VILLAGE OF PLEASANT PRAIRIE

CHAPTER 405

DESIGN STANDARDS
AND
CONSTRUCTION SPECIFICATIONS

2023 EDITION

ORDINANCE NO. 16-11

ORDINANCE TO REPEAL AND RECREATE CHAPTER 405 OF THE MUNICIPAL CODE OF THE VILLAGE OF PLEASANT PRAIRIE, KENOSHA COUNTY, WISCONSIN RELATING TO DESIGN STADARDS AND CONSTRUCTION SPECIFICATIONS

BE IT ORDAINED AND ESTABLISHED by the Board of Trustees of the Village of Pleasant Prairie, Kenosha County, Wisconsin that Section 405 of the Municipal Code is repealed and recreated to read as follows:

Statutory authority.

A. This chapter is adopted by the Village of Pleasant Prairie under the authority granted by the Wisconsin Statutes, including without limitation, § 61.34, 61.345, 61.36 and 61.39, Wis. Stats.

Purpose and intent.

A. The Purpose of this Chapter is to establish uniform standards for design and construction within the Village of Pleasant Prairie. These standards will promote consistent design and construction practices and safeguard the interests of the Village of Pleasant Prairie by ensuring that all public and private improvements are designed and constructed in conformance with sound engineering practices and accepted standards.

Adoption – Design Standards and Construction Specifications.

A. This ordinance hereby adopts and incorporates the Design Standards and Construction Specifications for the Village of Pleasant Prairie, and any amendments that may be made by the Village Board from time to time, for all public and private improvements.

Jurisdiction; applicability.

A. This ordinance applies to design and construction of public and private improvements, land development, and grading and filling activities within the Village of Pleasant Prairie corporate limits.

B. The requirements of this ordinance are not exclusive. Other public agencies may have review and permitting jurisdiction, including but not limited to the Wisconsin Department of Natural Resources, United States Army Corps of Engineers, Wisconsin Department of Transportation and Kenosha County. This ordinance does not substitute for the requirements of other public agencies having jurisdiction.

Approvals.

A. No improvements such as land grading, land filling, storm water drainage facilities, sanitary sewer, water mains, roadway, paving, or other infrastructure shall be

constructed until plans are formally approved in writing by the Village and any other agencies having jurisdiction.

Enforcement; violations and penalties.

A. The following methods of enforcement in any combination thereof are authorized against any landowner or responsible party that is found to be in violation of any provision of this ordinance.

1) Stop Work Order. The Village may issue a stop-work order if the work being done does not comply with Village standards, is not being done correctly, does not have required approvals or permits from the Village or other agencies having jurisdiction, or is deemed unsafe to the public.

2) Compliance Order. The Village shall notify the owner in writing of any non-complying activity. The compliance order shall describe the nature of the violation, remedial actions needed, a schedule of remedial action, and additional enforcement action that may be taken.

3) Penalty. Any person violating any of the provisions of this chapter is subject penalties pursuant to § 1-4 of the Village Code.

4) If the violations are likely to result in damage to private properties, public facilities, waters of the state or other waterways in the Village, the Village may take emergency actions necessary to prevent such damage.

5) The owner or responsible party is responsible for any costs incurred by the Village to bring the violation into compliance with any compliance order. The Village shall mail an invoice for any such work to the owner or responsible party. All invoices shall be paid within 30-days. For invoices not paid within 30-days, there is a penalty of 1.5% per month due on the unpaid invoice balance, along with an additional ten-percent penalty if the outstanding invoice, interest, and penalty are placed on the tax roll (a lien against the property). The right of the Village to assess a lien against the property shall be one of the remedies available to the Village but shall not be the exclusive remedy. The Village may also sue for a money judgment for any invoices which are past due.

6) The Village may seek enforcement of violations of this ordinance through a court of equity located in Kenosha County.

Interpretations.

A. The provisions of this ordinance are considered minimum requirements. Where conditions imposed by this ordinance differ from comparable conditions imposed by any other ordinance, law, resolution, rule, or regulation of any kind, the regulations that are more restrictive or that impose higher standards or requirements shall govern. The Village

reserves the right to interpret and make determinations with regard to rules and regulations.

Editions and Addendums.

A. Reference to the current Design Standards and Construction Specifications shall be per current year edition, with first edition year, hereby adopted as 2016.

B. The Village Board may consider amendments, as issued per addendum, during the year for the current year edition. Addendum(s) shall be made by resolution that includes a description of the proposed amendments.

C. Each current year edition shall be updated to incorporate the previous year addendum(s).

Appeals.

A. Any appeal to this chapter shall be pursuant to Chapter 18, Article V, Zoning Board of Appeals, of this code.

Severability.

If any section, clause, provision or portion of this Chapter is judged unconstitutional or invalid by a court of competent jurisdiction, the remainder of the chapter shall remain in force and not be affected by such judgment.

Passed and adopted this 2nd day of May, 2016.

VILLAGE OF PLEASANT PRAIRIE

John P. Steinbrink, President

ATTEST:

Jane M. Romanowski, Clerk

Posted: 5/6/16

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SECTION 1.0
ADMINISTRATIVE

1. Development and Village Departments

Administration Department: The Village's Administration Department is responsible for the allocation of Village resources for development and construction activities, the consistent application of public policy as described in Village Ordinances and evaluating the fiscal impact of development and construction on the Village's general fund, capital fund and enterprise budgets.

Community Development Department: The Village's Community Development Department is the leading department for site planning, zoning, land development, and land development approvals. The Developer and design engineer shall initiate development projects with the Community Development Department. All development plans are submitted to Community Development, who in turn, routes plans and submittals to all other Village departments for review. Community Development coordinates all aspects of the proposed development from project initiation to final plan approval.

Engineering Department: The Engineering Department is the leading department for the establishment of civil engineering design standards and construction specifications and for the review and approval of project civil engineering plans.

Public Works Department: The Public Works Department is the leading department for construction management, inspection of public infrastructure, and monitoring public improvement construction compliance with Village standards.

Building and Inspection Department: The Building and Inspection Department is the leading department for the review and inspections associated with buildings, residential homes, and private infrastructure per State and local building and mechanical codes.

Fire and Rescue Department: The Fire and Rescue Department is the leading department for the review and inspection of all fire safety aspects of development.

2. Approvals

Plans may require approvals from one or several Village departments depending on the project. Plans are approved when:

A. Written approval is provided from each Department having review or approval authority for the specified project.

B. Written approval and/or permits are obtained from other agencies having jurisdiction for the specified project.

Any conditions contained in an approval or permit shall be fulfilled to the satisfaction of the approver.

3. Civil Plan Revisions

After the plans are approved in writing by the Village, any deviation shall require the notification and approval of the Village. The Developer shall submit the requested changes to the Village with a letter of explanation of the revision.

Any revisions that occur because of field construction conditions must be reported to the Village by the design engineer, developer, or engineering inspector immediately after they are discovered. Should the Village consider the required changes to be significant or questionable in nature, the Village shall issue a stop work order until revised drawings are submitted and approved by the Village. If the Village considers the changes to be insignificant in nature, work may proceed under the verbal authorization of the Village pending written documentation of the change.

4. Village Acceptance of Improvements and Warranty

Preliminary Acceptance

Following substantial completion of public and private improvements and other requirements as may be specified in the Development Agreement with the Village of Pleasant Prairie, the design engineer, developer, or contractor shall initiate preliminary acceptance of those improvements by notifying the Village. Preliminary Acceptance is a conditional acceptance of the improvements by the Village which coincides with the start of the warranty period. The notification must be in writing. All subject improvements should be in an approvable state with no or only minor punch list items remaining.

The contractor who installed the specified improvements shall provide a written certification that the work was constructed in accordance with the Village approved plans and specifications. The written certification shall state the specific improvement (s) or improvement(s) installed.

The inspector or firm inspecting the work shall provide written certification that the specified improvement(s) was observed to be constructed in accordance with approved plans and specifications, all significant construction punch list items have been completed, and provide a recommendation of acceptance to the Village.

The Village will conduct an inspection of the work and determine if the contractor's and developer's obligations have been fulfilled for preliminary acceptance or if any items or

deficiencies need to be addressed prior to Village acceptance. The Village will provide an acceptance punch list including items or deficiencies that need to be completed prior to preliminary acceptance and items to be completed prior to final acceptance by the Village. Upon the punch list items being completed, the Village will recommend Preliminary Acceptance to the Village Board. Preliminary Acceptance will initiate the start of the one year (1) warranty period, unless otherwise specified in the Developer's Agreement.

Warranty Period

Warranty and correction period length and requirements for public and private improvements shall be specified within the Development Agreement, but in no case shall be less than 2-years for street trees and 1-year for all other items from the date of Preliminary Acceptance.

Final Acceptance

At or near the warranty period expiration date, the design engineer, developer, or contractor shall initiate Final Acceptance of the improvements by notifying the Village. The notification must be made in writing and all preliminary acceptance punch list items completed.

The Village shall initiate the final review and inspection of the improvements and provide a list of items, deficiencies or corrections that need to be completed prior to final acceptance. Upon completion, the Village will recommend Final Acceptance to the Village Board.

5. Exceptions and Variations

In cases where the design engineer can demonstrate, in writing, with engineering rationale and data that a provision of these regulations, if strictly adhered to, would cause unnecessary hardship because of unique site conditions and that a departure may be made without destroying the intent of such provisions, the Village may approve a variation or modification of the required standard or regulation.

6. Definition of Terms and Abbreviations

AASHTO: Refers to all the publications of the American Association of State Highway Transportation Officials, and specifically, *A Policy on Geometric Design of Highways and Streets*, current addition.

ACOE: United States Army Corps of Engineers.

ASTM: American Society for Testing and Materials.

AWWA: American Water Works Association.

CONTRACTOR: An individual, company, firm, or other party or organization who contracts to construct all or a portion of the work.

DESIGN ENGINEER or ENGINEER OF RECORD: A qualified professional engineer registered in the State of Wisconsin responsible for the design and preparation of contract documents.

DEVELOPER: Any person, firm, corporation, agent, partnership, or entity that seeks to improve land in accordance with the Village's development regulations.

DEVELOPMENT: A man-made change to improved or unimproved real estate.

EJCDC: Engineers Joint Contract Document Committee.

FDM: Refers to the Wisconsin Department of Transportation *Facilities Development Manual*, current edition.

GIS: Geographical Information System.

HMA: Hot mixed Asphalt.

KWU: Kenosha Water Utility.

NGVD 29: National Geodetic Vertical Datum of 1929.

NAVD 88: North American Vertical Datum of 1988.

NAD 83: North American Datum of 1983.

