TOWN OF
INGALLS
Madison County

2023 Street Standards

FOR

PAVING AND SURFACING
STORM SEWER

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INGALLS
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2023 Street Standards

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STORM SEWER

Town of Ingalls
2023 Street Standards

FORWARD

The enclosed Standard Construction Details and Specifications are provided to outline the Town of Ingalls's minimum criteria for construction within the corporation limits. Interpretation of these standards and their intent will be made by the Street Superintendent. Exceptions may be granted as long as it meets the original intent of these standards or as new material becomes available and acceptable if it is deemed to be of benefit to the Town of Ingalls.

All construction projects which are to become part of the Town's system for operation and maintenance, shall conform to these standards. Construction drawings and specifications must be approved by the Town and a written permit obtained in accordance with existing ordinances before construction begins. In addition, sanitary sewer projects must be submitted to the Indiana Department of Environmental Management (IDEM) for approval. The Town will not approve a sanitary sewer project for construction until an approval from IDEM is received.

Construction observation shall be provided by the Town. A minimum of 48 hours notice shall be given prior to starting construction.

These standards were prepared with the intent of obtaining the highest quality of construction possible and are consistent with accepted industry practices and specifications. As new materials become available and acceptable, the standards may be revised and updated.

Copies of the standards may be obtained from the Town of Ingalls,

Ingalls Town Office,
308 Meridian Street
Ingalls, Indiana 46048

Telephone number: 317-485-4321,
Fax number: 317-485-5293.

January 7, 2022

TOWN OF INGALLS
MAINTENANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

That _____

(Contractor name, complete address including ZIP Code and legal title)

as Principal, hereinafter called Contractor, and _____

(Surety name and complete address including ZIP Code)

_____ a corporation organized and existing under

the laws of the State of _____, with its principal office in the City of _____

as Surety, hereinafter called Surety, are held firmly bound unto the **Town of Ingalls, 308 Meridian Street, Ingalls, Indiana 46048, a Municipal Corporation in the State of Indiana**, as Obligee, hereinafter called Owner, in the amount of

_____Dollars (_____), for the

payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, Contractor has by written agreement dated _____

_____ entered into a contract with Owner for _____

_____

in accordance with drawings and specifications prepared by _____

_____

which contract is by reference made a part hereof, and is hereinafter referred to as the CONTRACT.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if Contractor shall, for a period of three (3) years from and after the date of completion and acceptance of same by Owner, replace any and all defects arising in the Work, whether resulting from defective materials or defective workmanship, after such period this obligation shall be null and void; otherwise it will remain in full force and effect.

The Surety hereby waives notice of any alteration of extension of time made by the Owner.

Whenever Contractor shall be, and declared by Owner to be in default under the CONTRACT, the Owner having performed Owner's obligations thereunder, the Surety may promptly remedy the default, or shall promptly:

1. Complete the CONTRACT in accordance with its terms and conditions, and
2. Shall save the Owner harmless from any claims, judgments, or liens arising from the Surety's failure to either remedy the default or to complete the CONTRACT in accordance with its terms and conditions in a timely manner.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the Owner named herein or the successors of Owner.

Signed and sealed the * _____ day of _____ 20 _____

Principal Corporate Seal

_____
(Contractor Name)

BY: _____ (Seal)
(Must be President, Vice President, Owner, Partner, Manager, Member, or other duly Authorized Agent.)

_____
(Title)

Surety Corporate Seal

_____
(Surety)

BY: _____ (Seal)

NOTE: Please attach Power of Attorney

NOTE: Applicable sections of attached acknowledgements must be completed and returned as part of the bond.

*Power of Attorney must be certified on this date or later.

TOWN OF INGALLS
MAINTENANCE BOND

ACKNOWLEDGEMENTS

Acknowledgement by Principal if individual or Partnership

1. STATE OF _____
2. County of _____ to-wit:
3. I, _____, a Notary Public in and for the
4. county and state aforesaid, do hereby certify that _____ whose name is signed to the foregoing writing, has this day acknowledged the same before me in my said county.
5. Given under my hand this _____day of _____ 20 _____
6. Notary Seal 7. _____ (Notary Public)
8. My commission expires on the _____ day of _____ 20 _____

Acknowledgement by Principal if Corporation

9. STATE OF _____
10. County of _____ to-wit:
11. I, _____, a Notary Public in and for the
12. county and state aforesaid, do hereby certify that _____
13. who as, _____ signed the foregoing writing for
14. a corporation, has this day, in my said county, before me, acknowledged the said writing to be the act and deed of the said corporation.
15. Given under my hand this _____ day of _____ 20 _____
16. Notary Seal 17. _____ (Notary Public)
18. My commission expires on the _____ day of _____ 20 _____

Acknowledgement by Surety

19. STATE OF _____
20. County of _____ to-wit:
21. I, _____, a Notary Public in and for the
22. county and state aforesaid, do hereby certify that _____
23. who as, _____ signed the foregoing writing for
24. _____ a corporation, has this day, in my said county, before me, acknowledged the said writing to be the act and deed of the said corporation.
25. Given under my hand this _____ day of _____ 20 _____
26. Notary Seal 27. _____ (Notary Public)
28. My commission expires on the _____ day of _____ 20 _____

Sufficiency in Form and Manner of Execution Approved

Town Attorney

This _____ day of _____ 20 _____ By: _____ (Name)

Town of Ingalls
2023 Street Standards

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SECTION 01001 - GENERAL REQUIREMENTS

1.1 DEFINITIONS

A. Whenever used in these specifications the following terms have the meanings indicated which are applicable to both the singular and plural thereof:

1. Town - The Town of Ingalls, represented by the Town Council, having the authority to approve the plans, and specifications and accept the final construction. Person or firm having control over the development site, and management of the project on behalf of the Town.
2. Engineer - Town's Engineer acting on behalf of the Town.
3. Contractor - The person, firm or corporation with whom the developer or Town has entered into an agreement for construction of the project.
4. Project - The total construction of which the work to be provided may be the whole or part.
5. Work - The entire completed construction or the various separately identified parts required to be furnished.
6. Representative - Town's inspector or Engineer acting on behalf of the Town.
7. Superintendent – Street Superintendent, formerly known as Manager of Streets, and Utilities who is employed by the Town in a position with direct responsibilities over construction, operation and maintenance of streets and utilities.

1.2 WORK TO BE PERFORMED

Work to be performed shall be in accordance with drawings and specifications approved by the Town.

1.3 LOCAL LABOR AND MATERIALS

A. Whenever possible, the Contractor, his subcontractors, material men, or others who employ labor, shall employ such labor locally.

B. The Contractor shall purchase materials such as sand, cement, gravel, pipe, steel, lumber, etc., from local dealers wherever such local dealer's prices meet competitions' and where such materials meet the specifications.

1.4 SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION

The Contractor shall be solely responsible for all obligations prescribed as employer obligations under Chapter XVII of Title 29, Code of Federal Regulations, Part 1926, otherwise known as "Safety and Health Regulations for Construction".

1.5 DISCOVERY OF HAZARDOUS MATERIAL

If, during the course of this work, the existence of hazardous material, including asbestos containing material, is observed in the work area, the Contractor shall immediately notify the Town in writing. The Contractor shall not perform any work pertinent to the hazardous material prior to receipt of special instructions from the Town of Ingalls. Asbestos containing material includes transite pipe.

1.6 EASEMENTS

A. The Developer will obtain right-of-way easements over and through certain private lands for the construction and rehabilitation. The width or limits of such rights-of-way will be defined by the Town before the work or construction shall begin. If the methods of construction employed by the Contractor are such as to require the use of land beyond the limits obtained, he shall make his own agreements with the property owners affected for the use of such additional land.

B. In all such right-of-way easements, the Contractor shall be required to carefully remove the property owner's fences, or other obstacles to the construction procedure, and replace the same after the work is installed. The backfilling shall be to the grade of the existing ground level or to the grade as established by the property owner in the event the property owner permits the deposit of excess material upon such land.

C. The cost of all such restoration of property shall be included in this work.

1.7 OPERATIONS WITHIN RIGHT-OF-WAY

In public thoroughfares, all operations of the Contractor, including those of temporary nature, must be confined within the applicable right-of-way limits after having obtained an approved right-of-way permit from the Town. If the methods of the construction employed by the Contractor are such as to require the use of land beyond the public thoroughfares, he shall make his own agreements with the property owners affected for the use of such additional.

1.8 PERMITS

A. The Developer will obtain permits which relate to the completed facilities. Permits obtained by the Developer include permits from the following:

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1. Indiana Department of Environmental Management
2. Department of Natural Resources
3. Corps of Engineers
4. Indiana Department of Fire Prevention and Building Safety
5. Indiana Department of Transportation

6. Railroads

B. The Contractor shall obtain permits which relate to construction procedures.

1. All necessary permits or licenses required from the State or County in connection with construction procedures under or along existing highways shall be obtained by and at the expense of the Contractor. The construction shall be performed by the Contractor in full accordance with any and all requirements of the State Highway Commission or County Road Commission, including those applying to barricades, watchmen, guarding, lighting, storage or supplies, equipment and excavated materials, method or backfilling, final grading, replacement of pavement or road surface, and all other conditions or requirements which may be stipulated by the State Highway Commission or County Road Commission, whether specifically shown on the drawings or mentioned in the specification.

1.9 MAINTAINING TRAFFIC

A. Before closing any thoroughfare, the Contractor shall notify and, if necessary, obtain a permit or permits from the duly constituted public authority having jurisdiction, whether it be state, county, or town.

B. The Contractor shall notify the Town of the intention to close a particular street 72 hours in advance of the proposed closing. The Contractor shall place all proper detour signs and barricades prior to the actual street closing.

C. During the construction, the Contractor shall be responsible for maintaining and protecting the pedestrian and vehicular traffic at all times on all streets involved and providing access to all residential and commercial establishments adjacent to the construction area. The Contractor shall furnish and maintain signage, barricades, flares, etc., in accordance with Indiana Manual on Uniform Traffic Control Devices. The signage, barricades, etc., must be in good condition.

D. The Contractor shall conduct his work in such a manner as not to unduly or unnecessarily restrict or impede normal traffic through the streets of the community. Insofar as it is practicable, do not locate excavated material and spoil banks in such a manner as to obstruct traffic. Keep the traveled way of all streets, roads, and alleys clear and unobstructed insofar as is possible. Do not use streets, roads, or alleys for the storage of construction materials, equipment supplies, or excavated earth, except when and where necessary. If required by duly constituted public authority, the Contractor shall, at his own expense, construct bridges or other temporary crossing structures over trenches so as not to unduly restrict traffic. Such structures shall be of adequate strength and proper construction and shall be maintained by the Contractor in such a manner as not to constitute and undue traffic hazard. Private driveways shall not be closed, except when and where necessary, and then only upon due advance notice to the Town and for the shortest practicable period of time, consistent with efficient and expeditious

construction. The Contractor shall be liable for any damage to persons or property resulting from his work.

E. Streets in which excavation has occurred shall be temporarily restored to receive traffic as soon as possible. Permission to close additional streets shall be denied the Contractor if, in the opinion of the Town, the restoration on streets where excavation has occurred has not progressed satisfactorily.

1.10 WALKS AND PASSAGEWAYS

The Contractor, when required, shall make provisions at cross streets for the free passage of vehicles and foot passengers, either by bridging or otherwise. Do not obstruct the sidewalks, gutters, or streets, or prevent in any manner the flow of water in streets. Use all proper and necessary means to permit the free passage of surface water along the gutters. The Contractor shall immediately cast away all offensive matter, exercising such precaution as may be directed by the Town's Representative. All material excavated shall be so disposed of as to inconvenience the public and adjacent tenants as little as possible and to prevent injury to trees, sidewalks, fences, and adjacent property of all kinds. The Contractor may be required to erect suitable barriers to prevent such inconvenience or injury.

1.11 WARNING LIGHTS AND ARROW BOARDS

The Contractor shall place sufficient warning lights and arrow boards on or near the work and keep them illuminated during periods of construction and reduced visibility (from twilight in the evening until sunrise) and shall be held responsible for any damages that any party or the Town may sustain due to negligence while prosecuting this work.

1.12 UTILITIES

A. Temporary Removal: All existing utility systems which conflict with the construction of the work herein which can be temporarily removed and replaced shall be accomplished at the expense of the Contractor. Work shall be done by the utility unless the utility approves in writing that the work may be done by the Contractor.

B. Permanent Relocation of Utilities: Water mains, storm sewer inlets, gas lines, wire lines, service connections, water and gas meter boxes, water and gas valve boxes, light and traffic standards, cable ways, signals, and other utility appurtenances located in the public right-of-way which would permanently interfere with the proposed improvements will be moved by the utility involved and paid for by the Contractor.

C. Payment for Utilities: The Contractor shall make all necessary applications and arrangements and pay all fees and charges for electrical energy for power and light, gas, water, and telephone service as required for the construction of this

Contact during its entire progress. Included shall be all temporary wiring, switches, connections, and meters.

1.13 DUST, NOISE, AND EROSION CONTROL

Dust shall be minimized by use of water and deliquescent salts. Noise shall be minimized by use of properly constructed and maintained equipment provided with suitable mufflers, snubbers, and other sound attenuating devices and supports. Erosion shall be controlled in such a manner that soil particles from the construction site are prevented from entering public waters or from being deposited on neighboring property, streets, and highways.

1.14 SUBMITTALS - CERTIFICATE OF COMPLIANCE

The Contractor shall submit to the Town a Certificate of Compliance from the manufacturer and/or supplier of each and every specified material or manufactured equipment item. The Certificate shall state that the material or the item of equipment to be furnished has been manufactured with materials in accordance with the applicable sections of all required codes, specifications, and standards as required by the specifications.

1.15 MANUFACTURER'S SERVICE TIME

A. When equipment is to be furnished by the Contractor and maintained by the Town, service by the manufacturer is required to be furnished as part of the work and shall be at the Contractor's expense.

B. The service provided shall be by a qualified representative who shall check the completed installation, place the equipment in operation, and instruct the Town's personnel regarding operation and maintenance procedures. Such services are to be for a period of time and for the number of trips specified. A working day is defined as a normal 8-hour working day, on the job site and does not include travel time.

C. The services shall further demonstrate to the Town's complete satisfaction that the equipment will perform the functions for which are intended.

1.16 GUARANTEE/WARRANTY

The Contractor shall provide a written or typed warranty for all equipment installed.

1.17 RECORD DRAWINGS

A. The Contractor shall prepare or be responsible for preparation and submittal of record drawings, which shall include one (1) set of full size reproducible drawings

and one (1) set in an electronic file utilizing AutoCAD (Release 14) or comparable computer-aided design software in "DWG" and/or "DXF" format.

B. Record drawings shall be a full set of drawings showing all details of the construction project and reflecting any changes from the approved drawings. Accurate locations of manholes, structures, sewers, house/building services, utility crossings and other pertinent features shall also be shown.

C. Record drawings shall be certified as to their accuracy by a registered Professional Engineer.

D. Record drawings shall be submitted to the Town's Manager within thirty (30) days after completion of construction.

1.18 VIDEO RECORDS

A. The Contractor shall provide video records of the project limits prior to the start of work. The Town will not provide a "Notice to Proceed" prior to receipt of the video records. The video records shall be in a *.mpg or *.wmv format.

1.19 PERFORMANCE AND MAINTENANCE BONDS

A. The Town of Ingalls requires a Performance Bond in an amount not to exceed 125% of the valued improvements and a 3-year Maintenance Bond in an amount not to exceed 20% of the value of the installation of public utilities, roads, curbs, sidewalks, trails, waterlines, sanitary sewers, storm sewers, street lights and street signs prior to issuance of building permits and/or occupancy permits.

B. A certified engineer's estimate of the improvements must be submitted with the bonds.

END OF SECTION 01001

SECTION 02101 - TEMPORARY EROSION AND DUST CONTROL

PART 1 - GENERAL

1.1 DESCRIPTION

A. Temporary Erosion and Dust Control measures must meet the current Madison County Storm Water ordinance and the Indiana Department of Environmental Management Storm Water Pollution Prevention Plan (SWPPP) requirements.

B. This item shall consist of temporary control measures as shown on the plans or as ordered by the Town during the life of a contract to control water pollution, soil erosion, and siltation through the use of berms, dikes, dams, sediment basins, fiber mats, gravel, mulches, grasses, slope drains, and other erosion control devices or methods.

C. Temporary erosion control measures contained herein shall be coordinated with the permanent erosion control measures specified as part of this contract to the extent practical to assure economical, effective, and continuous erosion control throughout the construction period.

D. Temporary control may include work outside the construction limits such as borrow pit operations, equipment, and material storage sites, waste areas, and temporary plant sites.

E. Erosion control design for crossing a legal drain shall be approved and constructed per the latest standards of the Madison County Surveyor's Office.

1.2 SUBMITTALS

Submit erosion and dust control plans to the Street Superintendent for review and approval.

PART 2 - PRODUCTS

2.1 GRASS

Grass which will not compete with the grasses sown later for permanent cover shall be a quick-growing species (such as ryegrass, Italian ryegrass, or cereal grasses) suitable to the area providing a temporary cover.

2.2 MULCHES

Mulches may be hay, straw, fiber mats, netting, bark, wood ships, or other suitable material reasonably clean and free of noxious weeds and deleterious materials.

2.3 FERTILIZER

Fertilizer shall be a standard 10-10-2 commercial grade and shall conform to all federal and state regulations and to the standards of the Association of Official Agricultural Chemists.

2.4 STRAW BALE DIKE

Straw bale dikes, as illustrated in Detail 02101-A, shall be used to prevent soil erosion at all stream or ditch crossings. Individual straw bale dike locations are indicated on the site plans.

2.5 SLOPE DRAINS

Where construction disturbs grassy slopes equal to or steeper than 3:1 the slope shall be protected with an erosion control mat as illustrated in Details 2101B and 2101C. Slope drains may be constructed of pipe, fiber mats, rubber, Portland cement concrete, bituminous concrete or other materials that will adequately control erosion.

2.6 SILT FENCING

Silt fencing, as illustrated in Detail 02101-D, shall be used to prevent soil erosion at the top of slope as indicated on the site plans.

2.7 OTHER

All other methods and materials shall meet commercial grade standards and shall be approved by the Town before being incorporated into the project.

PART 3 - EXECUTION

3.1 GENERAL

A. In the event of conflict between these requirements and pollution control laws, rules, or regulations of other federal, state, or local agencies, the more restrictive laws, rules, or regulations shall apply.

B. The Contractor shall be responsible for compliance with construction practices and operations, to the extent of the construction work.

3.2 SCHEDULE

Prior to the start of construction, the Contractor shall submit schedules for accomplishment of temporary and permanent erosion control work, as are applicable for clearing and grubbing, grading, construction, paving, and structures at watercourses. The Contractor shall also submit a proposed method of erosion and dust control on haul roads

and borrow pits and a plan for disposal of waste materials. Work shall not be started until the erosion control schedules and methods of operations for the applicable construction have been accepted by the Town.

3.3 AUTHORITY OF TOWN

The Town has the authority to limit the surface area of erodible earth material exposed by clearing and grubbing, to limit the surface area of erodible earth material exposed by excavation, borrow, and fill operations, and to direct the Contractor to provide immediate permanent or temporary pollution control measures to minimize contamination of adjacent streams or other watercourses, lakes, ponds, or other areas of water impoundment.

3.4 CONSTRUCTION DETAILS

A. The Contractor will be required to incorporate all permanent erosion control features into the project at the earliest practicable time as outlined in the accepted schedule. Except where future construction operations will damage slopes, the Contractor shall perform the permanent seeding and mulching and other specified slope protection work in stages as soon as substantial area of exposed slopes can be made available. Temporary erosion and pollution control measures will be used to correct conditions that develop during construction that were not foreseen during the design state; that are needed prior to installation of permanent control features; or that are needed temporarily to control erosion that develops during normal construction practices but are not associated with permanent control features on the project.

B. Where erosion is likely to be a problem, clearing and grubbing operations should be scheduled and performed so that grading operations and permanent erosion control features can follow immediately thereafter if the project conditions permit; otherwise, temporary erosion control measures may be required between successive construction stages.

C. The Town will limit the area of clearing and grubbing, excavation, borrow, and embankment operations in progress, commensurate with the Contractor's capability and progress in keeping the finish grading, mulching, seeding, and other such permanent control measures current in accordance with the accepted schedule. Should seasonal limitations make such coordination unrealistic, temporary erosion control measures shall be taken immediately taken to the extent feasible and justified.

D. In the event that temporary erosion and pollution control measures are required due to the Contractor's negligence, carelessness, or failure to install permanent controls as scheduled or as ordered by the Town, such work shall be performed by the Contractor at his/her own expense.

E. The Town may increase or decrease the area of erodible earth material to be exposed at one time as determined by analysis of project conditions.

F. The erosion control features installed by the Contractor shall be acceptably maintained by the Contractor during the construction period.

G. Whenever construction equipment must cross watercourses at frequent intervals, and such crossings can adversely affect the sediment levels, temporary structures shall be provided.

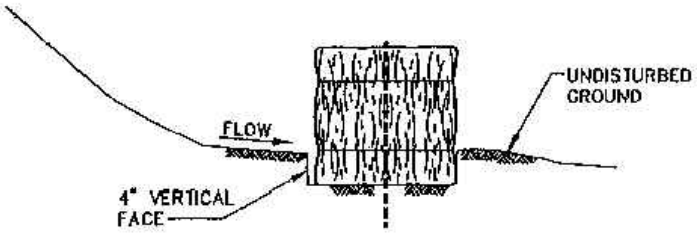
H. Pollutants such as fuels, lubricants, bitumen, raw sewage, wash water from concrete mixing operations, and other harmful materials shall not be discharged into or near rivers, streams, and impoundments or into natural or manmade channels leading thereto.

PART 4 - FIGURES

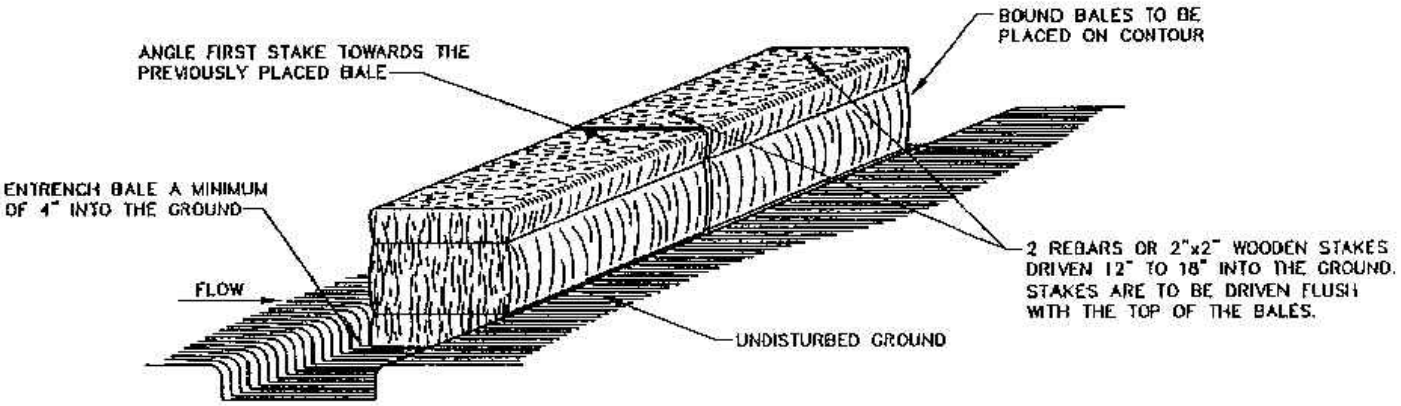
4.1 STANDARD EROSION DETAILS

FIGURE	DESCRIPTION
2101-A	Straw Bale Anchoring & Bedding Detail
2101-B	Erosion Control Mat - Staple Guide
2101-C	Erosion Control Mat - Slope Detail
2101-D	Silt Fence Detail
2101-D1A	Silt Fence Notes

END OF SECTION 02101



BEDDING DETAIL



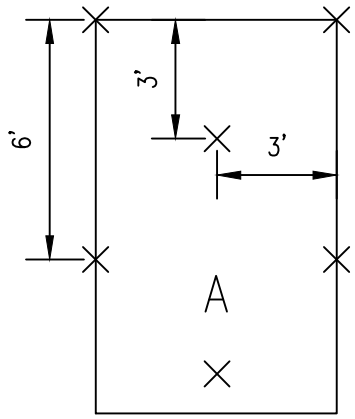
ANCHORING DETAIL

STRAW BALE ANCHORING & BEDDING DETAIL

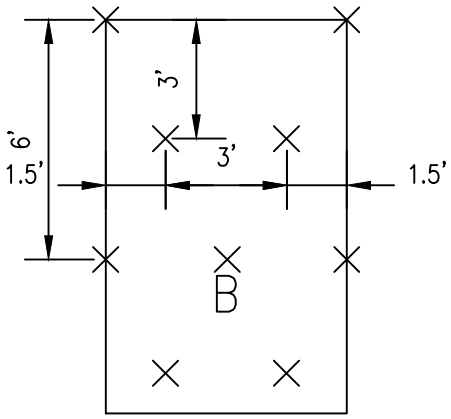
SCALE: NONE

TRIAD ASSOCIATES INC.
5835 LAWTON LOOP EAST DRIVE
INDIANAPOLIS, INDIANA 46216
PHONE: 317-377-5230 FAX: 317-377-5241

2101-A



1 STAPLE PER SQ. YD.



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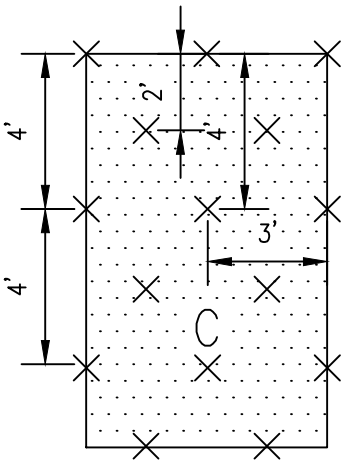

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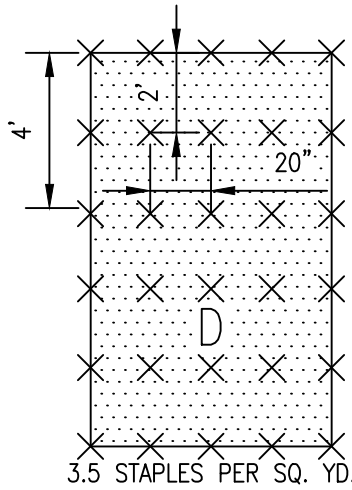

