way.

Facility or Facilities: Shall mean any infrastructure component or tangible asset in the Right-of-Way required to provide utility service , stormwater management or means of transportation.

Highway Supervisor: The person employed by the Board to administer the affairs of the Highway Maintenance department.

Highway Engineer: The person employed by the board to undertake all of the engineering duties required in operating the County Highway and related drainage systems pursuant to statute.

IAC: Shall mean the "Indiana Administrative Code".

INDOT: Shall mean the Indiana Department of Transportation.

ISWQM: Indiana Storm Water Quality Manual

Lot: A piece, parcel or tract of land designated by its owner or developer to be used, developed or built upon as a unit under single or multiple ownership or control.

Lot Corner: A lot abutting two (2) or more streets at their intersection where the interior angle of the intersection does not exceed one hundred thirty-five degrees (135 degrees).

MUTCD / IMUTCD: Shall mean the Indiana Manual on Uniform Traffic Control Devices for Streets and Highways.

NEMA: Shall mean the "National Electrical Manufacturers' Association."

OSHA: Shall mean the "Occupational Safety and Health Administration."

Parcel: See "Lot".

PCSWDM: Shall mean Porter County Stormwater Design Manual

PCUDO: Shall mean Porter County Unified Development Ordinance

Permittee: Shall mean a person who has obtained a permit as required by this ordinance.

Person: Shall mean any natural or corporate Person, business association or other business entity including, but not limited to, a partnership, a sole proprietorship, a political subdivision, a public or private agency of any kind, a utility, a successor or assign of any of the foregoing, or any other legal entity.

Pole Placement: Shall mean any excavation associated solely with a single placement or replacement of a utility pole.

Professional Engineer: Shall mean an engineer licensed and certified in the State of Indiana by the Indiana Professional Licensing Agency.

Professional Land Surveyor: Shall mean a surveyor licensed and certified in the State of Indiana by the Indiana Professional Licensing Agency.

Residential Entrance: A driveway by which a street is connected to a R-1 Zoned or R-2 Zoned facility and is ordinarily used only by the owner or occupant of the premises such as a garage, barn, residence or other improved property.

Right-of-Way: A strip of land occupied or intended to be occupied by transportation facilities, public utilities, or other special public uses. Rights-of-way intended for any use involving maintenance by a public agency shall be dedicated to the public use by the maker of the plat on which such right-of-way is established.

Site: The real property on which land-disturbing activities are taking place. The site may refer to a parcel of land proposed for subdivision development, the site of a commercial or industrial construction activity, or a lot for a single-family or two-family dwelling.

Standards: Shall mean the Porter County Engineering Standard Specifications and Standard Drawings.

Street: Any vehicular right-of-way that is: 1) Any existing State, County or municipal roadway; 2) Shown upon a plat approved pursuant to law; 3) Approved by other official action; or 4) Shown on a plat duly filed and recorded in the office of the County recording officer prior to the appointment of a Plan Commission and the grant to such Plan Commission to review plats; includes the land between the street lines, whether improved or unimproved.

Collector Street:	A street carrying traffic from local streets to the major system of arterial streets and including the principal entrance to a residential development and principal streets for circulation within such a development. As designated on the Functional Street Classification Map within the Porter County Land Use and Thoroughfare Plan.
Fully Improved:	A street that has been engineered and constructed to meet or exceed the County's minimum standards of the street's functional classification in the Thoroughfare Plan.
Highway:	A multi-lane highway, whether divided or undivided that serves a high volume of traffic for both long and short trips. As designated

on the on the Functional Street Classification Map within the *Porter County Land Use and Thoroughfare Plan.*

Local: A street designed primarily to provide access to abutting properties and discourage through traffic, as depicted by the Thoroughfare Plan within the Comprehensive Plan.

Arterial: A street with access control, restricted parking, and that collects and distributes traffic to and from secondary arterials, as depicted by the Thoroughfare Plan within the Comprehensive Plan.

Structure: Anything constructed or erected with a fix location on the ground, or attached to something having a fixed location on the ground. Among other things, structures include bridges, culverts, sewers, service pipes, underdrains, foundation drains, buildings, mobile homes, fences, billboards and pools.

Subdivision: The division of a parent tract or other piece of land into at least two (2) smaller lots or the combination of two (2) or more smaller lots into one (1) lot so that, either now or in the future, the subdivider can transfer ownership, construct buildings or establish a use other than vacant, or create new building sites for leasehold, and as further defined in the Unified Development Ordinance.

Subgrade: The top of the roadbed upon which the pavement structure (including aggregate sub-base) and shoulders are constructed.

Substructure: Shall mean all of that part of the structure below the bearings of simple and continuous spans, skewbacks or arches, and tops of footings of rigid frames together with backwalls, wingwalls, and wing protection railings.
Superintendent: Shall mean the Porter County Highway Superintendent or a designated representative.

SWPPP: Shall mean Stormwater Pollution Prevention Plan.

T-Turn Around: A dead end street that terminates at a T. It shall be used only when a street is expected to be extended in the future. It shall be included inside the phase, unit or section improved. The curbing shall end 34 feet from the lot line of the last lot to be developed.

Utility: Shall mean a public utility as defined in IC 8-1-2-1 and as it may be hereinafter amended and shall specifically include the non-regulated activities of such a utility.

Utility Location: Shall refer to the "Indiana Underground Plant Protection Service" commonly known as "Holey Moley."

Section 8.03: General Requirements

A. Prevailing Specifications

1. Unless otherwise provided in these specifications, the INDOT Standard Specifications, the INDOT Standard Drawings, the AASHTO's Policy on Geometric Design of Highways and Streets, the IMUTCD, IAC, the PCSWDM, and the PCUDO current at the time of construction plan approval, shall apply to all work performed and materials used in all projects and improvements.

B. General Information

1. Information on contractor qualifications, permit bonds, liability insurance, permits and agreements may be found in other Porter County Documents.

C. Safety Requirements

1. For all construction work, utilities, contractors, developers, land owners and residents shall:

   a. Comply with all federal, state, and local codes and regulations
   b. Have notices posted in prominent locations showing emergency telephone numbers, etc., as required by law
   c. Provide temporary fire extinguishers as required by law
   d. Provide first-aid kit as required by law
   e. Be responsible for all protection of persons and property in the construction area
   f. Follow all OSHA regulations
   g. Submit a Health and Safety Plan to the County, if required by the County

D. Pre-Construction Meeting

1. The County reserves the right to require a pre-construction meeting for each development and / or development phase prior to any land disturbing activity. At the pre-construction meeting, the following items may be required to be provided by the developer and / or its designated agent:

   a. Schedule of construction activities
   b. Proof of all permit approvals
   c. Contact information for all contractors working on the project including 24-hour emergency contact information

E. Start of Construction

1. Work shall not be started until the engineering plans have been approved by all agencies having jurisdiction over the phase of construction; a photo journal and DVD have been accepted by the County and, if required, a pre-construction meeting has taken place.

F. Construction Inspection

1. Inspections will be required for all public infrastructure located within subdivisions and streets which are beyond the corporate limits of any City or Town in Porter County. Minimum required inspections include the following:

   a. Inspection of pipe bedding and initial backfill for all piped utilities (storm sewer, sanitary sewer, water mains, etc...)
   b. Inspection of sub-grade prior to the placing of aggregate base course
   c. Inspection of the aggregate base course prior to the placing of curbing and bituminous surface
   d. Inspection of the placement of all curbing
   e. Inspection for correctness of forms and grade before any concrete is poured or asphalt is placed on all driveways
   f. Inspection of the placing of bituminous base, binder and surface courses
   g. Video inspection of all storm sewers, sanitary sewers and underdrains
   h. Mandrel testing of all storm sewers and sanitary sewers
   i. Completion of restoration items

2. Additional inspections may be required by Porter County at their discretion.

3. Porter County representatives or designated agents of Porter County shall be present for all inspections and shall be notified by the subdivision owner, developer or his designated agent prior to the required inspections not less than twenty-four (24) hours and no more than ten (10) days in advance of the required inspections.

4. The utility, developer and / or resident shall pay for all inspection fees at the current rates set forth by the County.

5. Porter County shall not be obligated to accept any work which has not been inspected or has been found to not be in compliance with the construction plans and / or Porter County requirements. Noncompliance may also result in extended maintenance bonds on the affected construction or other requirements as determined by Porter County.

6. Storm sewer, sanitary sewer and underdrain video inspections shall be performed by an independent sewer video inspection contractor hired by the developer and shall be witnessed by a representative of Porter County or its designated agent. Inspections should occur twice: thirty (30) calendar days prior to the release of the maintenance bond and thirty (30) calendar days prior to the release of the performance bond.

7. Mandrel testing of all storm sewers and sanitary sewers shall be performed by a contractor hired by the developer and shall be witnessed by a representative of Porter County or its designated agent.

G. Materials Testing

1. Material testing shall be performed by an independent testing laboratory at the utility, developer or resident's expense.

2. Porter County Departments shall retain the right to perform tests and / or additional tests.

3. All materials testing shall be performed in accordance with the current INDOT Standard Specifications.

4. Detailed testing requirements are provided in specific technical sections of this manual.

H. As-Built Drawings

1. "As Built Drawings" will be required on all improvements that are to be dedicated to, and accepted by, the County for inclusion in the public infrastructure; or will in any way impact any part of the existing public infrastructure.

2. "As Built" or record drawings of any sewer construction, sanitary or storm, in Porter County shall be provided to the Porter County Engineering Department upon completion of and prior to the County's acceptance of the project. As-built drawings shall be submitted on plan and profile sheets in digital format (AutoCAD and PDF formats), as well as typical hard copies (24" x 36" inch formats). Three (3) hard copies shall be submitted to the Porter County Engineering Department.

3. Requirements for "As-Built" or record drawings are as follows:

   a. Each sheet must be signed and sealed by a licensed Professional Engineer and / or licensed Professional Land Surveyor.
   b. All elevations given on as-builts shall be per NAVD 88 (North American Vertical Datum).
   c. Invert and casting elevations of all structures (i.e. manholes, catch basins, inlets, etc.) shall be provided. Casting elevations on catch basins and inlets shall be shown at the flow line.
   d. The percent of line slope between structures and/or between structures and stubs shall be shown.
   e. The horizontal location of sanitary laterals, storm laterals and/or taps shall be indicated from the downstream manhole.
   f. The length of the sanitary laterals and / or storm sewer laterals and/or taps from mainline sewer including the elevation of the laterals at the property/right-of-way line and offsets shall be shown.
   g. The location of all structures (i.e. manholes, catch basins, inlets, etc.) shall be shown by stationing.
   h. The locations and sizes of other existing utilities, including but not limited to communications and signals, fiberoptic, telephone, electric, gas and water shall be shown.
   i. The locations of all right-of way, easement and property lines shall be provided. When service taps have been installed, all property information shall be shown (i.e. lot #, address, property owner name).
   j. If horizontal location of sewer is per plan, place a check mark (✓) followed by the words "per plan" next to structure on plan section of sheet. Example: MH #1✓ per plan STA 1+00/10'RT, Line 'M'
   k. If vertical location of sewer is per plan, place a check mark (✓) followed by the words "per plan" next to invert elevation of structure indicated on profile section of sheet.
   l. If line slope of sewer is per plan, place a check mark (✓) followed by the words "per plan" next to line slope information of profile section of sheet. Example: 360 LFT – 30" sanitary sewer @ 1.00% ✓ per plan
   m. Any changes on horizontal and vertical location of sewers and any changes of percent of line slope must be shown on plan and profile sections.
   n. All information on "As-Built" or record drawings must be neat, concise, and legible.
   o. Indicate the composition of pipe, i.e. Clay, RCP, DIP, etc., on profile section of sheet for each run. A "run" being a section of pipe between structures or between structures and stubs.
   p. Any other information or data requested by County personnel must be included if requested.

I. DVD Record and Photo Journal

1. Any work completed within the County right-of-way may require a preconstruction and post-construction video record and/or photo journal. Contact the County to determine if a video record or photo journal is required.

2. All work to complete the video record and the photo journal shall be done in a professional manner and preferably by a professional photographer/videographer. Any submitted video or photography that lacks professional quality will be required to be re-shot using a business that specializes in documentary video/photography.

3. One original and one copy of both the DVD and the Photo Journal shall be forwarded to the County Engineering Department for review and written acceptance shall be required prior to beginning construction. The DVD and Photo Journal shall become the property of the County.

4. All DVD's shall be labeled with the name "Porter County" and the name of the Contractor. The photo journal shall be in color and professionally labeled showing the name "Porter County" and the name of the Contractor.

5. The Contractor shall keep one copy of both the DVD and the Photo Journal for their records.

6. The Video Record shall be submitted in DVD format, professionally completed video recording of the entire project area to clearly show all features located within and adjacent to the right-of-way. This includes driveways, street pavements, and encroachments in the right-of-way, shrubs, trees, fences, condition of driveways at and beyond the existing right-of-way line etc., prior to the start of construction. The DVD shall include close-ups of the foundations of each structure located adjacent to the right-of-way. The DVD shall cover three sides of the foundation, the side adjacent to the right-of-way and the two sides perpendicular to the right-of-way. Audio identification shall be included to describe each property, i.e. "You are seeing County Road 200 East, the east side of the property" also every effort shall be taken to give some visual reference of each shot (panning to an address or street sign). The camera work must be reasonably stable (the use of a tripod may be necessary). The recording shall include a time and date code displayed at one corner of the screen.