PCC: Portland Cement Concrete.

PC: Refers to "Point of Curvature" for horizontal curves.

PT: Refers to "Point of Tangency" for horizontal curves.

PLANS: The approved plans, profiles, typical cross sections, working drawings, supplemental drawings, and specifications that show the location, character, dimensions, and details of the work to be done.

PRIVATE IMPROVEMENT: Private sewer systems, water systems, storm systems, roads, sidewalks, street lighting, street trees, or other infrastructure that is owned and maintained by the landowner, an association, or other private entity.

PUBLIC IMPROVEMENT: Public sewer systems, water systems, storm systems, roads, parkways, sidewalks, street lighting, street trees, and all other infrastructure will be owned and maintained by the Village of Pleasant Prairie or other public entity.

PUNCH LIST: A list of deficiencies requiring corrective action before final payment or acceptance of the project.

SEWRPC: Southeastern Wisconsin Regional Planning Commission

SPS: Refers to the Wisconsin Department of Safety and Professional Services.

STANDARD SPECIFICATIONS: Refers to the *Standard Specifications for Sewer and Water Construction in Wisconsin*, current edition and its revisions, prepared by a committee of municipal engineers, consulting engineers, suppliers, and contractors for the purpose of suggesting standards for the design and construction of sanitary sewer, storm sewer, and water main.

STATE SPECIFICATIONS: Refers to the *Standard Specifications for Highway and Structure Construction in Wisconsin, Department of Transportation,* current edition and its supplements.

SUBSTANTIAL COMPLETION: Substantial completion is defined as such time improvements are completed to Village Standards, are safe, ready for use, have been and passed inspections and testing, and all Village requirement have been completed, except for what the Village may determine as minor punch list items. Substantial Completion shall be determined by the Village using their best judgment.

USGS: United States Geological Survey.

VILLAGE OF PLEASANT PRAIRIE: The Village of Pleasant Prairie, Wisconsin, and where appropriate, its Village Board, commissions, committee, and authorized officials.

VILLAGE: Authorized officials of the Village of Pleasant Prairie to administer and enforce the provisions of these design standards and construction specifications. Authorized officials include the Village Engineer, Village Construction Engineer, Village Director of Public Works, Community Development Director, Village Building Superintendent, or their designee(s).

VILLAGE ADMINISTRATOR: The Chief Administrative Officer for the Village of Pleasant Prairie.

VILLAGE ENGINEER: A professional engineer, registered in the State of Wisconsin, who has been appointed as the Village Engineer, or the Village Engineer’s authorized agent.

VILLAGE CONSTRUCTION ENGINEER: A professional engineer who has been appointed as the Village Construction Engineer or the Village Construction Engineer's authorized agent.

DIRECTOR OF PUBLIC WORKS: A professional engineer who has been appointed as the Village Director of Public Works.

VILLAGE SPECIFICATIONS: Specifications of the Village of Pleasant Prairie, latest edition.

VPC: Refers to beginning of vertical curve.

VPI: Refers to the vertex of vertical curve (the intersection of the two tangents).

VPT: Refers to end of vertical curve.

WDNR: Wisconsin Department of Natural Resources.

WDOT: Wisconsin Department of Transportation.

END OF SECTION

SECTION 2.0
ENGINEERING PLAN STANDARDS

1. Introduction

The Village requires uniform plans for ease of record keeping, review, and understanding. Plans standards and design guidelines as established in this chapter are Village standard minimum requirements.

2. General

A. Plan scales shall be standard scales (1'=100', 60', 50', 40', 20', 10'). Plan scales shall be large enough to be legible and easily reviewable. Typical plan scales shall be 1"=20', horizontal and 1'=4' or 5' vertical when plotted on full size plan sheets, unless otherwise approved by the Village.

B. Plans shall be based on vertical datum (NGVD29 or NAVD 88) and horizontal datum NAD 83(2011).

C. All proposed improvements and construction materials shall be indicated in the plans.

D. Plans must be bound and submitted in a neat and organized manner.

E. Reports including storm water management plan(s) and construction specifications manual(s) shall be comb bound, dated, contain a table of contents, and be sealed by a Wisconsin registered licensed professional engineer.

F. Village of Pleasant Prairie shall be provided electronic PDF copies of all final plans and reports. PDF's shall be created directly from CADD export files whenever possible.

3. Plans – General

A. Plan Content. Construction plans shall generally include the following, as may be applicable:

1) Title cover sheet.

2) Detail sheets.

3) Grading / erosion control plans.

4) Sanitary sewer and water main plans.

5) Roadway and storm sewer plans.

6) Roadway cross-sections.

Other civil plans, development plans, or planning reports, which may be submitted separately include:

7) Landscaping / street tree plan.

8) Street lighting plan.

9) Street sign plan.

10) Soils report.

11) Storm water management plan.

12) Preliminary and final plat(s).

13) Wetland and Floodplain plats.

14) Primary Environmental Corridor Staking / Delineations.

B. Title Cover Sheet. All plans shall contain a title cover sheet. The title cover sheet for civil plans shall include the following information:

1) The official project title and location map.

2) Name of property owner, developer, and contact information of owner or owner's representative.

3) Project number used by the firm preparing the plans.

4) Identification of horizontal and vertical control and coordinate system used with a listing of project bench marks.

5) A legend of symbols and index of sheets.

6) Date of preparation and applicable revision date(s), including month, day, and year.

7) Government Agency and Utility Contacts.

8) Stamp and signature of the Wisconsin licensed professional engineer under which the plans were prepared.

9) A note warning that Digger's Hotline must be contacted to locate underground utilities prior to the start of construction.

10) If the project is required to have a preconstruction conference by the Village the following note shall be provided. "Prior to construction, a pre-construction conference must be held at the Village offices. The preconstruction conference shall be scheduled and moderated by the designing Engineer of Record".

11) The following note shall be placed on the plan cover sheet: "Each Contractor shall have a copy of the Village approved plans, project manual, and Village construction specifications on-site during times of construction. The construction specifications are an integral part of the civil engineering plans."

C. Title Block. Each plan sheet shall include a title block with the following information:

1) Project name.

2) Type of plan. (i.e. grading /erosion control, sanitary sewer / water main, etc.)

3) Designed by.

4) Checked by.

5) Revision date (month, day, and year).

4. Plan Items – General

A. In addition to specific design and plan item requirements for utilities, grading, and roadway plans, the following items shall be standard to all plans :

1) North arrow.

2) Plan scale.

3) Abutting Roadway and Railway Right-of-way lines and widths.

4) Property lines.

5) Project boundary.

6) Lot number or address identification of properties within or immediately adjacent to project area.

7) Existing utilities and structures including but not limited to the following:

a. Storm sewer, sanitary sewer, and water system facilities.

b. Electric, gas, phone, cable, or other service provider utilities.

c. Street pavement edges and pavement type, curbs, sidewalk, bike lanes, alleys, driveways, or other surface types.

d. Existing mail boxes, signs, fences, light poles, landscaping, trees, buildings, or other surface features within or immediately adjacent to the project area.

8) Roadway names.

9) Existing and proposed easement locations, type, and width.

10) Environmental features (wetlands, waterways, floodplain, conservancy areas etc.) and any associated setbacks.

11) Location and identification of benchmarks.

12) Existing parks.

END OF SECTION

SECTION 2.1
SANITARY SEWER SYSTEM

1. Introduction

All proposed developments, subdivisions, and buildings must have a properly designed and constructed sanitary sewer collection system. The system shall provide an adequate means of delivering sewage collected from the development to an existing sanitary sewer system.

2. Compliance with the following;

A. Standard Specifications for Sewer & Water Construction in Wisconsin.

B. Village Standard Construction Specifications.

C. Chapter NR 108 – Requirements for Plans and Specifications Submittal for Reviewable Projects and Operations of Community Water Systems, Sewerage Systems, and Industrial Wastewater Facilities.

D. Chapter NR 110 – Sewerage Systems.

E. SPS 382-387 Plumbing Code.

F. Chapter 395 of the Village Municipal Code – Land Development and Development Control.

G. Chapter 420 of the Village Municipal Code – Zoning Ordinance.

H. Chapter 381 of the Village Municipal Code – Construction Site Maintenance and Erosion Control.

3. Public Sewers – General

A. Public sewers are owned and maintained by the Village of Pleasant Prairie. Wastewater flows are treated by the City of Kenosha Water / Wastewater Utility (KWWU).

B. Public sewers shall be constructed in accordance with the Village Standard Construction Specifications.

C. Approvals and permits for public sewers shall be obtained in the following order:

First: Village of Pleasant Prairie;

Second: City of Kenosha Water / Wastewater Utility;

Third: Southeastern Wisconsin Regional Planning Commission (SEWRPC);

Fourth: The Wisconsin Department of Natural Resources (WDNR).

1) The Village (not the Developer) shall submit plans to the City of Kenosha Water / Wastewater Utility after Village plan approval.

2) The Developer shall submit plans to SEWRPC after approval from the Village and KWWU.

3) The Developer shall submit plans and an approval letter(s) to WDNR after approval from the Village, KWWU and SEWRPC.

4) Approvals from SEWRPC and WDNR shall be provided to the Village.

4. Private Sewers- General

A. Private sewers shall be approved by the Village prior to State submittal. Village approved plans and state approved plans shall not differ.

B. Private sewers shall be constructed in accordance with the Village Standard Construction Specifications. Any deviations shall be approved by the Village, prior to construction.

C. Private Sanitary Sewer Access and Maintenance Easement. The owner shall dedicate an access and maintenance easement to the Village for the private sewer facilities. This easement shall be in the form of a Dedicated Private Sanitary Sewer Access and Maintenance Easement provided on a certified survey map, final plat or other recordable document.

D. Maintenance Agreement. A Village approved maintenance agreement is required for the maintenance of all private sewer facilities. The maintenance agreement shall be based on a maintenance plan developed for the life of the sewer. The agreement provisions shall be tied to the Dedicated Access and Maintenance Easement and shall include the following:

1) Legal description of the Private Sanitary Sewer Access and Maintenance Easement.

2) Identification of the private sewer facilities.

3) Identification of the owner of the sewer facilities.

4) Provisions and of maintenance requirements for the sewer facilities.

5) Provisions allowing the Village access to the property to perform inspections or maintenance that are not being properly performed by the owner.

6) Agreement that the owner shall be responsible for all costs associated with the construction and maintenance of the sewer facilities.

5. Preparation of Plans

A. Plans must be prepared, stamped, and signed by a qualified professional engineer registered in the State of Wisconsin.