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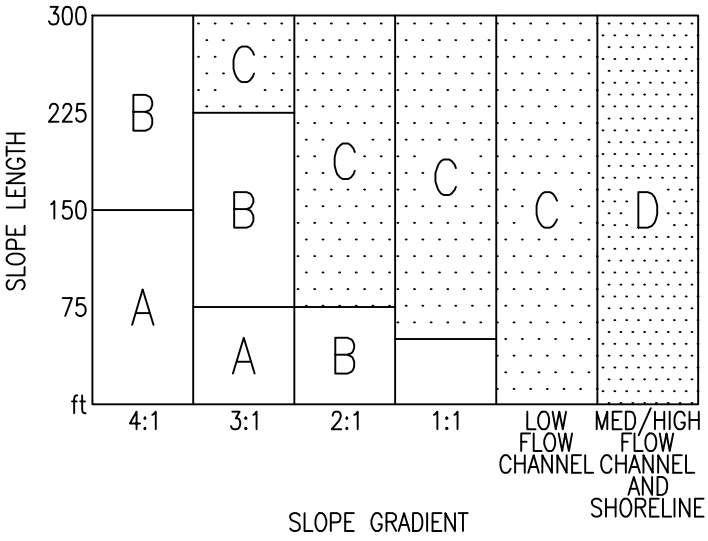
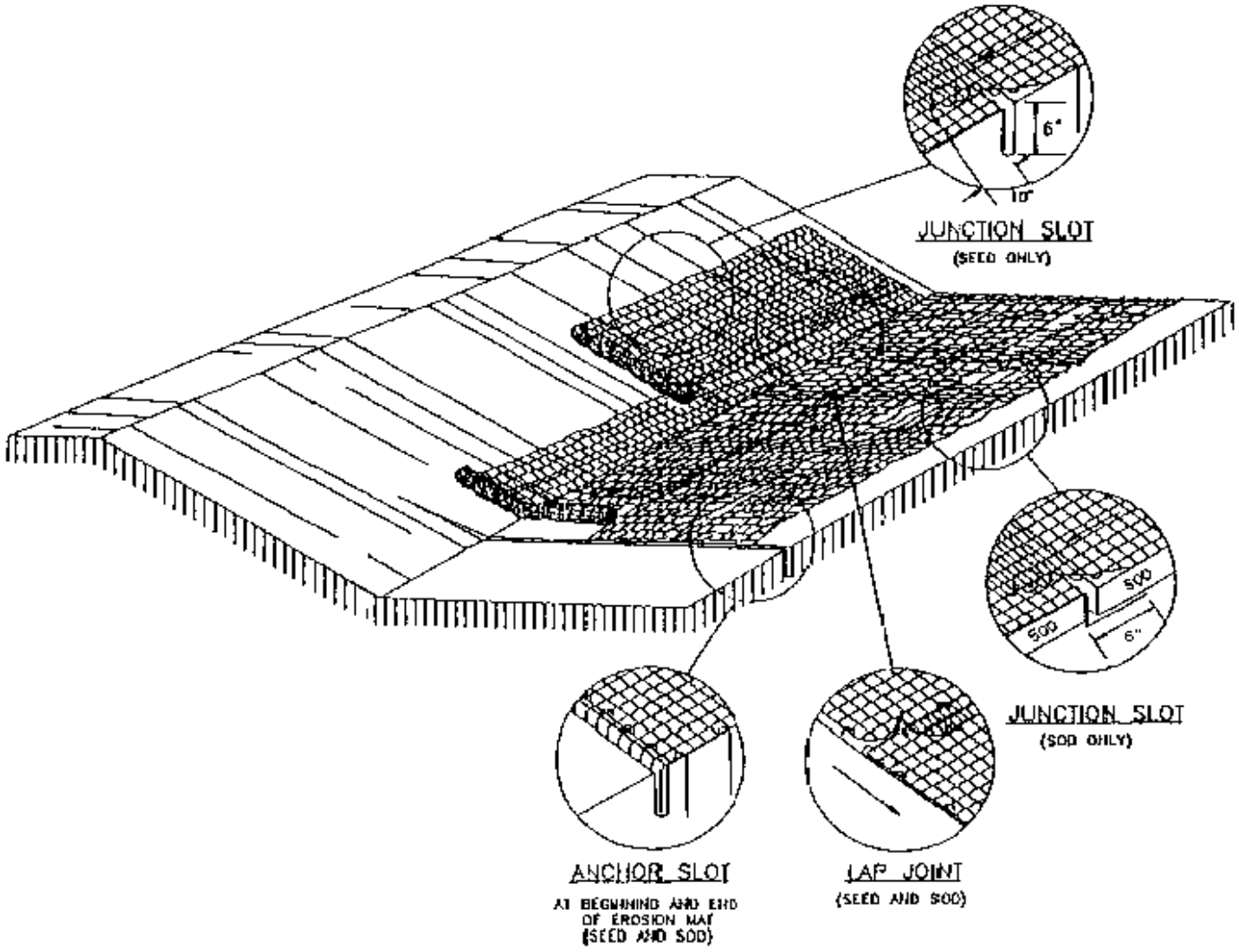


EROSION CONTROL MAT - STAPLE GUIDE

SCALE: NONE

TRIAD ASSOCIATES INC.
5835 LAWTON LOOP EAST DRIVE
INDIANAPOLIS, INDIANA 46216
PHONE: 317-377-5230 FAX: 317-377-5241

2101-B



EROSION CONTROL MAT - SLOPE DETAIL

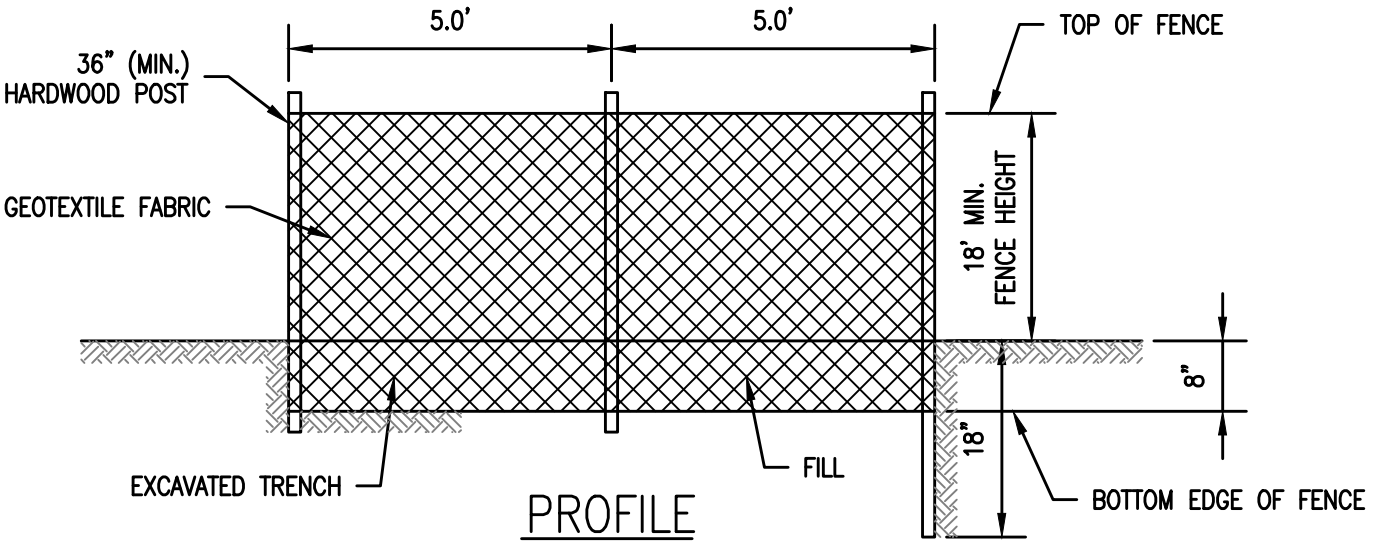
SCALE: NONE

GENERAL NOTES

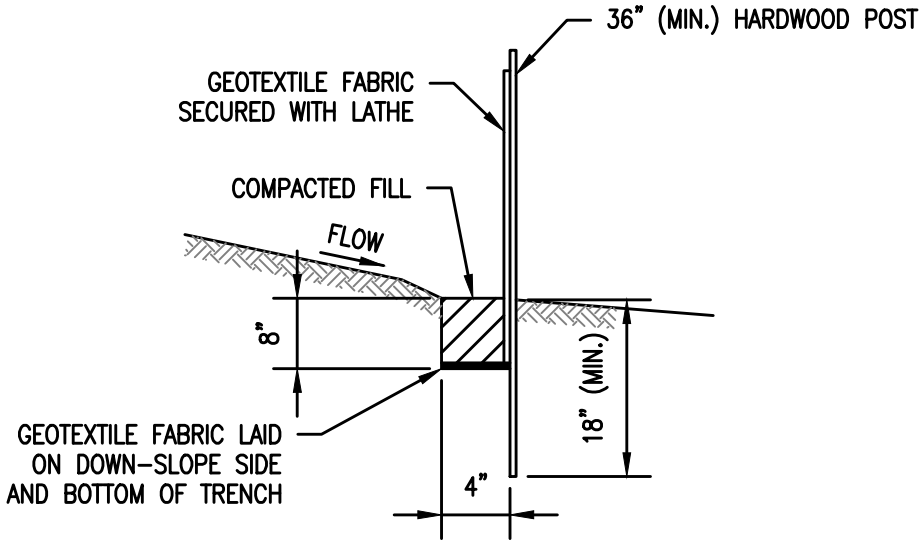
1. PREPARE SOIL BEFORE INSTALLING BLANKETS INCLUDING APPLICATION OF LIME, FERTILIZER AND SEED.
2. BEGIN AT THE TOP OF THE CHANNEL BY ANCHORING THE BLANKET IN A 6" DEEP x 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
3. ROLL CENTER BLANKET IN DIRECTION OF WATER FLOW ON BOTTOM OF CHANNEL.
4. PLACE BLANKETS END OVER END (SHINGLE STYLE) WITH A 6" OVERLAP. USE A DOUBLE ROW OF STAGGERED STAPLES 4" APART TO SECURE BLANKETS.
5. FULL LENGTH EDGE OF BLANKETS AT TOP OF SIDE SLOPES MUST BE ANCHORED IN 6" DEEP x 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
6. BLANKETS ON SIDE SLOPES MUST BE OVERLAPPED 4" OVER THE CENTER BLANKET AND STAPLED.
7. IN MEDIUM/HIGH FLOW CHANNEL APPLICATIONS. A STAPLE CHECK SLOT IS RECOMMENDED AT 30 TO 40 FOOT INTERVALS. USE A ROW OF STAPLES 4" APART OVER ENTIRE WIDTH OF THE CHANNEL. PLACE A SECOND ROW 4" BELOW THE FIRST ROW IN A STAGGERED PATTERN.
8. THE TERMINAL END OF THE BLANKETS MUST BE ANCHORED IN A 6" DEEP x 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.

TRIAD ASSOCIATES INC.
5835 LAWTON LOOP EAST DRIVE
INDIANAPOLIS, INDIANA 46216
PHONE: 317-377-5230 FAX: 317-377-5241

2101-C



PROFILE



SECTION

SILT FENCE DETAIL

SCALE: NONE

NOTE:
SEE SHEET 2101-D1A FOR INSTALLATION PROCEDURE
AND MAINTENANCE NOTES.

TRIAD ASSOCIATES INC.
5835 LAWTON LOOP EAST DRIVE
INDIANAPOLIS, INDIANA 46216
PHONE: 317-377-5230 FAX: 317-377-5241

2101-D

SILT FENCE

INSTALLATION PROCEDURE

1. LAY OUT LOCATION OF THE FENCE SO THAT IT IS PARALLEL TO THE CONTOUR OF THE SLOPE AND AT LEAST 10 FEET BEYOND THE TOE OF THE SLOPE TO PROVIDE A SEDIMENT STORAGE AREA. TURN THE ENDS OF THE FENCE UP SLOPE SUCH THAT THE POINT OF CONTACT BETWEEN THE GROUND AND THE BOTTOM OF THE FENCE END TERMINATES AT A HIGHER ELEVATION THAN THE TOP OF THE FENCE AT ITS LOWEST POINT.
2. EXCAVATE AN EIGHT–INCH DEEP BY FOUR–INCH WIDE TRENCH ALONG THE ENTIRE LENGTH OF THE FENCE LINE. INSTALLATION BY PLOWING IS ALSO ACCEPTABLE.
3. INSTALL THE SILT FENCE WITH THE FILTER FABRIC LOCATED ON THE UP–SLOPE SIDE OF THE EXCAVATED TRENCH AND THE SUPPORT POSTS ON THE DOWN–SLOPE SIDE OF THE TRENCH.
4. DRIVE THE SUPPORT POSTS AT LEAST 18 INCHES INTO THE GROUND, TIGHTLY STRETCHING THE FABRIC BETWEEN THE POSTS AS EACH IS DRIVEN INTO THE SOIL. A MINIMUM OF 12 INCHES OF THE FILTER FABRIC SHOULD EXTEND INTO THE TRENCH. (IF IT IS NECESSSARY TO JOIN THE ENDS OF TWO FENCES, USE THE WRAP JOINT METHOD.)
5. LAY THE LOWER FOUR INCHES OF FILTER FABRIC ON THE BOTTOM OF THE TRENCH AND EXTEND IT TOWARD THE UP–SLOPE SIDE OF THE TRENCH.
6. BACKFILL THE TRENCH WITH SOIL MATERIAL AND COMPACT IT IN PLACE.

MAINTENANCE

- INSPECT WITHIN 24 HOURS OF A RAIN EVENT AND AT LEAST ONCE EVERY SEVEN CALENDAR DAYS.
- IF FENCE FABRIC TEARS, STARTS TO DECOMPOSE, OR IN ANY WAY BECOMES INEFFECTIVE, REPLACE THE AFFECTED PORTION IMMEDIATELY. NOTE: ALL REPAIRS SHOULD MEET SPECIFICATIONS AS OUTLINED WITHIN THIS MEASURE.
- REMOVE DEPOSITED SEDIMENT WHEN IT IS CAUSING THE FILTER FABRIC TO BULGE OR WHEN IT REACHES ONE–HALF THE HEIGHT OF THE FENCE AT ITS LOWEST POINT. WHEN CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED, REMOVE THE FENCE AND SEDIMENT DEPOSITS, GRADE THE SITE TO BLEND WITH THE SURROUNDING AREA, AND STABILIZE.

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2101-D1A

SECTION 02222 - EARTHWORK FOR UTILITIES

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope: Specifications for the stripping of topsoil and vegetation, excavation, trenching, bedding, filling, backfilling, compaction, and related work in connection with the installation of water mains, gravity sanitary sewers, storm sewers, and force mains are included in this Section.

B. Definitions

1. Excavation: Removal of earth and rock to form a trench for the installation of a water main, gravity sanitary sewer, storm sewer, or force main.
2. Earth: Unconsolidated material in the crust of the Earth derived by weathering and erosion. Earth includes:

    a. Materials of both inorganic and organic origin;
    b. Boulders less than 1/3 cubic yard in volume, gravel, sand, silt, and clay;
    c. Materials which can be excavated with a backhoe, trenching machine, drag line, clam shell, bulldozer, highlift, or similar excavating equipment without the use of explosives, rock rippers, rock hammers, or jack hammers.

3. Rock: A natural aggregate of mineral particles connected by strong and permanent cohesive forces. Rock includes:

    a. Limestone, sandstone, dolomite, granite, marble, and lava;
    b. Boulders 1/3 cubic yard or more in volume;
    c. Materials which cannot be excavated by equipment which is used to remove earth overburden without the use of explosives, rock rippers, rock hammers, or jack hammers;
    d. Materials which cannot be excavated with a backhoe, trenching machine, drag line, clan shell, bulldozer, highlift, or similar excavating equipment without the use of explosives, rock rippers, rock hammers, or jack hammers.

4. Undercutting: Excavation of rock and unsuitable earth below the bottom of the pipe or conduit to be installed in the trench.

5. Subgrade: Undisturbed bottom of a trench.

6. Bedding: Earth placed in trench to support pipe and conduit.

7. Backfill and Fill: Earth placed in trench from the top of bedding to finished grade, or to subbase or pavement.

8. Topsoil: Earth containing sufficient organic materials to support the growth of grass.

1.2 BLASTING

Blasting shall not be permitted.

Requests for a variance to this shall be considered on a case by case basis after a written request from the contractor is received by the Town's Manager.

1.3 SUBMITTALS

Contractor shall submit materials test reports, as applicable.

1.4 JOB CONDITIONS

A. All information provided by the Town, including drawings relating to borings, materials encountered, and rock elevations, is furnished only for the information and convenience of the Contractor. The Town does not warrant or guarantee that the materials and conditions encountered during construction will be the same as indicated by the boring samples or by information shown on the drawings as the information has been obtained from surveys performed by outside consultants.

B. Existing storm sewers, sanitary sewers, water mains, gas mains, electric ducts, telephone ducts, steam mains and other underground structures, lines, and their house connections, have been shown on the plans according to the best available information. The exact location and protection of these facilities and structures, their support and maintenance in operation during construction (in cooperation with the proper authorities), is the responsibility of the Contractor in the performance of his contract.

PART 2 - PRODUCTS

2.1 BEDDING

A. Class I bedding shall be angular 6 to 12 mm (1/4 to ½ inch) graded stone, coral, slag, cinders, crushed stone or crushed shells.

B. Class II bedding shall be coarse sands and gravels with maximum particle size of 20 mm (3/4 inch). Class II bedding includes variously graded sands and gravels containing small percentage of fines generally granular and non-cohesive, either wet or dry. Soil types GW (well-graded gravel), SW (well-graded sand), and SP (pea gravel and/or crushed stone mixed with sand) are included in this class.

2.2 BACKFILL

A. General: Backfill shall be earth of such gradation and moisture content that the soil will compact to the specified density and remain stable. Unsuitable materials shall not be used.

B. Cover Material: Pipe cover material shall consist of durable particles ranging in size from fine to coarse (No. 200 to 1 inch) in size in a substantially uniform combination. Unwashed bank run sand and crushed bank-run gravel will be considered generally acceptable. Bedding material may be used for cover material.

C. Granular Backfill - Special Backfill: Granular backfill, when indicated on the plans or as ordered by the Engineer, shall be used for backfilling providing it meets the following soils classified by the Unified Soils Classification System ASTM D-2487 or the Indiana State Highway Standard Specifications Section for Special Fill and Backfill ("B" Borrow).

Group Symbols	Typical Names
GW	Well-graded gravels and gravel-sand mixtures, little or no fines
GP	Poorly graded gravels and gravel-sand mixtures, little or no fines
SW	Well-graded sands and gravely sands, little or no fines
SP	Poorly graded sands and gravely sands, little or no fines

D. Gravel Backfill: When the material excavated from the trench is suitable for granular backfill, the Town reserves the right to order, in writing, the use of this excavated material in place of the granular backfill specified to be paid for as a separate pay item.

E. Suitable Excavated Materials as Backfill: Excavated material shall be used when earth backfill is specified on the plans or where granular backfill is not specifically specified, provided that such material consists of loam, clay, or other materials which, in the judgment of the Engineer, are suitable for backfilling. Unsuitable backfill or frozen backfill material shall not be used. Suitable backfill shall be the following soils, classified by the Unified Soil Classification System, ASTM D-2487:

Group

Symbols	Typical Names
GW	Well-graded gravels and gravel-sand mixtures, little or no fines
GP	Poorly graded gravels and gravel-sand mixtures, little or no fines
GM	Silty gravels, gravel-sand-silt mixtures
GC	Clayey gravels, gravel-sand-clay mixtures
SW	Well-graded sands and gravely sands, little or no fines
SP	Poorly graded sands and gravely sands, little or no fines
SM	Silty sands, sand-silt mixtures
SC	Clayey sands, sand-clay mixtures
ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands
CL	Inorganic clays of low to medium plasticity, gravely clays, sandy clays, silty clays, lean clays

F. Unsuitable Materials: Materials which are unsuitable for backfill include stones greater than 8 inches in their largest dimension, pavement, rubbish, debris, wood, metal, plastic, and the following soils, classified by the Unified Soil Classification System, ASTM D-2487:

Group Symbols	Typical Names
OL	Organic silts and organic silty clays of low plasticity
MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts
CH	Inorganic clays of high plasticity, fat clays
OH	Organic clays of medium to high plasticity
PT	Peat, muck, and other highly organic soils

G. Concrete Backfill: Concrete used for backfill around sewers, water mains, or other utility piping shall be Class B Concrete.

H. Cellular Concrete: Light weight cellular concrete may be used for filling of abandoned sewers as a grouting mixture for filling voids and as a substitute for

backfill concrete in tunnels or casing pipes. The cellular concrete shall be produced by blending preformed foam with cement-sand grout slurry produce a concrete having a fresh weight per cubic foot or not less than 75 pounds.

PART 3 - EXECUTION

3.1 EXISTING UTILITIES, STRUCTURES, AND PROPERTY

A. All poles, fences, sewer, gas, water or other pipes, wires, conduits and manholes, railroad tracks, buildings, structures, and property along the routes of water mains, force mains, and sewers shall be supported and protected from damage by the Contractor.

B. Movable items such as mail boxes may be temporarily relocated during construction. Place movable items in their original location immediately after backfilling is completed, unless otherwise shown on the drawings. Replace movable items which are damaged during construction.

C. The Contractor shall proceed with caution in the excavation and preparation of trenches so that the exact location of underground utilities and structures, both known and unknown, may be determined. The Contractor shall be responsible for the repair of utilities and structures when broken or otherwise damaged.

D. Whenever, in the opinion of the Town, it is necessary to explore and excavate to determine the location of underground structures, the Contractor shall make explorations and excavations for such purpose.

E. Wherever sewer, gas, water, or other pipes or conduits cross the trench, the Contractor shall support said pipes, and conduits without damage to them and without interrupting this Contract. The manner of supporting such pipes, etc., shall be subject to the approval of the utility involved.

F. When utility lines that have to be removed or relocated are encountered within the area of operations, the Contractor shall notify the Town in ample time for the necessary measure to be taken to prevent interruption of the service.

G. The Contractor shall so conduct the work that no equipment, material, or debris will be placed or allowed to fall upon private property in the vicinity of the work unless he shall have first obtained the property owner’s written consent thereto and shall have shown said written consent to the Town.

H. All excavated material shall be piled in a manner that will avoid obstructing sidewalks and driveways. Hydrants under pressure, valve pit covers, valve boxes, curb stop boxes, fire and police call boxes, or other utility controls shall be left unobstructed and accessible until the work is completed. Gutters shall be kept

clear or other satisfactory provisions made for street drainage, and natural watercourses shall not be obstructed.

I. All streets, alleys, pavements, parkway, and private property shall be thoroughly cleaned of all surplus materials, earth, and rubbish placed thereon by the Contractor.

3.2 CLEARING

A. Clear and remove logs, stumps, brush, vegetation, rubbish, and other perishable matter from the project site as required to perform work.

B. Do not remove or damage trees that do not interfere with the work. Completely remove trees required to be removed, including stumps and roots. Properly treat damaged trees which can be saved.

C. Debris from the tree removal, including truck, branches, leaves, roots and stumps, shall not be buried or burned on the job site, but must be completely hauled away and disposed of at the Contractor's expense.

3.3 STRIPPING AND STOCKPILING OF TOPSOIL

A. Strip topsoil and vegetation from the excavated areas. Clean topsoil may be stockpiled for reuse as the upper 6 inches of those areas to be seeded.

B. Do not intermix grass, weeds, roots, root mat, brush, and stones larger than 3 inches with stockpiled topsoil. Dispose of root contaminated topsoil.

3.4 PAVEMENT AND WALK REMOVAL

A. Remove existing pavement and walks from the excavated areas. Remove excavated asphalt and concrete materials from the job site as these materials are excavated.

B. The width of pavement removed along the normal trench for the installation of pipe and structures shall not exceed the width of the trench by more than 12 inches on each side of the trench when the amount of pavement removed is less than 75% of the total existing pavement width. Remove all existing pavement when the excavation requires the removal of 75% or more of the total existing pavement width.

C. Remove walks completely when excavation is along the length of a walk and requires the removal of part of the walk. Remove walks to existing joints in the walks when excavation crosses walks. If there are no joints in an existing walk, the width of walk removed shall not exceed the width of the trench by more than 12 inches on each side of the trench.

D. Use methods to remove pavement and walks that will assure the breaking or cutting of pavement and walks along straight lines. The face of the remaining pavement and walk surfaces shall be approximately vertical.

3.5 EXCAVATING

A. General: After stripping of topsoil and vegetation, perform excavations of every description regardless of material encountered within the grading limits of the project to lines and grades as indicated on the drawings or as otherwise specified.

1. Materials removed below the depths indicated without specific direction of the Engineer shall be replaced at no additional cost to the Town, to the indicated excavation grade with satisfactory bedding materials placed and compacted.

B. Dewatering: Keep excavations free from water until the water mains, force mains, sewers, structures, and appurtenances to be constructed in the excavations are completed and will safely withstand forces from water. Provide sufficient dewatering equipment and make satisfactory arrangements for the disposal of the water without undue interference with other work, damage to property, or damage to the environment.

1. Operate dewatering equipment ahead of pipe laying and keep the water level below the pipe invert until the pipe is secured by backfill.

C. Trenching: Trees, boulders, and other surfaces encumbrances, located so as to create a hazard to those involved in excavation work or in the vicinity thereof at any time during operations, shall be removed or made safe before excavating is begun.

1. Do not open more than 100 feet of trench in advance of the installed pipe, unless otherwise directed or permitted by the Town's Representative. Excavate the trench within 6 inches of full depth for a distance of at least 30 feet in advance of the pipe laying, unless otherwise directed or permitted.

2. Contractor shall be responsible for the determination of the angle of repose of the soil in which the trenching is to be done. Excavate all slopes to at least the angle of repose except for areas where solid rock allows for line drilling or pre-splitting, or where shoring or trench box is to be used.

3. Sides, slopes, and faces of all excavations shall meet accepted engineering requirements by scaling, benching, barricading, rock bolting, wire meshing,

or other equally effective means. Give special attention to slopes which may be adversely affected by weather or moisture content.

4. Flatten the trench sides when an excavation has water conditions, silty materials, loose boulders, and areas where erosion, deep frost action, and slide planes appear.

5. Shoring, sheeting, trench box, or other means shall be used to support sides of trenches in hard or compact soil when the trench is more than 5 feet in depth and 8 feet or more in length. Sides of trenches shall include embankments adjacent to trenches. In lieu of shoring, the sides of the trench above the 5-foot level may be sloped to preclude collapse, but shall not be steeper than a 1-foot rise to each 1/2-foot horizontal. Provide a bench of 4 feet minimum at the toe of the sloped portion of the trench wall when the outside diameter of the pipe to be installed is greater than 6 feet.

6. Use diversion ditches, dikes, or other suitable means to prevent surface water from entering an excavation and to provide adequate drainage of the area adjacent to the excavation. Do not allow water to accumulate in an excavation. If possible, the grade should be away from the excavation.

7. Excavations shall be inspected by a competent Contractor's Representative after every rainstorm or other hazard-increasing occurrence, and the protection against slides and cave-ins shall be increased, if necessary.

8. Do not store excavated or other material nearer than 4 feet from the edge of any excavation. Store and retain materials as to prevent materials from falling or sliding back into the excavation. Install substantial stop log or barricades when mobile equipment is utilized or allowed adjacent to excavations.

9. The width of trenches in earth for water main pipe, sewers, basin connections, house connections, and other drains up to and including 33 inches in internal diameter shall provide a clearance of not less than 8 inches or more than 10 inches on each side of the pipe. Trenches for pipe larger than 33 inches in internal diameter shall provide a clearance of not less than 10 inches or more than 14 inches on each side of the pipe.

10. The maximum clear width of trenches in earth for manholes shall be the greatest external width of the structure plus the space necessary for the construction and removal of the forms and construction of masonry work.

11. The design of the water main, force main, and/or sewer pipe and structures is predicated upon the width of trench specified in this Article. The Contractor shall be responsible for the provision and installation, at his own expense, of such remedial measures as may be directed by the

Engineer, should the trench width limits specified in this Article be exceeded.

12. Test the air in excavations in locations where oxygen deficiency or gaseous conditions are possible. Establish controls to assure acceptable atmospheric conditions. Provide adequate ventilation and eliminate sources of ignition when flammable gases are present. Attended emergency rescue equipment, such as breathing apparatus, a safety harness and line, and basket stretcher, shall be readily available where adverse atmospheric conditions may exist or develop in an excavation.

13. Provide walkways or bridges with guardrails where employees or equipment are required or permitted to cross over excavations.

14. Provide ladders where employees are required to be in trenches 4 feet deep or more. Ladders shall extend from the floor of the trench to at least 3 feet above the top of the excavation. Locate ladders to provide means of exit without more than 25 feet of lateral travel.

15. Provide adequate barriers and physically protect all remotely located excavations. Barricade or cover all wells, pits, shafts, and similar excavations. Backfill temporary wells, pits, shafts, and similar excavations upon completion of exploration and similar operations.

D. Quicksand: Carry on the work with utmost vigor and proceed with the work expeditiously when running sand, quicksand, or other bad or treacherous ground is encountered. Install bedding to support the pipe as directed by the Town.

3.6 SHEETING

A. The Contractor shall be responsible for construction means, methods, techniques, and procedures, and for providing a safe place for the performance of the work by the Contractor, Subcontractors, suppliers and their employees, and for access use, work, or occupancy by all authorized persons.

B. The Contractor shall be solely responsible for all obligations prescribed as employer obligations under Chapter XVII of Title 29, Code of Federal Regulations, Part 1926, otherwise known as “Safety and Health Regulations for Construction.”

C. Adequate supporting systems, such as sheeting, shoring, piling, cribbing, and bracing shall be furnished and installed by the Contractor as required to protect existing buildings, utilities, and property from damage during the progress of the work

3.7 STORAGE AND REMOVAL OF EXCAVATED MATERIAL

A. Suitable excavated material required for filling and backfilling operations may be stockpiled in on-site locations as approved by the Town, until the material is ready to be placed.

B. Remove unsuitable materials from the job site as unsuitable materials are excavated. Remove surplus suitable materials from the job site as trenches are backfilled.

3.8 TEMPORARY PLUGS

Prevent foreign matter from entering pipe while it is being installed. Do not place debris, tools, clothing, or other material in the pipe. Close the open ends of pipe by watertight plugs when pipe laying is not in progress. Remove any earth or other material that enters pipe, lateral pipe, or appurtenances through any open pipe end. Remove earth and other materials at no additional cost to the Town.

3.9 BACKFILLING WATER MAIN TRENCHES

A. Backfilling of water main trenches shall meet the requirements of ANSI/AWWA C600, unless otherwise specified in this Section.

B. Do not backfill trenches and excavations until all utilities have been inspected by the Town's Representative and until all underground utilities and piping systems are installed in accordance with the requirements of the specifications and the drawings. Required hydrostatic tests may be applied to the line either before or after the trench is backfilled, subject to the approval of the Town.