7. The Photo Journal shall be made of as many pictures as necessary to clearly show all visible cracks, foundation faults, and sidewalk and driveway cracks of each property. A minimum of one (1) picture shall be provided for each of the

three sides of the structure or foundation to show the existing condition. All fences, trees and landscaping shall be included in at least one (1) of the photos. Photographs shall be made with a digital camera with at least 6 megapixels. Photographs shall be in color, 8-inch x 10-inch with a tape or scale to provide registration of photograph for any existing damage. Photographs shall be taken in sufficient lighting, weather (e.g. no snow cover) to provide high quality details. Photographs shall include the date taken in one corner and an address or location identifier label. The photos for a specific address and location shall be in its own folder.

Section 8.04: Sediment and Erosion Control

A. Scope of Work

1. This section covers work associated with the prevention of the migration of soil and sediment from a construction site via stormwater, wind, vehicular tracking or other means during all phases of construction.

B. Related Documents and Standard Drawings

1. The following documents are related to the specifications outlined in the latest edition of the: PCUDO; INDOT Standard Drawings and Specifications; PCSWDM; and the ISWQM.

2. The following standard construction drawings shall apply to this section and may be found in the Standard Drawings Section of this Manual:

II-1: Erosion Control – Construction Sequence
II-2: Erosion Control – Light Land Disturbing
II-3: Erosion Control – Moderate Land Disturbing
II-4: Temporary Stone Construction Entrance
II-5: Temporary Diversion Channel
II-6: Rock Check Dam
II-7: Excavated Drop Inlet Protection
II-8: Gravel Ring Drop Inlet Protection
II-9: Geotextile Drop Inlet Protection
II-10: Stone Bag Curb Inlet Protection
II-11: Catch Basin Insert Inlet Protection
II-12: Temporary Silt Fence
II-13: Contour Wattle
II-14: Seeding Tables – Temporary Seeding
II-15: Seeding Tables – Permanent Seeding

C. General Requirements

1. Approved stormwater pollution control practices (SWPCP)s for construction are provided in the Standard Drawings Section of this Manual. Materials specifications, dimensions, installation and maintenance requirements shall be provided on the construction drawings. Other SWPCPs for construction sites may be approved on a case by case basis by Porter County.

2. The Contractor shall be responsible to comply with the design drawings, all aspects of the current Porter County erosion control ordinance and the Indiana and Federal regulations pertaining to sediment and erosion control for construction sites.

D. Supplemental Design Requirements

1. Porter County Stormwater Design Manual

a. Descriptions, limitations, design requirements, drainage report requirements and stormwater pollution prevention plan (SWPPP) requirements for approved stormwater pollution control practices (SWPCP) for construction sites are provided in Section VIII of the Porter County Stormwater Design Manual (PCSWDM).

b. The engineer and / or land surveyor shall include the construction details for the applicable stormwater pollution control practices (SWPCP) for construction sites in the plans and specifications for the proposed development or site improvement plans. If required by site conditions, it is the responsibility of the engineer and / or land surveyor to modify dimensions shown on these details appropriately. The basis for the modification of the details shall be justified by engineering calculations provided in the drainage report. See the PCSWDM for further information.

E. Construction Materials

1. Erosion Control Products

a. Materials for approved stormwater pollution control practices (SWPCP)s are provided on the Standard Drawings.

F. Construction Requirements and Performance Criteria

1. Erosion Control Products

a. Construction requirements for approved stormwater pollution control practices (SWPCP)s are provided on the Standard Drawings.

G. Construction Testing Requirements

1. There are no construction testing requirements.

H. Post-Construction Requirements

1. Sediment and Erosion Control Practices

a. Maintenance of sediment and erosion control practices shall be maintained in accordance with manufacturer recommendations and Standard Drawings continually throughout the duration of construction and through establishment of adequate stabilizing vegetation.

b. The Contractor shall inspect and maintain all storm water quality practices on site. Each practice shall be inspected within 24 hours of each rain event and at least once every seven calendar days. A rain event shall be defined as a precipitation event that results in a total measured precipitation accumulation equal to, or greater than, one-half (0.5) inch of rainfall. The Contractor shall keep inspection and maintenance records for each storm water quality practice.

Section 8.05: Clearing, Excavations and Site Grading

A. Scope of Work

1. This section covers:

   a. Clearing, grubbing, removing, and disposal of vegetation and debris in construction sites and the public right-of-way
   b. Embankment construction and excavation
   c. Site grading

B. Related Documents and Standard Drawings

1. The following documents are related to the specifications outlined in the latest edition of: PCUDO; INDOT Standard Drawings and Specifications, PCSWDM; and the ISWQM.

2. The following standard construction drawings shall apply to this section and may be found in the Standard Drawings Section of this Manual:

   III-1 General Lot Grading, Ridge Along Rear Lot Lines
   III-2 General Lot Grading, Gentle Cross Slope
   III-3 General Lot Grading, Steep Cross Slope
   III-4 General Lot Grading, Valley Along Rear Lot Lines
   III-5 Side Yard Lot Grading (Scenario 1)
   III-6 Side Yard Lot Grading (Scenario 2)
   III-7 Side Yard Lot Grading (Scenario 3)
   III-8 Side Yard Lot Grading (Scenario 4)
   III-9 Side Yard Lot Grading (Scenario 5)
   III-10 Lot Grading – Finished Floor Elevation
   III-11 Protection of Drainage Easements

C. General Requirements

1. Protection of Existing Utilities

   a. Protect existing utilities during construction.
   b. Notify Porter County and their designated agents not less than two days in advance of any proposed utility interruptions.
   c. Contact Indiana Underground Plant Protection Service (IUPPS) for utility location services for the construction project area a minimum of 3 working days prior to any excavation. This does not relieve the Contractor of notifying utility owners who may not be part of the IUPPS alert system.

d. Demolish and remove completely any underground utilities indicated to be removed. Coordinate with the utility companies to shut off services if lines are active.

2. Safety

a. The Contractor is responsible for the placement of all safety lighting, barricades, and warning signs. Initial access hole shall be cut only as large as required to perform work. Any excavation undertaken or authorized by this ordinance shall comply with all with requirements of these specifications and the Indiana Code.

3. Field Tiles or Other Drainage Structures

a. If a field tile or other drainage structure is discovered during the course of construction within or outside the public right-of-way, the Contractor shall identify its source and direction and immediately notify Porter County Engineering Department and Porter County Surveyor's Office. The tile shall be replaced, reconnected and / or rerouted per the direction of Porter County at the expense of the Developer / Contractor.

D. Supplemental Design Requirements

1. All new subdivision designs and site designs are required to provide a proposed master grading plan showing the following grades for each lot:

a. Top of foundation grade elevations for each building pad
b. Minimum opening elevations (window wells, walk out basements)
c. Proposed lowest adjacent grades at the four corners of the building pad
d. Proposed driveway slopes
e. Proposed finished grade spot elevations at the four corners of the lot and intermediate points as necessary to indicate high or low points
f. Flow arrows indicating the direction of the proposed flow across each lot, side yard and rear yard
g. Flow arrows indicating the direction of flow along streets
h. Major flow arrows indicating routing of overland flow from sag points to the detention basin
i. Proposed storm sewers including flow arrows and manhole, catch basin or inlet number corresponding to the design plans
j. All information required by the PCSWDM

2. Typical lot grading scenarios are provided in Standard Detail Nos. III-1 through III-10.

E. Construction Materials

1. Borrow

a. Borrow shall consist of material approved by Porter County Engineering Department required for the construction of embankments or for other portions of the work and shall be obtained from approved locations and sources outside the right-of-way.
b. Borrow material shall be free of substances that will form deleterious deposits, or produce toxic concentrations or combinations that may be harmful to human, animal, plant or aquatic life, or otherwise impair the designated uses of the stream or area.

F. Construction Requirements and Performance Criteria

1. Clearing of Right-of-Way or Easements

a. Install sediment and erosion control measures in accordance with the approved Stormwater Pollution Prevention Control Plan (SWPPCP) prior to commencing clearing.
b. Clearing of Right-of Way or Easements shall consist of clearing, grubbing, removing, and disposal of all vegetation and debris within the limits of the Right-of-Way or Easement. Burning is not permitted.
c. All existing trees and vegetation that are noted as to remain shall be protected.
d. Any damage to the natural habitat, vegetation, or objects designated to remain shall be repaired, replaced, or compensated for by the Developer / Contractor at their own expense.

2. Topsoil Stripping and Stockpiling

a. Stockpile topsoil in areas that are approved by Porter County during the plan development process. Soil stockpile locations shall be designated on the stormwater pollution prevention plan (SWPP).
b. Contain and protect all stockpiles from wind and water erosion.
c. Do not place stockpiles within drip lines of remaining trees.
d. Dispose of unsuitable or excess topsoil per all local, State and Federal regulations.
e. Provide erosion-control measures for all stockpile areas to prevent soil erosion and discharge of soil bearing water runoff to adjacent properties, public right-of-ways, roadways and walkways.

3. Excavation and Embankment

   a. The excavation and embankments for the roadway, intersections, and entrances shall be finished to reasonably smooth and uniform surfaces. Excavation operations shall be conducted so that material outside the limits of slopes will not be disturbed. Prior to beginning excavation, grading, and embankment operations in any area, all necessary clearing and grubbing in that area shall have been performed.
   b. The area of the exposed materials shall be limited by the Contractor's capacity to adequately maintain permanent and temporary erosion and sediment control features. The Contractor shall stabilize (temporary seed, or other approved methods) an area if the disturbed ground has been or will be left bare and unworked for fifteen consecutive calendar days.
   c. All spongy and yielding material which does not readily compact and all vegetation shall be removed from within slope-stake limits. Soft or unstable materials which are encountered where the proposed embankment will be placed shall be removed.
   d. Frozen materials, stumps, roots, all or parts of trees, brush, weeds, sod, or other perishable materials shall not be incorporated in the embankment. Rocks greater than 6 inches in any dimension shall not be left within 6 inches of the finished subgrade. The original ground surface, or the surface of any lift in place shall not be frozen and shall be free of snow, ice, or mud.
   e. The embankment shall be kept drained at all times by keeping the center higher than the sides and uniformly graded.
   f. All slopes which are to be graded and not stabilized with other erosion control measures shall be roughened as described herein, until permanent erosion control measures are placed. Roughening shall take place each day after work is performed on the slopes, or as directed to re-establish the roughening. The soil slopes shall be roughened to create a series of ridges and depressions parallel to the roadway making grooves at least 1 inch deep and not more than 15 inches apart. Slopes shall be stabilized using temporary seeding.

4. Emergency Excavation in the Right-of-Way

   a. The Porter County Engineering Department is to be notified as soon as possible in the event of any emergency excavation, followed by an appropriate permit application.

5. Mass Grading

   a. Prior to any building activity, the entire development phase shall be mass graded to within 4-inches (plus or minus) of final grade; except in drainage easements, where the grade shall be set to within 1-inch (plus or minus) of the final grade.
   b. Vegetation shall be established in all drainage easements prior to commencement of any building construction or individual lot grading activities. Vegetation shall be maintained throughout construction of the subdivision or development and the completion of all building activities in the subdivision or development. See Standard Drawing No. III-11.
   c. Appropriate erosion control measures and orange snow fencing shall be installed and maintained at the drainage easement lines as shown in Standard Drawing No. III-11 for all lots. Installation of fencing should commence immediately after mass site grading has ceased for the entire subdivision or development phase and before any building construction occurs.

6. Site Grading

   a. Site grading shall meet the requirements of all applicable building codes.
   b. Where an approved master grading plan exists, the builder shall propose construction that is consistent with the approved master lot grading plan.
   c. Where an approved master grading plan does not exist, the builder shall propose construction that is consistent with Standard Drawing Nos. III-1 through III-10, unless otherwise approved by the Porter County Building Department.
   d. During site grading activities, existing and proposed drainage easements (rear yard, side yard and other) shall be kept free from debris and soil. Appropriate erosion control measures and orange snow fencing installed during the mass grading phase shall be maintained at the drainage easement lines as shown in Standard Drawing No. III-11.
   e. Gutters and downspouts shall be directed toward a positively drained swale or into a storm sewer dedicated for the purposes of downspout collection.

G. Construction Testing Requirements

1. Compaction Requirements:

   a. Place backfill and fill materials in layers not more than 10-12 inches in loose depth for material compacted by heavy compaction equipment,

and not more than 4 inches in loose depth for material compacted by hand-operated tampers.

b. The minimum soil compaction requirements for backfill material and pavement subgrade will be as indicated below. The moisture content shall be controlled within -2 and +1 percentage points of optimum moisture content. Maximum density and optimum moisture content shall be determined in accordance with the standard Proctor test ASTM D-698 and AASHTO T 99 using method A for soil and method C for granular materials.

Material	Percent Compaction
Subgrade under pavement (including approaches and driveways) and curbs	100%
Topsoil used in all but the top six inches (6") of fill	90%
Existing ground receiving fills.	95%
Backfill in pipe and conduit trenches under pavements and curbs.	95%
All other areas receiving fill.	95%

c. A minimum of (1) compaction test location will be required on the backfill for each sewer pipe and water main pipe transverse run that is under the pavement or concrete curb. A minimum of three (3) compaction test locations will be required on the backfill for sewer pipe or water main pipe run parallel to or in the direction of the roadway. A pipe run is the length between manhole, catch basin, inlet structures or valves. At each compaction test location, a compaction test is required per lift of backfill.

d. A minimum of one (1) compaction test location will be required per 150 lineal feet of roadway, per lift of earth fill, subgrade and subbase.

e. A minimum of one (1) compaction test location will be required per 150 lineal feet of pipe, per lift of backfill.

f. The location of the compaction tests will be selected by the Porter County Engineer.