6. General Design Requirements

A. Service Area and Design Capacity.

1) The sewer design shall accommodate the flows of the development and the ultimate service area. As part of the design, an ultimate service area map shall be provided with details of topography, future sewer sizes, elevations, sewer depths, and calculated system design flows and system capacity. The basis of design for all projects shall accompany the submitted engineering plans.

B. Public Sewer Location.

1) Sewer mains shall be extended to the far property boundaries for future connection.

2) Sewer alignments along new public roadways shall follow the centerline of the roadway. Additional manholes shall be provided in curvilinear roads to closely follow the centerline.

3) Public sewers shall be located in a public right-of-way or centered within a permanent dedicated Sanitary Sewer Access and Maintenance Easement.

4) Sewer alignments along existing roads or in easements shall be approved on a case-by-case basis. Alignments must be approved prior to completing / submitting construction plans to the Village.

5) Sanitary Sewer, Access and Maintenance Easements shall be a minimum of 20-feet wide. If the sanitary sewer is located within the same easement as another utility or the sewer depth is greater than 15-feet, the easement width shall be increased at the direction of the Village.

6) For sanitary sewers within permanent easements, a paved / gravel access path may be required at the direction of the Village to allow utility vehicles to access and maintain the public sewer. The access path shall be designed to accommodate the width and weight of utility vehicles.

C. Sewers.

1) Sewer depths for new residential areas must accommodate gravity basement service.

2) 4-inch diameter laterals shall be provided for single family homes. Sewer laterals to other structures shall be based on anticipated full build wastewater flows with a minimum of 6-inch diameter unless otherwise approved or directed by the Village.

3) All 4-inch and 6-inch diameter laterals shall be connected to the sanitary sewer main and all laterals 8-inch diameter and larger shall be connected to manholes unless otherwise approved or directed by the Village.

4) Risers shall be provided for all laterals over 14-feet in depth, in accordance with the Village's Standard Detail. All riser heights shall be shown on the plans.

5) Sewer lateral grade shall be at a typical 2.08% unless otherwise approved by the Village. Minimum lateral grade is 1.04% and maximum grade is 4.16%. Lateral grades shall be shown on the plans. Lateral elevations at the right of way shall be shown on the plans unless the lateral is for a single family home.

6) All laterals exceeding 100-feet in length shall have cleanouts installed on them. Clean out locations shall be noted on the plans, if applicable.

7) Outside drop manholes may only be used where the proposed drop exceeds 3.0 feet. Inside drops are not allowed on new manholes but may be installed on existing manholes if approved by the Village and WDNR.

8) Inside "splash" drops shall be no greater than 6-inches to avoid sewage waterfalls in manholes.

9) Manholes shall have a typical 0.1 foot drop in invert elevations unless otherwise approved by the Village Engineer where adequate grade is not available.

10) New sewer connections to existing manholes shall be cored.

11) Sampling manholes are required for all commercial, industrial, or other developments, as may be determined by the Village, per Village Specifications. Sampling manholes shall be located to allow easy access for utility crews and shall be within pavement areas but not in parking stalls. No alignment changes are allowed at a sampling manhole.

12) Sewers crossing existing Village roads shall be backfilled using slurry backfill and restored per Village Specifications.

13) A temporary plug must be installed in the downstream manhole during construction to prevent sediment / debris from entering the downstream sewer. All plugs must be removed prior to the Village acceptance of the new service. Plans shall contain a note stating this requirement, if applicable.

14) Sanitary sewers shall be designed with a minimum of 6-feet of cover at all locations unless otherwise approved by the Village.

15) All existing sanitary lateral(s) to a lot which are not used by a development shall be abandoned and capped at the main, as part of the development requirements, unless otherwise determined by the Village.

7. Plan Items

A. The following plan elements shall be provided in the construction plans:

1) Master sanitary sewer system overview sheet.

2) Plan view of all sewers.

3) Identification of public vs. private facilities must be indicated on the plan.

4) Profile of existing and proposed public sewers.

5) Invert, rim elevation and casting model number of all sewer manholes.

6) Sewer diameter, distance, and percent grade between manholes.

7) New sewer material and class of pipe.

8) Material and sizes of any existing sanitary sewer to be tied into.

9) Lateral locations and invert elevation(s) at the right-of-way. Locations and length of any riser.

10) Proposed public right-of-ways and/or easements shall be shown in plan view. Copies of complete easement documents shall be provided, if applicable.

11) Limits of granular, excavated material, and/or slurry backfill.

12) Separation distances between sanitary sewer and other utilities.

13) Details (manhole, sampling manhole, sanitary riser, tracer wire, etc.).

END OF SECTION

SECTION 2.2
STORM SEWERS AND STORM WATER MANAGEMENT

1. Introduction

All proposed developments, subdivisions, and buildings must have a properly designed and constructed storm sewer conveyance and management system. Storm sewer facilities may be publicly or privately owned as deemed appropriate by the Village.

2. Compliance with the following;

A. Standard Specifications for Sewer & Water Construction in Wisconsin.

B. Village Standard Construction Specifications.

C. Chapter 298 of the Village Municipal Code – Storm Water Management and Storm Water Drainage Facilities.

D. Chapter 297 of the Village Municipal Code – Storm Sewers. (Re: Illicit Discharges),

E. Chapter 300 of the Village Municipal Code – Storm Water Storage Facilities. (Re: Illegal fill or alterations of storm water ponds).

F. Chapter NR 151 - Runoff Management.

G. Wisconsin Department of Natural Resources Storm Water Post-construction Technical Standards.

H. SPS Chapters 382-387 Plumbing Code.

I. Chapter 395 of the Village Municipal Code – Land Development and Development Control.

J. Chapter 420 of the Village Municipal Code – Zoning Ordinance.

K. American Concrete Pipe Association Concrete Pipe Design Manual

3. Public Storm Water Facilities – General

A. Village public storm water facilities shall be constructed and meet the Village Standard Construction Specifications.

4. Private Storm Water Facilities – General

A. Private storm sewers in commercial or industrial developments shall meet the requirements of the Wisconsin Administrative Code (SPS 382-387)

B. Private storm sewers in residential developments shall meet the Village standards and construction specifications for public storm sewer infrastructure.

C. Private Storm Water Drainage Access and Maintenance Easement. The owner shall dedicate an access and maintenance easement to the Village for the private storm water facilities. This easement shall be in the form of a Dedicated Private Storm Water Drainage Access and Maintenance Easement provided on a certified survey map, final plat, or other recordable document.

D. Maintenance Agreement. A Village approved maintenance agreement is required for the maintenance of all private storm water facilities. The maintenance agreement shall be based on a maintenance plan developed for the life of the facilities. The agreement provisions shall be tied to the Dedicated Access and Maintenance Easement and shall include the following:

1) Legal description of the Private Storm Water Drainage Access and Maintenance Easement.

2) Identification of the private storm water facilities.

3) Identification of the owner of the storm water facilities.

4) Provisions, requirements, and timelines for the operation, inspection, and maintenance of the storm water facilities by the owner.

5) Provisions allowing the Village access to the property to perform inspections or maintenance that are not being properly performed by the owner.

6) Agreement that the owner shall be responsible for all costs associated with the construction, operation, and maintenance of the storm water facilities.

5. Preparation of Plans

A. Plans must be prepared, stamped, and signed by a qualified professional engineer registered in the State of Wisconsin.

6. Storm Water Management

A. Storm water management is regulated by Chapter 298 of the Village Municipal Code. The design engineer shall reference this Chapter for design criteria and information pertaining to the following:

1) Peak runoff discharge performance standards.

2) Runoff quality performance standards.

3) Infiltration standards.

4) Protective areas.

5) Detention and retention facilities.

6) Storm water management plan.

7) Approvals, agreements, easements, permits and conditions.

B. Design of post construction storm water facilities shall follow and meet the applicable WDNR Storm Water Post-Construction Technical Standards.

C. New residential ponds shall be designed with aerator(s) or pond fountain(s), unless otherwise determined by the Village. Aerators / fountains shall meet the requirements set forth in the WDNR technical standard – 1001 and be designed for the pond size.

D. Wet ponds shall be designed with a safety shelf meeting WDNR technical standard requirements.

E. Storm water management pond shall fully contain the runoff from the tributary watershed area during the 100-year, 24-hour, rainfall under post-developed conditions. Hydrology calculations shall use Atlas 14 precipitation depths, and NRCS MSE3 precipitation distribution.

F. Storm water management ponds shall have a minimum 1-foot freeboard from the calculated 100-year high water elevation to the top of pond embankment and shall have an approved designed emergency overflow spillway.

G. Development design shall provide designated 100-year overland flood routes that convey storm water drainage to the designed storm water management facility. Flood routes shall be in designated Flowage Easements, Right-of-Ways, or Storm Water Drainage Access and Maintenance Easements.

7. Storm Water Management Plan

A. The storm water management plan shall be provided in an electronic pdf including the following:

Narrative

1) Title sheet with official project name, date of preparation, and applicable revision dates. The title sheet must be stamped / sealed by a registered Wisconsin professional engineer.

2) Table of contents.

3) Narrative of required storm water performance requirements for the development.

4) Description of the project site location and existing conditions including land use, topography, existing drainage patterns (including offsite contributory drainage), existing downstream structures, points of discharge, identification of navigable streams, wetland(s), floodplain(s), and other relevant features effecting storm water drainage of the development.

5) Description of site soil type(s) and identification of hydrologic soil classification(s) used (Type A, B, C, D).

6) Description of the proposed development and post-construction site conditions including storm water drainage facilities being used to meet the performance standards, drainage patterns, points of discharge, protective areas, and other relevant features effecting storm water drainage of the development including any relevant impacts to upstream contributory or downstream receiving areas.

7) Description of the analytical procedures used to quantify storm water runoff rates, volumes, and water quality performance standards.

8) Summary of the pre-developed and post-developed hydrologic and hydraulic parameters used in the evaluation including runoff curve number(s), time of concentration(s), drainage basin and sub-basin delineations, including acreages.

9) Summary of the project site's pre-developed and post-developed peak storm water runoff rates for the 1-year, 2-year, 10-year, and 100-year frequency, 24-hour duration design rainstorm event(s).

10) Summary of the post-developed storm water quality analysis results and comparison with the performance requirements.

11) Summary of the post-developed storm water infiltration analysis and comparison with the performance requirements.

Appendices

12) Pre-developed and post-developed drainage basin map with topographic contours, time of concentration path(s), basin identification numbers, and acreages.

13) Hydrologic computer model printout with page numbers including a model schematic, table of contents, model input summary sheets, time of concentration calculations, model output summary sheets. Each model run should be separated by a divider sheet with an description heading.

14) Water quality computer model printout including input parameters and output results.

15) Infiltration design worksheets, if applicable.