C. Place and tamp bedding and backfill in a manner which will not damage pipe coating, wrapping, or encasement.

D. Material from the trench subgrade to the centerline of the pipe shall be Class II bedding. Place bedding by hand or approved mechanical methods in layers of 8 inches loose depth. Compact bedding by hand tamping or with power operated hand vibrating compactor. Deposit bedding in the trench for its full width on each side of the pipe simultaneously.

E. Place pipe cover material from the centerline of the pipe to 12 inches over the pipe. Compact pipe cover material to the density required to allow backfill over the pipe cover material to be compacted to the density specified in this Article.

F. Do not use the following materials for backfill:
   1. Unsuitable materials;
   2. Frozen materials;
   3. Materials which are too wet or too dry to be compacted to the densities specified in this Article.

G. Trenches Requiring Special Backfill When Specified: Where the edge of the trench is 5 feet or less form the edge of the existing or proposed roadway pavement and trenches across roadways, driveways, utility crossing, or in areas to be paved or subjected to traffic, the trench shall be backfilled with Special Backfill. Backfill any trench specifically indicated on the drawings with Special Backfill. Place Special Backfill in lifts. Compact each lift of backfill to not less than 95% of the maximum dry density as determined in accordance with AASHTO T99, Method A. Compaction shall be by hand tamping or approved mechanical tamping devices, or in larger excavations by approved rollers. Do not compact backfill by puddling, unless permitted by the Town.

H. Trenches in State Highway Right-of-Way: Where excavation occurs within the right-of-way of a state highway, all areas within 12 feet of the pavement edge shall be backfilled with Grade "B Borrow" Special Backfill. All areas beyond 12 feet shall be backfilled in the manner specified in the following paragraph.

I. Trenches Not Requiring Special Backfill: Backfill trenches not requiring granular backfill with suitable excavated material. Place and compact backfill to produce an adequate foundation for the applicable paved or unpaved surface treatment. Fill and restore any settlement of the backfill. In paved areas, backfill shall be maintained to subbase elevation. In unpaved areas, backfill shall be mounded above finish grade to allow for settlement. Grade unpaved area to be restored 6 inches below finish grade after settlement of backfill and immediately before restoration of vegetated areas. Place 6 inches of topsoil over area to be restored.

J. Trenches in Traveled Pavements: All cuts and trenches in paved streets or other paved areas shall be backfilled within suitable excavated material unless granular backfill is specifically indicated on the plans or ordered by the Town to within 12 inches of the street surface. The remainder of the trench is to be filled with crushed stone and compacted in place, prior to opening the street to traffic. The Contractor shall maintain the trenches, adding crushed stone and grading as necessary, until sufficient settlement has taken place and final restoration is made.

3.10 BACKFILLING STORM SEWER TRENCHES

A. Do not backfill trenches and excavations until all utilities have been inspected by the Town's Representative and until all underground utilities and piping systems are installed in accordance with the requirements of the specifications and the drawings.

B. Place and tamp bedding and backfill in a manner which will not damage pipe coating, wrapping, or encasement.

C. Bedding procedures for storm sewers shall be as specified in the Section for the applicable pipe material.

D. If bedding does not cover the pipe, place pipe cover material from the top of bedding to 12 inches over the pipe. Compact pipe cover material to the density required to allow backfill over the pipe cover material to be compacted to the density specified in this Article.

E. Do not use the following materials for backfill:

1. Unsuitable materials;
2. Frozen materials;
3. Materials which are too wet or too dry to be compacted to the densities specified in this Article.

F. Trenches Requiring Special Backfill When Specified: Where the edge of the trench is 5 feet or less from the edge of the existing or proposed roadway pavement and trenches across roadways, driveways, utility crossings, or in areas to be paved or subjected to traffic, the trench shall be backfilled with Special Backfill. Backfill any trench specifically indicated on the drawings with Special Backfill. Place Special Backfill in lifts. Compact each lift of backfill to not less than 95% of the maximum dry density as determined in accordance with AASHTO T99, Method A. Compaction shall be by hand tamping or approved mechanical tamping devices, or in larger excavations by approved rollers. Do not compact backfill by puddling, unless permitted by the Town.

G. Trenches in State Highway Right-of-Way: Where excavation occurs within the right-of-way of a state highway, all areas within 12 feet of the pavement edge shall be backfilled with Grade “B Borrow” Special Backfill. All areas beyond 12 feet shall be backfilled in the manner specified in the following paragraph.

H. Trenches Not Requiring Special Backfill: Backfill trenches not requiring granular backfill with suitable excavated material. Place and compact backfill to produce an adequate foundation for the applicable paved or unpaved surface treatment. Fill and restore any settlement of the backfill. In paved areas, backfill shall be maintained to subbase elevation. In unpaved areas, backfill shall be mounded above finish grade to allow for settlement. Grade unpaved area to be restored 6 inches below finish grade after settlement of backfill and immediately before restoration of vegetated area. Place 6 inches to topsoil over area to be restored.

I. Trenches in Traveled Pavement: All cuts and trenches in paved streets or other paved areas shall be backfilled within suitable excavated material unless granular backfill is specifically indicated on the plans or ordered by the Town to within 12 inches of the street surface. The remainder of the trench is to be filled with crushed stone and compacted in placed, prior to opening the street to traffic. The Contractor shall maintain the trenches, adding crushed stone and grading as necessary, until sufficient settlement has taken place and final restoration is made.

3.11 CLEANUP AND MAINTENANCE

A. Cleanup the job site as backfilling is completed. Remove excess earth, rock, bedding, materials, and backfill materials. Remove unused piping materials, structure components, and appurtenances. Restore items moved, damaged, or destroyed during construction. Grade area to be restored. Leave backfill mounded over trenches which are not backfilled with Special Backfill. Cleanup and restoration specified in this paragraph shall be completed within 1,000 feet of excavation.

B. Restoration of grass, bushes, trees, and other plants shall be completed by Contractor to original condition.

C. Restoration of pavement and walks shall be specified in Section 02500, Paving and Surfacing. A temporary driving surface, such as crushed stone, shall be compacted in place in the trench area as backfilling is complete. Cold-mix asphalt patching material may be used as a temporary driving surface at the Contractor's option or when specifically called for in the plans or specifications. Temporary pavement shall not be more than 1,000 feet behind the excavation. When no existing pavement remains after excavation, a temporary compacted aggregate surfacing may be provided instead of the permanent pavement or a temporary cold-mix asphalt pavement. When the pavement is asphaltic concrete, placement of the asphaltic concrete surface course may be delayed until all other heavy construction is completed.

D. Maintain the job site until the work has been completed and accepted. Fill trenches which settle when settlement is visible. Restore items damaged by construction or improper restoration. Keep dust conditions to a minimum by the use of water, salt, calcium chloride, or other means.

END OF SECTION 02222

SECTION 02500 - PAVING AND SURFACING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Scope: This section covers all work involved in the installation of new pavement, walks, curbs, trails, and the repair and replacement of existing streets, roads, highways, drives, parking areas, curbs, gutters, sidewalks, and other paved areas damaged or destroyed during construction of the work included in this Contract.

All new development shall construct a sidewalk or trail along the entire road frontage of the development. The Town Manger should be consulted prior to plan development to determine whether a sidewalk or trail will be required with the project.

No sidewalk shall be less than 4 feet wide. The Street Superintendent shall be consulted prior to plan development to determine the required width.

B. Related Work Specified in Other Sections

1. Section 02222 Earthwork for Utilities
2. Section 02902 Landscaping for Utilities

C. Codes, specifications, and standards referred to by number or title shall form a part of this specification to the extent required by the reference thereto. Except as specifically modified in this specification, paving and surfacing operations, materials and testing will comply with the most current revisions of applicable sections of the Indiana Department of Transportation Standard Specifications.

D. Definitions

1. Abbreviations

a. INDOTSS Indiana Department of Transportation's Standard Specifications, latest revision.
b. AASHTO American Association of State Highway & Transportation Officials.
c. ACI American Concrete Institute.
d. ASTM American Society for Testing & Materials.
e. NRMCA National Ready Mix Concrete Association.

2. Rock: A natural aggregate of mineral particles connected by strong and permanent cohesive forces. Rock includes limestone, sandstone, dolomite, granite, marble, and lava.

3. Subgrade: The prepared and compacted soil immediately below the pavement or walk system and extending to such depth as will affect the structural design.

4. Subbase: The layer of specified or selected material of designed thickness placed on a subgrade to support a base course and surface course.
5. Base Course: The layer of specified or selected material of designed thickness placed on a subbase to support a binder or surface course.

6. Binder Course: The layer of specified or selected material or designed thickness placed on a base course to support a surface course.

7. Surface Course: The layer of specified or selected material of designed thickness placed on a subbase or base course to support the traffic load.

1.2 QUALITY ASSURANCE

A. The Contractor shall employ and pay for the services of an independent testing laboratory (unless otherwise noted) to perform specific services and necessary field density tests. The Contractor shall demonstrate to the Town's Representative that proper compaction has been obtained and proper asphalt and concrete mix designs are in compliance with the specifications.

B. Mixing Plant: Prior to placing any hot asphalt concrete pavement or Portland cement concrete pavement, the Contractor shall provide to the Town the name and location of the bituminous mixing or concrete mixing plant and the type and composition of mixes the Contractor proposes to use in the work.

C. Paving and surfacing shall comply with the tolerances specified in applicable Sections of INDOTSS.

1. Subgrade and subbase shall be within ½ inch of dimensions indicated on drawings.
2. Bituminous base shall not vary longitudinally more than ¼ inch from a 10-foot straightedge. Bituminous and concrete surfaces shall not vary more than 1/8 inch from a 10-foot straightedge.
3. Finished surface shall be within ¼ inch of dimensions indicated on drawings.

D. Asphalt and concrete pavement shall be installed by a contractor whose prime business is asphalt or concrete paving.

1.3 SUBMITTALS

A. Submittals shall be as specified in the General Conditions and Section 01001, General Requirements.

B. Submit the following:

1. Name and location of bituminous mixing plant or concrete ready-mix plant. Mixing plants and equipment shall meet the applicable requirements of INDOTSS.

2. Type and composition of proposed materials and mixes. Job mix formulas shall be prepared and submitted for approval to the Street Superintendent and shall be in accordance with INDOTSS. The formula shall include standard bituminous information such as aggregate gradation, binder content, maximum specific gravity, and air voids.

3. Certified copies of reports of tests specified in this Section and required by the referenced standards

1.4 JOB CONDITIONS

A. Do not place paving and surfacing materials on a wet surface, pumping subbase or when weather conditions would prevent the proper construction of paving and surfacing.

B. Do not place aggregates on frozen subgrade. Do not place aggregates when air temperature is below 35°F.

C. Bituminous materials are to be placed in accordance with applicable requirements of INDOTSS.

D. Discontinue placing concrete when a descending air temperature away from artificial heat reaches 40°F, and do not resume placing concrete until an ascending air temperature away from artificial heat reaches 35°F.

E. Do not place paving and surfacing materials when natural light is not sufficient to properly observe work or operations.

1.5 CONSTRUCTION ENGINEERING

The Town will furnish the Contractor with necessary information relating to lines and grades, including temporary bench marks and reference points. The Contractor will be responsible for setting necessary construction stakes to establish the specified roadway line and grade. The Contractor shall be held responsible for the reasonable preservation of

references points set by the Town. Reestablishment of reference points due to the Contractor's negligence will be done by the Contractor at his expense.

1.6 GRADE ADJUSTMENT OF EXISTING STRUCTURES

A. When grade adjustment of existing structures is required, the manhole frames, covers and gratings, and the gas and water valve boxes and covers, shall be removed and reconstructed to grade as required.

B. On resurfacing work, the castings and boxes shall be adjusted to grade after the last binder course has been laid and before placing the surface course.

C. All castings, frames and valve boxes adjusted to grade shall be done in advance of the final paving and shall be paid for by the Contractor as part of the project, unless specifically identified as an item for payment in unit price contracts.

1.7 CONTRACTOR'S QUALIFICATIONS

A. The Contractor shall be a firm whose prime business is asphalt or concrete paving. The Contractor shall have a competent supervisor on the site during the progress of the work, acting for the Contractor in all matters concerning the work. He shall have the authority to receive directions and act upon them for the Town through the Town's authorized representative.

B. The Contractor shall keep a set of Plans and Specifications available on the site and in good condition.

1.8 TRAFFIC CONTROL

The Contractor shall plan construction operations so that existing local traffic access can be maintained. During the construction, he will also maintain appropriate use of barricades, lights, flagmen and other protective devices, whether specified for the project or required by the local governing authority. Traffic control devices used for maintenance of Traffic shall comply with the Indiana Manual on Uniform Traffic Control Devices.

PART 2 - PRODUCTS

2.1 AGGREGATE

A. Fine aggregates shall consist of natural sand or manufactured sand produced by crushing rock, shells, air-cooled blast furnace slag, or wet bottom boiler slag.

1. Fine aggregates used in Portland cement concrete and bituminous pavements shall be free from injurious amounts of organic impurities.

When subjected to the colorimetric test for organic impurities and a color darker than the standard is produced, it shall be tested for effect of organic impurities on strength of mortar in accordance with AASHTO T 71. If the relative strength at 7 and 28 days, calculated in accordance with section 10 of T 71, is less than 95%, it shall be rejected.

B. Coarse aggregates shall consist of clean, tough, durable fragments of crushed rock, crushed or uncrushed gravel or shells, or crushed and processed air-cooled blast furnace slag. These materials shall not contain more than 15% flat or elongated pieces and shall not contain particles with an adherent coating. Flat or elongated pieces will be described as pieces having a length in excess of four times its width.

C. Coarse aggregates and fine aggregates shall comply with applicable requirements of INDOTSS.

2.2 BITUMINOUS MATERIALS

A. Petroleum asphalt cement shall be homogeneous, free from water, and shall not foam when heated to 347ºF.

1. Petroleum asphalt cement shall be PG Binder, grade PB 64-22.
2. Materials shall conform to applicable requirements of INDOTSS.

B. Bituminous materials for prime coat shall consist of:

1. Asphalt emulsion - AE-PMP.
2. Materials shall conform to applicable requirements of INDOTSS.

C. Bituminous materials for tack coat shall consist of:

1. Asphalt emulsion - AE-T, AE-PMT, SS1h, AE-NT.
2. PG Asphalt Binder, PG 64-22.
3. Materials shall conform to applicable requirements of INDOTSS.

D. Bituminous materials for seal coat shall consist of:

1. Asphalt emulsion - RS-2, AE-90, AE-90S or HFRS-2.
2. Materials shall conform to applicable requirements of INDOTSS.

E. Cover aggregate shall consist of:

1. Coarse aggregates, Class B or Higher, Size No. 8, 9, 11, 12, SC12, or SC16.
2. Fine aggregate (natural sand only), size no. 23 or 24.
3. Materials shall conform to applicable requirements of INDOTSS.

2.3 HOT MIX ASPHALT (HMA)

A. Hot mix asphalt (HMA) shall consist of an intimate mixture of coarse aggregate, fine aggregate (including mineral filler if required), and asphalt cement or emulsion combined in proportions specified in applicable requirements of INDOTSS Section.

B. When the use of one type or source of aggregate or binder is started, the use of the same type or source shall be continued for the entire lift being constructed, unless otherwise directed by the Town.

C. The use of recycled materials, RAP or RAS, shall not be permitted unless otherwise directed and approved by Engineer.

D. Preparation of HMA mixtures shall comply with the applicable requirements of INDOTSS.

2.4 PORTLAND CEMENT CONCRETE

A. Cement shall be Portland cement and shall meet the requirements of ASTM Specification C 150, ACI 201, and ACI 318. Cement shall be Type 1 for normal use, Type 1A where air entrainment is desired, or Type III or Type IIIA where high early strength is desired and authorized by the Engineer. Blended hydraulic cements which meet the requirements of ASTM Specification C595 Type 1P Portland pozzolan cement may be used where a more watertight concrete is required. Fly ash may also be used as a partial cement replacement for Types 1 or 1A. Cement shall meet requirements specified in INDOTSS.

B. Regular fine and coarse aggregates shall meet the requirements of ASTM Specification C 33. Aggregate shall be crushed limestone with a maximum size of ¾ inch, except in mass concrete the maximum size may be 1-1/2 inches.

1. Lightweight fine and coarse aggregates shall meet the requirements of ASTM Specification C 330.
2. Insulating fine and coarse aggregates shall meet the requirements of ASTM Specification C 332.

C. Water shall be potable, clean, and free from injurious amounts of oils, acids, alkalis, organic materials, or other substances that may be deleterious to concrete or steel. A maximum of 500 mg/L of chloride ion may be present in the water.

D. Air entraining admixtures shall meet the requirements of ASTM Specifications C 260.

1. Water reducing and retarding admixtures shall meet the requirements of ASTM C494, Type A or Type D; however, they shall contain no chlorides,

be nontoxic after 30 days and compatible with the air entraining admixtures. The amount of admixture added to the concrete shall be in accordance with the manufacturer's requirements. Furnish a compliance statement that the admixture used satisfies all requirements of this specification. Evidence that the admixture is included in the approved list of the INDOTSS Division of Materials and Tests, and in accordance with all requirements of applicable sections of INDOTSS, will satisfy the requirement for a compliance statement.

2. Fly ash shall meet the chemical and physical requirements of ASTM C 618 for mineral admixture Class F, except loss on ignition shall not exceed 6%. Fly ash shall be sampled and tested in accordance with ASTM C 311 prior to use.

E. Reinforcing steel shall meet the requirements of ASTM Specification A 615, Grade 60.

1. Welded wire fabric or wire mesh shall meet the requirements of ASTM A 185.

2. Reinforcing steel and appurtenances shall follow applicable requirements of INDOTSS.

F. Preformed expansion joint filler shall meet the requirements of ASTM Specification D 1752, Type III.

1. Hot-poured elastic joint filler shall meet the requirements of ASTM Specification D 1190.

2. Waterproof expansion joint filler shall meet the requirements of ASTM Specification D 1850.

3. Joint materials specified in INDOTSS Section 906 may be used, approved by the Engineer.

G. Concrete pavement shall be wet cured by using burlap, waterproof blankets, or ponding; or by using a membrane compound. If the membrane method is used, the compound shall be Type 2, complying with AASHTO M148 for white pigmented compound. A pressure sprayer capable of applying a continuous uniform film to the pavement surfaces will be required.

H. Dowel bars shall be smooth, round bars of plain billet steel conforming to ASTM A615, Grade 40, and free of any deformation or foreign material that would restrict slippage in concrete. Dowel bars shall be coated as required by INDOTSS. For expansion joints, each bar shall be provided with a metal cap, or approved plastic cap, on one end that will provide for ample movement of the slabs.

1. Dowel bars and assemblies shall conform to the requirements of INDOTSS Section 501.14 (f).

I. Concrete base shall meet the requirements of INDOTSS Section 307.

J. Reinforced concrete pavement shall meet the requirements of INDOTSS Section 501.

K. Reinforced concrete for sidewalks and steps shall meet the requirements of INDOTSS Section 604.

L. Reinforced concrete for curbing shall meet the applicable requirements of INDOTSS.

2.5 UNDERDRAINS

Underdrain material shall be 6-inch polyethylene perforated pipe meeting ASTM F405 specification and shall be per INDOT standard specification for "Underdrain."

PART 3 - EXECUTION

3.1 GENERAL

A. The Contractor is responsible to provide equipment, workmanship and materials required to achieve a finished product that meets these specifications.

B. Use compaction equipment suitable to the material being placed. Compacting equipment shall include at least one piece of equipment capable or providing a smooth even surface on the pavement surface course.

C. Prior to placing paving and surfacing materials, shape subgrade as required to produce finished pavement grades and cross-sections shown on drawings.

D. Do not place paving and surfacing material before subgrade is reviewed and accepted by the Town. Do not place paving and surfacing materials on a frozen or muddy subgrade.

E. Compact subgrade to not less than 100% of its maximum density as determined in accordance with AASHTO T99.

F. Provide adequate drainage at all times to prevent water from standing on subgrade, pavement or walks.

3.2 SUBGRADE

The subgrade material and testing shall comply with applicable requirements of INDOTSS, before placement of subbase.

3.3 SUBBASE PREPARATION

Provide 8 inches of subbase in locations where pavement is to be placed on a material other than Special Backfill. Subbase shall meet the applicable requirements of INDOTSS.

Proof roll prepared subbase surface to check for unstable areas. Remove loose material and soft spots, replace with stable material and re-proof. The Street Superintendent or Representative may require a 10" lime-treated subbase in areas that cannot be adequately stabilized. Do not begin paving work until deficient areas have been corrected.

Flowable Fill with 2" hot mix surface per INDOT Standards to be accepted for backfill.

3.4 AGGREGATE BASE, SURFACE, OR SHOULDERS

A. Aggregate base, surface, or shoulders shall consist of crushed rock or gravel. The aggregate type shall be suitable for the area in which the project is located. The aggregate thickness shall be as shown on the drawings and as specified herein.

B. Aggregate shall be Course Aggregate, Class D or Higher, unless otherwise specified by the Town.

C. Compacted aggregate materials and construction shall conform to applicable requirements of INDOTSS.

D. 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 3 in. and a maximum of 6 in., except where utilized as a shoulder. The compacted depth of a lift for a shoulder shall be a minimum of 3 in. and a maximum of 9 in.

E. If spreading devices are used which will ensure proper depth and alignment forms will not be required; otherwise, forms shall be required. Forms shall be of wood or steel, adequate in depth, straight, of uniform dimensions and equipped with positive means for holding the form ends rigidly together and in line. Segregation of material shall be avoided by any spreading method used. No payment will be made for aggregate placed beyond the dimensions shown on the drawings.

F. Compact material in each lift after material is spread and shaped. Compact material to not less than 100% of maximum dry density as determined by AASHTO T99.

Use construction procedures, including sufficient wetting and number of passes, to ensure specified density is attained.

G. The Contractor shall employ an independent testing laboratory to perform field density tests to demonstrate proper compaction of aggregate surface pavement, upon request by the Town.

H. In a brick surfaced street, unless specifically excepted and pending the structural adequacy of any remaining brick, the Contractor may remove all brick and enough base material to allow full width repaving using either a bituminous or concrete pavement; or of providing a HMA base and HMA intermediate for the full depth of the brick across the trench and then replace the entire street with 1 inch of HAC surface.

I. Unless otherwise shown on the drawings, the minimum section (excluding subgrade) of reinforced concrete shall be 6 inches of compacted #53, aggregate base and 6 inches of 4,000 psi reinforced concrete.

J. Unless otherwise shown on the drawings, for a street with a brick base and an asphalt surface, the replacement section shall be full depth asphalt from the bottom of the brick base to the top of the asphalt surface. The top 1 inch shall be #11 HMA surface.

K. Unless otherwise shown on the drawings, for a street with a concrete base and an asphalt surface, the replacement section shall be a new concrete base, not less than 6 inches thick with #5 HMA base to within 1 inch of the existing grade and then 1inch of #11 HMA surface.

L. Unless otherwise shown on the drawings, chip and seal pavements shall have 8 inches of compacted aggregated base (#53, crushed stone) and 1 inch process bituminous coated aggregate pavement placed and rolled as specified in applicable Sections of INDOTSS.

M. Unless otherwise shown on the drawings, gravel pavement shall be replaced with 6 inches of #53, compacted stone or gravel aggregate as specified in applicable Sections of INDOTSS.

3.5 HOT MIX ASPHALT

A. This work shall consist of constructing one or more courses of HMA base, intermediate, and wedge leveling or surface mixtures on a prepared foundation in accordance with these specifications and in reasonably close conformance with the lines, grades, thicknesses, and typical cross sections shown on the plans or established by the Town.

1. If the required finished depth of any course is to exceed three times the top size of the aggregate used as shown by actual screen analysis, the course shall be constructed in two or more lifts, as directed.

2. Mix type shall be as indicated on the drawings, without exception, unless otherwise approved in writing by the Town.

    a. Job mix formulas shall be prepared and submitted for approval to the Town in accordance with applicable sections of INDOTSS. The job mix formula shall include standard bituminous mixture information including, but not limited to, aggregate gradation, binder content, maximum specific gravity, and air voids.

3. Materials and construction requirements shall comply with applicable requirements of INDOTSS.

B. If the previously constructed course is granular, a prime coat will be required.

1. Apply prime coat uniformly at a rate of 0.50 to 0.75 gallon per square yard depending on condition of surface and amount of loose aggregate.

2. Apply prime coat with a pressure distributor. Temperature of prime coat shall not exceed 150^{o}F.

3. Squeegee excess prime coat from the subbase surface. Correct deficient or skipped area.

4. Prime coat shall be placed in accordance with applicable sections of INDOTSS.

C. Place and spread bituminous base mixture with a bituminous paver. In areas inaccessible to a paving machine, place and spread bituminous base mixture by other acceptable mechanical or hand methods.

D. Tack coat shall be placed on existing bituminous or concrete surfaces before a new lift of bituminous material is added. Apply tack coat uniformly at a rate of 0.05 to 0.10 gallon per square yard.

1. Patch and clean existing surface. The surface shall be free of irregularities and provide a reasonably smooth and uniform surface to receive the tack coat. Remove and replace unstable corrugated areas with suitable patching materials.

2. Tack coat shall be placed in accordance with applicable sections of INDOTSS.

E. Placement and compaction of hot mix asphalt (HMA) shall conform to applicable requirements of INDOTSS.

F. Place binder used for wedging or leveling, approaches and feathering by mechanical methods or acceptable hand methods for placing and spreading in accordance with applicable requirements of INDOTSS.

3.6 SEAL COAT AND COVERING AGGREGATE (CHIP AND SEAL)

A. Application shall be as follows:

Type (see Note 1)	Application	Cover Aggregate Size Number and Course	Rate of Application Per Square Yard	
			Aggregate Pounds (lbs)	Bituminous Material Gallons at 60°F
1 or 1P (see Note 2)	Single	23, 24	12-15	0.12 – 0.16
2 or 2P	Single	12, SC 12	14 – 17	0.29 – 0.33
3 or 3P	Single	11, SC 11, SC 16	16 – 20	0.36 – 0.40
4 or 4P	Single	12	28 - 32	0.63 – 0.68
5 or 5P	Double	Top: 12, SC 12 Bottom: 11, SC 11, SC 16	16 – 19 16 – 20	0.41 – 0.46 0.28 – 0.31
6 or 6P	Double	Top: 11, SC 11, SC 16 Bottom: 9	18 – 22 28 – 32	0.62 – 0.68 0.42 – 0.46
7 or 7P	Double	Top: 11, SC 11, SC 16 Bottom: 8	18 – 22 28 – 32	0.62 – 0.68 0.42 – 0.46
Note 1 – AE-90S and SC aggregates shall be used for Type P seal coats, except SC aggregate requirement will not apply to seal coat used on shoulders. Note 2 – HFRS-2 shall not be used with type 1 seal coat.				

B. Seal coat and covering aggregate shall be placed in accordance with applicable sections of INDOTSS.

3.7 PORTLAND CEMENT CONCRETE PAVEMENT

A. Portland cement concrete pavement shall consist of a coarse aggregate base (if required) and a reinforced or unreinforced Portland cement concrete surface, as shown on the drawings.

1. Use No. 53, coarse aggregate for subbase, unless otherwise shown or specified.

2. Pavement cross-section shall be as shown on drawings.

B. Where an aggregate base course is shown or specified, it shall be constructed in accordance with Article 3.3 of this specification.

C. Portland cement concrete pavement operations and materials shall comply with applicable sections of INDOTSS unless otherwise specified by the Town.

1. Alternate equipment to that specified in INDOTSS, shall be allowed provided that line, grade, surface, smoothness and other requirements of the specifications are met. The equipment used shall be subject to the approval of the Town.

2. Expansion and contraction joints shall be installed as indicated on the drawings or as required by INDOTSS. Expansion joints shall be required whenever new concrete abuts fixed objects or existing concrete surfaces, whether or not shown on the drawings.

3. Keyway construction, load transfer devices, tie bars and slab and ear reinforcement shall be installed as indicated on the drawings.

4. Unless otherwise shown on the drawings, the final finish of concrete pavement shall be by brooming, as set out in INDOTSS, to form a transverse skid-resistant finish.

5. The Contractor shall always have materials available to protect the surface of concrete against rain. These materials shall consist of burlap, curing paper or plastic sheeting.

6. New concrete pavement shall be protected by the Contractor until opening to traffic is approved by the Town. It shall not be opened to traffic until the field-cured concrete has attained a flexural strength of 550 psi, or a compressive strength of 3,500 psi. If such tests are not conducted, the pavement shall not be opened to traffic until 14 days after the concrete was placed. Before opening to traffic, the pavement shall be cleaned and permanent lane markings applied to the pavement.

3.8 WALKS

A. Walks shall consist of a coarse aggregate subbase and a reinforced concrete surface. Use No. 53 crushed stone for subbase, unless otherwise shown. Concrete shall be Class “A” 4,000 psi concrete.

B. Subbase shall be 2 inches thick, and concrete shall be 4 inches thick, unless otherwise shown. Sidewalks that cross driveway approaches shall be 6 inches thick.