H. Post Construction Requirements

1. Maintain erosion and sediment control practices until final pavement and / or vegetation has been established.

2. Remove erosion and sediment control practices upon final pavement and / or vegetation acceptance by the County.

Section 8.06: Public Streets

A. Scope of Work

1. This section covers supplemental design requirements, construction materials, construction requirements and performance criteria, construction testing requirements and post-construction requirements for public street construction.

2. Public street construction includes asphalt pavement and concrete curb and gutter for streets, as well as acceleration and deceleration lanes and passing blisters.

3. The use of concrete pavement may be approved by the Porter County Engineering Department on a case by case basis. If concrete pavement is to be approved, materials and construction requirements must follow INDOT Standard Drawings and Specifications Section 500, latest edition.

4. Street sign placement is also included in this section.

B. Related Documents and Referenced Standard Construction Drawings

1. The following documents are related to the specifications outlined in this section: PCUDO; AASHTO, "A Policy on Geometric Design of Highways and Streets," latest edition; and the INDOT Standard Drawings and Specifications, latest edition.

2. The following standard construction drawings shall apply to this section and may be found in the Standard Drawings Section of this Manual:

IV-1 Typical Sections – New Subdivision
IV-1b Typical Section – Conservation Subdivision Only
IV-1c Boulevard Entrance – Lane Shift Standard
IV-2 Typical Cul-De-Sac
IV-3 Temporary "T" Turnaround
IV-4 Acceleration / Deceleration Lane
IV-5 Passing Blister
IV-6 Rolled Curb and Gutter
IV-6b Edge of Pavement Treatments
IV-7 Warp Pattern Curb & Gutter Into Casting
IV-8 Curb Turnout
IV-9 Street Name Signs
IV-10 Street Name Sign Placement

C. General Requirements

1. This Sub-Section is reserved for future use, if required.

D. Supplemental Design Requirements

1. Typical Sections

a. Typical pavement sections, pavement widths and right-of-way widths of arterial, collector, boulevard, local and alley roadways shall conform to Standard Drawing IV-1. Curb and gutter shall be per Standard Drawing IV-6.

2. Minimum Stopping Sight Distances

a. Minimum stopping sight distance shall be the greater distance of the stopping sight distance as determined by methods prescribed by AASHTO or the minimum distances shown on Standard Drawing IV-1. Obstructions (e.g. landscaping, monument signs, etc...) shall be kept clear from the triangle created by the calculated distances.

3. Vertical Curves

a. Vertical curves shall be proposed or used at all grade breaks, and the maximum grade change without a vertical curve shall be 0.50%. At intersections, the break in grade may be a maximum of 4% maximum, conforming to the crown of the cross street. The minimum length of vertical curves shall be determined using methods prescribed by AASHTO, but shall not be less than three (3) times the design speed.

4. Horizontal Curves

a. The minimum radius and tangent of horizontal curvature measured on the centerline of the street shall be as shown on Standard Drawing IV-1.

5. Intersections

a. Street curbs at intersections shall have a minimum radius of 20 feet measured from the front of curb.
b. Turn lanes with tapers and passing blisters as shown on Standard Drawings IV-4 and IV-5 are required at approaches for new roads and / or

commercial drives as determined by the Porter County Engineering Department.

c. Intersection design should include analysis of intersection sight distance for each intersection of roadways per "A Policy on Geometric Design of Highways and Streets" from AASHTO, latest edition. Special consideration should be given to crops, vegetation, and other objects. All roads shall be evaluated in a subdivision.

d. Intersection grading details and geometric dimensions shall be shown on the approved plans.

e. Street jogs with centerline offsets of less than one hundred fifty (150) feet shall not be permitted.

f. The centerline of intersecting streets should intersect as nearly at right angles as possible. No intersection shall be at an angle of less than 70 degrees

g. The simultaneous intersection of streets resulting in traffic from more than four directions is prohibited.

6. Cul-de-sacs and Dead End Streets

a. Where cul-de-sacs are allowed, they shall conform to the dimensions of Standard Drawing IV-2.

b. A temporary T-Turn around conforming to dimensions as shown in Standard Drawing IV-3 may be approved on a case by case basis by the Porter County Engineering Department. The turn-around shall be relinquished and removed at that time the dead street is extended.

c. The design plans shall provide a spot grading plan for each cul-de-sac and temporary T-Turn around.

7. Street and Regulatory Signage

a. Locations of street and regulatory signage shall be provided on the plans in accordance with IMUTCD and shall be approved by Porter County.

b. Street name signs installed and not conforming to the Indiana Manual on Uniform Traffic Control Devices will not be maintained by the Porter County Engineering Department.

c. Street name signs shall be in accordance with Standard Drawing IV-9.

d. Street name signs should be shown on the plans as placed on corners so that they will be on the far right-hand side of the intersection for traffic north or east bound on the major street. If both streets are major routes, the sign should be on the northeast corner. See Standard Drawing IV-10.

8. Pavement Markings

   a. Pavement markings shall be designed in accordance with IMUTCD and shall be approved by Porter County.

9. Bridges

   a. Structures having clear spans greater than twenty (20) feet shall be considered a bridge.
   b. The design of bridges shall be in accordance with INDOT, Porter County and other regulatory agency requirements.

10. Other

   a. No objects (signage, landscaping or other objects) except those allowed by the Porter County Engineering Department shall be placed in the right-of-way and areas designated as corner cut areas as shown on Standard Drawing IV-11.

11. Chemical Modification of Soils

   a. If chemical modification of soils is to be proposed for a development, a geotechnical engineer, registered in the State of Indiana, shall utilize methods and procedures outlined in INDOT Standard Specification Section 215, latest edition and the INDOT manual entitled, "Design Procedures for Soil Modification or Stabilization", latest edition to develop a chemical modification program. This program shall be provided to Porter County Engineering and approved prior to construction.

E. Construction Materials

1. Subgrade

   a. Materials and depths for the stabilization (chemical modification of soils) and / or removal and replacement of unsatisfactory subgrade shall be in accordance with with INDOT Standard Specification Section 900, latest edition and/or approved by the Porter County Engineering Department on a case by case basis.

2. Subbase

    a. Subbase shall be coarse aggregate, Class D or higher, Size No. 53 limestone in accordance with INDOT Standard Specifications, latest edition.

3. Geogrid

    a. Geogrids appearing on the current Porter County approved materials list may be used.

4. Hot Mix Asphalt (HMA) Pavement

    a. Materials for HMA Pavement shall be in accordance with the current INDOT Standard Specifications Section 402, "Hot Mix Asphalt, HMA, Pavement."

5. Concrete for Curb and Gutter

    a. Materials for concrete curb and gutter shall be in accordance with the current INDOT Standard Specifications Section 605, "Curbing."

6. Street Signs

    a. Materials for street signs shall be in accordance with the current INDOT Standard Specifications Section 919, "Traffic Signs".

7. Pavement Markings

    a. Pavement markings shall be durable, thermoplastic pavement markings and shall be in accordance with the current INDOT Standard Specification Section 921, "Pavement Marking Materials".

8. Underdrains

    a. Materials provided for underdrains shall be in accordance with Section VII of these specifications.

F. Construction Requirements and Performance Criteria

1. Subgrade

a. The subgrade shall be constructed uniformly transversely across the width of the pavement including two (2) feet outside the edge of curbs unless otherwise directed by the Porter County Engineering Department.

b. Soils containing greater than 3% by dry weight calcium, magnesium carbonate or organic material, or with a maximum dry density of less than 100 pounds per cubic foot, or with liquid limit of greater than 50, will not be permitted within the specified thickness of the subgrade. Density shall be determined in accordance with AASHTO T 99 and loss of ignition shall be determined in accordance with AASHTO T 267. Liquid limits shall be determined in accordance with AASHTO T 89.

c. During subgrade preparation, adequate drainage shall be provided at all times to prevent water from standing on the subgrade.

d. The grade and cross section of the subgrade shall be finished within a tolerance of 1/2 in. (13 mm) from the true subgrade. It is permissible to finish within this tolerance by blading or other mechanical means without the use of side forms. If these methods do not finish within this tolerance, side forms shall be used.

e. Subgrade surfaces shall be free from objectionable or foreign materials at the time of placement of subbase.

f. The subgrade material shall be brought to a firm and unyielding condition with a uniform density. All soft and yielding material that will not compact readily when rolled or tamped shall be removed and replaced with suitable material. Paving material or subbase shall not be placed on a soft, spongy, frozen or other unsuitable subgrade or base.

g. Leveling course is not required as long as the finished subgrade conforms to the lines, grades and cross sections of the approved engineering plans and is firm and unyielding with a uniform density. If a leveling course is used, it shall be Indiana No. 53 compacted aggregate limestone.

h. Unsatisfactory subgrade as determined by proofrolling or other methods shall be removed and replaced in accordance with methods and materials approved by the inspector from the Porter County Engineering Department.

i. Compaction criterion for subgrade is specified in Section III of these specifications.

j. Chemical modification of subgrade soils may be performed in accordance with INDOT Standard Specification Section 215, latest edition, when approved by the Porter County Engineering Department.

2. Subbase

   a. Aggregate shall not be placed when the air temperature is less than 35°F (2°C). Aggregate shall not be placed on a frozen subgrade. Frozen aggregates shall not be placed.
   b. The aggregate shall be spread in uniform lifts with a spreading and leveling device approved by the Engineer. The spreading and leveling device shall be capable of placing aggregate to the depth, width, and slope specified. The compacted depth of each lift shall be a minimum of three (3) inches and a maximum of six (6) inches.
   c. The aggregate shall be handled and transported to minimize segregation and the loss of moisture.
   d. Aggregates shall be immediately compacted to a minimum of 100% of the maximum dry densities in accordance with AASHTO T 99. The aggregate shall meet the compaction requirements at the time subsequent courses are placed.
   e. The top of each aggregate course shall be checked transversely to the cross section and all deviations in excess of 1/2 inch shall be corrected. If additional aggregate is required, the course shall be remixed and re-compacted.
   f. Paving material shall not be placed on a soft, spongy, frozen or other unsuitable subbase. Compaction criterion for subbase is specified in Section III of these specifications.

3. Geogrid

   a. Geogrid shall be installed in accordance with the manufacturer's recommendations with excess geogrid being removed. The Contractor may turn the excess portion of the geogrid into the fill layer as an alternative to removal, provided an acceptable installation is obtained.
   b. The geogrid shall be kept taut during placement of the subbase. Installation may require the use of stakes to hold the geogrid in place.
   c. The geogrid material supplier shall provide a qualified manufacturer's representative on the contract site at the start of the work to assist the Contractor. The representative shall also be available during the construction when required by the Porter County Engineering Department or Contractor. A copy of the manual for the installation shall be furnished to the Porter County Engineering Department.
   d. Geogrid shall be overlapped a minimum of two (2) feet side to side and end to end. The geogrids shall be overlapped three (3) feet in areas where foundation conditions cannot support foot traffic or where two (2) feet is found to be inadequate during fill placement. Overlaps shall be oriented, or shingled, to prevent advancing fill from lifting the geogrid.

Overlaps shall be further secured to prevent separation during fill placement.

e. Damaged geogrid shall be patched. Patching shall include placement of a minimum of three (3) feet of overlapped geogrid beyond the damaged area. If the damaged portion extends for more than 50% of the roll in the width direction, the entire width shall be replaced.

f. Geogrid shall be covered with fill within three calendar days after placement. Only that amount of geogrid required for pending work shall be placed to minimize exposure of the geogrid.

4. Hot Mix Asphalt (HMA) Pavement

a. HMA Pavement shall be installed in accordance with the current INDOT Standard Specifications Section 402, "Hot Mix Asphalt, HMA, Pavement".

5. Concrete for Curb and Gutter

a. Concrete curb shall be installed in accordance with the current INDOT Standard Specifications Section 605, "Curbing".

b. Two (2) #4 reinforcing steel bars shall be continuously provided in accordance with Standard Drawing No. IV-6.

c. Forms shall be of wood or metal, straight, free from warp, and of such construction that there will be no interference to the inspection of grade or alignment. All forms shall extend for the entire depth of the curb and shall be braced and secured sufficiently so that no deflection from alignment or grade shall occur during the placing of the concrete.

d. The face and top of the curb and gutter shall be checked with a ten (10) foot straightedge. Portions showing irregularities of 0.25 inches or more shall be removed and replaced.

e. Consolidation of concrete placed in the forms shall be by vibration or other acceptable methods. Forms shall be left in place for 24 hours or until the concrete has set sufficiently so that they can be removed without injury to the curbing. Upon removal of the forms, the exposed curbing face shall be rubbed immediately to a uniform surface. Rubbing shall be accomplished by the use of water and a carborundum brick. For the purpose of matching adjacent concrete finishes or for other reasons, other methods of finishing may be permitted. No plastering will be permitted.

f. Curbing shall be constructed with intermediate joints located at ten (10) foot intervals. These joints may be sawed or formed with metal separator plates, and the depth and width shall be in accordance with the standard drawings.

g. Preformed expansion joints, 0.25 inches thick, shall be placed at the beginning and end of all curb returns and also at castings and every 100 feet.
h. Immediately upon completion of the rubbing, the curbing shall be moistened and kept moist for three days, or cured by the use of membrane forming material. The method and details of curing shall be subject to approval by the Porter County Engineering Department.
i. Backfilling shall not begin until after concrete has cured for 72 hours.
j. After the concrete has set sufficiently, the spaces in front and back of the curb shall be refilled with suitable material to the required elevations in layers of not more than six (6) inches and be tamped thoroughly.