8. General Design Requirements

A. Public Storm sewers Location

1) Storm sewer alignments along new public roadways shall be on the west or south side of the roadway. Storm sewers should be aligned parallel to the sanitary sewer and generally 10-feet away from but no closer than 8-feet from the sanitary sewer within the limits of the roadway pavement. Appropriate manholes shall be provided to maintain the alignment on curvilinear roads to keep the storm sewer under the pavement.

2) Storm sewer alignments along existing roads or in easements shall be approved on a case-by-case basis. Alignments must be approved prior to completing / submitting construction plans.

3) Public storm sewers shall be located in a public right-of-way or centered within a permanent Storm Sewer Access and Maintenance Easement. Storm Sewer Access and Maintenance Easements shall be a minimum of 20-feet wide. The easement width may be increased by the Village due to sewer size, depth, other utilities located within the same easement, or other site specific factors.

B. Storm Sewers

1) Unless otherwise specified by the Village, storm sewers shall be designed for a 10-year reoccurrence frequency storm event as defined by the Southeastern Wisconsin Regional Planning Commission (SEWRPC).

2) Unless otherwise approved by the Village, storm sewer design flow shall be based on the rational method, Q=CIA.

3) Storm sewer design calculations along with a storm sewer drainage map shall be submitted for review. The drainage map shall include the storm sewer system plan, topographic information, watershed delineations, watershed acreages, time of concentration (Tc) and Tc flow paths, runoff coefficients, and storm structure and watershed identification labels.

4) All offsite contributory drainage areas shall be delineated and included in the design calculations and drainage map.

5) The design of the drainage system shall not adversely affect adjacent or downstream properties or cause upstream ponding or back-water problems. Design shall accommodate increased runoff created onsite and consider potential for increased runoff from upstream properties, where applicable.

6) Minimum public storm sewer pipe diameter is 15-inches for mains except 12-inch diameter mains are permitted for sump outlet storm sewers. Minimum catch basin lead diameter is 12-inches.

7) Storm sewer mainline shall be designed with a minimum depth of 4-feet unless otherwise approved by the Village.

8) Double inlets shall be provided at sag curves within public roadways.

9) All apron endwall(s) shall have a steel grate. (See Village Standard Endwall Grate).

10) For parking lots and other large paved areas, a minimum of one catch basin shall be provided for approximately every 20,000 square feet of impervious surface area, or as determined by the Village.

11) Reinforced concrete pipe (RCP) or reinforced horizontal elliptical pipe (RCHEP) shall be designed in accordance with the Concrete Pipe Design Manual issued by the American Concrete Pipe Association. All public storm sewer pipes shall be constructed of reinforced concrete pipe, unless otherwise approved to be HDPE. All public storm sewer pipes within existing or proposed roadway pavements shall be reinforced concrete pipe. RCP and RCHEP shall be the following minimum pipe classes:

    a. 12” and 15” diameter – Minimum Class IV

b. 18” diameter and larger – Minimum Class III

c. RCHEP – Minimum Class HE-II

C. Sump Pump Laterals

1) Sump pump laterals must be provided for all lots within new subdivisions and multi-family developments.

2) All new lots shall have a 4-inch storm lateral extended from a public storm sewer to the lot line, unless otherwise approved by the Village. Laterals may be extended from the storm sewer in the adjacent road (or from the side / rear yard when such storm sewers are available). Storm laterals may also be directly connected to catch basins, if the catch basin is located within the lot frontage.

3) On portions of roadways not requiring storm sewer for surface drainage, a minimum 12-inch diameter sump outlet storm sewer shall be extended in the roadway from the end of the downstream storm sewer. The storm sewer shall be constructed the same as the main storm sewers. A manhole shall be provided at the upstream end for access/maintenance.

4) New minor land divisions where storm sewers are not available may be required to provide alternative collections systems as determined by the Village.

5) Storm sewer lateral grade shall be at a typical 2.08% unless otherwise approved by the Village. Minimum lateral grade is 1.04%.

6) All laterals exceeding 100-feet in length shall have cleanouts installed on them. Clean out locations shall be noted on the plans, if applicable.

D. Downspouts and Roof Drainage

1) All single family and two family residential dwelling units shall have downspouts discharged to the lawn on the subject property in a manner that directs drainage away from the building to yard swales or downslope areas as designed in the grading plan. Downspouts shall <u>not</u> be interconnected to the private or public storm sewer unless the development is specifically designed and approved by the Village Engineer for such connections.

a. Downspout extensions shall not be extended to discharge at the lot line or onto adjacent properties.

2) All multifamily residential buildings shall have downspouts interconnected to the storm sewer system or other approved point of discharge as approved by the

Village to prevent erosion from roof runoff and minimize problems on paved surfaces. Plans shall clearly show and note downspout drainage provisions.

3) All commercial (non-residential) building roof leaders and downspouts shall be interconnected directly to the on-site storm sewer system or other point of discharge as approved by the Village to prevent erosion from roof runoff and minimize problems on paved surfaces. Plans shall clearly show and note downspout drainage provisions.

   a. Roof drainage from commercial buildings shall have internal plumbing or external downspouts that are located in areas that are not subject to damage or high pedestrian traffic. Plans shall show proposed downspout locations.

E. Open Channels

1) The design of open channels shall be reviewed on a case by case basis.

2) The design shall prevent excessive velocity flow and erosion.

3) Side slopes for open channels and swales shall be a maximum of 4:1.

4) Open channels may be required to be located in a storm water drainage access and maintenance easement, at the direction of Village.

F. Bridges and Culverts.

1) In addition to meeting other applicable requirements, all new and replacement bridges and culverts over navigable waterways, including pedestrian and other minor bridges, shall be designed to accommodate the one-hundred-year recurrence interval flood event, as established in the applicable federal flood insurance study, SEWRPC report or Village storm water management plan, without raising the peak stage by more than 0.01 foot. Larger permissible flood stage increases may be allowed by the Village Board where topographic and land use conditions can accommodate the increased flood stage without additional flood damage, provided that flood easements have been secured from all property owners affected by such excess stage increases or other appropriate measures have been taken to protect the Village from possible liability. Such bridges and culverts shall be so designed and constructed as to facilitate the passage of ice flows and other debris.

2) All new and replacement bridges shall be constructed with all applicable local, state and federal rules and regulations.

9. Plan Items

A. Storm Sewers plan elements shall include the following:

1) Master storm sewer system overview sheet.

2) Plan view of all storm sewers.

3) Identification of public vs. private facilities must be indicated on the plan.

4) Profile of public storm sewers.

5) Invert, rim elevation and casting model number of all sewer manholes.

6) Sewer diameter, distance, and percent grade between manholes.

7) New sewer material and class of pipe.

8) Material and size of any existing storm sewer to be tied into.

9) Sump lateral locations and invert elevation(s) at the right-of-way.

10) Proposed public right-of-ways and/or easements shall be shown in plan view. Copies of complete easement documents shall be provided, if applicable.

11) Limits of granular, excavated material, and/or slurry backfill.

12) Separation distances between storm sewer and other utilities.

13) Location and size of rip-rap

14) Details (manhole, catch basin, end section, swale, rip-rap, etc.).

B. Detention / Retention Ponds.

1) Grading plan of pond design.

2) Normal water elevation and designed 100-year water elevation labeled on plan.

3) Pond cross section, including but not limited to:

a. Normal, 2-year, and 100-year water elevations.

b. Bottom of pond elevation.

c. Emergency spillway and elevation.

d. Embankment material noted. Show keyway, if applicable.

e. Pond liner material, thickness, limits, etc.

f. Storm sewer discharge pipe / anti-seep collar.

g. Grading slopes (i.e. 4:1, 10:1 etc.)

h. Label and dimension top of berm width and safety shelf width.

i. Limits of topsoil replacement, turf-reinforcement matting etc.

4) Details of pond outlet structure, emergency spillway, etc.

5) A soils report shall be provided with boring information at the pond site. Pond design shall take into consideration existing soil types present and groundwater elevation.

END OF SECTION

SECTION 2.3
WATER MAIN

1. Introduction

All proposed developments, subdivisions, and buildings shall include provisions for municipal water service.

2. Other - Compliance with the following:

A. Standard Specifications for Sewer & Water Construction in Wisconsin.

B. Village of Pleasant Prairie Standard Construction Specifications.

C. NR 108 – Requirements for Plans and Specifications Submittal for Reviewable Projects and Operations of Community Water Systems, Sewerage Systems, and Industrial Wastewater Facilities.

D. NR 811 – Requirements for Operation and Design of Community Water System.

E. SPS 382-387 Plumbing Code.

F. NFPA 24 – Requirement for all private fire service water mains, including sprinkler system Chapter 420 lead-ins and combination fire/water mains from public water mains. Chapter 395 LD and LCO.

G. Chapter 180 – Fire and Rescue Protection.

3. Village Public Water Main – General

A. Public water main(s) within the Village of Pleasant Prairie are owned and maintained by the Village, unless in an area that is serviced directly by the Kenosha Water Utility. The Village purchases water as a wholesale customer from the Kenosha Water Utility.

B. Public water mains shall be constructed in accordance with the Village Standard Construction Specifications.

C. Approvals and permits for public water mains shall be obtained in the following order:

First: Village of Pleasant Prairie;

Second: City of Kenosha Water / Wastewater Utility;

Third: Wisconsin Department of Natural Resources.

1) The Village (not the Developer) shall submit plans to the City of Kenosha Water / Wastewater Utility after Village plan approval.

2) Plan submittal to the WDNR is to be completed by the developer's engineer <u>after</u> Village and Kenosha Water / Wastewater Utility approval of the plans.

4. Private Water Main – General

A. Private water mains shall be approved by the Village prior to State submittal. Village approved plans and state approved plans shall not differ.

B. A utility customer's service lateral shall be directly connected to a public water main and there shall be no other customer connections downstream from the Village of Pleasant Prairie utility shut off valve.

1) The village must have the ability to turn off water service to individual utility customer from a public shut off valve without impact to a different customer.

2) Projects where one customer has multiple buildings on a property: Buildings shall be individually serviced / metered from a public main or the entire property shall be serviced from one public service lateral with a master meter and the internal mains shall be privately owned and maintained, the method of which shall be determined and/or approved by the Village.

B. Private water mains and appurtenances shall meet the Village Standard Construction Specifications. Any deviations shall be approved by the Village, prior to construction.

C. Access and Maintenance Easement. The owner shall dedicate an access and maintenance easement to the Village for the private water facilities. This easement shall be in the form of a Dedicated Water Main Access and Maintenance Easement provided on a certified survey map, final plat, or other recordable document.