C. Compact subbase to not less than 95% of maximum dry density, as determined in accordance with AASHTO T99.

D. Proportion, mix, and place concrete as specified in applicable sections of INDOTSS. Walks shall have a broom surface finish. Edge all outside edges of walk and all joints with a ¼ inch radius edging tool.

E. Unless otherwise shown on the drawings, walks shall be divided into sections not more than five feet in length by dummy joints formed by a jointing tool with a ¼ inch radius.

F. Form construction joints around all abutting structures and appurtenances such as manhole, utility poles, hatches, and hydrants. Install ½ inch thick pre-molded expansion joint filler in construction joints. Expansion joint material shall extend for the full depth of the walk.

G. If existing sidewalk is to be removed and replaced with new sidewalk or new sidewalk extended from existing sidewalk, the existing sidewalk shall be removed to the nearest joint of suitable quality or as directed by the Town Representative.

3.9 CURBS

A. The construction of curbs, combination curb and gutter, and integral curb and gutter shall be in accordance with these specifications and as shown on the plans and shall be in reasonably close conformance with the lines and grades shown on the plans or as directed by the Town.

B. Excavation for curbs shall be made to the required depth, and the subgrade or base upon which the curb is constructed shall be compacted to a firm, even surface to not less than 95% of maximum dry density as determined in accordance with AASHTO T99.

C. Concrete for curbs shall be Class A, 4,000 psi, as specified previously for Concrete Pavement.

D. The curbs shall be constructed by the use of wood or metal forms; or, if approved by the Town, the curb may be constructed using a curb slipform machine. Forms, if used, shall be straight, free from warped or bent sections, and shall extend for the entire depth of the curb and shall be securely held in place so that no deviation from alignment and grade will occur during placement of concrete. The concrete shall be consolidated by vibration or other acceptable methods. The top of the curb shall be floated smooth and the top outer corner rounded to a 1inch radius.

E. The face, top, and gutter of curbs shall not have deviations or irregularities of more than ¼ inch when checked with a 10-foot straightedge.

F. Construction joints shall be placed at 10-foot intervals, unless otherwise shown or directed by the Town. The joint shall be uniform, of 1/8 to 1/4 inch in width, and to a depth of approximately 2-1/2 inches. The joint may be saw cut or formed by approved removable strips providing a straight joint at right angles to the length of curb. Joints shall be filled with specified bituminous joint filler material. Construction joints shall be formed around all abutting structures such as inlets and shall be as specified previously.

G. As soon as possible after placing and finishing of concrete, the curbing shall be moistened and kept moist for three days, or cured with the use of a specified membrane compound.

H. If existing curb is to be removed and replaced with new curb or new curb extended from existing curb, the existing curb shall be removed to the nearest joint of suitable existing curb or as directed by the Town.

3.10 LANE STRIPPING

A. Lane striping is to be in accordance with all applicable standards in INDOTSS and the construction plans.

B. Parking lots are to be striped with standard white road paint. Spaces to be striped shall be 9 feet 0 inches wide by 18 feet 0 inches long with 4 inch wide stripes. Handicap parking spaces shall meet current ADA requirements.

C. Contractor will not permit traffic on any new pavement surface prior to striping.

D. Contractor will clean the new pavement surface to remove all dust, dirt, mud and debris prior to striping.

3.11 TESTING FOR HOT MIX ASPHALT (HMA)

A. The Contractor shall employ and pay for the services of a competent independent testing laboratory to take cores at selected locations and perform described tests. Compaction requirements for HMA mixtures placed in accordance with applicable sections of INDOTSS shall be controlled by in place density determined from cores cut from the compacted pavement. A minimum of two cores per section shall be cut for each course of each material or as directed by the Town Representative. Sections are defined as a maximum of 1000 Mg (1041 ton) of HMA base or intermediate or 600 Mg (624 ton) of HMA surface. The transverse core location shall be located so that the edge of the core will be no closer than 75 mm (3 inches) from a confined edge or 150 mm (6 inches) from a non-confined edge of the course being placed.

B. For compaction of HMA mixtures with quantities less than 100 Mg (104 ton) per day, acceptance may be visual as determined by the Town.

C. The Contractor along with their independent testing lab representative shall obtain cores in the presence of the Town's Representative with a device that shall produce a uniform 150 mm (6 inches) in diameter pavement sample. Each HMA course shall be cored within one work day of placement. Damaged core(s) shall be discarded and replaced with a core from a nearby location as selected by the Town.

D. The Contractor, in the presence of the Town's Representative, shall mark the core to define the course to be tested. If the defined area is less than 1.5 times the maximum particle size, the core will be discarded and a core from a new random location will be selected for testing as determined by the Town's Representative. Within one work day of coring operations the Contractor shall clean, dry, refill and compact the core holes with suitable material approved by the Town.

E. The Contractor's testing lab representative shall take immediate possession of the cores. If the cores are subsequently damaged, additional coring within the specific section(s) will be required at locations to be determined by the Town.

F. Each core shall be tested within one work day of coring operation to determine thickness, bulk specific gravity, aggregate gradation and binder content. Test results shall then be transmitted either verbally or by other means to both the Contractor and the Town for verification before each subsequent bituminous lift is placed.

1. Average thickness of the cores shall not vary from the plan thickness more than 12.5 mm (0.5 inch) for HMA base and intermediate course(s) and 6.25 mm (0.25 inch) for HMA surface course(s) for acceptance in accordance with INDOTSS section 105.03.

2. The bulk specific gravity shall be determined in accordance with AASHTO T166 or AASHTO T 275. The in place density of a section for a mixture shall be expressed as :

   Density % = (BSG/MSG) * 100

   Where:

   BSG = bulk specific gravity as determined from independent testing laboratory.
   MSG = maximum specific gravity as reported on job mix formula.

3. The calculated density of the cores shall not be less than 90% nor more than 96% as set out above. Test results which are outside stated limits

shall be considered and adjudicated as a failed material in accordance with INDOTSS.

G. The Contractor's independent testing laboratory representative shall determine the aggregate gradation and binder content of the core samples in accordance with ITM 571. Aggregate gradation shall be within tolerances set forth in applicable sections of INDOTSS and binder content shall be within ±0.5 percent from the job mix formula. Test results which are outside the stated limits shall be considered and adjudicated as a failed material in accordance with INDOTSS.

H. A copy of all core test results shall be submitted to the Town's Manager for verification of specification compliance within one calendar week of core testing.

I. The Contractor shall make the following tests at no additional cost to the Town, and they shall be as specified in this Article and as requested by the Town. Perform tests in accordance with the following ASTM Specifications:

Test	ASTM Specification
Slump	C143
Air Content	C173
Test Cylinder	C313 or C513
Core Samples	C42
Fly Ash	C311

1. Measure slump each time test beams or cylinders are to be made and at any other time requested by the Town's Representative. The slump shall be as specified in applicable sections of INDOTSS, or as otherwise specified herein, unless specifically excepted by the Town's Manager.

2. Measure air content each time test beams or cylinders are to be made and at any other time requested by the Town. The field test may be omitted if the air content is known prior to taking samples. The field test may not be omitted if fly ash is used in the mix.

3. Concrete paving mixes shall comply with guidelines of INDOTSS Section 501.03 and shall meet the testing requirements of Section 501.03 (a). However, in lieu of forming test beams as described in Section 501.03 (a) 2, the Contractor may substitute cylinder tests as follows:

    a. Make test cylinders in sets of four. Field cure one cylinder and break at seven days. Laboratory cure the remaining three cylinders and break at 28 days. The Contractor shall be responsible for handling and transportation of cylinders.

b. If fly ash is used in the mix, a total of seven cylinders shall be taken. The additional three cylinders shall be laboratory cured and broken at 56 days, if the 28-day strength does not meet specifications.

c. Make one set of test cylinders for each 100 cubic yards, or fraction of 100 cubic yards, of concrete placed; or at other times requested by the Town.

d. Unless otherwise specified, concrete shall have a 28-day compressive strength of 4,000 psi, as demonstrated by laboratory tests of cylinders.

3.12 PROTECTION

A. Maintain compacted aggregate subbase and surface true to line and grade and required density. Maintain subbase until prime coat is placed. Maintain surface until job is complete.

B. Do not permit vehicular traffic of any kind on any bituminous course until the bituminous mixture has hardened sufficiently not to be distorted beyond specified tolerances. Remove any foreign material which is on the surface of any course before the course is rolled or any subsequent course is placed.

C. Do not permit traffic on concrete pavement or walks until concrete has developed sufficient strength not to be marked or damaged. Do not permit vehicular traffic on concrete for at least 14 days.

D. Repair or replace damaged pavement and walks to the satisfaction of the Town.

3.13 CLEANUP

Clean up the job site following pavement and surfacing restoration. Remove all rubbish, excess materials, temporary structures, and equipment. Leave the work in a neat and presentable condition.

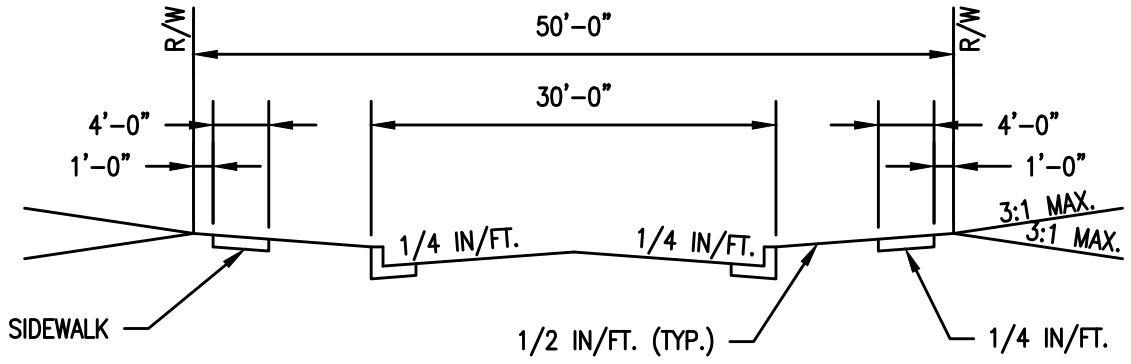
PART 4 - FIGURES

4.1 STANDARD PAVEMENT DETAILS

FIGURE	DESCRIPTION
2500A	Typical Section - Collector Street
2500B	Minimum Residential Subdivision Entrance from a Thoroughfare

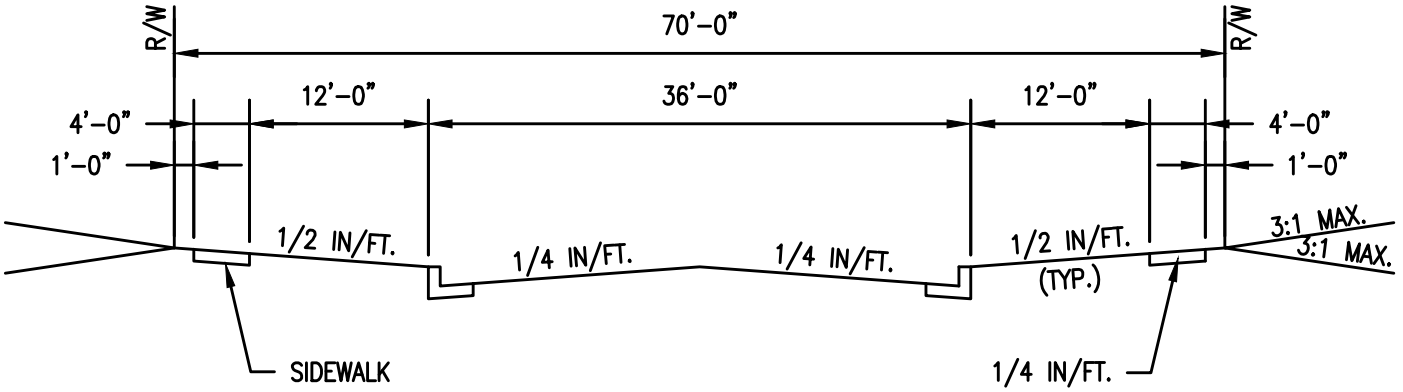
2500C	Typical Pavement Sections, Local Streets
2500D	Typical Pavement Sections, Collector
2500E	Typical Pavement Sections, Arterial/Commercial Streets
2500F	Joint Detail
2500G	Joint and Structure Detail
2500H	Joint Location, Street Plan
2500I	Roll Curb
2500J	Integral Curb and Gutter
2500K	Integral Curb and Gutter, Reverse Slope
2500L	Pipe Underdrain
2500M	Sidewalk Details
2500N	Handicapped Accessible Sidewalk
2500O	Subdivision Cul-de-sac
2500P	Subdivision Temporary Cul-de-sac
2500Q	Standard Barricade
2500R	Street Signs
2500S	Residential Driveways
2500S.2	Commercial Drive – Class III
2500S.3	Commercial Drive Class IV
2500T	Typical Driveway Section
2500U	Repair of Cuts within Pavement Limits, Limits of Patch
2500V	Repair of Cuts within Pavement Limits, Bituminous and Concrete Patches
2500W	Repair of Cuts within Pavement Limits, Temporary Patch
2500X	Bicycle/Jogging Path

END OF SECTION 02500



TYPICAL MINIMUM R/W SECTION - LOCAL STREET

SCALE: NONE



TYPICAL MINIMUM R/W SECTION - COLLECTOR, INDUSTRIAL AND ARTERIAL STREETS

SCALE: NONE

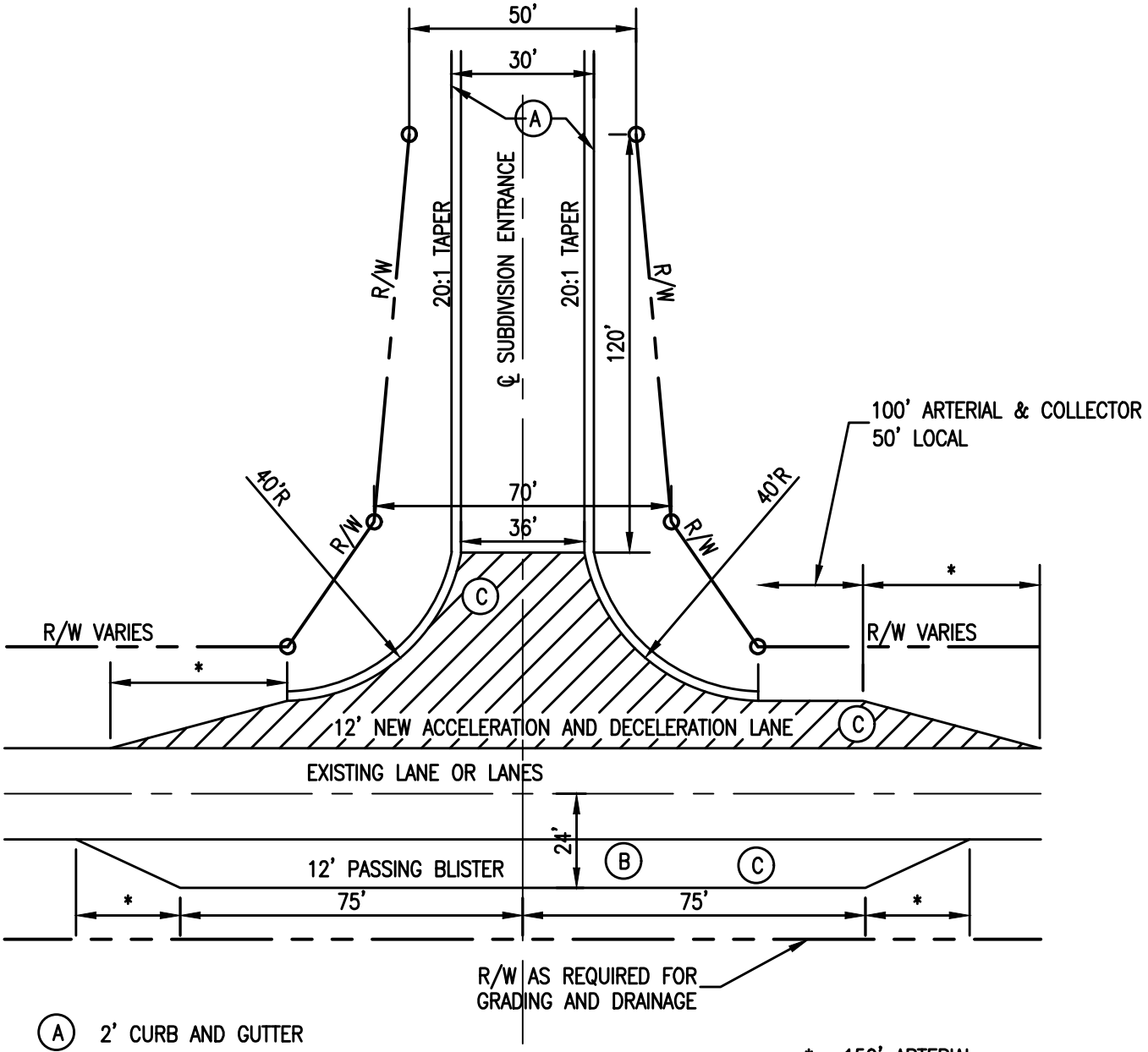
* A TRAFFIC STUDY MAY BE REQUIRED TO DETERMINE APPROPRIATE STREET WIDTH FOR COLLECTOR AND ARTERIAL STREETS. A MEETING WITH THE TOWN MANAGER IS RECOMMENDED PRIOR TO DESIGN.

NOTE:

THE CURB & GUTTER SHALL BE TYPE I OR TYPE II AS SHOWN ON THE CURB & GUTTER STANDARD SHEETS. TYPE II CURB & GUTTER SHALL BE USED ADJACENT TO NON-RESIDENTIAL OR MULTI-FAMILY RESIDENTIAL AREAS.

TRIAD ASSOCIATES INC.
5835 LAWTON LOOP EAST DRIVE
INDIANAPOLIS, INDIANA 46216
PHONE: 317-377-5230 FAX: 317-377-5241

2500-A



(A) 2' CURB AND GUTTER

(B) PASSING BLISTER WHEN REQUIRED

(C) LANE WIDENING SHALL MATCH EXISTING PAVEMENT SURFACE TYPE

* 150' ARTERIAL
100' COLLECTOR
75' LOCAL

MINIMUM RESIDENTIAL SUBDIVISION ENTRANCE FROM A THOROUGHFARE

SCALE: NONE

NOTE:
CONSTRUCTION PLANS SHALL INCLUDE CENTERLINE PROFILE OF THE EXISTING ROAD BEING INTERSECTED BY THE ENTRANCE. THE PROFILE SHALL EXTEND A MINIMUM OF 500' EACH DIRECTION FROM ENTRANCE CENTERLINE.

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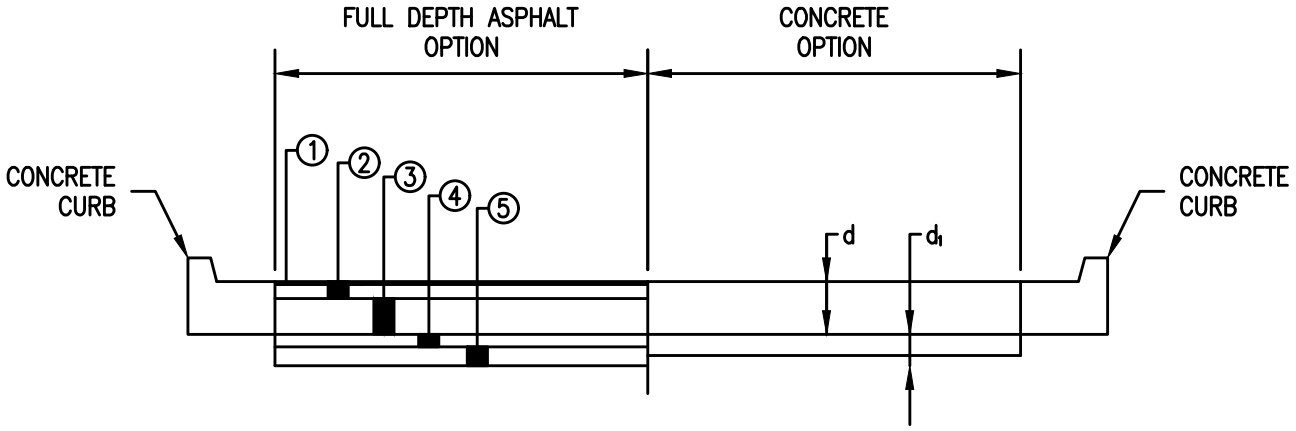
2500-B



COLLECTOR STREETS

	ASPHALT	ASPHALT ALTERNATIVE 1	ASPHALT ALTERNATIVE 2	ASPHALT ALTERNATIVE 1
①	1" SURFACE #11 OR #12	1" SURFACE #11 OR #12	1" SURFACE #11 OR #12	d=7" CONCRETE
②	2 1/2" BINDER #9	2 1/2" BINDER #9	2 1/2" BINDER #9	8" COMP. AGGR. (SIZE #53)
③	6" BASE #5D	4" BASE #5D	3" BASE #5D	
④	6" COMP. AGGR. (SIZE #53)	8" COMP. AGGR. (SIZE #53)	6" COMP. AGGR. (SIZE #53)	
⑤	N.A.	N.A.	12" LIME TREATED SUBBASE *	

TYPICAL PAVEMENT SECTIONS

SCALE: NONE

* LIME MODIFICATION SHALL BE BETWEEN 3% AND 6% BY WEIGHT WITH THE SOIL TEMPERATURE 45° OR ABOVE MEASURED 4" (100mm) BELOW THE SUBGRADE SURFACE WITH THE AIR TEMPERATURE RISING, ALL IN ACCORDANCE WITH THE LATEST AMENDED VERSION OF THE INDIANA DEPARTMENT OF TRANSPORTATION'S SPECIAL PROVISION FOR LIME MODIFICATION.

NOTE:

* ADD 1" TO ALL TOTAL BITUMINOUS AND CONCRETE THICKNESSES IF ANTICIPATED TRUCK TRAFFIC IS GREATER THAN 10%.
* DEPTH OF CONCRETE GUTTER SHALL EQUAL DEPTH OF CONCRETE PAVEMENT.

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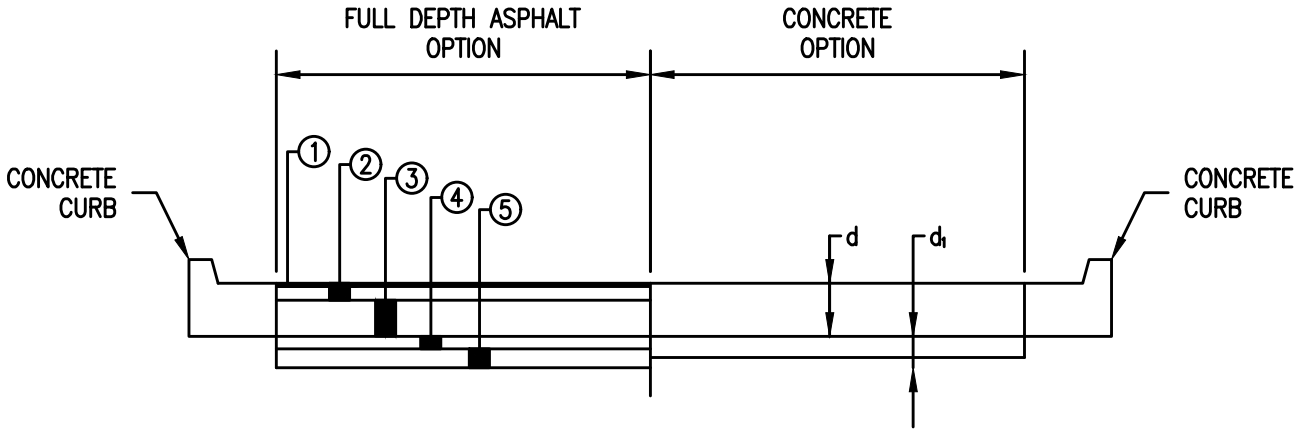
2500-C



INDUSTRIAL AND ARTERIAL

	ASPHALT	ASPHALT ALTERNATIVE 1	ASPHALT ALTERNATIVE 2	ASPHALT ALTERNATIVE 1
①	1" SURFACE #11 OR #12	1" SURFACE #11 OR #12	1" SURFACE #11 OR #12	d=9" CONCRETE
②	2 1/2" BINDER #9	2" BINDER #9		6" COMP. AGGR. (SIZE #53)
③	8" BASE #5D	6" BASE #5D	6" BASE #5D	
④	6" COMP. AGGR. (SIZE #53)	8" COMP. AGGR. (SIZE #53)	6" COMP. AGGR. (SIZE #53)	
⑤	N.A.	N.A.	12" LIME TREATED SUBBASE *	

TYPICAL PAVEMENT SECTIONS

SCALE: NONE

* LIME MODIFICATION SHALL BE BETWEEN 3% AND 6% BY WEIGHT WITH THE SOIL TEMPERATURE 45° OR ABOVE MEASURED 4" (100mm) BELOW THE SUBGRADE SURFACE WITH THE AIR TEMPERATURE RISING, ALL IN ACCORDANCE WITH THE LATEST AMENDED VERSION OF THE INDIANA DEPARTMENT OF TRANSPORTATION'S SPECIAL PROVISION FOR LIME MODIFICATION.

NOTE:

* ADD 1" TO ALL TOTAL BITUMINOUS AND CONCRETE THICKNESSES IF ANTICIPATED TRUCK TRAFFIC IS GREATER THAN 10%.
* DEPTH OF CONCRETE GUTTER SHALL EQUAL DEPTH OF CONCRETE PAVEMENT.

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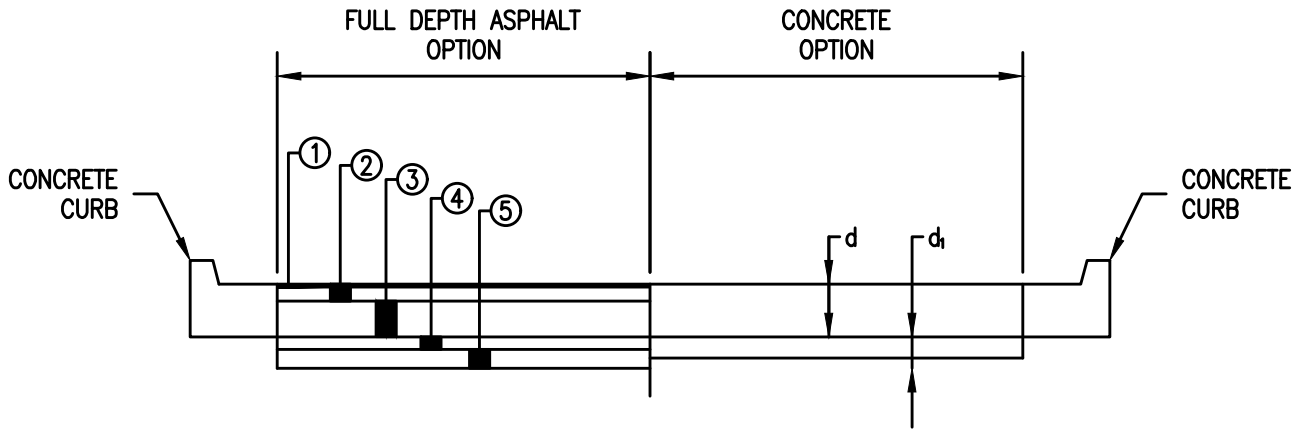
2500-D



LOCAL STREETS

	ASPHALT	ASPHALT ALTERNATIVE 1	ASPHALT ALTERNATIVE 2	ASPHALT ALTERNATIVE 1
①	1" SURFACE #11 OR #12	1" SURFACE #11 OR #12	1" SURFACE #11 OR #12	d=6" CONCRETE
②	2 1/2" BINDER #9	2 1/2" BINDER #9	2" BINDER #9	d_1 =4" COMP. AGGR. (SIZE #53)
③	6" BASE #5D	4" BASE #5D	3" BASE #5D	12" LIME TREATED SUBBASE *
④	6" COMP. AGGR. (SIZE #53)	8" COMP. AGGR. (SIZE #53)	6" COMP. AGGR. (SIZE #53)	
⑤	N.A.	N.A.	12" LIME TREATED SUBBASE *	

TYPICAL PAVEMENT SECTIONS

SCALE: NONE

* LIME MODIFICATION SHALL BE BETWEEN 3% AND 6% BY WEIGHT WITH THE SOIL TEMPERATURE 45° OR ABOVE MEASURED 4" (100mm) BELOW THE SUBGRADE SURFACE WITH THE AIR TEMPERATURE RISING, ALL IN ACCORDANCE WITH THE LATEST AMENDED VERSION OF THE INDIANA DEPARTMENT OF TRANSPORTATION'S SPECIAL PROVISION FOR LIME MODIFICATION.

NOTE:

* ADD 1" TO ALL TOTAL BITUMINOUS AND CONCRETE THICKNESSES IF ANTICIPATED TRUCK TRAFFIC IS GREATER THAN 10%.
* DEPTH OF CONCRETE GUTTER SHALL EQUAL DEPTH OF CONCRETE PAVEMENT.