6. Street Signs

a. Street signs shall be installed in accordance with the current INDOT Standard Specifications Section 802, "Signs".

7. Pavement Markings

a. Pavement markings shall be installed in accordance with the current INDOT Standard Specifications Section 808, "Pavement Traffic Markings".

8. Curb and Gutter Removal

a. Contractor must remove damaged curb section to the nearest joint.
b. Restoration of street pavement areas damaged by curb removal shall be restored to the existing material and thickness.

9. Underdrains

a. Six (6) inch diameter perforated underdrains shall be installed a minimum of 50-feet in each direction from the low point of each sag curve in the roadway profile on each side of the roadway. The underdrain shall be connected to the storm inlet or catch basin at the low point. The minimum longitudinal slope on the underdrain shall be 0.20-percent.

G. Construction Testing Requirements

The County may require testing. Said testing services shall be completed under the direction of a qualified and registered Professional Engineer licensed in the State of Indiana. The developer shall furnish and pay for the following tests:

1. Subgrade

    a. All areas of subgrade shall be proof rolled. Proofrolling shall be performed by the Contractor and witnessed by a representative of the Porter County Engineering Department. Proofrolling shall be performed with a legally loaded tri-axle dump truck. The number and location of passes shall be determined by the representative from the Porter County Engineering Department.
    b. Compaction testing frequency shall be in accordance with Section III of these specifications. Test results shall be provided to the Porter County Engineering Department for review and approval prior to placement of subbase material.
    c. The Porter County Engineering Department reserves the right to test subgrades with a Clegg Soil Impact Hammer or any other test deemed necessary by the Porter County Engineering Department.
    d. Testing for chemical modification of soils shall be in accordance with INDOT Standard Specification Section 215, latest edition.

2. Subbase

    a. All areas of subbase shall be proof rolled. Proofrolling shall be performed by the Contractor and witnessed by a representative of the Porter County Engineering Department. Proofrolling shall be performed with a legally loaded tri-axle dump truck. The number and location of passes shall be determined by the representative from the Porter County Engineering Department.
    b. Compaction testing frequency shall be in accordance with Section III of these specifications. Test results shall be provided to the Porter County Engineering Department for review and approval prior to placement of subbase material.
    c. The Porter County Engineering Department reserves the right to test subgrades with a Clegg Soil Impact Hammer.

3. Geogrid

    a. No construction testing is required for this item.

4. Hot Mix Asphalt Pavement

    a. At the request of Porter County, the Developer may be requested to pay for and provide pavement cores for newly completed asphalt roadways, acceleration lanes, deceleration lanes and / or passing blisters. The

number and location of cores shall be specified by the Porter County Engineering Department.

5. Concrete for Curb and Gutter

   a. At the request of Porter County, the Developer may be requested to pay for and provide testing of concrete cylinders. The number and frequency of concrete cylinders shall be specified by the Porter County Engineering Department.

H. Post-Construction Requirements

1. Approval shall be granted by the Porter County Engineering Department for the use of herbicides to control vegetation adjacent to existing utilities. The respective utility shall provide requested documentation by Porter County to the Porter County Engineering Department and receive written approval to apply herbicide prior to its use. Documentation may include but may not be limited to Material Safety Data Sheets, Hazmat information for the products used and any approvals required by the Indiana Department of Environmental Management (IDEM).

Section 8.07: Driveways and Approaches

A. Scope of Work

1. This section covers related documents, administrative requirements, supplemental design requirements, construction materials, construction requirements and performance criteria, construction testing requirements and post-construction requirements for driveways and approach construction within the public right-of-way.

B. Related Documents and Standard Drawings

1. The following documents are related to the specifications outlined in this section: PCUDO; AASHTO, "A Policy on Geometric Design of Highways and Streets," latest edition; and the INDOT Standard Drawings and Specifications, latest edition.

2. The following standard construction drawings shall apply to this section and may be found in the Standard Drawings Section of this Manual:

V-1 Commercial Drive Approach Type I
V-2 Commercial Drive Approach Type II
V-3 Residential Driveway Approach
V-4 Drive Construction with Depressed Curb

C. General Requirements

A driveway or road right-of-way cut permit is required prior to the issuance of a building permit. This includes all properties described by metes and bounds description, whether residential or commercial, and all building lots in recorded platted subdivision, industrial parks, etc. as each individual lot is developed. The issuance of this permit on a public road is conditional upon a cut approval to be conducted by a representative of the Porter County Highway Engineering Department.

A driveway permit may be denied at the discretion of the Porter County Board of Commissioners if a determination is made that the public road to be accessed is not passable by emergency vehicles. The road permit will be granted if the county road is upgraded to the extent necessary to assure safe passage by emergency vehicles. The cost of the upgrade of the county is a cost that must be incurred by the applicant.

Any driveway installed must be constructed in such a manner as to provide for reasonable emergency vehicle access to the property located there.

D. Supplemental Design Requirements

1. PCUDO Requirements

a. Design requirements in this Subsection are not intended to be all inclusive and are intended to supplement the design requirements provided in the PCUDO.

2. Driveway Culverts

a. Driveway culverts shall be provided under all driveway entrances and/or approaches where there the street is not curb and guttered or whenever necessary to provide adequate drainage in accordance with the approved engineering plans and specifications.
b. The minimum size driveway culvert shall be twelve (12) inches in diameter and twenty (20) feet in length, with two metal end sections. The size of the culvert shall be determined by the Porter County Engineering Department.

3. Other Items

a. Curb inlets shall not be designed or allowed for in front of driveways.
b. When a driveway abuts an existing chip and seal road or stone road, the driveway shall be sloped away from the road towards inlets or the existing roadway ditch.
c. The edge of the driveway abutting up to an existing road shall be flush with the existing roadway surface.
d. New driveways constructed in areas of existing roads with curb and gutter are required to maintain the existing gutter line through the limits of the drive.

4. Geometry

a. Geometry for driveways shall be in accordance with Standard Drawings V-1, V-2, V-3 and V-4.

E. Construction Materials

1. Subgrade

b. Materials for the stabilization and / or removal and replacement of unsatisfactory subgrade within the right-of-way shall be approved by the Porter County Engineering Department on a case by case basis.

2. Subbase

   a. Subbase shall be coarse aggregate, Class D or higher, Size No. 53 in accordance with Indiana Department of Transportation Standard Specifications, latest edition.

3. Hot Mix Asphalt (HMA) Pavement for Driveways and Approaches

   k. Materials for HMA Pavement shall be in accordance with the current Indiana Department of Transportation Standard Specifications Section 402, "Hot Mix Asphalt, HMA, Pavement".

4. Concrete Pavement for Driveways and Approaches

   b. Materials for driveways and approaches shall be in accordance with the current Indiana Department of Transportation Standard Specifications Section 502, "Portland Cement Concrete Pavement".

5. Driveway Culverts

   a. Materials for driveway culverts shall be in accordance with materials outlined for culverts in Section VII.

F. Construction Requirements and Performance Criteria

1. Subgrade

   a. The subgrade shall be constructed in accordance with the requirements outlined for subgrade construction in Section IV, "Public Streets".

2. Subbase

   a. Subbase shall be constructed in accordance with the requirements outlined for subbase construction in Section IV, "Public Streets".

3. Hot Mix Asphalt Pavement

   a. HMA pavement for drives and approaches shall be constructed in accordance with the current Indiana Department of Transportation Standard Specifications Section 402, "Hot Mix Asphalt, HMA, Pavement".

4. Concrete Pavement for Drives and Approaches

    a. Concrete pavement for drives and approaches shall be constructed in accordance with the current Indiana Department of Transportation Standard Specifications Section 502, "Portland Cement Concrete Pavement".
    b. Expansion and contraction joints are required.

5. Driveway Culverts

    a. Construction requirements for driveway culverts shall be in accordance with materials outlined for culverts in Section VII.

G. Construction Testing Requirements

2. This Sub-Section is reserved for future use, if required.

H. Post-Construction Requirements

1. Curb and Gutter

    a. The gutter line shall not be filled in at driveways nor is it allowed for water to be drained in a concentrated form.

Section 8.08: Sidewalks, Curb Ramps and Trails

A. Scope of Work

1. This section covers supplemental design requirements, construction materials, construction requirements and performance criteria, construction testing requirements and post-construction requirements for sidewalks, curb ramps, and trails.

B. Related Documents and Standard Drawings

1. The following documents are related to the specifications outlined in this section: PCUDO; AASHTO, "A Policy on Geometric Design of Highways and Streets," latest edition; ADA; and the INDOT Standard Drawings and Specifications, latest edition.

2. The following standard construction drawings shall apply to this section and may be found in the Standard Drawings Section of this Manual:

VI-1 Sidewalk Detail
VI-2 Sidewalk Curb Ramp Type I
VI-3 Sidewalk Curb Ramp Type II
VI-4 Typical Trail Sections

C. General Requirements

1. Grading the entire right-of-way shall be provided for the location of sidewalks one (1) foot from front lot lines and a proper grade shall be provided by the developer according to standards shown on plans and cross sections approved by the Board of Commissioners. Exceptions or deviation to sidewalk location may be considered on an individual basis.

2. Sidewalks shall be provided in accordance with the PCUDO and Standard Drawings VI-1, VI-2 and VI-3.

3. Material, texture, color and pattern of curb ramps shall meet the requirements of the latest ADA requirements regardless of the details provided in these specifications.

4. The location of curb ramps shall take precedence over the location of drainage structures and signal, utility, or light poles. Drainage structures shall not be located within the limits of the curb ramp, exclusive of flared sides. Poles shall be located so as not to impede the usage or safety of the curb ramps.

5. Crosswalk markings shall be located such that the curb ramps shall be contained within the markings unless otherwise specified. The flared sides need not fall within the crosswalk lines.

6. The normal gutter flow line shall be maintained throughout the curb ramp area, and appropriate drainage structures shall be used, as needed, to intercept the flow prior to the curb ramp area. Positive drainage shall also be provided to carry water away from the intersection of the curb ramp and the gutter line.

7. The bottom edge of curb ramps and the top of curb shall be flush with the edge of the adjacent pavement or the gutter line.

8. The curb ramp running slope shall not exceed 12:1.

9. Curb ramp cross slope shall not exceed 50:1.

10. Sidewalks constructed within the street right-of-way shall have a minimum width of four (4) feet and a minimum depth of concrete of four inches, except when the sidewalk is designed into a section of driveway entrance, in which case the minimum depth of concrete shall be six (6) inches.

11. The sidewalk surface shall be sloped one-quarter (1/4) inch per foot toward the street.

12. Where sidewalk is constructed immediately adjacent to curb, the surface of the sidewalk shall be constructed ½" higher than the top of the curb.

13. Where sidewalk is constructed adjacent to curb the space behind the new curb shall be filled with granular material to the required elevation and compacted in layers not to exceed four (4) inches.

14. Where sidewalk is not constructed adjacent to the curb the space behind the curb shall be filled with suitable material to the required elevation and compacted in layers not to exceed four (4) inches.

15. Trails shall be designed in accordance with Standard Drawing VI-4 unless other approved drawings are provided.

D. Supplemental Design Requirements

1. This Sub-Section is reserved for future use, if required.

E. Construction Materials

1. Subgrade

c. Materials for the stabilization and / or removal and replacement of unsatisfactory subgrade shall be approved by the Porter County Engineering Department on a case by case basis.

2. Subbase

a. No subbase material is required for installation of concrete sidewalks and curb ramps.

b. Subbase for asphalt trails shall be coarse aggregate No. 53 in accordance with Indiana Department of Transportation Standard Specifications, latest edition.

3. Concrete

a. Concrete for sidewalks and curb ramps shall be Class A in accordance with the current Indiana Department of Transportation Standard Specifications Section 702, "Structural Concrete".

b. Concrete surfaces are not permitted for trails.

c. Joint fillers shall be preformed materials intended to be used in Portland cement concrete pavement and bridge joints or as otherwise specified. Joint fillers shall be in accordance with AASHTO M 213.

4. Hot Mix Asphalt (HMA) Pavement

I. Materials for HMA Pavement for trails shall be in accordance with the current Indiana Department of Transportation Standard Specifications Section 402, "Hot Mix Asphalt, HMA, Pavement".

5. Mulch

   a. Materials for mulch for trails shall be approved by Porter County on a case by case basis.

6. Compacted Sand

   a. Materials for compacted sand for trails shall be in accordance with Porter County on a case by case basis.

7. Compacted Aggregate

   a. Compacted Aggregate for trails shall be in accordance with Coarse Aggregate, Class D or higher, size No. 53.

   b. Coarse Aggregate, Class D or higher, size No. 73 may be used for surface courses only, when specified.

8. Detectable Warning Elements

   a. The detectable warning surface in concrete curb ramps shall be selected from the INDOT's list of approved Detectable Warning Elements and conform to ADA.

9. Paint

   a. Paint materials shall be "Traffic Paint" in accordance with the current edition of Indiana Department of Transportation Standard Specifications Section 909.

F. Construction Requirements and Performance Criteria

1. Subgrade

   a. Excavation shall be made to the required depth and width that will permit the installation of forms for concrete sidewalk and curb ramps or to place the appropriate trail materials. The foundation shall be shaped and compacted to a firm even surface in accordance with the section shown on the plans. All soft and yielding material shall be removed and replaced with acceptable material.

2. Subbase

   a. Subbase for asphalt trails shall be placed in lifts not exceeding 4 in. in depth. Each lift shall be thoroughly compacted.