D. Maintenance Agreement. A Village approved maintenance agreement is required for the maintenance of all private water main facilities. The maintenance agreement shall be based on a maintenance plan developed for the life of the facilities. The agreement provisions shall be tied to the Dedicated Water Main, Access, and Maintenance Easement and shall include the following:

1) Legal description of the water main access and maintenance easement.

2) Identification of the private water facilities.

3) Identification of the owner of the water facilities.

4) Provisions, requirements, and timelines for the operation, inspection, and maintenance of water facilities by the owner.

5) Provisions allowing the Village access to the property to perform inspections or maintenance that are not being properly performed by the owner.

6) Agreement that the owner shall be responsible for all costs associated with the construction and maintenance of the water facilities.

5. Private Fire Service Water Mains and Protection Systems– General

A. All fire protection / combination mains and protections systems are reviewed and approved by the Village of Pleasant Prairie Fire and Rescue Department and their

independent fire safety consultant. The design engineer shall coordinate with the Fire Department and reference Chapter 180 (Fire and Rescue Protection) of the Village Ordinance(s) for all requirements, early in the project design process.

B. Buildings serviced by a combination municipal water and fire protection main must be sized by a Wisconsin licensed fire protection (sprinkler) contractor. No main is allowed to travel underground, under a building.

C. Private fire service water mains, including sprinkler system lead-ins and combination fire / water mains shall meet NFPA 24.

6. Preparation of Plans

A. Plans must be prepared, stamped, and signed by a qualified professional engineer registered in the State of Wisconsin.

B. Fire protection mains shall be prepared, stamped, and signed by a Wisconsin registered fire-protection contractor.

7. General Design Requirements

A. Water Mains and Laterals.

1. Water mains shall be looped or designed with the intention to loop unless otherwise approved by the Village.

2. Water main alignment along new Village roads shall be located 10-feet east or north of the roadway centerline. Appropriate bends / fittings shall be provided to maintain the alignment on curvilinear roads and keep the water main under the pavement

3. Water main alignment on existing Village roads or in easements shall be approved by the Village on a case by case basis. Alignment must be approved prior to completing / submitting construction plans.

4. Water Main, Access, and Maintenance Easements shall be a minimum of 20-feet wide. If the water main is located within the same easement as another utility or the depth is greater than 8-feet, the easement width shall be increased at the direction of the Village.

5. Water mains shall be extended to the far property boundaries for future connection / extension.

6. Water laterals shall be installed with the curb valve and box located approximately 0.5 foot within the right-of-way line as required by typical road sections or as approved by the Village.

7. Water mains crossing existing roads shall be backfilled with slurry. Roadway pavement must be removed and replaced in accordance with the Village Specifications and Village Standard Details.

8. The Village of Pleasant Prairie Fire and Rescue Department approval must be obtained for all proposed hydrant locations, fire loops, sprinkler lines and combination services/mains.

9. All water mains serving residential development shall be a minimum of 8-inches in diameter and mains serving commercial or industrial development shall be a minimum of 12-inches in diameter.

10. Water mains shall be designed to have a minimum cover depth of 6-feet.

11. Valves shall be provided at all branches within intersections.

12. Valves in residential areas shall be placed at intervals not greater than 800-feet.

13. Valves in commercial or industrial areas shall be placed at intervals not greater than 600-feet.

14. Hydrants in residential areas shall be placed at intersections and at 400-feet intervals (in general). Hydrants in commercial / industrial or other higher protection areas may require additional hydrants as required by the Village.

15. All existing hydrants located adjacent to proposed developments shall be modified or replaced by the Developer as needed to meet current Village fire hydrant specifications as directed by the Engineer.

16. All existing water lateral(s) to a lot which are not used by a development shall be abandoned and capped at the main, as part of the development requirements, unless otherwise directed by the Village.

17. 4-inch and 10-inch water mains and service laterals are not permitted within right of way and public utility easements unless otherwise determined by the Village.

8. Plan Items

A. The following plan elements shall be provided in the construction plans:

1. Master water system overview sheet.

2. Grade breaks, bends, fittings, valves, and hydrants shall be labeled on the plans with stations, elevations, and depths.

3. Plan and profiles are required for all public water mains.

4. Water main size, distance, and percent grade between grade breaks.

5. Water main material.

6. Lateral locations and invert elevations at the right-of-way.

7. Limits of granular, excavated material, and/or slurry backfill.

8. Material and size of existing water main to be connected.

9. Separation distance(s) between water main and sanitary sewer.

10. Proposed public right-of-ways and/or easements shall be shown in plan view. Copies of complete easement documents shall be provided, if applicable.

END OF SECTION

SECTION 2.4
ROADS

1. Introduction

This chapter outlines the minimum plan standards for public and private roadways. Additional roadway design requirements may be required by the Village based on site characteristics, traffic impact analysis studies, neighborhood and regional planning, and local road and traffic conditions.

2. Other – Compliance with the following:

A. Chapter 395 of the Village Municipal Code – Land Division and Development Control.

B. Chapter 420 of the Village Municipal Code - Zoning

C. Village of Pleasant Prairie Standard Construction Specifications.

D. Wisconsin Department of Transportation Facilities Development Manual (FDM).

E. Wisconsin Bicycle Facility Design Handbook.

F. AASHTO Book.

3. Preparation of Plans

A. Plans must be prepared, stamped, and signed by a qualified professional engineer registered in the State of Wisconsin.

4. Design Requirements

A. Typical Urban Sections. Village typical sections shall be used for development design. The following typical sections can be found in the Village Standard Construction Specifications Standard Detail Section. These typical sections shall be the minimum design requirements and changed as necessary based on traffic needs and geotechnical recommendations.

1) Residential Minor Street Section.

2) Residential / Commercial Collector Street Section.

3) Industrial Street Section.

4) Residential Boulevard Section.

5) Private Minor Street Section.

6) Residential Cul-De-Sac.

B. Design for private minor streets shall be further reviewed on a case by case basis to determine required easement widths or other additional design requirements based on the development design.

C. Curb and Gutter

1) Curb and gutter shall conform to the Village of Pleasant Prairie Standard Construction Specifications and Details.

D. Underdrains

1) Underdrains shall be installed along the full length of public roadways. Underdrain construction shall conform to the Village of Pleasant Prairie Standard Construction Specifications, typical sections and Details.

E. Horizontal and Vertical Alignment

1) Roadways shall be centered within the street right-of-way.

2) Unless necessitated by exceptional topography, and subject to the approval of the Village, the vertical center-line grade of any public street shall not exceed 5%.

3) The minimum vertical center-line grade of any public street is 0.50%.

4) Horizontal Curves shall meet FDM design requirements.

5) A tangent of at least 100-feet shall be introduced between reverse horizontal curves.

6) Vertical curves shall meet FDM design requirements.

7) All intersection curb radii in residential streets shall have a minimum radius of 25-feet to the back of curb.

8) Deceleration / acceleration tapers in conformance with WDOT standards shall be provided at the direction of the Village on existing roads at the intersections of new roads unless the existing road has been reconstructed to its ultimate cross section. The need for by-pass lanes at all new intersections with existing roads will be evaluated by the Village on a case by case basis.

F. Cross Slope

1) Typical roadway cross slope shall be 2%.

2) Cross slopes within intersections or transition areas shall not be less than 1% or more than 5%.

G. Site Distances

1) Public and private streets design shall include safe stopping distances. Design shall meet AASHTO and FDM design requirements.

H. Cul-de-Sacs and Dead End Streets

1) Permanent cul-de-sacs for residential development shall meet the Village standard cul-de-sac detail geometrics, unless otherwise approved by the Village.

2) Permanent cul-de-sac lengths shall not exceed the maximum as set by Chapter 395 of the Land Division Ordinance.

3) The temporary termination of a public street that is intended to be extended at a later date shall be accomplished by constructing a temporary cul-de-sac as outlined in Chapter 395 of the Land Division Ordinance and shown in the Village of Pleasant Prairie Standard Construction Specifications details.

I. Sidewalks

1) Sidewalks shall meet the standards set in the Village of Pleasant Prairie Standard Construction Specifications.

2) Design engineer shall provide proposed spot grades and grading information on the plan regarding the sidewalk design.

3) Sidewalks shall be designed with a 1.5% cross slope.

J. Bicycle Facilities

1) Bicycle facilities shall be in accordance with the applicable section of the Wisconsin Bicycle Facility Design Handbook and the FDM.

K. Traffic Signals

1) Traffic signal plans meeting WDOT design requirements shall be provided for any proposed signalized intersection.

L. Street Signing

1) A street signing plan shall be prepared by and installed by the Developer for all developments, as applicable.

2) Street sign posts shall be steel meeting the standards set in the Village of Pleasant Prairie Standard Construction Specifications.

M. Street Lighting

1) A street lighting and photometric plan shall be prepared by Developer for all developments, as applicable.

2) Refer to Chapter 395-77 of the Village Municipal Code.

3) Street lighting shall be owned and maintained by We Energies unless otherwise directed by the Village of Pleasant Prairie.

4) Pole, luminaire model, and color temperature must be approved of by the Village of Pleasant Prairie. All street lights must conform to the following requirements:

a. Pole, luminaire, and exposed accessories must be black or dark bronze as approved by the Village.

b. LED luminaires.

c. All street lighting shall be decorative for residential developments.

5) Existing street lights which do not conform to Subsection 4) above shall be modified or replaced by the Developer as necessary to be in compliance unless otherwise approved by the Village.

6) Street lights which are not owned by We Energies shall conform to Section VS-0800 of the Village Specifications in addition to the above requirements.

N. Pavement Markings

1) A pavement marking plan shall be prepared by the Developer and submitted to the Village for review and approval, as part of the roadway design.

O. Soils Report

1) A geotechnical soils report, including geotechnical recommendations shall be prepared and submitted for all roadway designs and be sealed by a Wisconsin registered licensed professional engineer Borings shall be performed in 500-foot intervals along the roadway and extend to 5-feet below the proposed roadway subgrade.

5. Plan Items

A. Plan and Profile Sheets.

1) Roadway stationing.

2) Existing and finished centerline profiles.

3) Storm sewers and culvert locations and information.

4) Roadway centerline elevations at interval distances no greater than 50-feet (25-feet within vertical curves).

5) Vertical curves. Stationing and elevation of VPI, VPC, and VPT and curve length.

6) Horizontal curves. Stationing of PC, PT, and curve element information.

7) Slope of the roadway between each grade break.

8) Stationing to match points of existing roads or intersections.

B. Intersection and Cul-de-Sac Details.

1) Radii of all intersections.

2) Elevations at PC and PT points, high points, and at mid radii.