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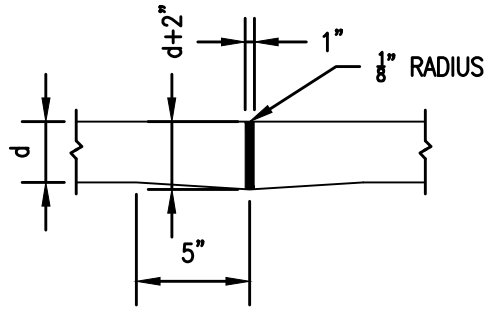
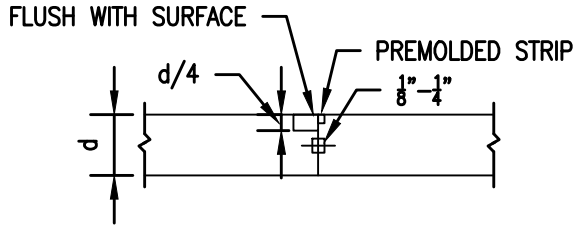
2500-E



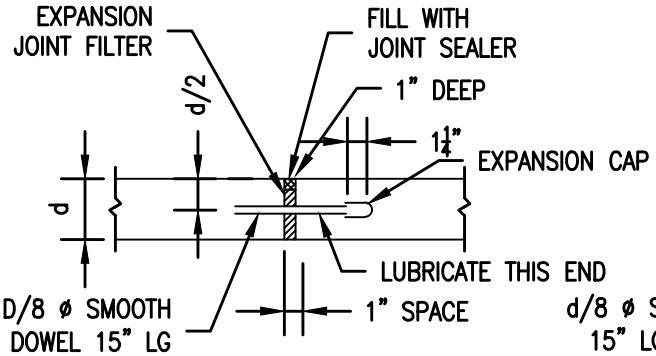
TYPE A

EXPANSION JOINT



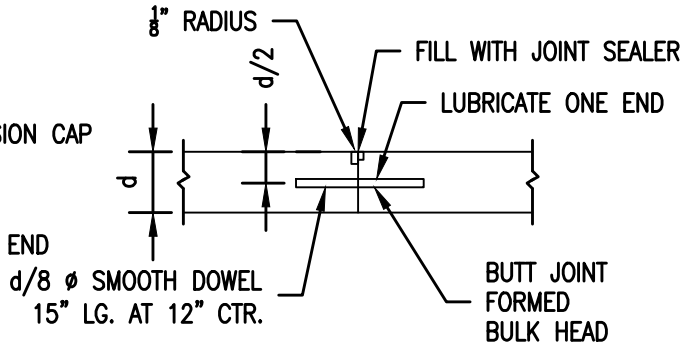
TYPE C

SAWED OR PREMOLDED STRIP
LONGITUDINAL OR TRANSVERSE



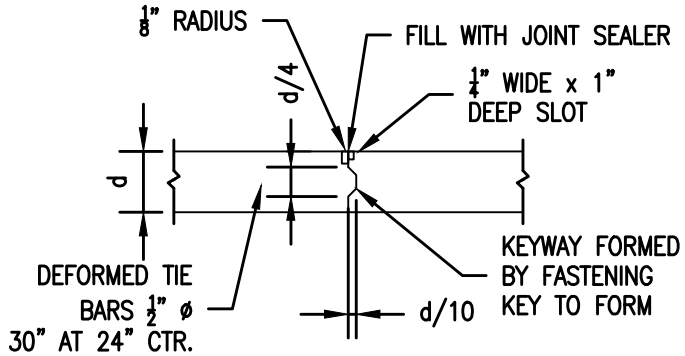
TYPE A–ALTERNATE

EXPANSION JOINT



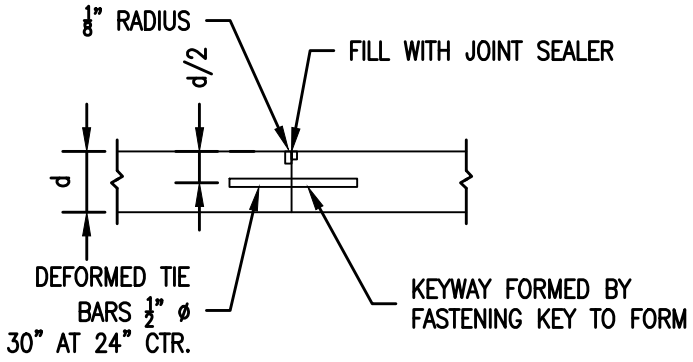
TYPE D

TRANSVERSE CONSTRUCTION JOINT



TYPE E

TIED TRANSVERSE CONSTRUCTION JOINT



TYPE E

TIED TRANSVERSE CONSTRUCTION JOINT

JOINT DETAILS

SCALE: NONE

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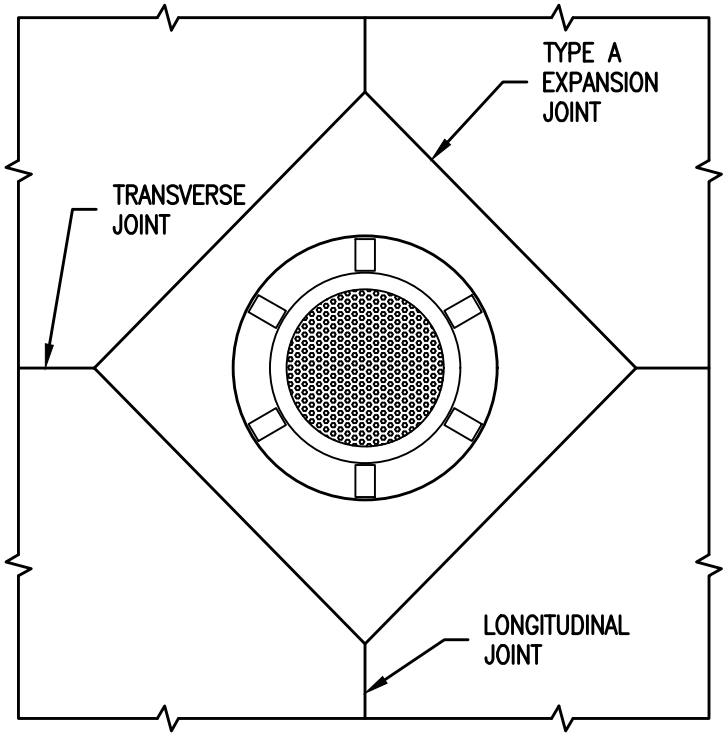
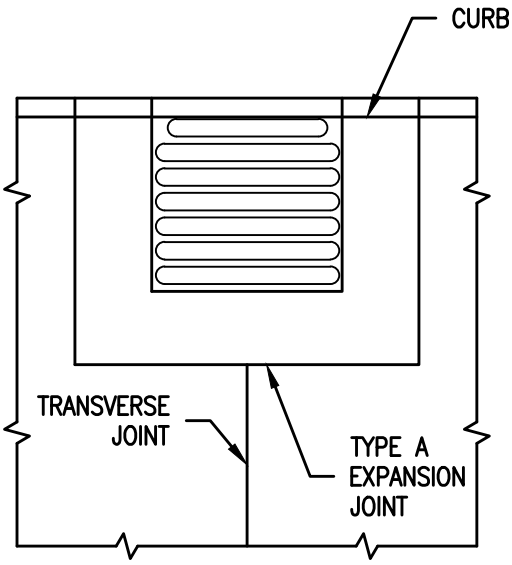
2500-F



MANHOLE BOXOUT



CATCH BASIN BOXOUT

1. ALL CATCH BASINS SHALL BE SEPARATED FROM THE PAVEMENT AND CURB BY BOXING OUT AROUND BASIN AS SHOWN ABOVE. EXPANSION JOINT MATERIAL SHALL EXTEND COMPLETELY THROUGH CURB AND SLAB. MANHOLE CASTINGS WITHIN THE PAVEMENT LIMITS SHALL BE BOXED IN LIKE MANNER EXCEPT WHEN TELESCOPING–TYPE CASTINGS ARE USED.
2. WHEN A JOINT FALLS WITHIN 5 FOOT OF OR CONTACTS BASINS, MANHOLES, OR OTHER STRUCTURES, SHORTEN ONE OR MORE PANELS EITHER SIDE OF OPENING TO PERMIT JOINT TO FALL ON ROUND STRUCTURES AND AT OR BETWEEN CORNERS OR RECTANGULAR STRUCTURES.

STRUCTURE DETAILS

SCALE: NONE

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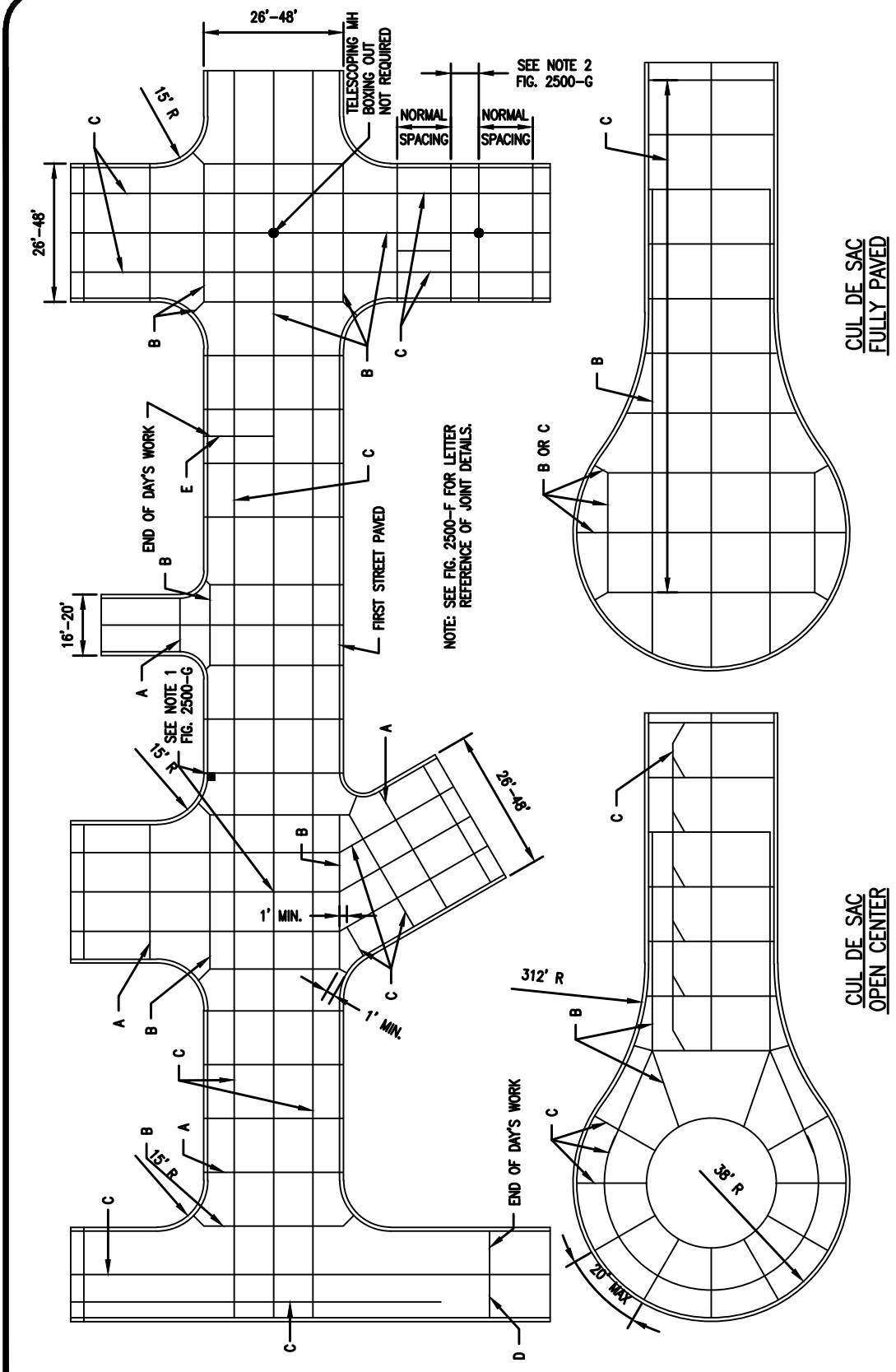
2500-G



JOINT LOCATIONS

SCALE: NONE

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5835 LAWTON LOOP EAST DRIVE
INDIANAPOLIS, INDIANA 46216
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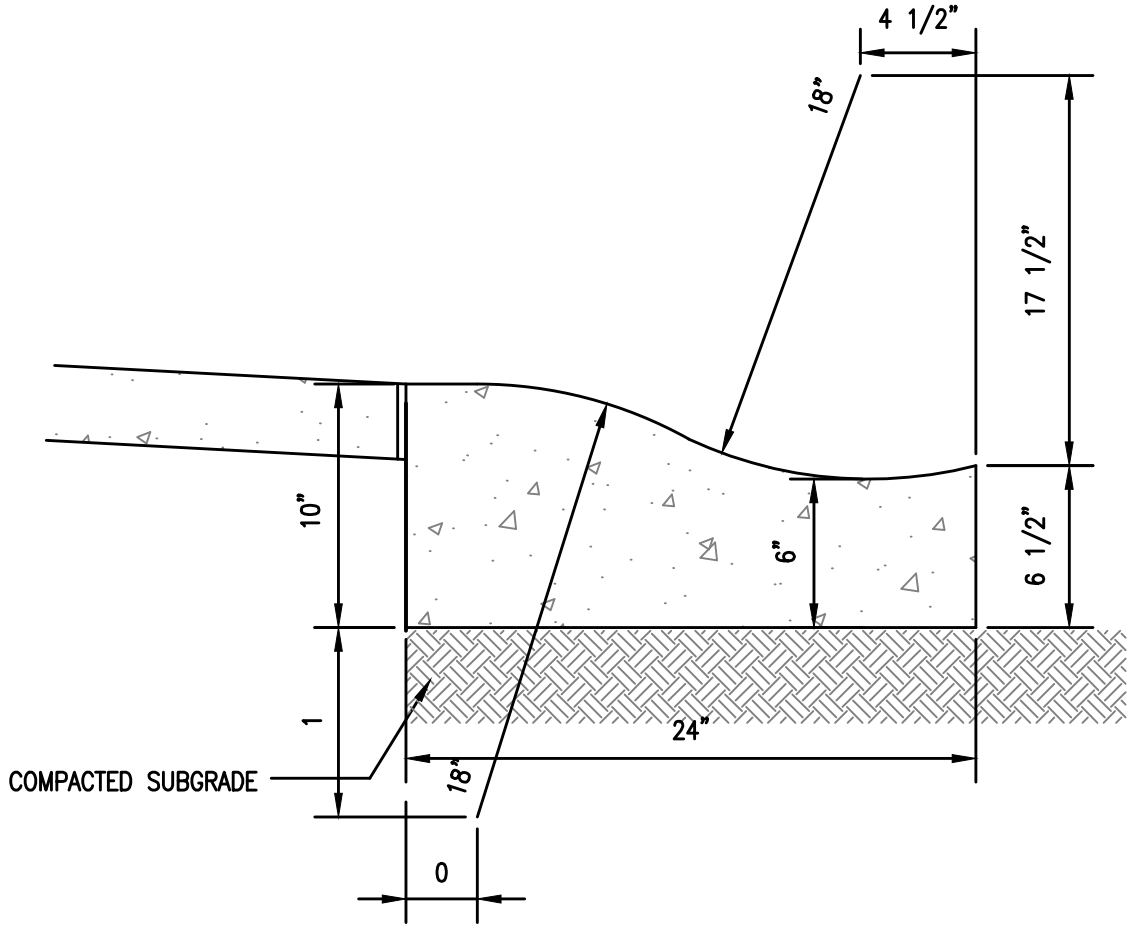
2500-H



TYPE I ROLL CURB

SCALE: NONE

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5835 LAWTON LOOP EAST DRIVE
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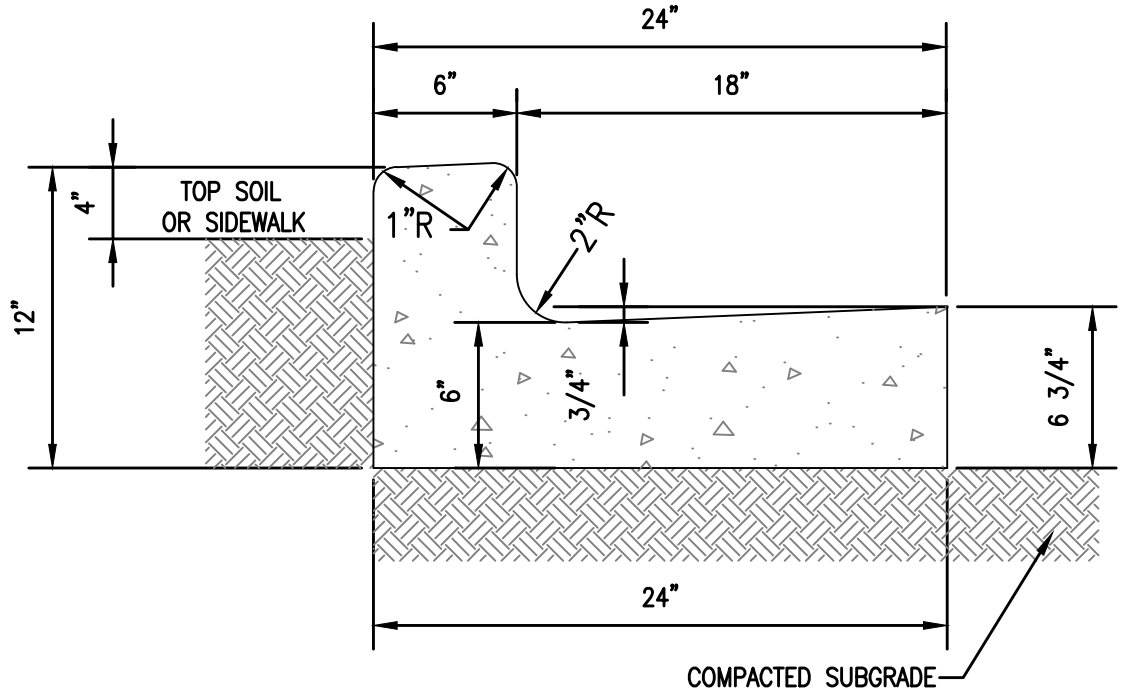
2500-I



TYPE II INTEGRAL CURB AND GUTTER

SCALE: NONE

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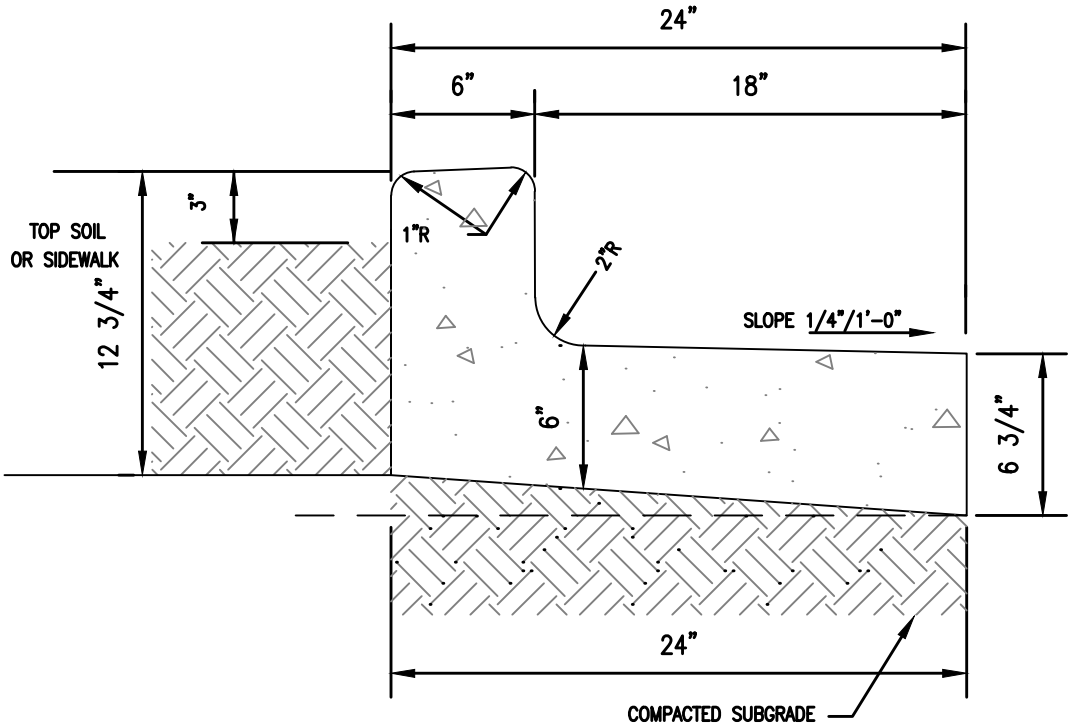
5835 LAWTON LOOP EAST DRIVE
INDIANAPOLIS, INDIANA 46216
PHONE: 317-377-5230 FAX: 317-377-5241

2500-J

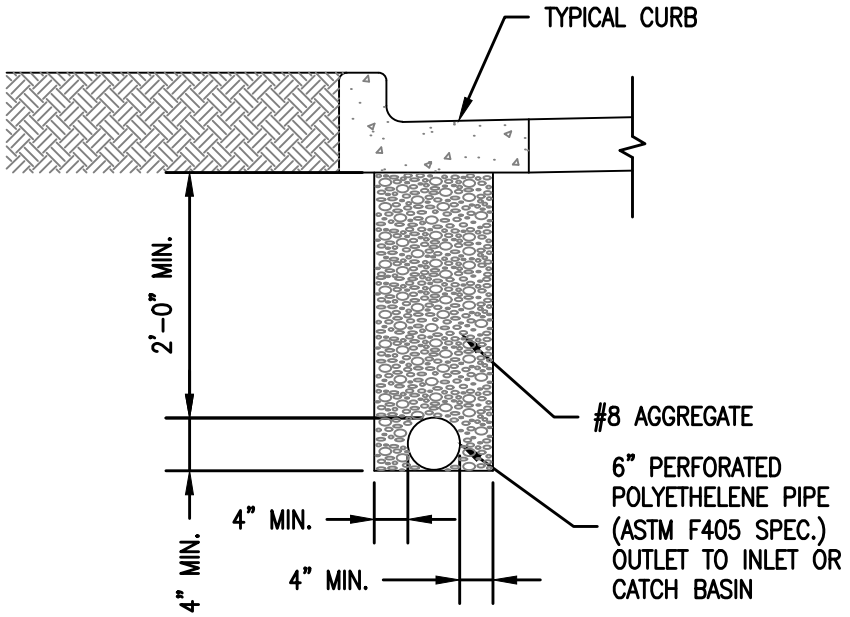


INTEGRAL CURB AND GUTTER REVERSE SLOPE

SCALE: NONE

TRIAD ASSOCIATES INC.
5835 LAWTON LOOP EAST DRIVE
INDIANAPOLIS, INDIANA 46216
PHONE: 317-377-5230 FAX: 317-377-5241

2500-K



UNDERDRAIN DETAIL

SCALE: NONE

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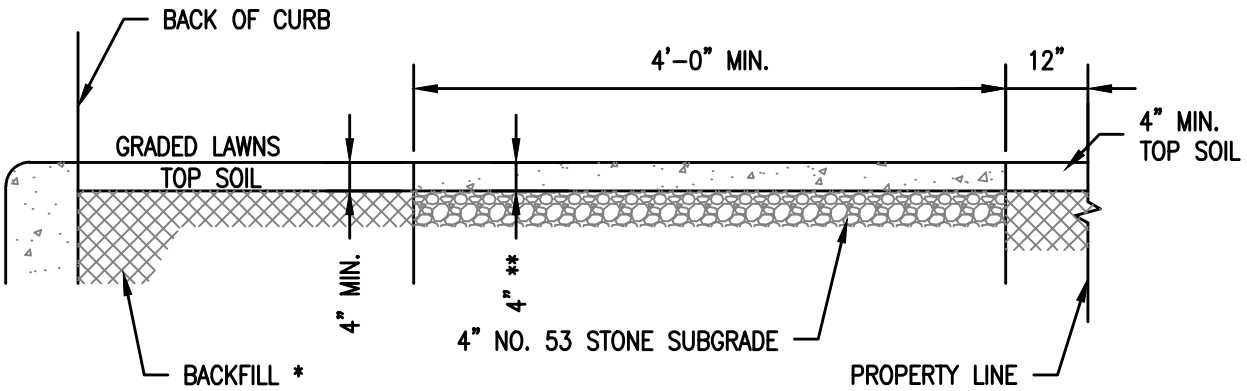
2500-L

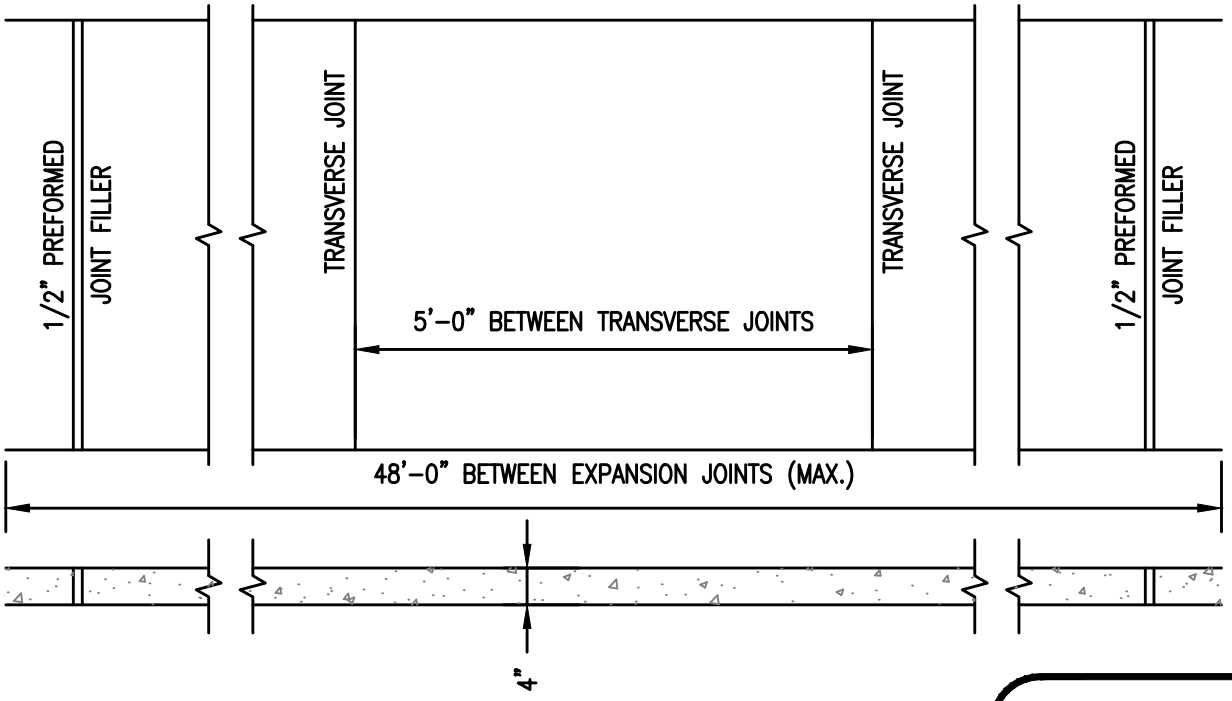


TYPICAL SIDEWALK SECTION

* THE SPACE BEHIND THE CURB SHALL BE FILLED WITH SUITABLE MATERIAL TO THE REQUIRED ELEVATION AND COMPACTED IN LAYERS NOT TO EXCEED 6" IN DEPTH.

** WHERE SIDEWALK CROSSES DRIVE, MINIMUM DEPTH OF CONCRETE IS 6".

SUBGRADE UNDER ALL CURBS, SIDEWALKS, AND DRIVES SHALL BE COMPACTED IN ACCORDANCE WITH I.D.O.H. SPECIFICATIONS.