3. Concrete

   a. Forms shall be of wood, metal, or other approved material and shall extend for the full depth of the concrete. Forms shall be straight, free from warp, and of sufficient strength to resist the pressure of the concrete without springing. Bracing and staking of forms shall be such that the forms remain in both horizontal and vertical alignment until their removal.

   b. The foundation shall be thoroughly moistened immediately prior to the placing of the concrete. The proportioning, mixing, and placing of the concrete shall be in accordance with the current Indiana Department of Transportation Standard Specifications Section 702, "Structural Concrete". The thickness of the concrete in the curb ramp, including flared sides, shall be as shown on the plans for the type specified.

   c. The surface shall be finished with a wooden float. No plastering of the surface will be permitted. Ramp surfaces shall be coarse broomed and corrugated transverse to the slope as shown on the plans. The surface texture of the flared sides shall be coarse broomed with the striations transverse to the slope. All exposed edges shall be finished with a 1/4 in. radius.

   d. Joints

      i. Expansion joints are required at intervals not to exceed 50 feet for four, five, or six -foot sidewalk.

      ii. All concrete joints shall be finished with a 1/4 in. radius.

      iii. Preformed 1/2 inch joint filler shall be placed around all appurtenances, such as manholes and utility poles which extend into and through the sidewalk, and between the sidewalk and any fixed structure, such as a building or bridge. The preformed joint filler shall extend for the full depth of the sidewalk or curb ramp, and shall be flush with the surface of the adjacent concrete.

iv. Where sidewalk is being replaced, sawcut and join the walk to the nearest joint of the existing improvements. If existing adjacent concrete slabs not scheduled for replacement are damaged by the Contractor's operation, the Contractor shall replace the concrete to the next joint. Repair or removal of any panel of sidewalk shall be removed to the nearest joint regardless of property line.

e. Concrete shall be cured for at least 72 hours. Curing shall be in accordance with the current Indiana Department of Transportation Standard Specifications Section 504.04 except curing compound shall not be used in the area where detectable warning elements are to be installed. During the curing period all pedestrian traffic shall be excluded.

4. Hot Mix Asphalt (HMA) Pavement

b. HMA Pavement shall be installed in accordance with the current Indiana Department of Transportation Standard Specifications Section 402, "Hot Mix Asphalt, HMA, Pavement".

5. Mulch

a. This Sub-Section is reserved for future use, if required.

6. Compacted Sand

a. This Sub-Section is reserved for future use, if required.

7. Compacted Aggregate

a. Construction requirements for the placement of compacted aggregate shall meet those outlined in Section V.

8. Detectable Warning Elements

a. Detectable warning elements shall be manufactured or field cut to completely fill the area of the curb ramp as shown on the plans. Elements shall be installed to be level across joints or seams and shall be flush with the edges of adjoining concrete.

b. Brick elements shall be placed in a mortar setting bed within the hardened concrete block out. The concrete base of the block out shall have a rough textured finish, such as would be produced by a screed or wood float. The depth of the block out shall be such that a mortar bed

thickness of 3/8 in. minimum to 3/4 in. maximum is achieved for the nominal depth of the element. The hardened concrete base shall be free of all material which might prevent the mortar setting bed from adhering. The concrete base shall be dampened with water, but be surface dry immediately prior to the placing the mortar setting bed. The mortar setting bed shall be laid out the desired thickness, no more than 2 ft ahead of laying the elements. The elements shall be buttered with mortar on the bottom before placement into the setting bed.

Elements from various manufacturers shall not be mixed at any individual concrete ramp location.

Brick elements shall be laid out in a running or stacked bond pattern with a 1/16 average joint width. The joint width shall not exceed 1/8 in. Whole elements should be laid first, followed by elements cut to size, keeping the number of joints to a minimum. A masonry saw shall be used to produce a clean, accurate, straight cut. The joint between elements shall be completely filled with a dry fine aggregate. The fine aggregate may be obtained from a non-Certified Aggregate Producer, but it shall be natural sand having a gradation where at least 95% of the material passes the No. 4 sieve. Excess fine aggregate shall be removed from the surface of the elements.

c. Cast iron elements shall be installed in accordance with the manufacturer's recommendations. A rust inhibiting compound shall be applied to all cast iron elements.

9. Paint

a. The exposed surfaces of the curb throughout the width of curb ramps shall be painted yellow in accordance with the most current edition of Indiana Department of Transportation Standard Specification. Silica sand shall be applied to the wet paint along the top of the curb at the rate of 6.0 lb/gal.

G. Construction Testing Requirements

1. Subgrade

a. Construction testing requirements for subgrade shall meet those outlined in Section V for subgrade.

2. Subbase

a. Construction testing requirements for subbase shall meet those outlined in Section V for subbase.

3. Concrete

a. Construction testing requirements for concrete shall meet those outlined in Section V for concrete.

4. Hot Mix Asphalt (HMA) Pavement

a. Construction testing requirements for asphalt shall meet those outlined in Section V for HMA Pavement.

5. Mulch

a. No construction testing is required for this item.

6. Sand

a. This Sub-Section is reserved for future use, if required.

7. Compacted Aggregate

a. This Sub-Section is reserved for future use, if required.

8. Detectable Warning Elements

a. No construction testing is required for this item.

9. Paint

a. No construction testing is required for this item.

H. Post-Construction Requirements

This Sub-Section is reserved for future use, if required.

Section 8.09: Utilities

A. Scope of Work

1. This section covers supplemental design requirements, construction materials, construction requirements and performance criteria, construction testing requirements and post-construction requirements for utility construction in the existing and proposed right-of-way.

B. Related Documents and Referenced Standard Construction Drawings

1. The following documents are related to the specifications outlined in this section: PCUDO; AASHTO, "A Policy on Geometric Design of Highways and Streets," latest edition; the INDOT Standard Drawings and Specifications, latest edition; PCSWDM; and IAC for the construction of water and wastewater facilities.

2. The following standard construction drawings shall apply to this section:

VII-A1 Pipe in Casing Detail
VII-A2 Pipe Bedding and Backfill Under Existing Pavement
VII-A3 Pipe Bedding and Backfill
VII-A4 Backfill Requirements
VII-A5 Backfill Requirements (Continued)
VII-B1 Typical Culvert Installation
VII-B2 Underdrain Typical Section
VII-B3 Rear Yard Perforated Pipe Detail
VII-B4 Concrete End Sections
VII-B5 Metal End Sections
VII-B6 Storm Manhole Type 1
VII-B7 Storm Manhole Type 2
VII-B8 Storm Manhole Type 2 (Restricted Headroom)
VII-B9 Precast Storm Drop Manhole
VII-B10 Storm Manhole Type 3
VII-B11 Storm Manhole Type 4
VII-B12 36" Storm Manhole Casting
VII-B13 Inlet Type 1
VII-B14 Inlet Type 2
VII-B15 Inlet Type 3
VII-B16 Catch Basin
VII-B17 Precast Perforated Drywell
VII-B18 Strom Manhole Wall Repair Detail
VII-B19 Miscellaneous Pipe Details

VII-B20 Storm Sewer Lateral Connection
VII-C1 Force Main Marker Detail
VII-D1 Typical Utility Locations (Existing 40' R/W)
VII-D2 Typical Utility Locations (Existing 60' R/W)

C. General Requirements

The following requirements in this section apply to excavation, bedding, laying pipe, joining pipe, tee connections, backfilling, bore and jacking, and road cuts associated with the construction of storm sewer, sanitary sewer, and water main unless otherwise noted in the specific sections regarding those utilities.

1. Excavation

a. Unless otherwise directed, the trench cross sectional dimensions shall be as shown on the plans. The trench bottom shall give full support to the pipe as show on the plans. Recesses shall be cut to receive any projecting hubs or bells.

b. Where pipe is to be placed in fill sections, a portion of the fill shall be constructed prior to installation of the pipe as shown on the plans.

c. In case a firm foundation is not encountered at the required grade, the unstable material shall be removed to such depth that when replaced with suitable material, usually B borrow, compacted, and properly shaped, it will produce a uniform and stable foundation along the entire length of the pipe. A timber mat shall be placed to hold the pipe to line and grade if it is necessary.

d. All trenches shall be kept free from water until any joint filling material has hardened sufficiently not to be harmed.

2. Bedding

a. Pipe bedding depth shall be as shown on the plans. A minimum of 3", 4", and 6" is required for pipes of outside diameter 27" and smaller, 30" to 60", and 66" and larger respectively.

b. Bedding material shall be crushed stone or gravel INDOT Coarse Aggregate No. 8, 9, or 73 with a 50% mechanical crush count.

c. All bedding and initial backfill shall be installed in 4" to 6" balanced lifts and mechanically tamped. Bedding material shall be hand placed around

the haunch and sides of the pipe to ensure proper compaction and complete filling of all voids. Initial backfill shall be of the same material as the bedding and be placed to a minimum of 1' above the top of the pipe.

3. Laying Pipe

a. Each section of pipe shall have a full firm bearing throughout its length, true to the line and grade given. All pipes which settle or which are not in alignment shall be taken up and re-laid. Pipe shall not be laid on a frozen trench bottom. Fully bituminous coated and lined corrugated steel pipe and pipe-arches shall only be placed when the ambient temperature is 35°F (2°C) or above.

b. Concrete pipe shall be laid with hub upgrade, with the spigot end fully extended into the adjacent hub, and with all ends fitted together tightly.

c. Concrete pipe shall not be laid in muck or sulphate soils.

d. Pipe joints shall be sealed with approved rubber type gaskets.

e. Each joint, regardless of the type used, shall be sealed with an approved compression type joint sealer in accordance with ASTMC 425 or ASTM C 443, whichever is applicable.

f. Joints and stub-tee connections for plastic pipe shall be in accordance with the requirements of the respective material specifications for each type of pipe.

g. Connections of pipe to manholes, catch basins, and inlets shall utilize cast in place water tight connector, and shall be in accordance with the manufacturer's recommendations. Cast in place water tight connectors shall be per the Porter County Approved Materials List, latest edition.

h. Prior to being lowered into the trench, corrugated metal pipe sections shall be examined closely and so fitted that they will form a true line of pipe when in place. Sections which do not fit together properly shall not be used.

i. At the time of acceptance, all pipe shall have been cleaned and be free from silt and other foreign matter.

j. Prior to constructing a pipe extension, the existing structure shall be cleaned of all foreign materials. Existing anchors, end sections, or

headwalls shall be removed as shown on the plans or as directed. All existing pipes which are damaged by the removal operation shall be replaced. Removed materials shall be disposed of by the Contractor.

4. Joining Pipe

   a. Band couplers for AASHTO M 36 (M 36M) I and type II corrugated steel pipe and pipe-arches shall have corrugations that mesh with the corrugations of the pipe sections being joined or the annular rerolled ends of those pipe sections. Band couplers with projections (dimples) may be used with pipe having either annular or helical corrugations only when corrugated band couplers will not provide a matching connection to both pipes. Band couplers for AASHTO M 36 (M 36M) type IA and IIA corrugated steel pipe and pipe-arches shall have corrugations that mesh with the corrugations of the pipe or shall be gasketed flat bands.

   b. At the connection of a pipe extension to an existing structure where the extension is a different pipe material from that in place, or a satisfactory joint cannot be obtained, a concrete collar shall be constructed to the satisfaction of the Porter County Engineering Department. Portions of the existing structure shall be removed as shown on the plans, or as necessary, to ensure proper fit of the extension to the existing pipe. If not shown on the plans, the collar shall have a width of at least 18 inches and a thickness of at least 6 inches around the entire joint.

   c. If rigid pipe connections are of lesser strength than that of the main barrel of a pipe structure, these connections shall be encased with concrete at least 6 inches thick.

   d. Any pipe which is damaged during installation shall be repaired or replaced as directed.

5. Backfilling

   a. See Section VII-7 for backfilling requirements for trenches cut in existing pavement.

   b. Any trench under pavement or curb and gutter must be backfilled completely with Indiana compacted aggregate No. 53 or 73 limestone. Any trench beyond the back of curb must be backfilled with B Borrow from an imaginary line out from a lateral distance of minimum of five feet on a one to one slope (45 Deg.). Excavated material may be utilized for the remainder of backfill required in the trench if found to be suitable.

Prior to using excavated material approval must be obtained from the Porter County Engineering Department. All backfill materials must be compacted to a 95% Proctor Dry Density.

c. Trenches located in easements or open areas beyond the requirements listed above may be backfilled with native material. The portion around and for 12 inches above the top of the pipe shall be free from large stones. This material shall be placed in layers not to exceed 12 inches and each layer compacted thoroughly by means of mechanical tamps. If coarse aggregate No. 8, No. 9, or No. 11 is used for structure backfill, geotextile shall be installed.

d. An adequate earth cover, as shown on the plans, shall be placed over the structure before heavy equipment is operated over it.

e. Replacement of grassed areas shall be restored by seeding or sodding as directed by the Porter County Engineering Department.

6. Bore and Jacking

a. All utilities must be bore and jacked or directionally drilled under existing pavement within the Right of Way. Open cuts will only be allowed if approval is granted from the Porter County Engineering Department on a case by case basis for a special exception.