3) Curb elevation along the cul-de-sac at intervals no greater than 50-feet in the outside curb line and corresponding elevation along the interior curb line.

4) Special details of intersections which may include turning lanes, acceleration/deceleration lanes or other design specific requirements shall be provided in the plan set.

C. Roadway Cross-Sections.

1) Roadway cross-sections at 50-foot station intervals and drive locations, including:

a. Existing grade.

b. Right-of-way and easement locations.

c. Proposed road section through entire right-of-way and slope intercepts.

d. Subgrade elevations at centerline and aggregate base edge lines.

e. Finished road grade at centerline.

f. Proposed utility placement locations.

g. Offsets, slope grades, and any other sectional features of importance.

D. Concrete Joint Layout Plan.

1) Concrete pavements including concrete base(s) for HMA/PCC composite pavement sections shall have a joint layout plan and details. The jointing plan can be completed by the design engineer or as a required submittal by the Contractor- See Village Standard Construction Specification VS-0500 (Section 8 – Concrete Pavement).

2) The jointing plan and details shall provide an overall layout and horizontal positioning for jointing the roadway, intersections, tapers, cul-de-sacs, and boxing out structures.

3) Jointing layout shall follow the general guidelines as provided by the American Concrete Pavement Association (Intersection Joint Layout) and Wisconsin Pavement Association (Concrete Pavement Inspection Guide for WisDOT projects).

6. Timing of Improvements

A. Roadway(s) and associated underground utilities shall be constructed in one phase, unless otherwise approved by the Village.

B. Roadways shall be scheduled to be completed (final paved) by October 15th and be preliminary accepted by the Village prior to winter season. If roadways are not paved and accepted prior to the winter season, the Village may elect not to take responsibility of plowing the public roads, in which the Developer shall plow the roads as required by the Village for utility and emergency access purposes.

END OF SECTION

SECTION 2.5
GRADING AND EROSION CONTROL PLAN

1. Introduction

A grading plan is an important element in ensuring that topographic land alterations, development, filling, grading, or other work associated with changing land elevations or drainage patterns on a property is done in a responsible fashion considering the relationship with adjacent properties and future land use plans in order to prevent property damage, flooding, standing water, erosion, and development problems.

2. Compliance with the following:

A. Chapters 395, 370, and 470 of the Village Municipal Code – Land Division and Development Control

B. Chapter 381 of the Village Municipal Code – Construction Site Maintenance and Erosion Control.

C. Chapter 298 of the Village Municipal Code – Storm Water Management and Storm Water Drainage Facilities

D. NR 151 of the Wisconsin Administrative Code

E. Wisconsin Department of Natural Resources Storm Water Construction Technical Standards

3. Land Activities

A grading and erosion control plan is required for the following classified land activities:

A. Engineer Designed Land Activities. Engineer Designed land activities include land development, grading, or land alteration activities which are required to have detailed plans prepared by a Wisconsin registered licensed professional engineer. Engineered land activities include:

1) Residential subdivision development.

2) Commercial, industrial, and institutional developments.

3) Park and recreational development.

4) Any land development or construction activity greater than 0.5-acres in size or any size that in the judgment of the Village Engineer requires a plan prepared by a professional engineer.

B. Surveyor Designed Land Activities. Surveyor designed land activities include smaller land development or land alteration activities which are required to have detailed plans prepared by either a Wisconsin registered licensed professional engineer or a

Wisconsin registered licensed land surveyor who is qualified to prepare grading and erosion control plans. Surveyor designed land activities include:

1) Development of residential lot(s) not located in a subdivision with an approved master grading plan.

2) Any land development or construction activity which includes land grading alterations or land disturbance less than 0.5-acres that in the judgment of the Village Engineer requires professional surveying and grading plan preparation.

C. Minor Land Activities. Minor land activities include small landscaping or other projects considered minor in nature which in the judgment of the Village Engineer does not need professional surveying or engineering and can be completed by a landowner or contractor. Minor land activities include:

1) Small landscaping, lot improvements, or other projects that requires a land disturbance permit to be issued to the Landowner and in which the project involves a limited area, minor land disturbance, minor fill quantities, and will not adversely impact the subject property or a neighboring properties.

2) Minor land activities cannot involve work in or in close proximity to a wetland, floodplain, navigable water way, or other environmentally sensitive areas that requires professional survey delineations or engineering analysis.

4. Preparation of Plan(s)

A. Engineer Designed Land Activities.

1) Plans must be prepared, stamped, and signed by a Wisconsin registered licensed professional engineer.

B. Surveyor Designed Land Activities.

1) Plans must be prepared, stamped, and signed by either a Wisconsin registered licensed professional surveyor or engineer who is qualified to prepare grading and erosion control plans.

C. Minor Land Activities.

1) Plans or submittal materials may be prepared by the landowner, landowner's authorized agent, contractor, or other(s). All plans, details, and project submittal information must be submitted by the landowner or the landowner's authorized agent.

5. General Design Requirements

A. Drainage.

1) Grading plans shall accommodate offsite drainage.

2) Grading plans must ensure positive drainage through the project area.

3) Grading plans shall not block, impede, or alter storm water surface drainage; cause upstream ponding or back-water problems; or adversely affect adjacent or downstream properties.

B. Berms.

1) The maximum slope for berms is 3:1.

2) Berms shall be constructed in a way not to impede, restrict, or block surface water drainage.

3) Berms shall not obstruct traffic vision at road intersections.

C. Storm Water Ponds.

1) The maximum slope below the safety shelf is 2:1.

D. Minimum and Maximum Slopes.

1) All rear and side yard drainage swales and roadside ditches shall have a minimum 1.0% gradient.

2) All rear and side yard drainage swales shall be designed to be centered on property line(s).

3) The maximum slope for any grading, except berms and wet detention ponds below the safety shelf, shall be 4:1.

E. Earthwork.

1) Plans shall be prepared to minimize the need for excessive import or export of fill material.

2) Earthwork calculations shall be submitted for major development projects or other projects as requested by the Village Engineer. Earthwork calculations shall be submitted for the entire development with the engineer's estimate of the amount of import or export of fill needed for the site grading plan. Offsite borrow areas and surplus disposal areas must be addressed and identified.

F. Permits / Approvals.

1) Copies of applicable permits as prepared for submittal shall be provided with the grading and erosion control plans: WDNR WRAPP permit, work within navigable waterway, wetland fill, Kenosha County Highway and/or WDOT permits, and all other county, state and federal permits.

2) Prior to construction commencement, plans must be approved by the Village and all project permits must be issued.

6. Plan Items.

A. The following plan elements shall be provided in grading and erosion control plans.

1) Drawings shall be based on vertical datum (NGVD29 or NAVD 88) and the horizontal coordinate system NAD 83(2011). Plans must contain a note stating the datum and coordinate system used.

2) Base map data such as property boundary, right-of-way(s), building and utility structure(s), roadway(s), curb line(s), sidewalk(s), easement(s), fence(s), tree line(s), storm sewer facilities etc.

3) Existing and proposed topographic contours at 1-foot intervals. Topography information shall extent onto adjoining properties to adequately assess the potential impact of the proposed development on existing homes, businesses, and associated drainage.

4) Proposed spot grade elevations defining high points, swale centerline grades, pavement / curb grades and other detailed topographic plan items.

5) Location and topographic contours of proposed storm water detention, retention, or infiltration facilities with normal and high water (100-year) elevations indicated.

6) Cross-section of proposed detention, retention, or infiltration facilities.

7) Location and design of emergency overflow weirs and direction of emergency overland flow paths with details of control structures.

8) Location and flow path of 100-year overland flood routes through the project area.

9) Limits and applicable setbacks of wetlands, ordinary high water mark, floodplain and floodway boundaries with appropriate base flood elevations.

10) Proposed top of foundation elevation(s) and finished yard grade elevation(s) at the foundation of proposed buildings. Building design for habitable living space below the first floor elevation shall indicate the floor elevation of that space.

11) Existing and proposed retaining walls, including top of wall and bottom of wall elevations, wall material(s), and design details. Retaining walls greater than 4-feet in height shall be prepared, stamped and signed by a Wisconsin registered licensed professional engineer.

12) Location of temporary soil stockpiles. Permanent soil stockpiles are not permitted.

13) Master grading plans for residential lots shall include proposed spot grades every 25-feet along all lot lines, centerline of drainage swales, and high points.

14) Grading plans for subdivisions shall include lot number(s) corresponding to the subdivision plat.

15) Location, dimensions, and details of all construction site erosion control measures, such as silt fence, hay bales, inlet protection, sedimentation basins etc.

16) Sediment and erosion control plan per Chapter 381 (§ 381-9) of the Municipal Code.

17) Location, dimensions, and details of construction entrances and stone tracking pads.

18) In areas of floodplain, wetlands, and conservation areas, or other identified protective areas, orange construction fence shall be installed immediately down slope from the silt fence, easement line, or other line of delineation. The fence shall be installed to prevent intrusion into the protected area.

19) Erosion control provisions, meeting WDNR standards, including details and calculations of erosion control treatment practices.

20) Location of areas to be sodded or seeded and mulched or otherwise stabilized with vegetation and identification of seed mixtures or cover type.

21) A construction sequence schedule.

END OF SECTION

SECTION 2.6
CONSTRUCTION AND SPECIFICATION MANUAL

1. Introduction

A project construction and specification manual (Project Manual) is required for all public infrastructure construction and private infrastructure associated with residential private roads and utilities.

2. Special Provisions for Industrial and Commercial Developments

A. Village of Pleasant Prairie standard construction specifications (Project Relevant Sections).

B. Special provisions.

1) Special provisions by design engineer that may cover construction items or other project or contract provisions not included in the Village standard construction specification.

3. Project Manuals by Developer for Public Infrastructure and Residential Development

A. Project bidding and construction contract administration is the sole responsibility of the developer and/or their agents. The Village, at the Developer's cost, will provide construction inspection (not contract administration), preparation of record drawings for public improvements, and provide GIS data for public improvements.

B. The project manual format and specific contract between the bidder and developer is left to the developer's discretion subject to Village approval; however, the following items, at a minimum, must be included in the Project Manual for infrastructure construction.

1) Title sheet of manual with official project name, date of preparation, and applicable revision dates. The title sheet must be stamped / sealed by a registered Wisconsin professional engineer under whom the plans were prepared.

2) Contract documents.

3) Insurance requirements and Certificates of Insurance with the Village named as an insured party.

4) Bid Form with item quantity schedule.

5) Village of Pleasant Prairie standard construction specifications.

6) Special provisions.

a. Special provisions by design engineer that may cover construction items or other project or contract provisions not included in the Village standard construction specification.