CONCRETE SIDEWALK

SIDEWALK DETAILS

SCALE: NONE

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5835 LAWTON LOOP EAST DRIVE
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2500-M

HANDICAPPED ACCESSIBLE SIDEWALK

Sidewalk curb ramps shall meet current Indiana Department of Transportation (INDOT) design standards. Refer to INDOT's website for the appropriate standard drawing;

http://www.in.gov/dot/div/contracts/standards/drawings/sep16/e/600e/e600%20combined%20pdfs/E604-SDWK.pdf

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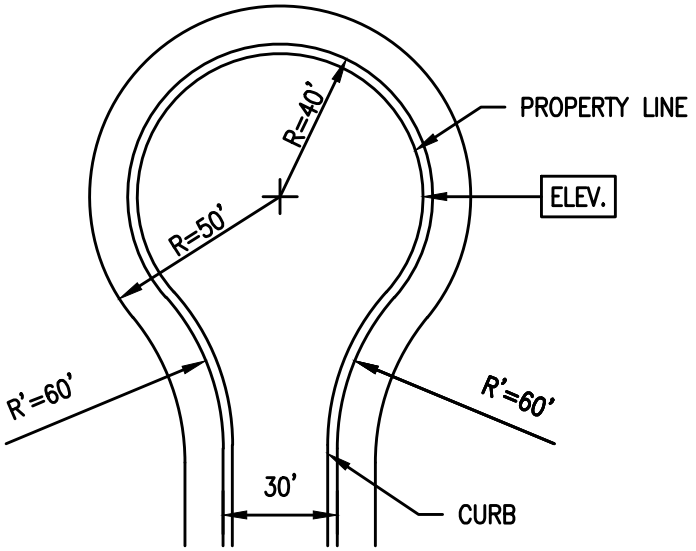
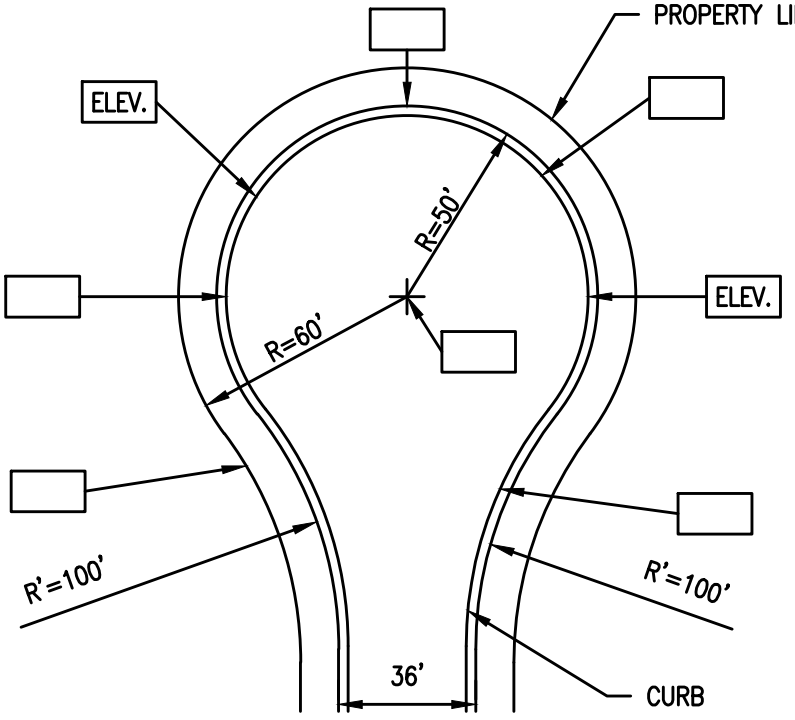
2500-N



TYPE–1



TYPE–2

SUBDIVISION CUL-DE-SAC

SCALE: NONE

NOTES:

1. TYPE–1 SHALL BE USED ONLY IN RESIDENTIAL SUBDIVISIONS; ALL OTHER USE TYPE–2.
2. WARNING SIGNS SHALL BE POSTED AT ENTRANCE TO STREET, INDICATING NO OUTLET.
3. DETAIL SHALL BE IDENTIFIED BY STREET NAME.
4. ELEVATIONS PROVIDED SHALL BE PROPOSED FLOW LINE OF GUTTER.
5. ONE DETAIL SHALL BE PROVIDED FOR EACH CUL–DE–SAC.
6. SCALE SHALL BE 1"=40' OR LARGER.

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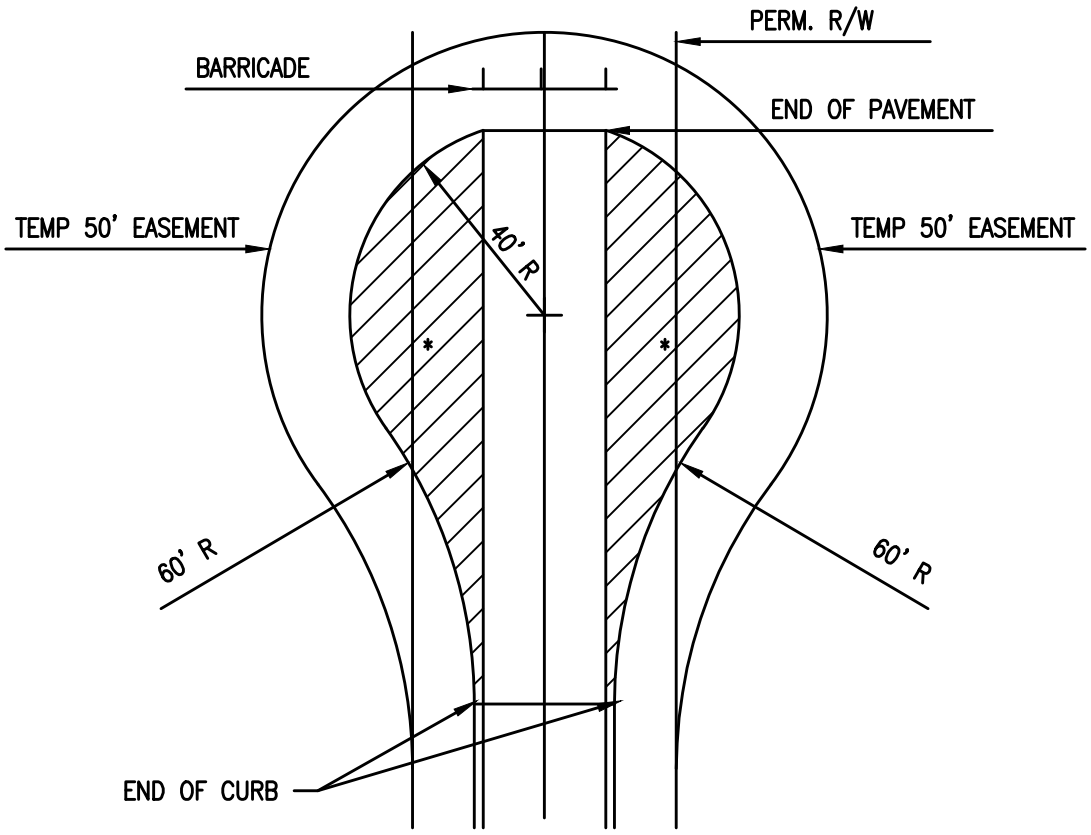
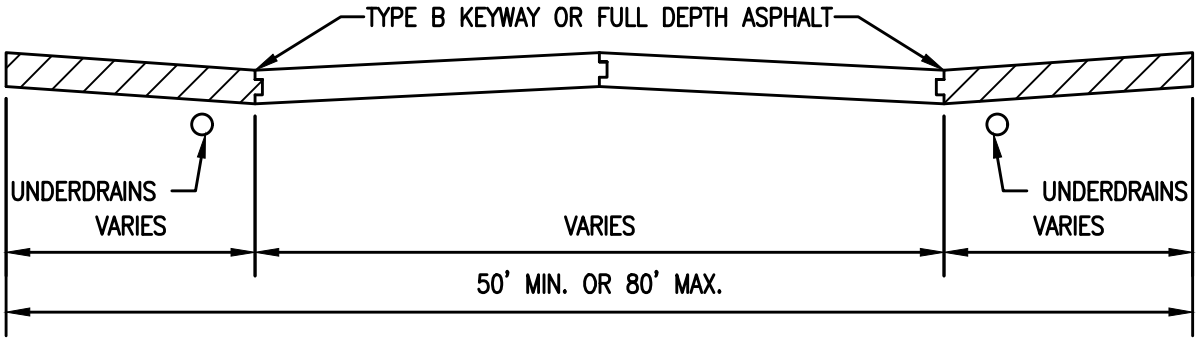
2500-0



* TO BE REMOVED WHEN THE STREET IS CONTINUED.
THICKNESS AND TYPE TO MATCH PERMANENT PAVEMENT.



SUBDIVISION TEMPORARY CUL-DE-SAC

SCALE: NONE

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5835 LAWTON LOOP EAST DRIVE
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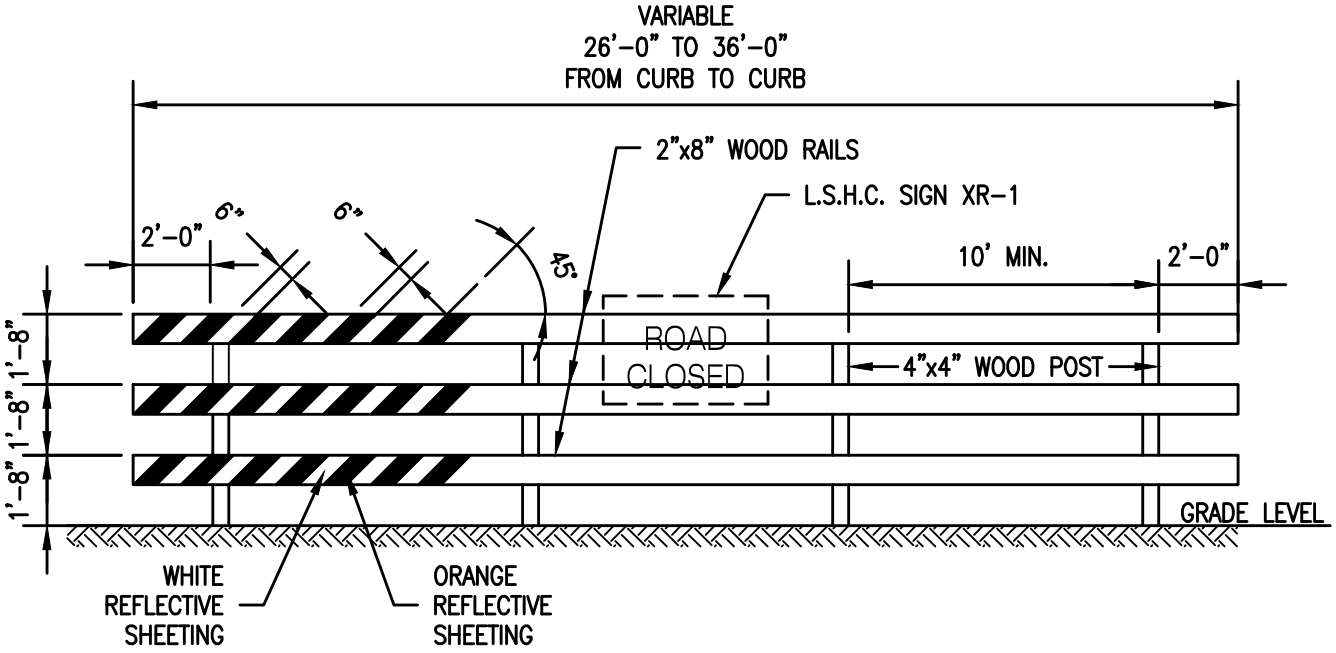
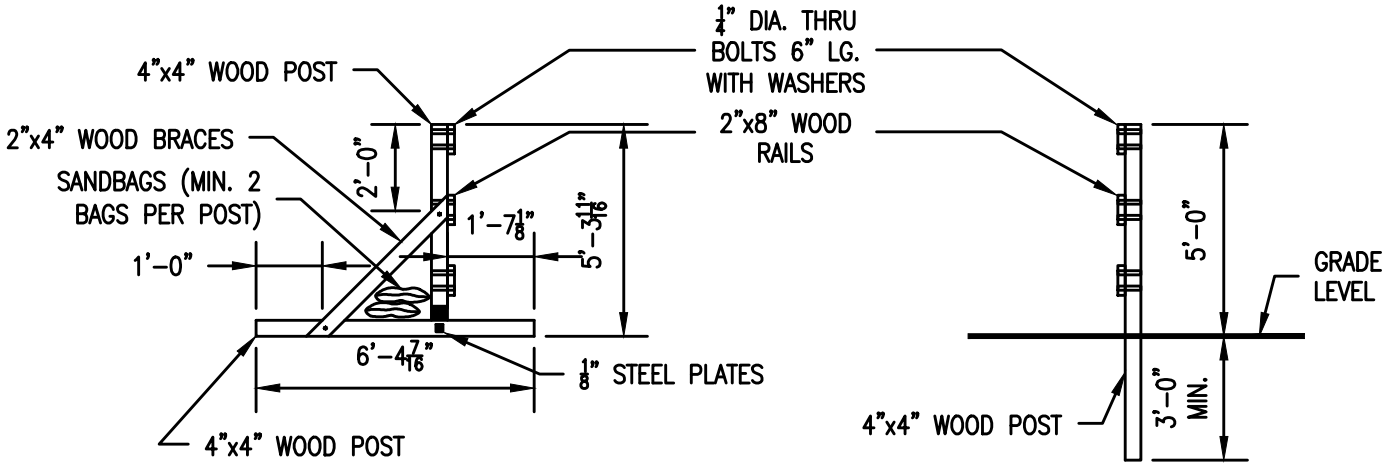
2500-P





STANDARD BARRICADE

SCALE: NONE

NOTES:

1. ALL WOOD POST AND SUPPORT MEMBERS SHALL BE PAINTED WITH TWO (2) COATS OF WHITE PAINT.
2. LOCATION OF BARRICADE AS PER PLANS
3. * REFLECTIVE SHEETING TO BE IN ACCORDANCE WITH I.N.D.O.T. STANDARD SPECIFICATIONS.
4. REFER TO SECTION 800 OF THE INDIANA DEPARTMENT OF HIGHWAYS STANDARD SPECIFICATIONS AND LATEST ADDITION OF INDIANA MANUAL OF UNIFORM TRAFFIC
5. WHEN THE PROPOSED EXTENSION OF THE STREET IS TO BE COMPLETED WITHIN a) LESS THAN TWO (2) YEARS USE THE SANDBAGS ON POSTS b) GREATER THAN TWO (2) YEARS USE THE GROUND POSTS.

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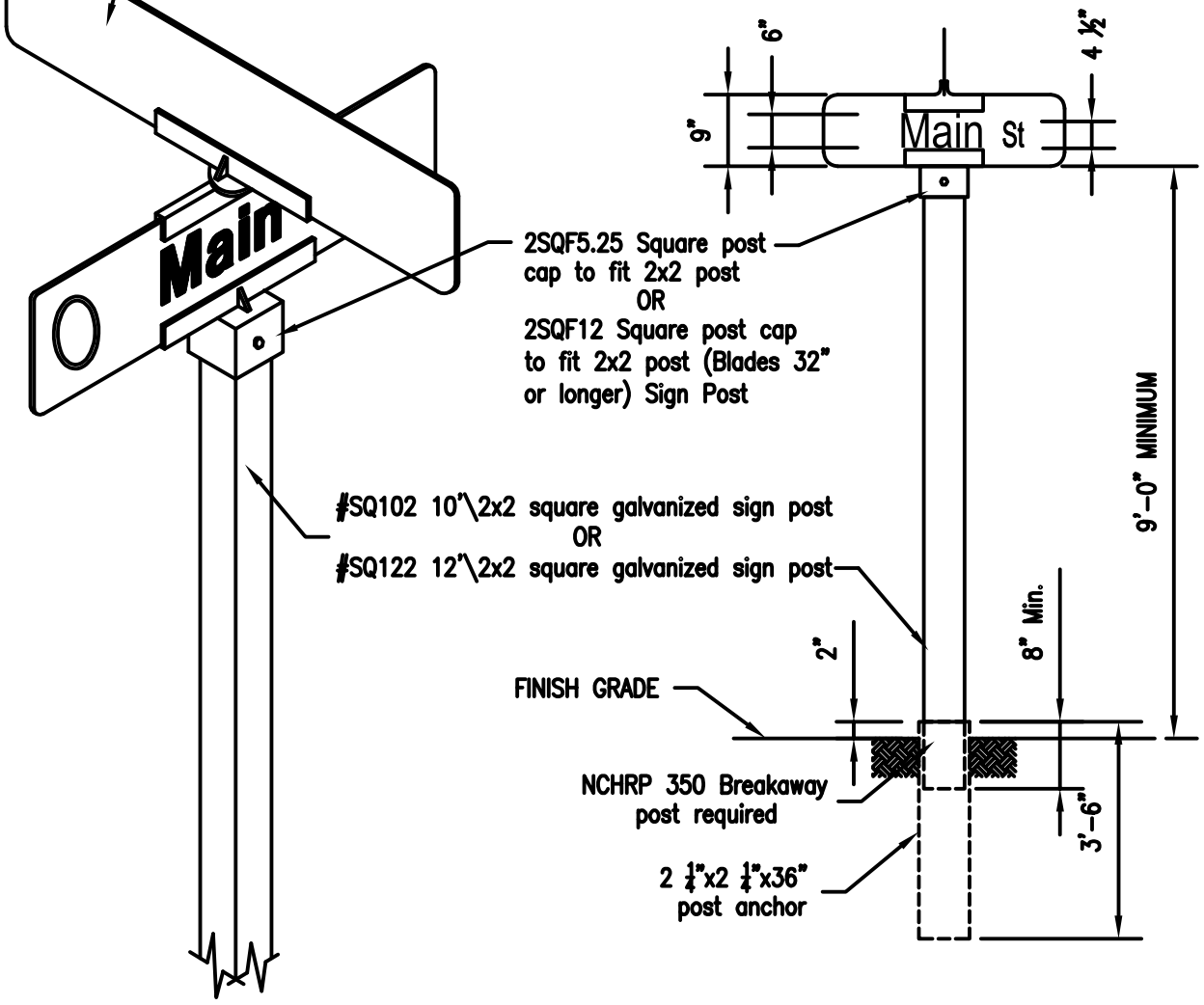
2500-Q

SIGN MATERIALS:

MATERIALS: FL9 Flat aluminum surface 0.080–gauge virgin aluminum for signs under 36" in length.
All FL9 signs 36" or longer shall be flat aluminum surface 0.10–gauge virgin aluminum.

BACKGROUND: 3M white sheeting HIP reflective Legend to include; Black copy, border & Logo
Series B letters Logo 6" Circle, Initial letter shall be upper–case, 6" in height, followed by 4.5" lower–case lettering. AS DEPICTED ALL CENTERED.
LOGO Specification on file with J A Larr&Co/Stello



Height Requirements:
3" SQ–32 anchor driven 3' below finish grade
10' or 12' post inserted and bolted into the anchor to leave a height of 9' from the finish grade to the post cap

STREET SIGN DETAIL

SCALE: NONE

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5835 LAWTON LOOP EAST DRIVE
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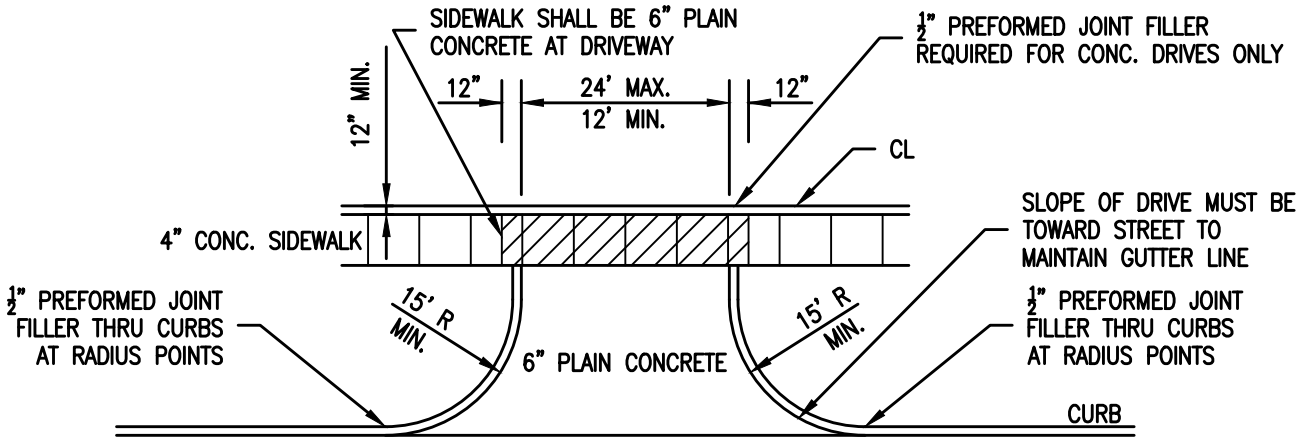
2500-R



INGALLS MINIMUM COMMERCIAL DRIVE

SCALE: NONE

NOTES:

1. DRIVE MUST BE APPROVED BY TOWN OF INGALLS STREET DEPARTMENT BASED ON ANTICIPATED USAGE AND LOCATION WITHIN INGALLS TOWN DISTRICT.
2. CROSS-HATCHED AREAS SHALL BE EITHER 6" PLAIN CONCRETE OR 1" BITUMINOUS SURFACE ON 2" BITUMINOUS BASE ON 4" TYPE "P" COMPACTED AGGREGATE BASE OR 1" BITUMINOUS SURFACE ON 4" BITUMINOUS COATED AGGREGATE BASE WITH 50 STONE EXTENDING TO THE SIDEWALK OR R/W LINE WHICHEVER IS NEAREST TO THE ROADWAY.
3. METAL OR CONCRETE END SECTION SHALL BE CONSTRUCTED ON ALL PIPES.
4. SUBGRADE UNDER ALL CURBS, SIDEWALKS, AND DRIVES SHALL BE COMPACTED IN ACCORDANCE WITH I.N.D.O.T.
5. SIDEWALKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPROPRIATE STANDARD AND SHALL BE CONTINUOUS ACROSS THE DRIVEWAY.

TRIAD ASSOCIATES INC.
5835 LAWTON LOOP EAST DRIVE
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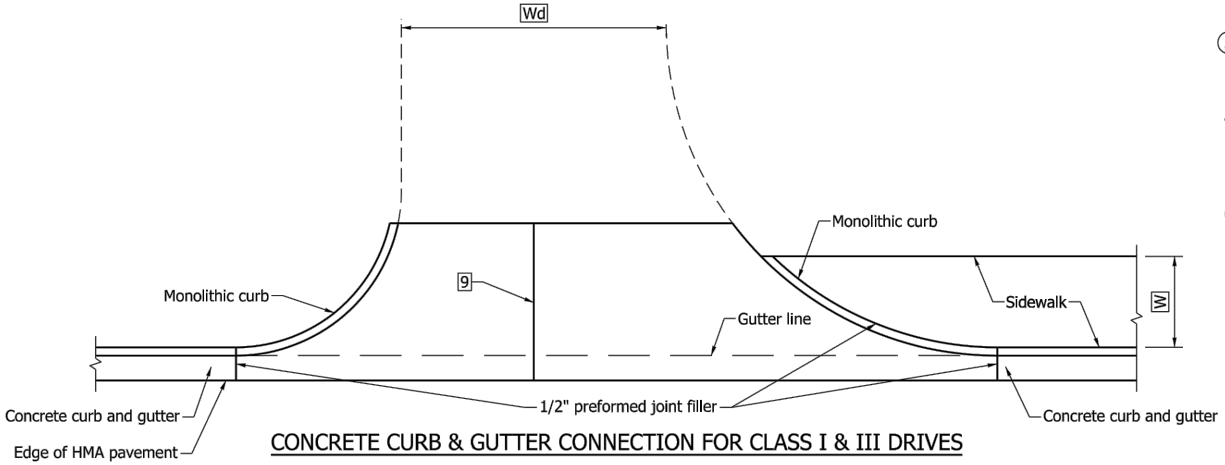
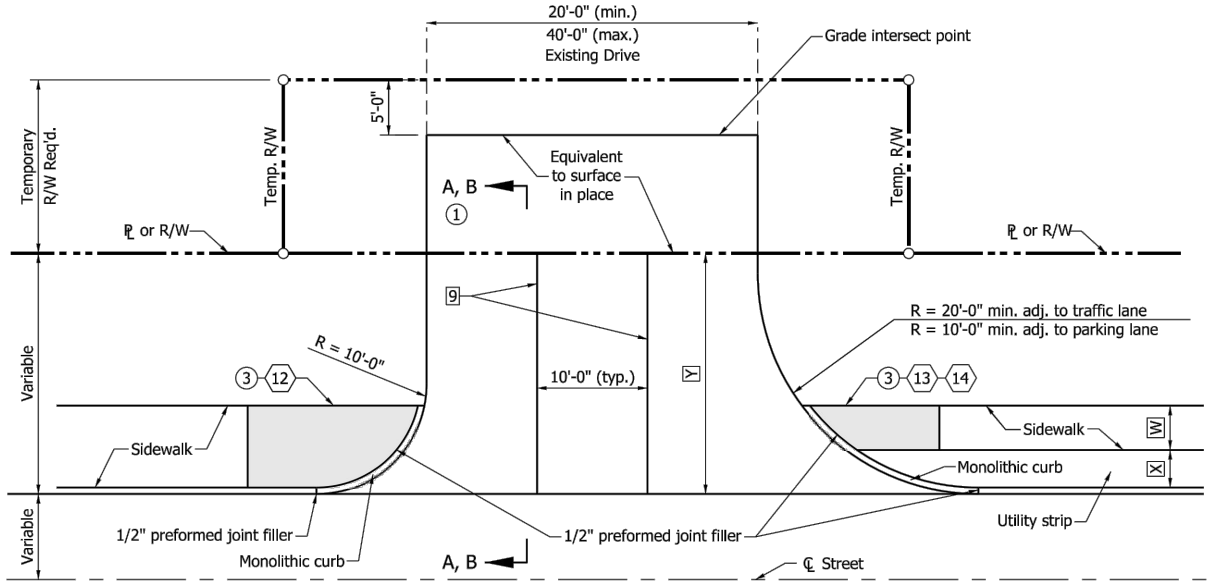
2500-S.1



CONCRETE CURB & GUTTER CONNECTION FOR CLASS I & III DRIVES



PLAN VIEW - CLASS III DRIVE

NOTES:

1. See Standard Drawing E 610-DRIV-08 for Section A-A, and Section B-B.
2. Pavement shall be PCCP for Approaches, 9 in., on subgrade treatment Type IIIA.
3. See Standard Drawings E 604-SDWK-01 or E 604-SDWK-02 for sidewalk elevation transition details, or Standard Drawing E 604-SWCR-09 for sidewalk curb ramp details if the drive is signalized.
4. See Standard Drawing E 610-DRIV-07 for joint placement details.
5. See Standard Drawing E 610-DRIV-13 for General Notes and additional Legend.
6. See Standard Drawing 503-CCPJ-02 for longitudinal joint details.

LEGEND

- W = Width of sidewalk
- Wd = Driveway width
- X = Distance between back face of curb and sidewalk
- Y = Distance from front face of curb to ℄ or R/W
- = Sidewalk elevation transition

ALL COMMERCIAL ENTRANCES WITHIN INGALLS TOWN DISTRICT SHALL BE CONSTRUCTED USING 9" PCCP ON TYPE IIIA SUBGRADE.