Special Exception For Open Cut: Boring shall be the preferred method for crossing or intersecting a county road. However, in the case of hardship an individual may be permitted to open cut into a paved road. To open cut into a paved road, the applicant is required to apply for a special exception before the Porter County Highway Department, and if denied has the right of appeal to the Porter County Board of Commissioners. If granted, the applicant is required to deposit no less than $500.00 nor no more than $2,000.00 with the Porter County Highway Department which will be held in escrow by the Porter County Highway Department until the road is restored to substantially the same condition. Such restoration shall occur within a reasonable time frame. Failure to substantially restore the road to the satisfaction of a representative from the Porter County Highway Department may result in forfeiture of the deposited amount for payment of Administrative costs, and the applicant will be assessed the cost of repair incurred by the Porter County Highway Department to rectify the damage.

b. Materials

i. Carrier Pipes

(a) Pipes used in the crossings shall be the same material as that adjacent to the crossings. The carrier pipe shall be installed per the lines and grades shown on the plans or as directed.

ii. Casing Pipe

(a) Casing pipe shall be welded steel pipe in accordance with INDOT Specifications. Steel casing pipe shall be selected by the Contractor to have minimum wall thickness sufficient to resist jacking forces.

iii. All utilities installed under a railroad right-of-way shall be in accordance with the specifications and requirements of the railroad having jurisdiction.

c. Installation

i. The casing pipe shall be so constructed as to prevent leakage of any substance from the casing throughout its length except at the ends of the casing, which must be blocked to prevent the entrance of foreign material. Casing shall be installed to prevent the formation of a waterway under the Pipe, and with an even bearing throughout its length, and shall slope to one end as shown on the plans.

ii. The casing pipe shall be pushed into the embankment with jacks and shall have a boring auger rotating within the pipe to remove the spoil. The front of the pipe shall be provided with mechanical arrangements or devices that will prevent the auger and cutting head from leading the pipe by more than 1/2 inch. Under no circumstances will more than 1/2 inch of unsupported excavation be permitted ahead of the casing pipe. The face of the cutting head shall be arranged to provide reasonable obstruction to the free flow of soft or poor material into the casing.

iii. The use of water or other liquids to facilitate casing emplacement and spoil removal is prohibited.

iv. If an obstruction is encountered during installation which stops the forward progress of the pipe, and it becomes evident that it is impossible to advance the pipe, the Porter County Engineering Department shall be notified. For installations utilizing tunnel shields or tunnel-boring machines or other methods that allow access to the face, the obstruction shall be removed in accordance with the QCP. For installations utilizing methods that do not allow access to the face, at the direction of the Porter County Engineering Department, the pipe shall be abandoned in place and filled with grout or other approved materials.

v. All installations shall have a bored hole essentially the same as the outside diameter of the pipe, plus the thickness of the protective coating. If voids should develop or if the bored hole is greater than the outside diameter of the casing by more than one inch, grouting shall be required to fill the voids.

vi. When a gravity flow carrier pipe is placed inside the casing pipe, the carrier pipe shall be secured to the lines, slopes, and grades shown on the plans and then the void between the two pipes shall be filled with a flowable grout, unless otherwise indicated on the plans, so that the carrier pipe remains in a fixed position.

vii. Upon completion of the installation of the pipe, all excavated areas not occupied by the pipe shall be backfilled and compacted with suitable material per these Standard Specifications.

7. Road Cuts

a. Open cuts will only be allowed if approval is granted from the Porter County Engineering Department.

b. The trench opening shall be no larger than necessary to make the required repairs. When ground conditions are unstable and there is danger of widespread caving, sheeting shall be driven, and if so ordered by the Porter County Engineering Department, the sheeting shall be left in place. The opening shall be made by sawing with a concrete saw. The saw cut shall be cut back from the area which might slough off due to vibration to undisturbed earth.

c. All road cuts shall require flowable fill unless the Highway Engineer and Superintendent approves otherwise. Flowable fill shall be in accordance with INDOT Standards and Specifications, latest edition.

d. Prior to placing flowable backfill, all standing water shall be removed from the trench. If the water cannot be removed from the trench, structure backfill shall be used in lieu of flowable backfill to an elevation 2 ft above the groundwater. The remainder of the trench shall be backfilled as shown on the plans.

e. Cuts with flowable fill shall extend flowable fill up to a point where 4-inches of HMA surface can be placed.

f. Any trench under pavement or curb and gutter must be backfilled completely with Indiana compacted aggregate No. 53 or 73 limestone. Any trench beyond the back of curb must be backfilled with B Borrow from an imaginary line out from a lateral distance of minimum of five feet on a one to one slope (45 Deg.). Excavated material may be utilized for the remainder of backfill required in the trench if found to be suitable. Prior to using excavated material approval must be obtained from the Porter County Engineering Department. All backfill materials must be compacted to a 95% Proctor Dry Density.

8. Marking of Utilities

a. Utility pedestals, valves, vaults, handholes, and any other objects installed by a Utility within the Right-of-Way shall be clearly marked by the appropriate Utility. The Porter County Engineering Department will not be held responsible for unmarked objects being damaged during routine maintenance such as mowing. All Utilities are subject to the permitting requirements of the Porter County Highway Department.

D. Supplemental Design Requirements

1. All stormwater conveyance systems and engineering plans shall be designed and in accordance with the Porter County Stormwater Design Manual, Resolution No. 09-05, and these Porter County Construction Standards and Specifications.

2. Surface water shall be drained from all new public road Right-of-Ways by an approved drainage system. All pipes, culverts, side ditches, manholes, inlets, bridges and other drainage related improvements necessary to provide adequate surface water drainage of the area, shall be constructed and installed in accordance with the approved engineering plans and specifications submitted

therefore by the developer to the various governmental agencies having jurisdiction over drainage.

3. Utility vaults shall be kept outside of the pavement.

4. Construction of Utilities in Existing Public Rights-of-Way

   a. Utilities to be constructed in existing public right-of-way shall be located as shown in Standard Drawings VII-D1 and VII-D2.
   b. No utility shall place their lines within three (3) feet of the ditch bottom (toe of slope).
   c. All sanitary sewers shall be placed under the pavement or designed in such a manner so as to not interfere with other utilities and provide easy access to all manholes.
   d. All utility poles (electric, telephone or cable) may generally be placed on either side of the County Roads in a zone lying 18 to 20 feet on a 40 foot right-of-way road and 28 to 30 feet on a 60 foot right-of-way road measured from the center line of the highway.

E. Construction Materials

1. Storm Drainage

   a. Pipe Culverts

      i. Mainline Culverts shall be:

         (a) Reinforced concrete pipe (RCP), Class III, or greater if conditions warrant, in accordance with AASHTO M 170. Precast concrete units shall be from a source listed in the INDOT List of Certified Precast Concrete Producers. Unless otherwise, specified pipe wall design and use of elliptical reinforcement in circular pipe are optional.

      ii. Driveway Culverts shall be one of the following:

         (a) Reinforced concrete pipe (RCP), Class III, or greater if conditions warrant, in accordance with AASHTO M 170. Precast concrete units shall be from a source listed in the INDOT List of Certified Precast Concrete Producers. Unless otherwise, specified pipe wall design and use of elliptical reinforcement in circular pipe are optional.

(b) Corrugated Steel Pipe (CSP) type I, IA, II, or IIA in accordance with AASHTO M 36. Corrugated steel pipe, pipe-arches, and coupling bands shall be zinc coated steel or aluminum coated steel in accordance with AASHTO M 36, except as noted herein.

b. Underdrains

i. Pipe

(a) Underdrain pipe shall be perforated polyvinyl chloride semicircular pipe in accordance with ASTM D 3034, SDR 35. This semicircular pipe shall have a smooth top and a smooth, semicircular bottom, nominally 4 5/8 inches in diameter, with perforations uniformly distributed along the top of the bottom section in accordance with AASHTO M 252 perforation requirements. The top section shall extend a minimum of 1/2 inches beyond the top of the semicircular section. The top section shall be approximately 6 3/8 inches wide including the sloping overhangs on each side. The pipe must be from an INDOT approved manufacturer.

ii. Geotextile Fabric

(a) Geotextile fabric materials for use with underdrains shall be in accordance with the current INDOT Standard Specifications Section 918.03, "Geotextile for Use With Underdrains".

iii. Bedding and Backfill

(a) Bedding and backfill for underdrains shall be Indiana coarse aggregate No. 8 or 9 limestone.

c. Storm Sewer Pipe

i. Pipe

Pipe beneath future or existing roadways or within five (5) feet of the back of curb shall be Reinforced Concrete Pipe as described below.

(a) Reinforced Concrete Pipe (RCP)

(i) Reinforced concrete pipe (RCP), Class III, or greater if conditions warrant, in accordance with AASHTO M 170. Precast concrete units shall be from a source listed in the INDOT List of Certified Precast Concrete Producers. Unless otherwise, specified pipe wall design and use of elliptical reinforcement in circular pipe are optional.

(b) Smooth Wall Polyethylene Pipe (HDPE)

(i) Pipe shall be in accordance with ASTM F 714 for nominal diameters of 39 inches or less. The pipe sizes shall be in accordance with ISO sizing system. The pipe dimension ratio shall be 26 or less. The compound used in manufacturing this type of pipe shall have a minimum cell class in accordance with 335434C as shown in ASTM D 3350. The pipe shall be from a manufacturer listed in the approved list of plastic pipe manufacturers maintained by the INDOT.

(c) Smooth Wall Polyvinyl Chloride Pipe (PVC)

(i) Pipe shall be in accordance with AASHTO M 278 for pipe sizes 4 inches through 15 inches (100 mm through 375 mm), and ASTM F 679 for pipe sizes 18 inches through 27 inches The compound used in manufacturing pipe shall have a minimum cell class in accordance with 12454C as shown in ASTM D 1784. The pipe shall be from a manufacturer listed in the approved list of plastic pipe manufacturers maintained by the INDOT.

(ii) A-2000 PVC pipe shall meet the requirements of ASTM F949. It shall be smooth interior and can be used up to 36 inches in diameter.

ii. Gaskets and Joints

(a) Reinforced Concrete Pipe (RCP)

(i) Rubber O-ring gaskets and joints of concrete pipe will meet the requirements of ASTM C443.

(b) Smooth Wall Polyethylene Pipe

(i) Fittings shall be in accordance with ASTM F 1055.

(ii) The joint will be a self-locking polyethylene integral bell or bell sleeve. It shall be watertight in accordance with ASTM D3212. The rubber gasket shall meet the requirements of ASTM F477.

(iii) The gasket on the spigot end of the pipe shall be lubricated prior to insertion as required by the pipe manufacturer.

(c) Smooth Wall Polyvinyl Chloride Pipe (PVC)

(i) Fittings shall be in accordance with AASHTO M 278 for pipe sizes 4 inches through 15 inches and ASTM F 679 for pipe sizes 18 inches through 27 inches

iii. End Sections

(a) Precast Concrete Pipe End Sections

(i) Precast concrete pipe end sections shall be cast in substantial permanent steel forms. Structural concrete shall attain a minimum 28 day compressive strength of 3,000 psi as determined in accordance with AASHTO T 22. When air entrained concrete is specified, it shall have an air content of from 5% to 8% by volume. The precast units shall be cured in accordance with AASHTO M 170. Water absorption of individual cores taken from such units shall not exceed 9%. Additional reinforcement shall be provided as needed to handle the precast units.

(b) Metal End Sections

(i) The end section's metal shall be in accordance with AASHTO M 36 or M 196, whichever is applicable.

(ii) End sections consisting of multiple panels shall have lap seams which shall be tightly jointed with 3/8 inch galvanized rivets or bolts.

(iii) All steel pipe end sections shall have a toe plate anchor constructed of 0.138 inches thick galvanized steel. The toe plate anchor shall be match punched to fit holes in the skirt lip, and shall be supplied loose, and complete with 3/8 inches diameter galvanized bolts.

(iv) Straps for pipe end sections shall be either galvanized No. 6 reinforcing bars or zinc coated 3/8 inch diameter aircraft cable.

d. Manholes, Inlets, and Catch Basins

i. Castings

(a) All storm sewer structure castings shall have "Dump no waste! Drains to waterways!" message with fish image.

(b) Manholes

(i) Castings for manholes or other structures requiring a solid lid casting shall be Neenah R-1642 or approved equal.

(ii) Castings for larger manholes or other structures requiring a 36" solid lid manhole casting shall be Neenah R-1640-D or approved equal.

(c) Inlets and Catch Basins

(i) Castings for 24-inch curb inlets and catch basins shall be Neenah R-3274, East Jordan Iron Works 7020, or approved equal.

(ii) Castings for 36-inch curb inlets and catch basins shall be Neenah R-3246, East Jordan Iron Works 7030, or approved equal.

(iii) Castings for inlets and catch basins in grass shall be Neenah R-2561 beehive grate, or approved equal.

(iv) Castings for inlets and catch basins in pavement (not in curb) shall be Neenah R-2390 or approved equal.

ii. Precast Concrete Manholes, Inlets, and Catch Basins

(a) These units shall be in accordance with AASHTO M 199. In addition to the requirements of AASHTO M 199, the manhole steps shall be permanently marked with the specific step designation, and the manufacturer's identification. This marking shall remain exposed after installation.

e. Special Structures

i. Materials for three sided, box structures, pipe arches, bridges, headwalls and wingwalls shall be in accordance with the latest INDOT Standard Specifications and shall be approved by the Porter County Engineering Department on a case by case basis.

2. Sanitary Sewer

a. All sanitary sewer materials shall be in accordance with the local municipality requirements of the City or Town that owns and operates the system that the new sanitary sewer is being tied into.

b. In all cases, materials shall conform to Indiana Administrative Code (IAC) Title 327, Article 3.

c. Septic system materials shall be in accordance with the requirements of the Porter County Health Department, the Indiana State Department of Health, and Rule 410 IAC 6-8.1.

3. Water Utilities

a. Materials for water utilities shall be in accordance with the requirements of the appropriate local municipality, the "Recommended Standards for Water Works" by the Great Lakes Upper Mississippi River Board of State and Provincial Health and Environmental Managers, and Indiana

Administrative Code Title 327, Article 8. All water mains shall be approved by the Indiana Department of Environmental Management and Porter County.