4. Project Manuals by Village

A. In addition to the requirements of section 3 above, the construction and specification manuals for public improvement projects in which the Village or their authorized agent bids, constructs, and performs the contract administration shall include the following in the Project Manual.

1) Official notice to bidders.

2) Instruction to bidders.

3) Wage rate requirements, determination, and forms, if applicable.

4) Bid form, also including:

a. List of subcontractors and suppliers.

b. Affidavit of organization and authority.

c. Bid bond.

5) Agreement, also including:

a. Performance bond.

b. Payment bond.

6) *Standard General Conditions of the Construction Contract* EJCDC C-700.

7) Village supplementary conditions to EJCDC No. C-700.

8) Special provisions.

END OF SECTION

SECTION 2.7
RESIDENTIAL LOT PLAT OF SURVEY(S) AND GRADING CERTIFICATION

1. Introduction

This chapter identifies requirements for plat(s) of survey(s) associated with residential single family lot development as part of the building permit process.

2. Grading / Drainage Plan Prerequisite

A Village approved grading and erosion control plan and owner / builder acknowledgment shall be required to be submitted for review and approval prior to issuance of a building permit.

A. Subdivisions with Pre-Approved Master Grading Plans.

1) The approved master grading plan shall be used for the Lots located within subdivisions that have pre-designed and Village approved grading plans. The plat of survey shall show all the designed grade information including spot grades and proposed topographic contour information.

2) The house style (i.e. rear basement exposures) for the lot shall match that required by the grading plan. For example if the master grading plan calls for a half or full exposed basement for the lot, the actual house style shall coincide with the lot plan.

3) Adjustments of proposed topographic contours (within the lot) shall be made on the plat of survey based on actual building envelope dimensions and placement on the lot, however, the building placement shall work with matching the subdivision lot line grades. No adjustments in common lot line grades shall be made without approval of the Village, Developer, and affected adjacent landowner(s).

B. Lots With No Pre-Approved Grading Plan.

1) A grading, drainage and erosion control plan must be prepared by the Developer and approved by the Village for lots that do not have an approved plan on file with the Village. The grading plan shall be prepared by a Wisconsin registered licensed professional engineer or surveyor in accordance with Section 2.5 of this ordinance “Grading and Erosion Control Plan”.

2) Plats of Survey shall show all designed grade information including spot grades, and existing / proposed topographic contour information.

C. Property Owner / Home Builder Acknowledgment of Approved Grading Plan

1) The property owner and builder shall provide written acknowledgment with respect to complying with the Village approved grading and drainage plan. The acknowledgment shall include the following requirements and information.

a. Property information (tax key number, street address, subdivision name, lot number)

b. Name of landowner and contact information.

c. Name of home builder and contact information.

d. Acknowledgment that the owner and builder have obtained a copy of the Village approved grading plan for the lot, understand the plan, and lot grading compliance requirements.

e. Acknowledgment that the owner and builder will adhere to the Village approved grading plan for the lot and that in so doing, the owner and builder will take all necessary measures to insure compliance, which may include professional surveying and re-grading as needed.

f. Identification of who (owner or builder) is responsible for completing the rough grading and site lot conditions for conditional occupancy per private agreements between the parties.

g. Identification of who (owner or builder) is responsible for completing the final grading and final occupancy grading certification per private agreements between the parties.

h. Acknowledgment that responsible party for completing the rough grading and conditional occupancy site lot condition shall complete a topographic survey of the lot to determine compliance, prior to conditional occupancy, at the request of the responsible party for final grading or the Village, if the rough grading and site lot conditions is disputed to be in compliance.

i. Acknowledgment that any deviation of the Village approved grading and drainage plan for the lot must have prior written approval from the Village.

j. Acknowledgment of site erosion control requirements.

k. Signatories from both the landowner and builder.

3. Plat of Survey Submittals

A. Three plat(s) of survey(s) are required to be submitted to the Building Inspection Department during the lot development process as noted below:

1) Plat of Survey –As a Condition Precedent to Building Permit Issuance.

a. This survey is submitted with the building permit application for review and approval by the Engineering, Building Inspection and Community Development Departments showing all standard requirements set forth in this ordinance.

2) Plat of Survey – Foundation Certification.

a. This survey is submitted upon completion of the foundation, prior to backfill and further framing construction of the home.

b. Survey is to include all requirements and additional requirements for verification of building setbacks and foundation certification.

3) Plat of Survey – Final Occupancy Grading Certification.

a. This survey is submitted upon completion of the home construction and final lot grading with topsoil and/or sod placement. The survey is to be submitted within 3-months after conditional occupancy is issued by the Village or if the conditional occupancy is issued during the non-growing season, by August 1st of the immediate next growing season.

b. Survey is to include all standard requirements and additional requirements for foundation certification and final occupancy.

4. Plat of Survey – Building Permit Issuance

A. Standard Requirements.

1) Title of Survey: (i.e. Plat of Survey – Building and Zoning Permit Issuance; Plat of Foundation -Survey Certification, or Plat of Survey-Final Occupancy Grading Certification).

2) Name and address of applicant, owner of the site, and Wisconsin registered land surveyor.

3) Wisconsin registered land surveyor stamp and certification.

4) Graphic scale and north arrow.

5) Property description, tax key number and address if applicable.

6) Property boundary with survey dimensions.

7) Existing and proposed right-of-way lines and road names adjacent to site.

8) Location of existing and proposed utilities on and adjacent to the property (full road right-of-way) including utility poles, peds, public and private mains, services and laterals. Diggers Hotline shall be contacted for the location of the existing utilities. On lots which do not have an existing sump pump lateral the proposed sump pump discharge location shall be shown.

9) Location of existing top of road curb, edge of pavement and/or shoulder adjacent to the site.

10) Location of existing or proposed sidewalk adjacent to property, if applicable.

11) Location of existing trees within right-of-way or easements.

12) Location and dimension of storm water drainage system(s), driveway culverts, and direction of natural drainage pattern on and adjacent to the site.

13) Location of existing wetlands, floodplain, lakes, streams, swales, ditches, or other water courses on or immediately adjacent to the site.

14) All existing utility, drainage, and preservation easements.

15) Existing and proposed structure locations and building footprints and dimensioned setbacks (side yard, street yard, rear yard). Also include setbacks from wetlands and ordinary high water mark, as applicable.

16) Adjacent lands and building locations. Include existing adjacent house street yard setback to determine building site lines.

17) Location of permanent residential driveway with setbacks to the side property line, width of driveway at the right-of-way, and width of driveway at the street. Driveway centerline shall be perpendicular to the adjacent roadway centerline within the right of way.

18) Location of adjacent land wells, septic fields, or holding tanks and their distance to the property line.

19) Proposed top of foundation, garage floor and finished yard grade per approved grading and drainage plan for the lot. Homes with full or partial exposures shall have all the exposure elevations noted.

20) Existing and proposed retaining walls, including top of wall and bottom of wall elevations, wall material(s), and design details. Retaining walls greater than 4-feet in height shall be prepared, stamped, and signed by a Wisconsin registered licensed professional engineer.

21) Date of plat preparation and revision dates.

22) Existing and proposed topographic contour and spot grade information in accordance with the lot grading and drainage plan pre-requisite in Section 2 above and per Section 2.5 “Grading and Erosion Control Plan”. The survey shall also include:

    a. Existing and proposed elevation(s) located every 25-feet along each property line, centerline of drainage swales, top of curb elevations at side lot line locations, and other required locations as may be requested by the Village Engineer.

        i. Existing elevations shall mean the existing elevations at the time of the plat preparation, prior to the home construction. Limits for existing survey shall at a minimum extend 25-feet onto adjacent properties and the full right-of-way width. Additional survey may be necessary in some situations.

ii. Proposed elevations shall mean the proposed elevations per the approved grading / drainage plan for the lot. Grading at the foundation shall match that shown on the proposed building elevations. All proposed grading necessary, including that on adjacent properties, shall be shown.

23) Identification of survey bearings base and survey benchmark(s).

5. Plat of Survey – Foundation Certification

A. All standard requirements in subsection 4 above plus the following:

1) As-built top of foundation elevation.

2) Revised building footprint and setbacks per as-built foundation location.

3) Location and dimension of all soil or dirt piles.

6. Plat of Survey – Final Occupancy Grading Certification

A. All standard and foundation certification requirements in subsection 4 and 5 above plus the following:

1) Final as-built grading elevations shown with 1-foot topographic contour elevations for the entire lot or grading limits as shown in the grading plan for the lot.

2) As-built versus designed spot grades every 25-feet along each property line and centerline of any drainage swale(s) coinciding with the approved lot grading plan.

a. Final elevations shall mean the final elevations after the lot has been top-soiled, final graded, and/ or sod placed.

b. Final elevations shall be within 0.15 feet of design grades as identified on the Village approved grading plan, unless otherwise approved by the Village.

3) Location and dimension of all structures, decks, patios, and retaining walls on the property.

7. Lot Condition for Conditional Occupancy.

A. Prior to Conditional Occupancy being granted, the lot condition shall meet the following minimum requirements.

1) All soil stockpiles, excess material, and debris shall be removed from the site.

2) The entire lot shall be rough graded in accordance with the grading plan with the exception of fine grading, topsoil placement, and lawn establishment.

a. Rough grading means that the entire site is graded in accordance with the Village approved grading plan with the exception that areas not top-soiled are left low within 0.3 to 0.5-feet of design elevations allowing for topsoil and lawn placement to final elevations.

3) All temporary erosion control measures shall be in place and in good condition.

4) As part of the request for Conditional Occupancy the following shall be provided:

   a. Certification in writing that these requirements have been met by property owner and/or responsible party for the lot conditions.

   b. Name and contact information of responsible party for the site rough grading.

   c. Written intent of compliance by the property owner regarding the final grading and final occupancy plat of survey and grading certification requirement.

5) If these conditions have not been met or if the site grading does not appear to be in accordance with the Village approved grading plan, conditional occupancy will not be granted until all conditions are deemed satisfied.

   a. A site topographic survey of the rough grading shall be provided, if directed by the Village to determine rough grading compliance.

   b. If in the judgment of the Village, the homebuilder in good faith and under consideration of the entire project planning, was unable to complete rough grading due to winter weather conditions, the Village may grant conditional occupancy if approved agreements and arrangements have been made with the Village and between the homebuilder and homeowner.

END OF SECTION

SECTION 3.0
PRECONSTRUCTION CONFERENCE AND CONSTRUCTION PROGRESS MEETINGS

1. Introduction

Pre-Construction Conference

A Pre-construction conference is required for all projects involving the construction of public facilities, subdivision development, commercial or industrial development, or any other project which is specified by the Village to have a pre-construction conference as a condition of plan approval. No site work shall commence until a pre-construction conference has been held.