REFER TO INDOT STANDARD DRAWINGS E-610-DRV FOR ADDITIONAL DETAILS & INFORMATION.
http://www.in.gov/dot/div/contracts/standard/drawings/sep16/e/sep600.htm

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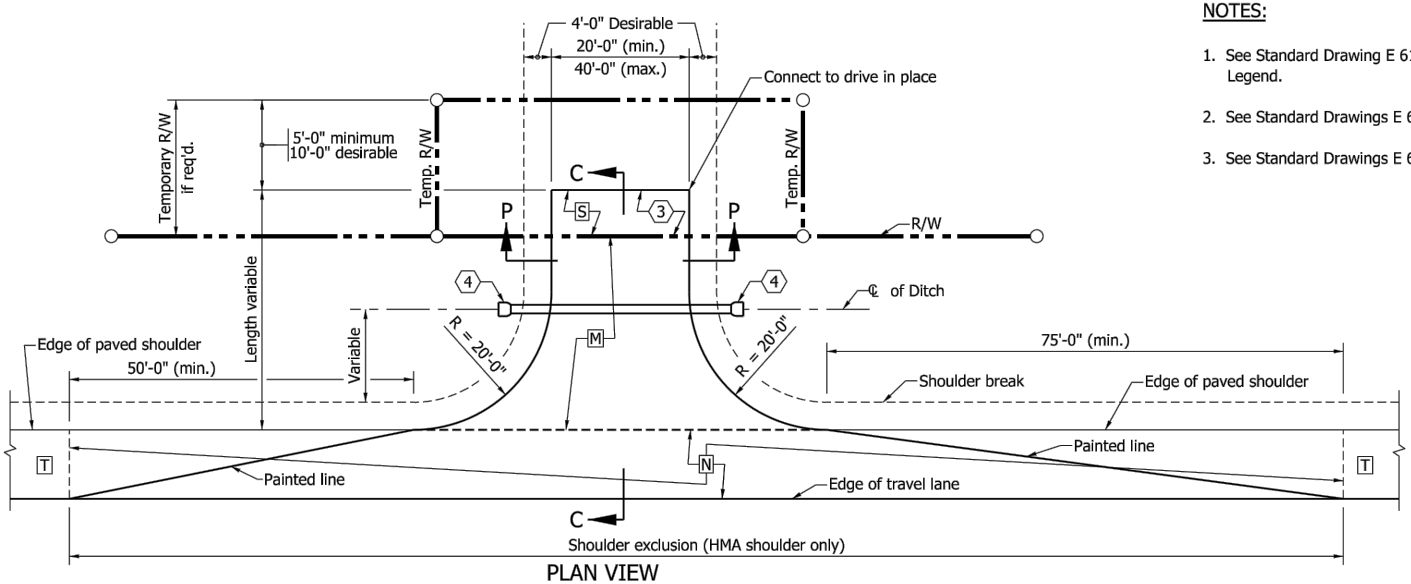
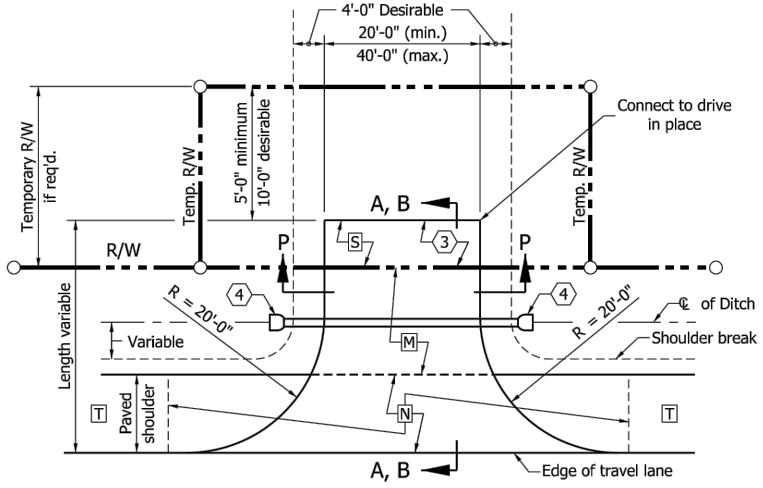
2500-S.2



PLAN VIEW

(PAVED SHOULDER 8'-0" FEET OR GREATER IN WIDTH)



PLAN VIEW

(PAVED SHOULDER LESS THAN 8'-0" IN WIDTH OR UNPAVED SHOULDER)

NOTES:

1. See Standard Drawing E 610-DRIV-13 for General Notes and additional Legend.
2. See Standard Drawings E 610-DRIV-10 for Sections A-A, B-B and C-C.
3. See Standard Drawings E 610-DRIV-09 for Section P-P.

LEGEND

[M] HMA for Approaches:
165#/syd HMA Surface Type B on
275#/syd HMA Intermediate Type B on
880#/syd HMA base, Type B on
subgrade treatment Type IIIA
or
PCCP for Approaches, 9", on
subgrade treatment Type IIIA

[N] The greater thickness of either the drive [M] or the paved shoulder [T] section.

[T] Plan shoulder section.

[S] For type and thickness equivalent to surface in place, see plans.

ALL COMMERCIAL ENTRANCES WITHIN INGALLS TOWN DISTRICT SHALL BE CONSTRUCTED USING 9" PCCP ON TYPE IIIA SUBGRADE.

REFER TO INDOT STANDARD DRAWINGS E-610-DRV FOR ADDITIONAL DETAILS & INFORMATION.
http://www.in.gov/dot/div/contracts/standard/drawings/sep16/e/sep600.htm

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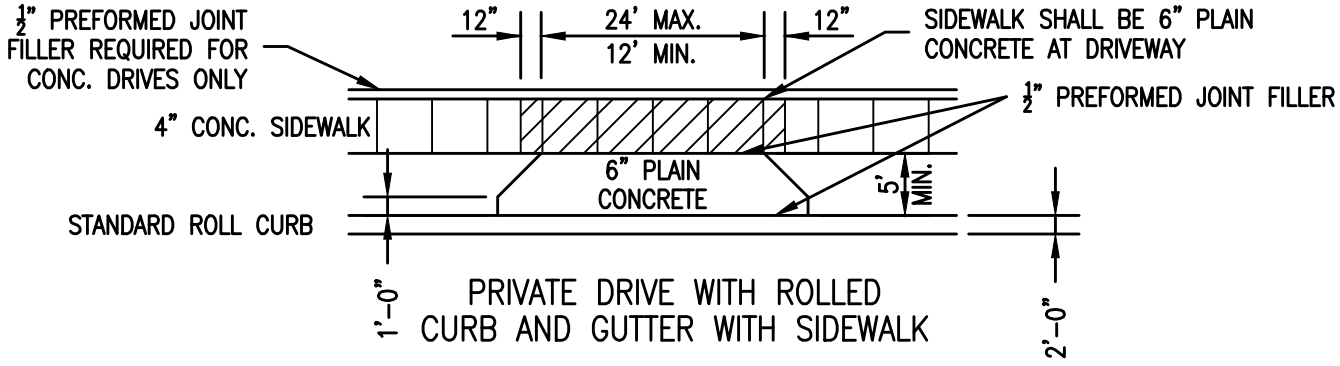
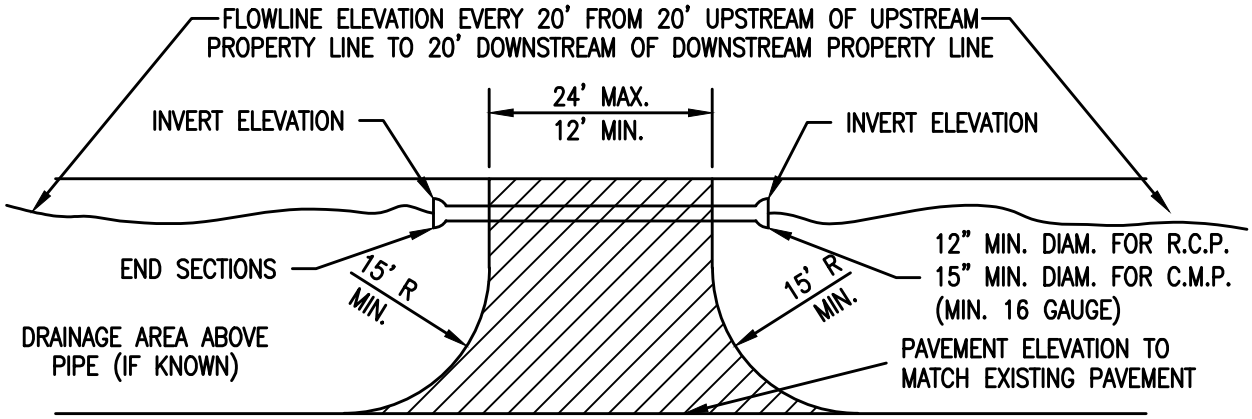
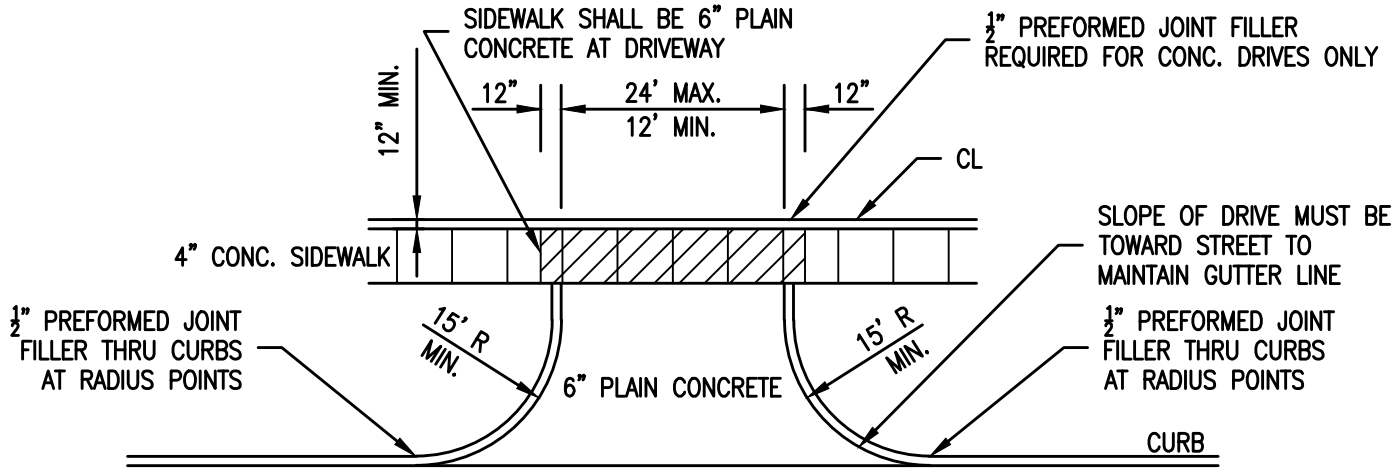
2500-S.3



PRIVATE DRIVE WITH ROLLED CURB AND GUTTER WITH SIDEWALK



PRIVATE DRIVE WITH OPEN DITCHES



RESIDENTIAL DRIVEWAYS

SCALE: NONE

NOTES:

1. CROSS-HATCHED AREAS SHALL BE EITHER 6" PLAIN CONCRETE OR 1" BITUMINOUS SURFACE ON 2" BITUMINOUS BASE ON 4" TYPE "P" COMPACTED AGGREGATE BASE OR 1" BITUMINOUS SURFACE ON 4" BITUMINOUS COATED AGGREGATE BASE WITH 50 STONE EXTENDING TO THE SIDEWALK OR R/W LINE WHICHEVER IS NEAREST TO THE ROADWAY.
2. METAL OR CONCRETE END SECTION SHALL BE CONSTRUCTED ON ALL PIPES.
3. SUBGRADE UNDER ALL CURBS, SIDEWALKS, AND DRIVES SHALL BE COMPACTED IN ACCORDANCE WITH I.N.D.O.T.
4. SIDEWALKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPROPRIATE STANDARD AND SHALL BE CONTINUOUS ACROSS THE DRIVEWAY.

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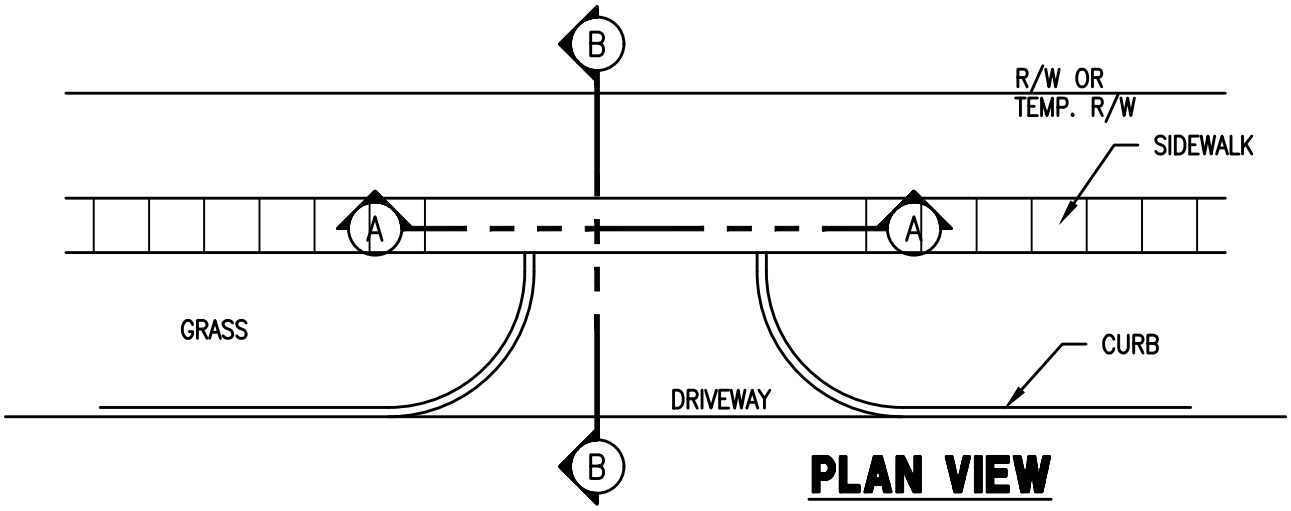
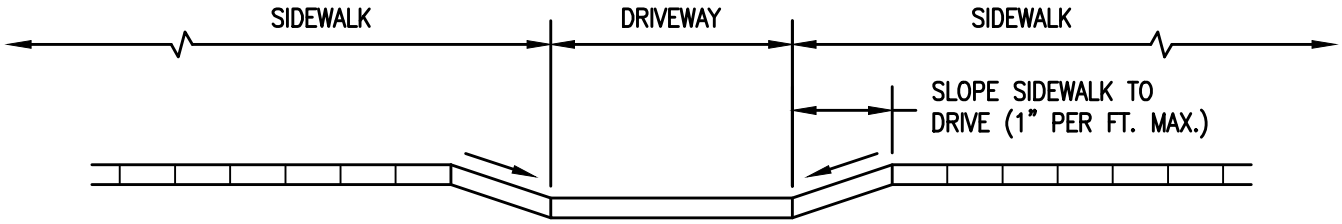
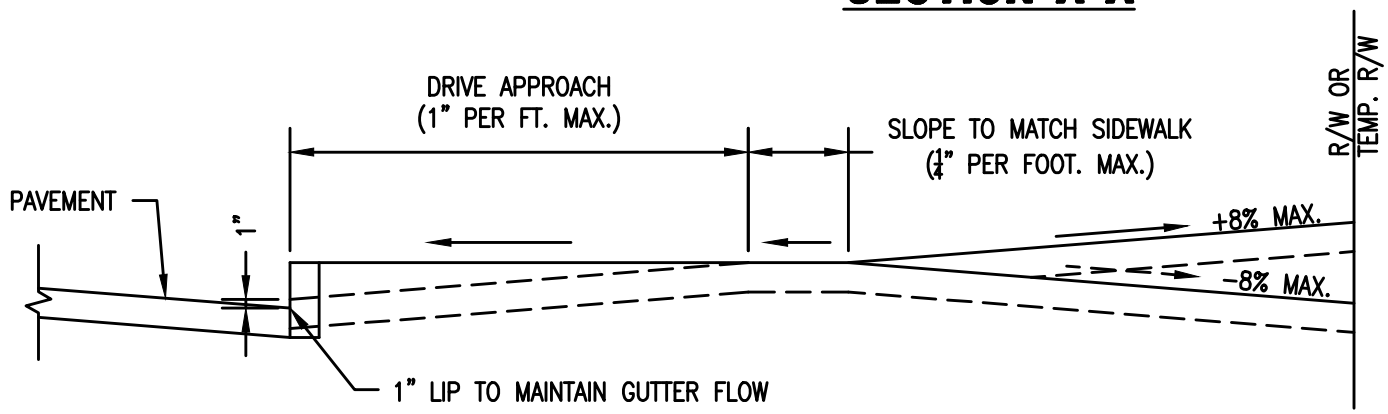
2500-S



PLAN VIEW



SECTION A-A



SECTION B-B

TYPICAL DRIVEWAY SECTION

SCALE: NONE

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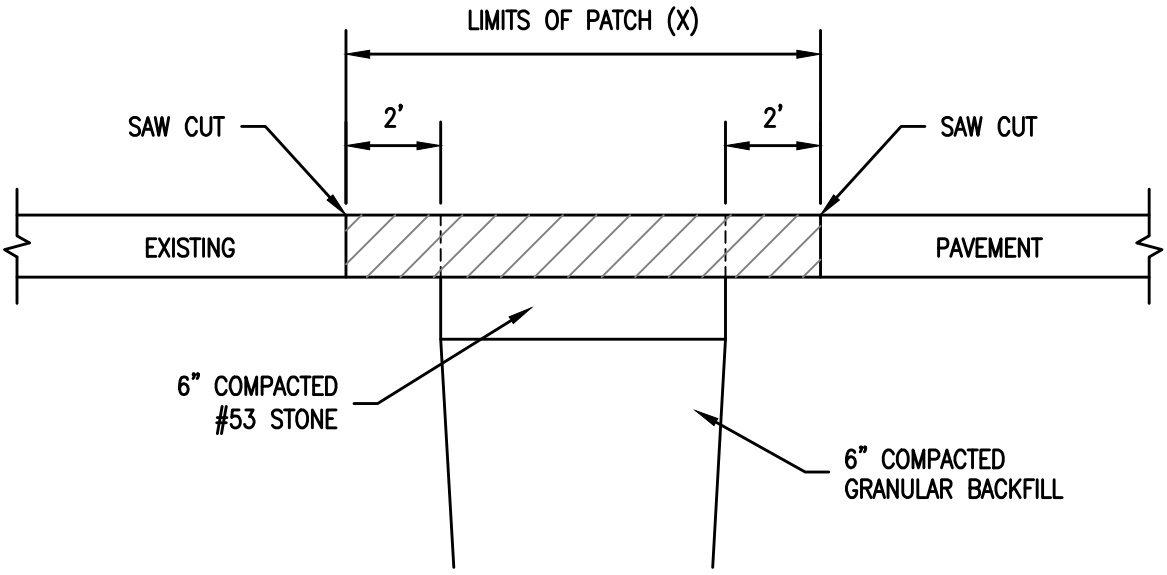
2500-T



NOTE:
SAW CUT 1/3 PAVEMENT THICKNESS THEN BREAK OUT.

REPAIR CUTS WITHIN PAVEMENT LIMITS
LIMITS OF PATCH

SCALE: NONE

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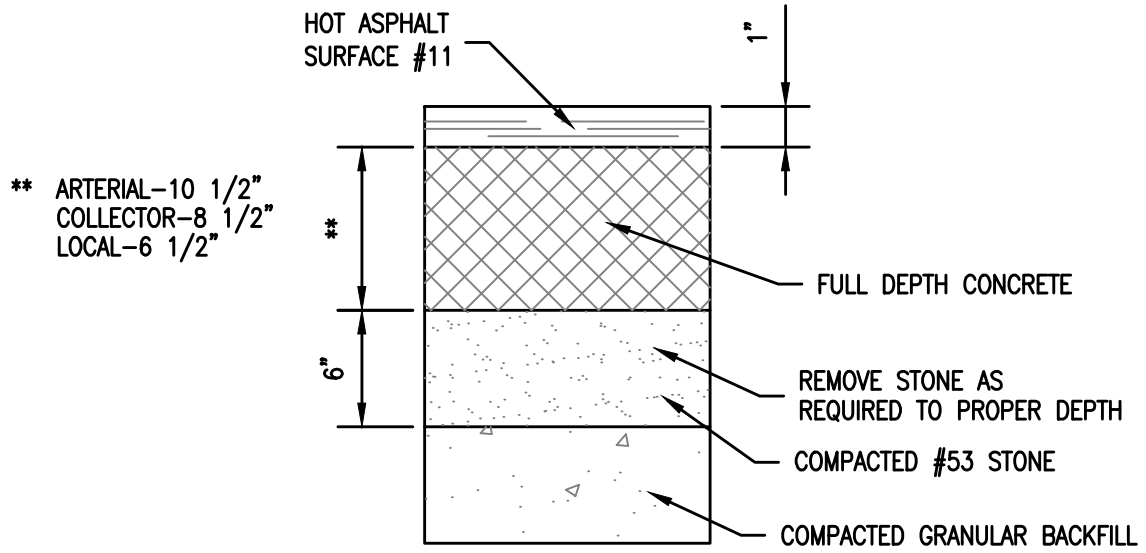
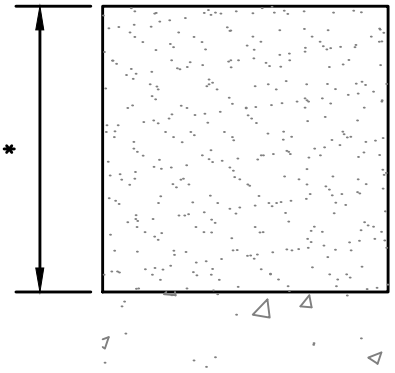
2500-U

REVISED: 11/2016



** ARTERIAL–10 1/2"
COLLECTOR–8 1/2"
LOCAL–6 1/2"

BITUMINOUS PATCHING



* ARTERIAL–8"
COLLECTOR–7"
LOCAL–6"

PLAIN CEMENT CONCRETE PATCHING

REPAIR CUTS WITHIN PAVEMENT
BITUMINOUS & CONCRETE PATCHES

SCALE: NONE

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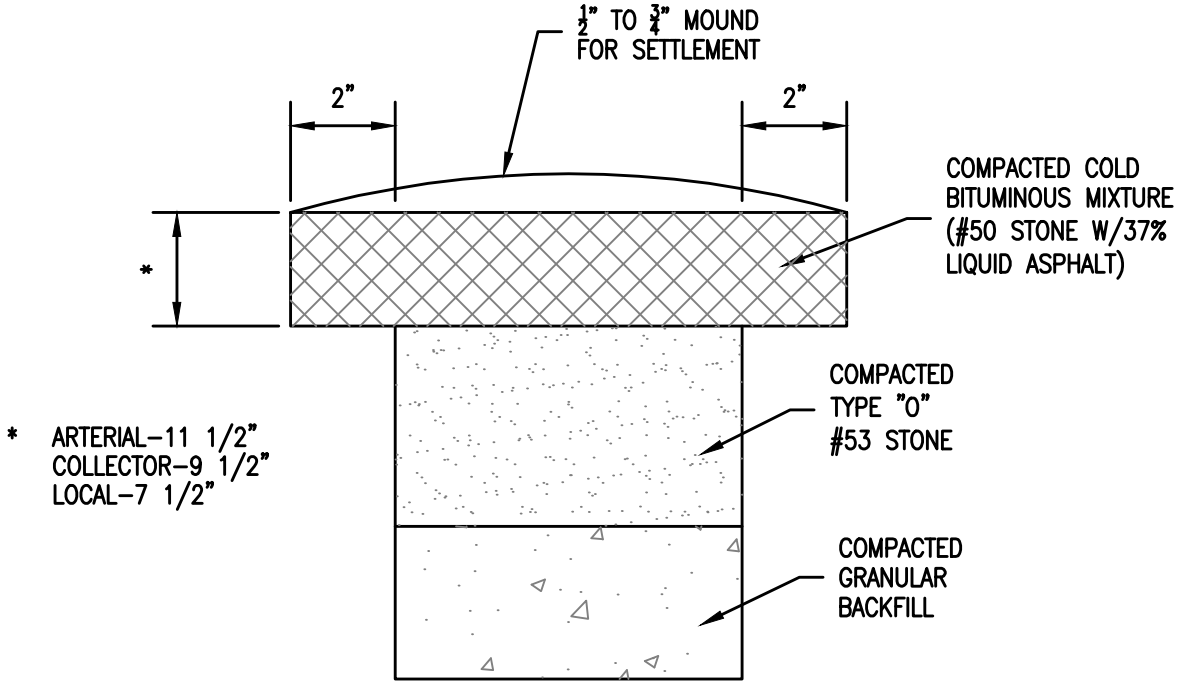
2500-V



TEMPORARY PATCH
(FROM NOV. 10 – APRIL 15)

REPAIR OF CUTS WITHIN PAVEMENT
LIMITS OF TEMPORARY PATCH

SCALE: NONE

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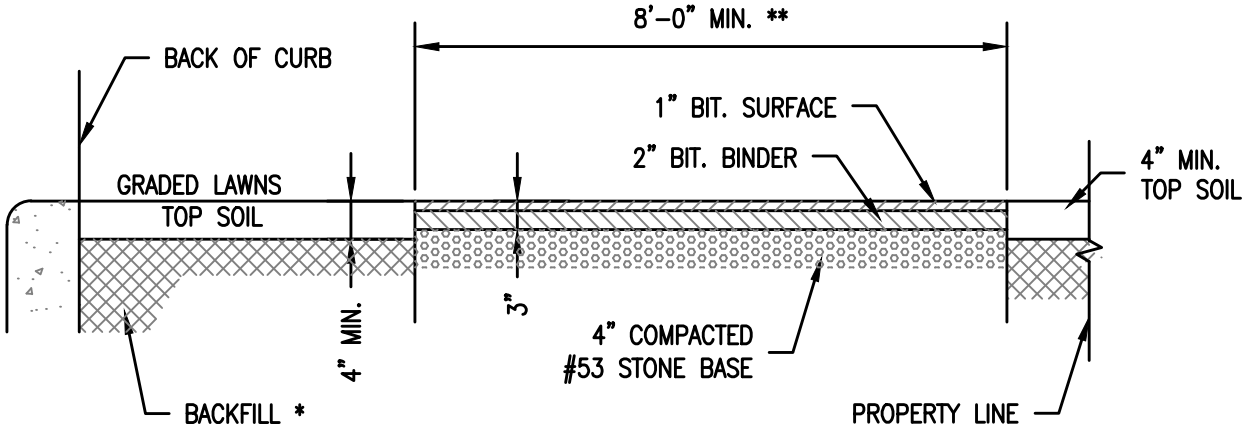
2500-W



TYPICAL PATH SECTION

BICYCLE/JOGGING PATH DETAIL

SCALE: NONE

* THE SPACE BEHIND THE CURB SHALL BE FILLED WITH SUITABLE MATERIAL TO THE REQUIRED ELEVATION AND COMPACTED IN LAYERS NOT TO EXCEED 6" IN DEPTH. SUBGRADE UNDER ALL CURBS, SIDEWALKS, AND DRIVES SHALL BE COMPACTED IN ACCORDANCE WITH I.D.O.H. SPECIFICATIONS.

** PERIMETER TRAILS WITHIN NEW SUBDIVISIONS AND ALONG COLLECTOR STREETS WITHIN TOWN LIMIT SHALL BE 10'-0" MIN.

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2500-X

SECTION 02501 - STANDARDS OF ROADWAY GEOMETRIC DESIGN

PART 1 - GENERAL

1.1 SECONDARY PLATS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS AND STANDARDS:

A. Minimum Pavement Width

1. Minimum pavement widths, to be installed at the subdivider's expense, shall be as follows:

a. Primary Arterials: Four (4) lanes at 12 feet, 16 feet center turn lane, plus two (2) feet curb and gutter.

b. Secondary Arterials: Four (4) lanes at 12 feet, or two (2) lanes at 12 feet plus two (2) parking lanes at ten (10) feet, plus two (2) feet curb and gutter.

c. Collector Streets: 36 feet back of curb to back of curb (2 feet curb and gutter).

d. Local Roads or Streets: 30 feet back of curb to back of curb (2 feet curb and gutter). When approved by the Ingalls Street Superintendent, local road and street widths on interior, low volume roadways and cul-de-sacs may be 32 feet back of curb to back of curb (2 feet curb and gutter).

e. The pavement of a turning circle at the end of cul-de-sacs shall have a minimum outside diameter of 80 feet back of curb to back of curb (2 feet curb and gutter).

f. Alleys: full width of the right-of-way.

g. In all residential or commercial areas, the minimum pavement width shall be 30 feet back of curb to back of curb.

2. In all industrial areas, the minimum pavement width shall be 24 feet with 8 feet of shoulder on each side of the pavement with "No Parking" on the shoulders.

B. Street Grades, Curves, and Sight Distances

1. The minimum vertical grade for all streets shall be 0.5%.

2. Maximum Vertical Grades

a. The maximum vertical grade for Primary Arterials and Secondary Arterials shall be 5.0%.

b. The maximum vertical grade for Collectors shall be 8%.

c. The maximum vertical grade for Local Roads and Streets shall be 8%.

d. The first 25 feet of an intersecting roadway, from the outer edge of a through roadway, shall be designed with a two percent (2%) downward grade. With a sag vertical curve situation, the two percent grade shall connect with the remaining street profile grade using a minimum vertical curve length of 50 feet. This sag vertical curve may start at the edge of the through roadway. With a crest vertical curve at the approach to an intersection, the two percent downward grade shall extend 25 feet from the edge of the through roadway and the crest vertical curve can begin at that point. The length of the crest vertical curve shall meet the requirements of the 2011 AASHTO Standards for crest vertical curves.

3. Vertical curves shall be designed to meet or exceed 2011 AASHTO Standards for sag and crest vertical curves as shown in Tables III-40 and III-42.

   a. Local Roads or Streets shall have a design speed of 30 mph.

   b. Collectors shall have a design speed of 30 mph.

   c. Primary Arterials and Secondary Arterials shall have a minimum design speed of 40 mph.

4. Horizontal centerline curve radius shall meet or exceed 2011 AASHTO Standards and shall correspond to the following design speeds:

   a. Local Roads or Streets and Collectors shall have a design speed of 30 mph and require a 300 foot minimum centerline radius.

   b. Primary Arterials and Secondary Arterials shall have a design speed of 40 mph and require a 675 foot minimum centerline radius.

   c. Tangent distance between reverse curves shall be 100 feet.

5. The maximum length cul-de-sac length shall be 600 feet measured along the centerline from the intersection at the origin to the center of circle. Each cul-de-sac shall have a terminus of circular shape with minimum

right-of way diameter of 100 feet for residential use and 120 feet for industrial use. Reference Figure 2500O.