4. Other Utilities

a. Vaults for all other utilities shall be precast concrete in accordance with ASTM C 858.

b. Vault castings shall be heavy duty, traffic rated, self sealing and bolted down.

c. Vault castings shall be stamped, "TELEPHONE", "ELECTRIC", "CABLE", or the appropriate utility type.

F. Construction Requirements and Performance Criteria

1. Storm Drainage

a. Pipe Culverts and Ditches

Excavation, bedding, laying pipe, joining pipe, tee connections, bore and jacking, and road cuts associated with the construction of pipe culverts shall be in accordance with the General Requirements of this Section.

Culverts Required: Where required to facilitate proper roadside drainage, any person, firm, or corporation a driveway entrance shall be required to install and maintain a 12-inch minimum diameter corrugated metal pipe of galvanized steel (aluminum not permitted) at least 20 feet in length with culvert end sections or a properly dipped or swaled pavement 20 feet in length, 16 feet in width, and 6 inches thick, designed so as not to create a hazard to the under parts of automobiles, at the entrance of each driveway.

Blocking Ditches Prohibited: No person, firm, or corporation shall fill or otherwise block roadside drainage ditches unless pursuant to the recommendation of the Porter County Highway Department and subject to the final approval of the Porter County Board of Commissioners, any installation pursuant to this section is conditional upon approval of the specifications by the Porter County Highway Department. Should final approval be granted by the Porter County Board of Commissioners for an applicant to fill or otherwise block roadside drainage ditches, any tile or conduit installed is subject to removal at

any time by the Porter County Highway Department at the discretion of the Porter County Board of Commissioners.

Proper Installation: It shall be the duty of each installer to ensure the culvert or drain is of sufficient capacity and in the proper location to comply with the above. The driveway surface shall, if possible, be level or slope away from the elevation of the county highway at the intersection of the driveway with the county highway to the existing right-of-way line. Should the culvert or drain be inadequate or require replacement, it shall be by thye obligation of the party using the driveway entrance and shall in no way be any liability to the Porter County Highway Department. The replacement of any driveway culverts shall be at the owner's expense, except where replacement shall be at the convenience of the County due to reconstruction of the county road. Additionally, should installation pursuant to this ordinance detrimentally affect either the drainage of the County's right-of-way or that of an adjoining property owner, it shall be the sole responsibility of the applicant and/or owner of the property to remedy the problem created.

b. Underdrains

i. Pipe

(a) Trenches shall be excavated to the dimensions and grade shown on the plans. Each longitudinal underdrain trench shall be cut continuously across all twin outlet areas and all single outlet areas. Such pipeless portions of the trench shall be backfilled with aggregate for underdrains. Pipes shall be secured to ensure that the pipe's required grade and horizontal alignment are maintained. Perforated pipe shall be placed with the perforations down. The pipe sections shall be joined securely with the appropriate couplings, fittings, or bands. The pipe shall be installed in the underdrain trench such that a minimum clearance of 2 inches exists between the pipe and the trench walls

(b) At the time of installation, a rodent screen made of woven stainless steel wire mesh or galvanized hardware shall be placed on the outlet pipe or the ends of the underdrain pipe when located in inlets or catch basins.

ii. Geotextile Fabric

(a) Storage and handling of geotextiles shall be in accordance with the manufacturer's recommendations. Each geotextile roll shall be labeled or tagged. Damaged or defective geotextile shall be replaced as directed. The geotextile shall be placed loosely, but with no wrinkles or folds. The ends of subsequent rolls of geotextile shall be overlapped a minimum of 1.0 ft. The upstream geotextile shall overlap the downstream geotextile.

iii. Bedding and Backfill

(a) Placement of aggregate bedding and backfill shall proceed following placement of the geotextile. Aggregate bedding and backfill for underdrains shall be placed in a manner which minimizes contamination.

c. Storm Sewer

i. Excavation, bedding, laying pipe, joining pipe, tee connections, bore and jacking, and road cuts associated with the construction of storm sewer shall be in accordance with the General Requirements of this Section.

d. Manholes, Inlets, and Catch Basins

i. Excavation shall be to the established bottom of the foundations. The finished surface shall be firm and smooth. If soft or yielding spots are encountered at this elevation, they shall be removed, backfilled with suitable material, and tamped into place. If rock is encountered at the bottom elevation, the excavation shall be carried down 6 inches further and backfilled with approved material tamped to the required elevation.

ii. Concrete construction shall be in accordance with the requirements for structural concrete in the latest INDOT Specifications Section 702, "Structural Concrete".

iii. Frames for castings and bearing plates for manholes shall be set in full mortar beds and secured as shown on the plans or as otherwise approved. The mortar shall be composed of one part cement to two parts No. 23 fine aggregate, by volume. Castings

shall be set to the finished pavement elevation so that subsequent adjustments are not necessary.

iv. Inlet and outlet pipes shall extend through walls a sufficient distance to allow for connections on the outside and the concrete or mortar carefully placed around them to prevent leakage around their outlet surfaces. Unless otherwise shown, the inside ends shall be flush with the inside walls. The pipe shall be of the same size and kind as that with which it connects on the outside.

e. Special Structures

i. Construction of three sided, box structures, pipe arches, bridges, headwalls and wingwalls shall be in accordance with the latest INDOT Standard Specifications and shall be approved by the Porter County Engineering Department on a case by case basis.

2. Sanitary Sewer

a. Construction of all sanitary sewer piping, manholes, or facilities shall be in accordance with the local municipality requirements of the City or Town that owns and operates the system that the new sanitary sewer is being tied into.

b. In all cases, conform to construction requirements of Indiana Administrative Code (IAC) Title 327, Article 3.

c. Septic system construction shall be in accordance with the requirements of the Porter County Health Department, the Indiana State Department of Health, and Rule 410 IAC 6-8.1.

d. Laterals shall be constructed from the mainline sewer to the right-of-way at the time of installation of the mainline sewer.

3. Water Utilities

a. Construction of water utilities shall be in accordance with the requirements of the appropriate local municipality, the "Recommended Standards for Water Works" by the Great Lakes Upper Mississippi River Board of State and Provincial Health and Environmental Managers, and Indiana Administrative Code Title 327, Article 8. All water mains shall be approved by the Indiana Department of Environmental Management and Porter County.

b. It is desirable that water services shall be constructed from the water main to the right-of-way at the time of installation of the water main and prior to the construction of the roadway sub-base.

4. Other Utilities

a. Above grade pedestals, down guys and other utility appurtenances shall be marked with high visibility markers a minimum of four (4) feet above the height of the of the pedestal, appurtenance or ground, whichever is greater. Markers shall be clearly visible from the roadway.

G. Construction Testing Requirements

The petitioner shall cause to have a video inspection made of all new storm sewer and sanitary sewer lines both prior to the release of the performance bond and maintenance bond. The video inspection shall verify that the sewer was installed at the proper grade with no sags or ponding. The sewer video should log the exact location of all laterals to the nearest foot. Two copies of the sewer video shall be provided to the Porter County Engineering Department for review and approval prior to their release of the maintenance bond.

1. Storm Drainage

a. Pipe Culverts

i. Mainline Culverts

(a) After the video inspection, all polyethylene and smooth wall polyvinylchloride pipes 36 inches diameter or less shall be mandrel tested. The mandrel shall be a go/no go mandrel with a minimum of nine arms or prongs and a diameter of 5% less than the pipe diameter. If the mandrel does not pass through the pipe when pulled by hand or the mandrel damages the pipe, the deficient pipe shall be removed, replaced, and mandrel tested a minimum of 30 days after the backfill has been replaced.

ii. Driveway Culverts

(a) Mainline culverts will be visually inspected for acceptance a minimum of 30 days after the completion of backfill operations. Pipes or sections of pipe that cannot be

visually inspected shall be video inspected as directed by the Porter County Engineering Department.

(b) No construction testing is required for this item.

b. Underdrains

i. There are no testing or video inspection requirements for underdrains.

c. Storm Sewer

i. After the video inspection, all polyethylene and smooth wall polyvinylchloride pipes 36 inch diameter or less shall be mandrel tested. The mandrel shall be a go/no go mandrel with a minimum of nine arms or prongs and a diameter of 5% less than the pipe diameter. If the mandrel does not pass through the pipe when pulled by hand or the mandrel damages the pipe, the deficient pipe shall be removed, replaced, and mandrel tested a minimum of 30 days after the backfill has been replaced.

ii. Video inspection per Section I.

d. Manholes, Inlets, and Catch Basins

i. No construction testing is required for these items.

e. Special Structures

i. This Sub-Section is reserved for future use, if required.

2. Sanitary Sewer

a. In addition to the required video inspection of all sanitary sewer lines, construction testing including but not limited to manhole vacuum tests, mandrel tests, air pressure tests, and pressure testing of force mains, shall be in accordance with the local municipality requirements of the City or Town that owns and operates the system that the new sanitary sewer is being tied into.

b. In all cases, conform to testing requirements of Indiana Administrative Code (IAC) Title 327, Article 3.

c. Septic system construction testing shall be in accordance with the requirements of the Porter County Health Department, the Indiana State Department of Health, and Rule 410 IAC 6-8.1.

d. Video inspection per Section I.

3. Water Utilities

a. Construction testing of water utilities shall be in accordance with the requirements of the appropriate local municipality, the "Recommended Standards for Water Works" by the Great Lakes Upper Mississippi River Board of State and Provincial Health and Environmental Managers, and Indiana Administrative Code Title 327, Article 8. All water mains shall be approved by the Indiana Department of Environmental Management and Porter County.

H. Post-Construction & Other Requirements

1. Storm Drainage

a. Residents shall not do anything to prohibit drainage flow within the curb and gutters.

b. Residents must not tie any sump pump, perimeter foundation drain, or piping from downspouts into storm sewer without prior approval from the Porter County Engineering Department.

2. Drain Tiles (septic field perimeter drains, basement drains, roof drains, gutters and downspouts)

Violators to any of the below shall be subject to a $300.00 fine for each day of violation after legal notice has been served.

a. Written approval from Porter County Highway shall be obtained prior to any drain tile construction.

b. A sump pump shall be required if the road ditch is higher in elevation than the proposed drain tile.

c. The existing road ditch shall be cleaned (excavated if deemed necessary by the Highway Department) and free of debris and brush to a sufficient

distance to provide adequate grade for water to flow. All work shall be in accordance with County standards.

d. In those instances where road ditches are available the drain tile connection shall be directly into the ditch and rip-rap placed on each side of the tile (2 foot by 4 foot by 8-inches deep).

e. In subdivisions where curbs exists, the property owner shall discharge various residential drain tile water on top of the ground and let the water flow on the ground surface a minimum travel distance of 40 feet from the road right-of-way line.

f. Known drainage problem areas shall not be compounded, nor shall any new drainage problems be created.

g. Roof, basement, and septic perimeter drains are prohibited from draining directly onto county road pavement.

3. Sanitary Sewer

a. Residents shall not tie any sump pump, perimeter foundation drain, or piping from downspouts into sanitary sewer.

4. Water Utilities

a. This Sub-Section is reserved for future use, if required.

Section 8.10: Maintenance of Traffic

A. Scope of Work

1. This section covers supplemental design requirements, construction materials, construction requirements and performance criteria, construction testing requirements and post-construction requirements for maintenance of traffic.

B. Related Documents and Standard Drawings

1. The following documents are related to the specifications outlined in this section: PCUDO, AASHTO, "A Policy on Geometric Design of Highways and Streets," latest edition; INDOT Standard Drawings and Specifications, latest edition; and the IMUTCD, latest edition.

2. The following standard construction drawings shall apply to this section and may be found in the Standard Drawings Section of this Manual:

VIII-1 Maintenance of Traffic
VIII-2 Maintenance of Traffic (Continued)
VIII-3 Standard Barricades
VIII-4 Standard Barricades (Continued)

C. General Requirements

1. A Maintenance of Traffic plan must be submitted for county approval at least five (5) working days prior to restriction or closure of any street. The plan shall include anticipated date and times of restriction or closure as well as emergency contact numbers. Note: Additional traffic control may be needed for high volume streets as determined by the Porter County Highway Department.

2. The contractor is responsible for proper traffic control and warning signing and devices as required by the MUTCD, for the duration of construction on any public street. Failure to do so will result in the county providing the necessary equipment and charging the contractor with all related costs.

3. Traffic control procedures shall move traffic safety and expeditiously through or around the work areas.

4. Maintain good public relations. Coordinate with the Porter County Engineering Department as well as local police, fire, and ambulance departments to utilize various news media to keep the public informed of any proposed work that will

require detours, lane closures, road closures or other changes from normal traffic conditions.

D. Supplemental Design Requirements

1. Porter County Engineering Department may require the developer to prepare detailed maintenance of traffic plans at any time they deem necessary.

E. Construction Materials

1. Materials for maintenance of traffic items shall be in accordance with INDOT Standard Specifications Section, 801, "Traffic Controls for Construction and Maintenance Operations".

F. Construction Requirements and Performance Criteria

1. Construction Requirements and Performance Criteria for maintenance of traffic items shall be in accordance with INDOT Standard Specifications Section, 801, "Traffic Controls for Construction and Maintenance Operations".

G. Construction Testing Requirements

1. This Sub-Section is reserved for future use, if required.

H. Post-Construction Requirements

1. All maintenance of traffic items shall be removed upon completion of the work and upon written approval of the Porter County Engineering Department.