C. Intersections

1. At street and alley intersections, property line corners shall be rounded by an arc, the minimum radius of which shall be 20 and ten (10) feet respectively. In business districts, a chord may be substituted for such arc.

2. Street Curb intersections shall be rounded by radii of at least 25 feet. A radius of 40 feet shall be used at the intersection with a Primary Arterial, Secondary Arterial or Collector street.

3. The above minimum radii shall be increased when the angle of street intersection is less than 90 degrees.

4. Intersections of more than two (2) streets at one point will not be allowed.

5. Street jogs with centerline offsets of less than 125 feet shall not be permitted.

6. All streets shall intersect at 90 degrees whenever possible for a minimum distance of 100 feet; however, in no instance shall they intersect at less than 80 degrees onto Primary Arterials, Secondary Arterials, or Collectors; or at less than 70 degrees onto Local Roads or Streets.

7. The following paragraphs shall be required as provisions of restrictive covenants of all Secondary Plats to which they apply:

   a. No fence, wall, hedge, tree or shrub planting which obstructs sight lines and elevations between three (3) and nine (9) feet above the street shall be placed or permitted to remain on any corner lot within the triangular area formed by the street right-of-way lines and a line connecting points 40 feet from the intersection of said street lines 40 feet for Collectors and Local Roads and Streets; and 75 feet for Primary Arterials and Secondary Arterials, or in the case of a rounded property corner, from the intersection of the street right-of-way lines extended.

   b. The same sight line limitations shall apply to any lot within ten (10) feet of the intersection of a street right-of-way line with the edge of the driveway pavement or alley line. No driveway shall be located within 75 feet of the intersection of two streets.

8. At the intersection of any proposed Local Road or Street with a Primary Arterial, Secondary Arterial, or Collector, acceleration and deceleration

lanes, passing blisters or left turn lanes shall be provided on the Primary Arterial, Secondary Arterial, or Collector. Reference Figure 2500B

D. Easements

1. Where alleys are not provided, easements for utilities shall be provided. Such easements shall have minimum widths of 20 feet, and where located along lot lines, one-half the width shall be taken from each lot.

2. Where a subdivision is traversed by a watercourse, drainage ditch, channel, or stream, adequate areas for storm water or drainage easements shall be allocated for the purpose of widening, deepening, sloping, improving or protecting said watercourses in accordance with the requirements of the Madison County Drainage Board and the Town of Ingalls Stormwater Ordinance.

3. The developer is encouraged to design for the placement of utility lines underground, following the required standards and specifications established by each utility company. The location of each underground utility system shall be shown by appropriate easement lines on the proposed plat.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

Not Applicable

END OF SECTION 02501

SECTION 02502 - STANDARDS OF ROADWAY CONSTRUCTION

PART 1 - GENERAL

1.1 ROAD CONSTRUCTION SHALL CONFORM TO THE FOLLOWING REQUIREMENTS AND STANDARDS:

A. Streets, General

1. Streets and alleys shall be graded, surfaced, and improved to the dimensions required by the cross-sections and the work shall be performed in the manner prescribed in Section 2500 and applicable sections of INDOTSS.

2. Prior to placing the street and alley surfaces, adequate subsurface drainage (underdrains) for the street shall be provided. Underdrain pipe shall conform to these Standards and applicable sections of INDOTSS.

3. Concrete and bituminous asphalt paving mixes shall comply with specifications contained in Section 02500.

4. Before any bond covering a street installation is released, the Street Superintendent or duly authorized representative may request that core borings of the street be provided, at the Contractor's or Developers expense, for thickness determination.

5. Prior to the acceptance of asphalt streets, the Contractor or Developer shall employ and pay for the services of an independent testing labor to take cores at selected locations. Marshall stability, flow and density tests, and percent of compaction determination shall be performed on completed asphalt work upon request of the Town's Manager or duly authorized representative.

6. Prior to acceptance of concrete streets, satisfactory test results from an independent testing laboratory must be provided to the Street Superintendent or duly authorized representative.

7. A developer may request permission from the Street Superintendent to delay the installation of the 1-inch surface layer of asphalt until the binder layer of asphalt has had sufficient time to prove its durability under the stress of heavy construction traffic. This delay shall not exceed one (1) year. The developer shall be required to submit a separate performance bond to cover the cost of the installation of the 1-inch surface layer of asphalt.

8. All traffic control devices shall comply with guidelines and requirements of the current edition of the Indiana Manual on Uniform Traffic Control Devices.

B. Subgrade for Street Pavements

1. Preparation

a. After all earth work is substantially complete and all drains installed, the subgrade shall be brought to the lines and grades shown on the plans.

b. Unless otherwise provided, the upper six (6) inches of all subgrade shall be uniformly compacted to at least 95 percent standard density as determined by the provisions of AASHTO, T99, "Compaction and Density of Soils". During subgrade preparation and after its completion, adequate drainage shall be provided at all times to prevent water from standing on the subgrade. Subgrades shall be so constructed that it will have uniform density throughout. After compaction and final grading, the subgrade shall be finished with a three-wheel roller weighting not less than ten (10) tons. For areas not accessible to the roller, the required compaction shall be obtained by using mechanical tampers.

c. All soft yielding or otherwise unsuitable material which will not compact properly shall be removed. All rock encountered shall either be removed or broken off to conform with required cross sections. Any holes or depressions resulting from the removal of such unsuitable material shall be filled with approved material and compacted to conform with the surrounding subgrade surface. No placement of pavement shall be permitted on uninspected or unapproved subgrade and, at no time, when the subgrade is frozen or muddy. No hauling shall be done nor equipment moved over the subgrade when its condition is such that undue distortion results. If these conditions are present, the subgrade shall be protected with adequate plank runways, mats, or other satisfactory means if hauling is to be done thereon.

d. The subgrade shall be prepared sufficiently in advance to facilitate proper inspection of final elevations and compactions by the Town Manager or duly authorized representative.

e. All utility and drainage excavations under pavement shall be backfilled with sand around pipes, and #53 stone compacted to street level. These locations shall be illustrated on construction drawings submitted to the Town.

2. Rigid Pavement Construction - When concrete is placed, the subgrade shall be properly dampened. Concrete pavement shall be constructed in accordance with Section 02500 and INDOTSS.

C. Pavement Section - Typical pavement sections shall conform to the cross sections shown by Figures 2500C through E. The use of alternative cross sections must be approved by the Street Superintendent prior to installation.

D. Curbs and Gutters

1. Wherever a proposed subdivision lies adjacent to or in proximity of other developed areas currently provided with curbs and gutters or that have more than three (3) lots per acre of land plotted into lots, the subdivider shall provide curb and gutter on each side of the street surface in the proposed subdivision.

2. Curbs and gutters shall comply with standard details shown by Figures 2500I through 2500K. As an alternate, curb sections which comply with INDOT standard details will be permitted upon approval by the Ingalls Manager.

2. All curb and gutter sections placed on Primary Arterials, Secondary Arterials, or Collectors shall be of the barrier type. Roll-type curb and gutter sections will be permitted for Local Roads and Streets.

4. Curbs and gutters shall be constructed according to Section 02500:

a. The minimum grade of any street gutter shall be not less than three-tenths percent (0.3%).

b. Inlet grates shall be heavy duty type recommended for bicycle traffic. Reference Section 02721.

E. Sidewalks, Pedestrian Paths, Jogging Paths, and Bicycle Paths.

1. Sidewalk shall be at least six (6) inches thick at drives and at least four (4) inches thick at all other locations. Sidewalks shall be at least five (5) feet wide adjacent to Primary Arterials, Secondary Arterials, Collectors and commercial, industrial or mutli-family developments. Sidewalks shall be at least four (4) feet wide at all other locations. Sidewalks shall be concrete in accordance with Section 02500. Expansion joints shall be located every 48 feet and control joints every six (6) feet. Reference Detail 2500X.

2. Curb ramps shall comply with Standard Detail 2500N.

3. Pedestrian paths, other than sidewalks, shall be constructed to a minimum width of five (5) feet, The paths shall be constructed of asphalt, crushed stone, paving stones, or other similar surface materials.

4. Bicycle ways/jogging paths shall be constructed to a minimum width of eight (8) feet with a maximum grade of eight percent (8%). The ways/paths shall be constructed of concrete or asphalt. Concrete ways/paths shall be at least four (4) inches thick and shall include wire fabric reinforcing of a size "6 x 6 - W2 x W2". Asphalt ways/paths shall be constructed using the following as a minimum requirement:

   a. Four (4) inches Compacted Aggregate Size No. 53, stone base

   b. Two (2) inches Bituminous Binder No. 8 or 9

   c. One (1) inch Bituminous Surface No. 11

5. All ways/paths shall be placed on properly prepared and compacted subgrades. Materials shall be furnished and installed in accordance with Section 02500 and INDOTSS.

6. When sidewalks or pathways cross major street intersections within or adjacent to a subdivision, necessary traffic control devices such as painted crosswalks and signs shall be installed at the subdivider's expense.

7. If not located within public rights-of-way, easements of at least ten (10) feet in width shall be provided for sidewalks, pedestrian paths, or bicycle paths.

F. Easements - Whenever possible, easements for poles or underground conduits for electrical power, or telephone lines shall be provided along rear lot lines.

G. Plans - Construction plans for improvements to be installed shall be furnished in accordance with the specifications of the Town and/or, when appropriate, to the Madison County Highway Department. Such plans must receive all appropriate approvals before improvements are installed. Upon completion of streets and alleys improvements, as-built plans shall be filed with the Town and when appropriate, to the proper governing body of Madison County. All construction plans shall include the following:

1. Horizontal geometry of each proposed street, with centerline and curb radii shown.

2. The profile of each proposed street, with grades indicated, and lengths of vertical curves.

3. The cross-section of each proposed street, showing the width of pavement, the location and width of sidewalks, and the location and size of utility mains.

H. Inspection - Prior to starting any construction, arrangements shall be made for inspection of work to ensure compliance with plans and specifications approved by the Town or, when appropriate, the Madison County Highway Department.

I. All construction must be approved by the Town. Notice of construction must be given to the Street Superintendent, or duly authorized representative, a minimum of 48 hours prior to beginning work.

J. Allowable Modifications - Where unusual or exceptional factors or conditions exist, the Town may allow minor modifications of any provision of this Section. When such modifications are allowed, a detailed written statement of the reasons for such modifications shall be attached to all copies of construction plans.

PART 2 - PRODUCT

2.1 Not Applicable

PART 3 - EXECUTION

3.1 Not Applicable

END OF SECTION 02502

SECTION 02503 - STREET LIGHTING

PART 1 - GENERAL

1.1 SCOPE
The extent and locations of the street lights are shown on the approved drawings.

1.2 QUALITY ASSURANCE
Contractor shall provide each furnishing as a complete unit produced by a single manufacturer, including fittings, accessories, bases and anchorage devices as applicable.

1.3 SUBMITTALS
Contractor shall submit manufacturer's technical data and installation instructions to Street Superintendent for each type of furnishing. Prior to installation, written approval must be obtained from the Town.

1.4 DELIVERY, STORAGE AND HANDLING
Furnishings and accessories shall be delivered with all components completely identified and ready for installation. Contractor shall store and handle furnishings in a manner to prevent damage.

PART 2 - PRODUCTS

2.1 STREET LIGHTS AND COMPONENTS

A. General Style
Period style single globe street light.

B. Pole
The pole shall consist of the base and associated accessories. The shaft shall be round and extruded from 6063-alloy aluminum, heat-treated to produce a T6 temper. Shafts shall have evenly spaced highly detailed raised vertical flutes with a .188 wall thickness. The base shall be one piece of .220 in. thick corrosion resistant cast aluminum consisting of a smooth stepped bottom section with flush hand hole, and a decorative tapered fluted section with highly detailed raised vertical flutes. The base and shaft shall be welded to form one rigid unit with a pole height of 12'-0", overall. The base shall be supplied with (4) anchor bolts having two nuts each. The finish for the entire assembly is to be a two part verde green electrostatically applied on textured acrylic enamel.

C. Globe
An acorn style clear patterned polycarbonate globe 15.5" x 28.5" shall be mounted on a decorative cast aluminum pole-fitter base.

D Fixture
The fixture shall be LED equivalent to a 150 Watt bulb.

PART 3 - EXECUTION

3.1 INSTALLATION

Contractor shall install furnishings and accessories in accordance with the manufacturer's installation instructions and industry accepted practices.

3.2 WARRANTY

Contractor shall provide manufacturers written warranty for furnishings and accessories which shall be for a period of one year from the date of acceptance. Defective parts shall be replaced at no cost to the Town during the warranty period.

PART 4 – FIGURES

4.1 STREET LIGHT DETAIL

FIGURE	DESCRIPTION
2503-1	Street Light Detail

END OF SECTION 02503

Town of Ingalls
2023 Street Standards

STREET LIGHT DETAIL		
	Style:	Village Series or equal, Environmentally Friendly
	Height:	37 7/8"
	Width:	15 ¾"
	Material:	319 Alloy Cast Aluminum. Dark Hemlock
	Globe:	P70343 Refractor Style TYP III or V
	Shield:	FP3318-2 Up Light Shield
	Finial:	H350M, Dark Hemlock
	Lamping:	LED, equivalent to 150Watts
	Voltage:	Multi Tap.
	Socket:	Med Base, 4K rated
	Style:	The Washington or equal
	Pole:	5" Dia. .125 Extruded Aluminum
	Base:	16 ¾" Dia. Heavy Cast Aluminum
	Pole Height:	12' over all.
	Base Height:	20"
	Tenon:	3" O.D. x 3"
	Access Door:	3" x 8" x 7" Secured with tamper-proof screws.
	Mounting	(3) 5/8" Dia. X 16'' galvanized "J" Bolts.
	Photo Cell:	7020 supplied with easy access door.
	77911 Black HPS150MUL	Luminaire
	70343	Ref/Globe
	FP3318-2	Shield (No Up Light)
	H130M Black	Finial
	76612 Black	Pole
	70203 Black	Photo Cell
This Street Light meets the "Reduces "No Light Up" Environmentally Friendly standards set by the Town of Ingalls.		

TRIAD ASSOCIATES INC.
5835 LAWTON LOOP EAST DRIVE
INDIANAPOLIS, INDIANA 46216
PHONE: 317-377-5230 FAX: 317-377-5241

2503-1

SECTION 02505 – RIGHT OF WAY PERMIT

GENERAL

1.1 SCOPE

A. General

1. All work within existing Town right-of-way shall require a "Right-of-Way" permit from the Town of Ingalls.

2. An application, plans of the proposed improvements, a Contractor's estimate or a cost estimate certified by a Professional Engineer must be submitted and approved prior to beginning any work within the Town right-of-way.

3. Upon approval of the proposed improvements, the applicant shall submit a bond in the amount of 125% of the estimated work to the Town prior to starting any work within the right-of-way.

PART 2 - PERMITTING

2.1 PERMIT APPLICATION

Type of permit:

☐ Road Cut ☐ Driveway ☐ Excavation ☐ Pole Line ☐ Railroad ☐ Miscellaneous

Project Location:

Project Description:

Project Purpose:

Improvement Cost Estimate: *(Attached a detailed cost estimate prepared by a Professional Engineer".)*	$

Bond Required? ☐ Yes ☐ No	If Yes, penal sum: *(Bond Amount 125% of Cost Estimate.)* $	Bond Number:

Permit Fee: *(Make check payable to the "Town of Ingalls".) Refer to attached Fee Schedule*	$

The applicant agrees to indemnify, defend, exculpate, and hold harmless the Town of Ingalls, its officials and employees from any liability due to loss, damage, injuries, or other casualties of whatsoever kind, or by whoever cause, to the person or property of anyone on or off the right-of-way arising out of, or resulting from the issuance of this permit or the work connected therewith, or from the installation, existence, use maintenance, conditions, repairs, alteration, or removal of any material, whether due in whole or in part to the negligent acts or omissions (1) of the Town, its officials, agents, or employees; or (2) of the applicant, his agents, or employees or claims out of workmen's compensation act or any other law, ordinance, order, or decree. The applicant also agrees to pay all reasonable expenses and attorney's fees incurred by or imposed on the Town in connection herewith in the event that the applicant shall default under the provisions of this paragraph.

Special Provisions:

Signature of Permit Applicant:	Printed name of Applicant:

Name of Organization:	Telephone Number: ( )

Address (Number and street, city, state and ZIP code:	Email Address:

Permit Number:	Approved By:

PART 3 – PERMIT PROVISIONS

3.1 GENERAL PERMIT PROVISIONS

1. All work described in the permit shall be subject to inspection by the Town of Ingalls and the permittee shall adjust or stop operations upon direction of any police officer or Town employee.

2. The permit may be rescinded at any time by the Town of Ingalls at its discretion or for noncompliance with any and/or all provisions of said permit.

3. The permittee shall notify the Town of Ingalls Street Department five (5) working days preceding the beginning of any work activity.

4. The permittee shall notify the Town of Ingalls Street Department that the work is complete and this notice is to be provided within seven (7) days from completion of all work on this permit.

5. The permittee shall have the permit complete with drawings and special provisions in their possession during work operations and will show said permit on demand, to any police officer or authorized Town of Ingalls employee.

6. The permittee shall pay the Town of Ingalls for any inspection costs where it is necessary to assign a Town of Ingalls employee to inspect the work. The permittee shall immediately reimburse the Town upon receipt of an itemized statement.

7. The permit is valid through the stated expiration date. If work is not completed within the allotted time, the permit is automatically cancelled unless an extension is requested prior to the expiration date and said request is approved by the Town of Ingalls. If a permit is cancelled, a new application must be submitted and approved before the proposed work can be accomplished.

8. The permittee shall erect and maintain all necessary signs, barricades, detour signs, and warning devices required to safely direct traffic over or around the part of the highway where permitted operations are to be done so long as the work does not interfere with traffic, in accordance with Section “VI” of the Indiana Manual of Uniform Traffic Control Devices.

9. All construction and materials used within the highway right-of-way must conform to the current Town of Ingalls “Utility and Street Standards” with the permittee being considered in the same status as the contractor.

10. The permitted operations shall not interfere with any existing structure on the Town of Ingalls right-of-way without specific permission in writing from the

Town of Ingalls. In the event that any buildings, railings, traffic control devices, or other structures are damaged, said cost of the removal and/or damage shall be borne by the permittee.

11. The permit does not apply to any State roads or bridges within the Town limits. The permittee must apply for an Indiana Department of Transportation right-of-way permit if the project is located on any State road or bridge.

12. Approval of the permit application shall be subject to the permittee obtaining all necessary authorizations from local authorities and complying with all applicable laws. The issuance of the permit shall in no way imply Town of Ingalls approval of, or be intended to influence any action pending before a local board, commission, or agency.

13. The permitted operations shall be allowed on Town right-of-way only between sunrise and sunset and shall not be performed on Saturdays, Sundays, or during the period beginning at 12:00 Noon on the last weekday (Monday through Friday) preceding and continuing until Sunrise on the day following: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, and Christmas.

14. Any objection to the conditions and provisions of an approved permit must be submitted in writing to the Town of Ingalls within fifteen (15) days from the issue date.

END OF SECTION 02505

SECTION 02558 - LOCATOR WIRE

PART 1 - GENERAL

1.1 SCOPE
Contractor shall furnish and install locator wire over the centerline of all buried non-metallic piping.

PART 2 - PRODUCTS

2.1 MATERIAL
Location wire shall be blue coated #10 solid copper

PART 3 - EXECUTION

3.1 INSTALLATION

A. Locator Wire shall be installed over all buried non-metallic piping in accordance with the manufacturer's installation instructions. Wire shall be installed over the centerline of pipe unless otherwise noted on plans.

END OF SECTION 02558

SECTION 02720 - STORM SEWER SYSTEM

PART 1 - GENERAL

1.1 SCOPE

The extent of the sewer pipe is indicated on the approved drawings and shall include pipe, end sections, precast structures, castings, bedding and backfill.

Work shall be done in complete accordance with the Town of Ingalls Standards unless exceptions are expressly approved by the Town in writing.

1.2 SUBMITTALS

Contractor shall submit plans for approval to the Town MS4 Storm Water Department.

1.3 MINIMUM STANDARDS FOR STORM SEWERS

A. New developments, commercial and residential must account for road drainage to the centerline of the road along the entire road frontage unless it can be demonstrated that there are existing facilities in place with sufficient capacity and functioning properly.

B. As the storm sewer system is installed, storm sewer lines shall be marked with a 2”x 4” or other acceptable stake, with a height allowing a minimum of 6’-0” above grade. Stake shall have the uppermost section painted red, and marked with the letters “ST” to indicate storm sewer or subsurface drain line placement.

C. All storm inlets shall be stamped with either a fish symbol or wording that indicates that the water flows to a waterway.

1.4 UNDERDRAINS

A minimum 6-inch underdrain is required in all drainage swales and under all curbs in new developments. Residential developments shall provide stubs for each lot for connection of sump pumps.

1.5 QUALITY CONTROL

The Town reserves the right to disapprove and require modifications if it has been determined that the proposed design is not consistent with accepted industry and/or Town Standards and practices or if construction would cause problems in the Town’s existing infrastructure.

END OF SECTION 02720

SECTION 02902 - LANDSCAPING FOR UTILITIES

PART 1 - GENERAL

1.1 DESCRIPTION

A. Furnish and install topsoil, fertilizer, seed, mulch, sod, trees, bushes, ornamental plants, fencing, mail boxes, planters, and related items necessary to complete work shown or specified.

B. The Contractor shall repair or replace lawn areas, trees, and ornamental plants damaged or destroyed during construction of the work included in this Contract, unless otherwise shown on the drawings. The Contractor shall repair or replace fences, mail boxes, planters, and other items damaged or destroyed during construction of the work included in this Contract, unless otherwise shown on the drawings.

C. Lawn areas include grassed areas which are cut and maintained on a routine basis. Lawn areas include lawns at homes and businesses and grass shoulders of streets, roads, and highways.

D. Replacement of underbrush in fields and woods, along farm fences and roads, and in similar areas is not required, unless otherwise shown on the drawings.

1.2 JOB CONDITIONS

A. Seed between February 15 and June 1 and between August 15 and November 1. Do not sow seed during adverse weather conditions. Do not broadcast seed during high wind. Do not sow seed when the moisture content of the soil it too low or too high for seed germination.

B. Plant trees and ornamental plants during the proper time and under the proper conditions for the particular tree or plant.

PART 2 - PRODUCTS

2.1 LAWN PRODUCTS

A. Limestone: Limestone shall be agricultural grade with a minimum total neutralizing power of 90. At least 40% of the limestone shall pass a No. 100 sieve, and at least 90% shall pass a No. 8 sieve.

B. Fertilizer: Fertilizer shall be 12-12-12 grade.

C. Seed:

1. Seed mix shall be as follows:

Seed Description	Percent by Weight
Kentucky Blue Grass (Poa parteusis)	35 to 40
Kentucky 31 Fecuse (Festuca arundinacea var. KY 31)	30 to 35
Perennial Rye (Lolium multiflorm)	30 to 35

2. Seeds shall not contain more than 5% inert matter. Seed shall not contain objectional weeds or material.

D. Mulch: Mulch shall be straw, grass, hay, pine needles, or wood fiber. Straw shall be threshed straw of cereal grain such as oats, wheat, barley, rye, and rice. Mulch shall not contain objectional weed seeds or other material that might be detrimental to the planting being established.

2.2 SOD

Provide strongly rooted sod, not less than two years old and free of weeds and undesirable native grasses. Provide only sod capable of growth and development when planted (viable, not dormant). Provide sod composed principally of Kentucky Bluegrass (Poapratensis).

2.3 TOP SOIL

A. Provide new topsoil that is fertile, friable, natural loam, surface soil, reasonably free of subsoil, clay lumps, brush, weeds and other litter, and free of roots, stumps, stones larger than 1 inch in dimension, and other extraneous or toxic matter harmful to plant growth.

B. Obtain topsoil from local sources or from areas having similar soil characteristics to that found at the project sire. Obtain topsoil only from naturally, well drained sites where topsoil occurs in a depth of not less than 4 inches. Do not obtain from bogs or marshes.

2.4 FENCE AND OTHER PRODUCTS

Replacement fence, mail boxes, planters, and other items shall be new and unused. Fence, mail boxes, planters, and other items shall be the same type as the items removed. Fence, mail boxes, planters, and other items shall be of equal quality to the items removed when the items removed were new.

PART 3 - EXECUTION

3.1 GRADING

Fine grade all non-paved areas disturbed during construction. Areas shall be smooth and uniform. Finish elevations and grades shall be the same as elevations and grades prior to construction, unless otherwise shown on the drawings.

3.2 PREPARATION OF PLANTING SOIL

A. Before mixing. clean topsoil of roots, plants, sods, stones, clay lumps, and other extraneous materials harmful or toxic to plant growth.

B. Mix specified soil amendments and fertilizers with topsoil at rates specified. Delay mixing of fertilizer if planting will not follow placing of planting soil within a few days.

C. “Schedule of Planting Soil Mixture Requirements” is attached at the end of this section.

D. For pit and trench type backfill, mix planting soil either prior to planting or apply on surface of topsoil and mix thoroughly before planting.

E. For planting beds and lawns, mix planting soil prior to backfilling, and stockpile at site.

1. Mix lime with dry soil prior to mixing fertilizer.
2. Apply phosphoric acid fertilizer (other than that constituting a portion of complete fertilizers) directly to subgrade before applying planting soil and tilling.

3.3 SEEDING

A. Loosen the seed bed to a depth of from 1 to 2 inches below finished grade.

B. Seeds and fertilizers can be sown with standard agricultural drills. Grass seeds may be sown broadcast or with a special seeder attachment on agricultural drills,

but shall not be covered with more than 1/2-inch of soil, whether drilled or raked in. If not covered by the drill, all uncovered seed shall, immediately after sowing, be slightly rakes or harrowed to cover the seed.

C. Apply fertilizer in the amount of 20 pounds per 1,000 square feet.

D. Sow grass seed at the rate of not less than four pounds per 1,000 square feet.

E. Apply adequate mulching material following seeding and fertilizing.

F. Keep seeded and fertilized areas adequately watered until germination of all seed is completed and uniform grass cover is accomplished.

3.4 PREPARATION OF SODDED AREAS

A. Prior to preparation of areas to be sodded, remove existing grass, vegetation, and turf. Dispose of such material in an appropriate and proper manner. Do not turn over any removed material into the soil being prepared for sodding.

B. Loosen subgrade of areas to be sodded to a minimum depth of 4 inches. Remove stones over 1-1/2 inch in any dimension and sticks, roots, rubbish, and other extraneous matter. Limit preparation to areas which will be planted promptly after preparation.

C. Place 4 inches of topsoil to be sodded.

1. Spread planting soil mixture to minimum depth required to meet lines,grades, and elevations shown, after light rolling and natural settlement.

2. Place approximately one-half of total amount of planting soil required. Work into top of loosened subgrade to create a transition layer and then place remainder of planting soil.

3. Allow for sod thickness in areas to be sodded.

D. Grade areas to be sodded to smooth, even surface with loose, uniformly fine texture. Roll and rake and remove ridges and fill depressions as required to meet finish grades. Limit fine grading to areas which can be planted immediately after grading.

E. Moisten prepared areas to be sodded before planting if soil is dry. Water thoroughly and allow surface moisture to dry before planting lawns. Do not create a muddy soil condition.

F. Restore areas to be sodded to specified condition if eroded or otherwise disturbed after fine grading and prior to planting

3.5 SODDING

A. Sod areas indicated on drawings to be sodded.

B. Loosen the surface to a depth of 1 to 2 inches and rake area before sod is placed. Remove clods, lumps, boulders, and debris.

C. Apply limestone at a rate of 25 pounds per 1,000 square feet. Apply fertilizer at a rate of 10 pounds per 1,000 square feet.

D. Lay sod strips by hand. Fit sod to surrounding grade and fixed objects. Butt sod strips together so there are no open joints. Tamp or roll sod after initial watering. The sod shall have a smooth even surface after tamping and rolling.

E. Stake or peg sod when the sodded area has a slope of less than 4 feet horizontal to 1 foot vertical.

F. Lay sod within 24 hours from time of stripping. Do not plant dormant sod or if ground is frozen.

3.6 PLANTING TREES AND OTHER PLANTS

A. Plant trees and other plants in the proper manner for the particular planting. Keep trees and plants properly watered until growth is assured.

3.7 FENCING AND OTHER RESTORATION

A. Locate fences, mail boxes, planters, and other items in the same location that the item has been prior to construction. Erect wire and board fences plumb and on straight lines. Set mail boxes, posts, poles, and similar items plumb. Restore planters and similar items to the same shape the items has been prior to construction.

B. Wire fences shall have the proper tension for the type of wire fence restored.

3.8 CLEAN-UP

Cleanup the job site following landscaping. Remove rubbish, excess materials, temporary structures, and equipment. Leave the work in a neat and presentable condition.

END OF SECTION 02902