Section 8.11: Traffic Signals

A. Scope of Work

1. This section covers supplemental design requirements, construction materials, construction requirements and performance criteria, construction testing requirements and post-construction requirements for traffic signals.

B. Related Documents and Standard Drawings

1. The following documents are related to the specifications outlined in this section: PCUDO, AASHTO, "A Policy on Geometric Design of Highways and Streets," latest edition; INDOT Standard Drawings and Specifications, latest edition; and the IMUTCD, latest edition.

C. General Requirements

1. This Sub-Section is reserved for future use, if required.

D. Supplemental Design Requirements

1. This Sub-Section is reserved for future use, if required.

E. Construction Materials

1. Materials for traffic signals and related items shall be in accordance with INDOT Standard Specifications Section 805, "Traffic Signals" and Section 922, "Traffic Signals".

F. Construction Requirements and Performance Criteria

1. Construction Requirements and Performance Criteria for traffic signals and related items shall be in accordance with INDOT Standard Specifications Section 805, "Traffic Signals" and Section 922, "Traffic Signals".

G. Construction Testing Requirements

1. This Sub-Section is reserved for future use, if required.

H. Post-Construction Requirements

1. This sub-section is reserved for future use, if required.

Section 8.12: Roadway Lighting

A. Scope of Work

1. This section covers supplemental design requirements, construction materials, construction requirements and performance criteria, construction testing requirements and post-construction requirements for street lighting.

B. Related Documents and Standard Drawings

1. The following documents are related to the specifications outlined in this section: PCUDO, AASHTO, "A Policy on Geometric Design of Highways and Streets," latest edition; INDOT Standard Drawings and Specifications, latest edition; and the IMUTCD, latest edition.

2. The following standard construction drawings shall apply to this section and may be found in the Standard Drawings Section of this Manual:

X-1 Street Lighting Foundation Details
X-2 General Lighting Detail

C. General Requirements

1. This Sub-Section is reserved for future use, if required.

D. Supplemental Design Requirements

1. This Sub-Section is reserved for future use, if required.

E. Construction Materials

1. Materials for street lighting and related items shall be in accordance with INDOT Standard Specifications Section, 807, "Highway Illumination".

2. Cobra head lighting styles may not be used unless approved by Porter County Engineering and Porter County Planning Department.

F. Construction Requirements and Performance Criteria

1. Construction Requirements and Performance Criteria for street lighting and related items shall be in accordance with INDOT Standard Specifications Section, 807, "Highway Illumination".

2. Cobra head lighting styles may not be used unless approved by Porter County Engineering and Porter County Planning Department.

G. Construction Testing Requirements

1. This Sub-Section is reserved for future use, if required.

H. Post-Construction Requirements

1. This sub-section is reserved for future use, if required.

Section 8.13: Low Impact Development

A. Scope of Work

1. This section covers work associated with the construction of low impact development facilities.

B. Related Documents and Standard Drawings

1. This following documents are related to the specifications outlined in this section: PCUDO; INDOT Standard Drawings and Specifications, latest edition; PCSWDM; Porter County Landscape Standards and Guidelines and the ISWQM.

2. The following standard construction drawings shall apply to this section and may be found in the Section X of the PCSWDM:

Filter Strips
Bioinfiltration / Bioretention / Rain Garden
Low Impact / Retentive Grading
Swales
Subsurface Infiltration
Detention Basins
Manufactured Stormwater Quality Units

C. General Requirements

1. This sub-section is reserved for future use, if required.

D. Supplemental Design Requirements

1. Porter County Stormwater Design Manual

a. Descriptions, limitations, design requirements, drainage report requirements for approved low impact development (LID) practices for are provided in Section X of the PCSWDM.

b. The engineer and / or land surveyor shall include the construction details for the applicable LID practices in the plans and specifications for the proposed development or site improvement plans. If required by site conditions, it is the responsibility of the engineer and / or land surveyor to modify these details appropriately. The basis for the modification of the details shall be justified by engineering calculations provided in the drainage report. See the PCSWDM for further information.

E. Construction Materials

1. Materials used for LID practices shall be in accordance with the PCSWDM and other Sections of these specifications.

F. Construction Requirements and Performance Criteria

1. Construction requirements and performance criteria for LID practices shall be in accordance with the PCSWDM and other Sections of these specifications.

G. Construction Testing Requirements

1. This sub-section is reserved for future use, if required.

H. Post-Construction Requirements

1. This sub-section is reserved for future use, if required.

Section 8.14: Landscaping

A. Scope of Work

1. This section covers work associated with the construction of landcaping facilities.

B. Related Documents and Standard Drawings

1. This following documents are related to the specifications outlined in this section: PCUDO; INDOT Standard Drawings and Specifications, latest edition; PCSWDM; and the Porter County Landscape Standards and Guidelines.

C. General Requirements

1. This sub-section is reserved for future use, if required.

D. Supplemental Design Requirements

1. This sub-section is reserved for future use, if required.

E. Construction Materials

1. This sub-section is reserved for future use, if required.

F. Construction Requirements and Performance Criteria

1. This sub-section is reserved for future use, if required.

G. Construction Testing Requirements

1. This sub-section is reserved for future use, if required.

H. Post-Construction Requirements

1. This sub-section is reserved for future use, if required.

Section 8.15: Miscellaneous Items

A. Scope of Work

1. This section covers work associated with:

   a. Mailboxes
   b. Reserved for future

B. Related Documents and Standard Drawings

1. The following documents are related to the specifications outlined in this section: PCUDO and the INDOT Standard Drawings and Specifications, latest edition.

2. The following standard construction drawings shall apply to this section and may be found in the Standard Drawings Section of this Manual:

   XIII-1: Mailbox Placement
   XIII-2: Survey Line Monument

C. General Requirements

1. Mailboxes

   a. A mailbox or newspaper delivery box, hereafter referred to as mailbox shall not be allowed to exist in the County's right-of-way if it interferes with the safety of the traveling public or the function of the road.

   b. Any mailbox that is found to violate the public safety intent of these standards shall be declared unacceptable and may be removed by the postal patron upon notification of the Porter County Highway Department. At the discretion of the Porter County Highway Engineer, based on an assessment of a hazard to the public, the postal patron shall be granted not less than 24 hours or more than 30 days, to remove an unacceptable mailbox. After the specified removal period has expired, the unacceptable mailbox shall be removed by the Porter County Highway Department.

   c. Deviations to the construction materials and the construction requirements and performance criteria can only be approved on a case by case basis by Porter County and the U.S. Postal Service. The developer and / or resident shall provide all necessary documentation to Porter

County and the U.S. Postal Service for their review of the proposed changes. Written permission for any deviation is required by both the U.S. Postal Service and Porter County Highway Department.

D. Supplemental Design Requirements

1. This Sub-Section is reserved for future use, if required.

E. Construction Materials

1. Mailboxes

2. Materials shall be of light sheet metal, fiberglass, or plastic construction and conform to the requirements of the U.S. Postal Service. Newspaper delivery boxes shall be of light sheet metal or plastic construction and of minimum dimensions suitable for holding a newspaper.
3. Dimensions of the boxes shall meet U.S. Postal Service standards.

F. Construction Requirements and Performance Criteria

1. Mailboxes

a. Mailboxes shall not be placed where access is prohibited by law.
b. The location and construction of the mailbox shall conform to Standard Drawing XIII-1, the standards established in this section, and the rules and regulations of the U.S. Postal Service.
c. Mailbox supports shall be placed in native soil or in crushed aggregate base materials whenever these materials provide adequate support. Mailbox supports shall not be placed in concrete unless necessary for support. Supports set in concrete shall be placed at a depth no greater than twelve inches (12").
d. Each post shall be a single four inch by four and a half inch (4"x4 ½") diameter wooden post or a metal post with a strength no greater than two inch (2") diameter standard strength steel pipe, and embedded no less than twenty-four inches (24") into the ground. A metal post shall not be fitted with an anchor plate, but it may have an anti-twist device that extends no greater than ten inches (10") below the ground.
e. The post-to-mailbox attachments shall be of sufficient strength to prevent the mailbox from separating from the post top if the installation is struck by a vehicle. The minimum spacing between the centers of the support posts shall be five-feet (5') maximum.

G. Construction Testing Requirements

1. This Sub-Section is reserved for future use, if required.

H. Post-Construction Requirements

1. This Sub-Section is reserved for future use, if required.

Section 8.16: Inspection Requirements

A. Preconstruction Meeting

1. Preconstruction meeting with developer, contractor, design engineer and county personnel shall be required prior to any land disturbing activity. The following items are required to be provided by the developer or the designated agent.
    a. Schedule of construction activities;
    b. Proof of all permit approvals, copies shall be submitted to the County for water, sanitary sewer, Rule 5, IDEM, Army Corp, etc.;
    c. Contact information for the developer's representative and all contractors working on the project including 24-hour emergency contact information;
    d. Traffic control plan to assure safe construction traffic access at all times;
    e. Pre-construction video record or photo journal if project is located on county right-of-way. Copy made available to Porter County Highway Engineering Department in DVD format.
    f. Erosion control measures installed in accordance with approved plan prior to commencement of land disturbing activities;
    g. Utility coordination as necessary;
    h. Any other information that may be required from a county department prior to commencing construction;
    i. Communication certification and verification.

B. Required Inspections

1. Clearing of right-of-ways and easements; building pads and parking areas. See Section II, Page II-3 for inspection schedule required. Maintenance records shall be available upon request by the County. (Sections II Sediment and Erosion control and Section III Clearing, Excavation and Site Grading)
    a. Sediment and erosion control measures in place;
    b. Top soil stock pile or soil stockpiles are per approved erosion control plan and protection in place;
    c. Tree and vegetation protection in place;
    d. Cut embankments or fill slopes and protected.

2. Roadways – public road inspections with the Highway Engineering Department; private roads through the Porter County Plan Commission. (Section IV – Public Streets)
    a. Subgrade prior to the placement of geogrid and aggregate base. If liming or other approved procedure is used an inspection shall be

scheduled during the construction of the approved sub-grad stabilization;

b. Compacted aggregate base prior to the placement of bituminous binder course and concrete curbing;
c. Bituminous binder prior to placement of bituminous surface course;
d. Final inspection for acceptance of roads and streets.

3. Sidewalks, curb ramps and trails (pathways) required to be installed by developer. All sidewalk and trail construction shall be in compliance with the American with Disabilities Act (ADA). (Section VI – Sidewalks, Curb Ramps and Trails)
    a. subgrade prior to placement of concrete for sidewalks and ramps, or placement of appropriate trail material;
    b. subbase prior to finished trail material.

4. Storm Water Management - Inspections to be scheduled with County Engineering Department if pipe or section of pipe is within the right-of-way. For pipe under private roadway or outside of the roadway area inspection is with the Porter County Plan Commission. (Section VII – Utilities)
    a. Material verification submitted for piping, manholes, end sections joint material and other materials as required by the engineering and plan commission;
    b. bedding material and pipe placement;
    c. trench backfill procedures;
    d. pipe joining and materials;
    e. manholes, catch basins and inlets; bedding backfill and sealing;
    f. All swales, slopes and grades;
    g. Storm water detention/retention, slopes, grades and landscaping/seeding;
    h. Storm water quality systems;
    i. Mandrell test for pipes;
    j. Video inspection if required by the County.

5. Sanitary Sewers - Inspections to be scheduled with County Engineering Department if pipe or section of pipe is within the right-of-way. For pipe under private roadway or outside of the roadway area inspection is with the Porter County Plan Commission. (Section VII – Utilities)
    a. Material verification submitted for piping, manholes, end sections joint material and other materials as required by the engineering and plan commission.
    b. bedding material and pipe placement;
    c. trench backfill procedures;
    d. Pipe joining and materials;

e. manholes; bedding backfill and sealing;
f. Mandrell test for pipes;
g. Vacuum testing for manholes;
h. Video inspection.

6. Water Distribution Systems - Inspections to be scheduled with County Engineering Department if pipe or section of pipe is within right-of-way. (Section VII – Utilities)
    a. Bedding and trench backfill procedures;
    b. Final acceptance or punch list showing completion of system and acceptance by the utility;
    c. Approved by the permitting authority.

7. Restoration and landscaping inspections to be scheduled with plan commission. Seeding of disturbed areas shall be inspected based upon the Rule 5 permit and approved construction sequencing.
    a. seeding of disturb areas;
    b. seed mixtures for ponds, swales, and slopes;
    c. erosion control maintenance;
    d. maintenance schedule to be provided.

8. Acceptance of improvements and release of performance guarantee or issuance of the Certificate of Occupancy.
    a. Maintenance guarantee submitted to County Engineer for review and scheduling to Board of Commissioners for approval.
    b. As-builts submitted to County Engineer and plan commission per Section I, *General Requirements* in Supplemental Design and Construction Standards/Specifications, must be reviewed;
    c. post video or photo log submitted to County Engineer;
    d. all infrastructure inspections and acceptances completed.

If proposed construction site is being serviced by well and septic systems, all inspections must be completed by the Porter County Health Department with their approval.

Section XIV is not an all inclusive list of the required inspections. Additional inspections may be determined at the pre-construction meeting or during the actual project construction. It is the developer/contractor's responsibility to contact County offices for inspections. Work that has not been inspected may not be accepted by Porter County.

Section 8.17: Approved Material List

A. Approved Materials

1. Flowable Fill
   a. Product 1237, 200 psi, 2 bag by Ozinga

2. Geogrid
   a. Tensar BX 1100

3. Cast in Place Watertight Connector
   a. A-Lok STM or Z-Lok by A-Lok Products, Inc.