Construction Progress Meetings

All projects, as determined by the Village, shall have regularly scheduled construction progress meetings, held at the Village offices or other Village approved locations.

2. Prerequisite

A. Prior to scheduling a pre-construction conference, the following items (as applicable) shall be completed and/or obtained and provided to the Village through the development review and approval process or as identified in Chapter 395 of the Land Division and Development Control Ordinance.

1) Village approved engineering plans and project specifications.

2) Subdivisions – approved final plat.

3) Village approved landscaping plan.

4) Village approved street signage plan.

5) Village approved street light plan.

6) Village Approved street pavement markings plan.

7) Executed contract documents.

8) Certificates of insurance.

9) Performance and payment bonds as applicable.

10) Executed developer's agreement.

11) All project related permits.

12) Irrevocable letter of credit and required cash payments and deposits.

3. Scheduling and Location of Conference

A. In general, the design engineer of record shall request and schedule a pre-construction meeting with the Village. In all cases, scheduling a pre-construction meeting is the responsibility of the Developer or their authorized agent.

B. The pre-construction conference shall be held at the Village offices in one of the following locations as determined by the Village.

1) Village Hall – 9915 39th Avenue, Pleasant Prairie, WI 53158

2) Village Municipal Building (Prange) – 8600 Green Bay Road, Pleasant Prairie, WI 53158

3) Other Village approved location.

4. Attendees

A. The pre-construction conference shall be attended by the following:

Attendees by Developer:

1) Developer.

2) Owner.

3) Design Engineer of Record.

4) Contractor (Project Manager and Superintendent).

5) Subcontractor Representative(s).

6) Local Utility Representatives, as applicable.

Attendees by Village (as applicable):

7) Engineering Department.

8) Village Construction Engineer or Manager.

9) Village Inspecting Engineer or Consulting Inspecting Engineer.

10) Building Inspection Department.

11) Community Development Department.

12) Fire and Rescue Department.

13) Police Department.

14) IT Department.

5. Pre-Construction Meeting Agenda and Moderation

A. The meeting agenda shall be prepared by the Developer's authorized agent, preferably the design engineer of record or construction manager. The preconstruction meeting shall at a minimum contain the following agenda items, as may be applicable to the project.

1) Introductions – meeting attendees.

2) Project description.

3) Listing of Contractors and Subcontractors for public or private improvements.

   a) Company name(s), type of work, contact person.

   b) Verification that contractor(s) are pre-qualified by the Village.

4) Permits and approvals.

5) Construction plans.

6) Construction access.

7) Erosion / sediment control.

8) Water main construction and inspections.

9) Sanitary sewer construction and inspections.

10) Storm sewer construction and inspections.

11) Roadway construction and inspections.

12) Digital Security Imaging System (DSIS) installation and inspections.

13) Work hours.

14) Contractors project schedule.

15) Contractor parking arrangements.

16) Job trailer location and security.

17) Inspection scheduling.

18) Construction staking & layout.

19) As-built survey requirements.

20) Pay requests and letter of credit reductions.

21) Emergency contacts.

22) Construction progress meetings.

B. The meeting shall be moderated by the Developer's authorized agent, preferably the design engineer of record or construction manager.

C. Meeting minutes shall be prepared by the moderator and distributed via email to all attendees within 10-business days of the meeting.

6. Construction Progress Meetings

A. Construction progress meetings shall be held to enable an orderly review of the progress of work and to provide a discussion of problems, field changes, or other items that need coordination and/or discussion throughout the construction period.

B. Progress meetings shall be held at regular scheduled times, as necessary to maintain progress of work.

C. Progress meetings shall be attended by appropriate representatives of the Contractor, Village, and Developer.

1) To the maximum extent possible, the Contractor shall assign the same representatives to represent Contractor at progress meetings throughout progress of work.

2) Subcontractors and others may be requested and required to attend progress meetings in which their respective work is involved.

D. Progress meetings shall at a minimum contain the following agenda items.

1) Review, revise as necessary, and approve minutes of previous meetings.

2) Review progress of work since last meeting, including current construction schedule and status of submittals for approvals.

3) Identify problems which impede planned progress and develop corrective measures and procedures to regain planned schedule.

4) Identify changes of work from contract or plans and ensure changes are acceptable prior those items being constructed.

5) Review status of current schedule of values and pay requests.

END OF SECTION

SECTION 3.1
CONSTRUCTION INSPECTION SERVICES AND CONTRACT ADMINISTRATION

1. Introduction

This chapter identifies the requirements for construction inspection services and construction contract administration of public and private improvements.

2. Public Improvements

A. All public roadways, storm sewers, sanitary sewers, water mains or other public improvements shall be inspected by the Village and/or the Village's hired consulting engineer, at the Developer's cost.

B. Contractors shall comply with Chapter 150 of the Village Municipal Code "Contractor Qualification Ordinance of the Village of Pleasant Prairie" requiring pre-qualification of Contractors prior to obtaining bidding documents or submitting bids or acting as a contractor or sub-contractor on any public improvement project.

C. All public improvements, including but not limited to, roadways, storm sewers, sanitary sewers, and water mains shall be staked by the Developer's engineer or contractor, at the Developer's cost.

1) Survey control and staking information, including all updates and revisions, shall be provided to the Village.

2) Village Inspection Services will perform quality assurance surveys and staking verifications.

3) If no construction staking is being utilized, then the Contractor shall provide an alternative means of verification acceptable to the Village. The means of verification shall be approved by the Village prior to construction. If no acceptable means is established, the Village reserves the right to require public improvements to be field staked.

D. The Developer shall coordinate their planned construction schedule with the Village and provide the Village with a minimum of two (2) months advance notice to allow the Village to obtain professional construction inspection services for the project.

3. Private Improvements – Responsibility of the Developer which may be transferred to an Association.

A. All private improvements, including but not limited to, private roadways, storm sewers, sanitary sewers, and water mains located in residential developments which will be owned and maintained by an association shall be staked and inspected by the Developer meeting the requirements of this Chapter. All applicable building and plumbing permit inspections required by State and local codes shall be completed in addition to the Developer's engineer inspections.

1) Developer's inspections shall be in accordance with this Chapter including the following sections: Inspection Services, Inspection Requirements, Inspection Certifications, and Inspection Logs.

4. Private Improvements – Commercial / Industrial / Institutional

A. Inspections for all private improvements associated with commercial, industrial, or institutional development are the responsibility of the Developer and are subject to all State and local codes and building and plumbing inspections.

1) Independent Inspection Services, Inspection Requirements, Inspection Certifications, and Inspection Logs requirements are at the discretion of the Developer.

B. All private fire service water mains, including sprinkler system lead-ins and combination fire/water mains from public water mains must be inspected by the Village Building Inspection Department and Village Fire and Rescue Department as determined by the Village.

5. Construction Contract Administration

A. Construction contracts that are executed by the Developer shall be administered by the Developer or their authorized agent. The Developer and/or their representative shall participate in the pre-construction meeting, construction progress meetings, and construction related issues.

B. The Developer shall remain responsible for all costs associated with plan errors, plan or field changes, or any other foreseen or unforeseen items needed to complete the construction of public and private infrastructure to Village standards.

C. Construction contract change order(s) shall be administered by the Developer and approved by the Village.

D. Village inspection of public infrastructure does not alleviate the Developer's responsibility of corrective work or costs thereof associated with defective work or construction that is not compliant with approved plans and specifications.

6. Construction Inspection Services

A. All construction services not performed by Village Staff shall be performed by a qualified firm with municipal engineering experience in the State of Wisconsin carrying professional liability insurance.

B. The on-site inspector shall be competent, have the knowledge and education pertaining to public infrastructure construction, proven experience performing on-site inspections of infrastructure, and be under the direct supervision of a Wisconsin licensed Professional Engineer. An experience resume' of the designated on-site inspector shall be provided to the Village for its approval.

C. Inspection responsibilities shall include, but are not limited to the following:

1) Review and be familiar with project plans, specifications, and permit provisions.

2) Attend the project pre-construction and progress meetings.

3) Provide on-site observations of the work and field checks of materials and equipment to further protect against defects in the work and help ensure that the construction meets the project specifications.

4) Take and create detailed construction observation notes and inspection logs.

5) Create, distribute, and follow-up on punch list items.

6) Keep close communications with Village and Developer's representatives as to the progress, adequacy of work, problems, or other pertinent information related to the construction.

7) Keep a record of constructed quantities of work which will serve as the basis for payment reviews.

8) Review change orders, field changes, and pay requests.

9) Provide written correspondence to the Village regarding recommendation of acceptance of work, certifying that work was completed in accordance with plans and specifications.

D. Construction inspection services is not meant to supervise, direct, control, have authority over or be responsible for the contractor's means, methods, techniques, sequences, or procedures of construction or the safety precautions and programs incident thereto, or for any failure of contractor to comply with laws and regulations applicable to the performance of work.

Construction inspection services shall include the preparation and submittal of record drawings and GIS update data to the Village.

7. Inspection Requirements

A. Roadways

Item		Inspection Required
1)	Roadway cut section	Full time
2)	Roadway fill section	Full time
3)	Excavation below subgrade	Full time
4)	Filling of excavation below subgrade	Full time
5)	Proofrolling subgrade	Full time (written certification)*
6)	Placement of aggregate base course	Full time

7)	Proofrolling aggregate base course	Full time (written certification)*
8)	Installation of curb and gutter	Full time
9)	Pavement placement	Full time
10)	Sidewalk construction	Full time
11)	Manhole and inlet adjustments	Full time
12)	Pavement marking and signage	Part time
13)	Restoration	Part time
14)	Punch list work	Part time

B. Storm Water

Item		Inspection Required
1)	Pipe installation	Full time
2)	Structure installation	Full time
3)	Manhole invert pouring	Part time
4)	Pond excavation	Part time
5)	Pond liner installation	Full time
6)	Pond embankment / keyways	Part time
7)	Rip-rap installation	Part time
8)	Open channels / swales	Part time
9)	Punch list work	Part time

C. Sanitary Sewer

Item		Inspection Required
1)	Pipe installation	Full time
2)	Structure installation	Full time
3)	Manhole invert pouring	Part time
4)	Testing and inspection	Full time (written certification)*

D. Water Main

Item	Inspection Required
1) Pipe installation	Full time
2) Structure installations	Full time
3) Testing and Disinfection	Full time (written certification)*

Written Certification: Items requiring written certification shall be provided on Village approved or Village standard forms.

8. Inspection Certifications

A. Upon substantial completion of the project a recommendation of Preliminary Acceptance shall be provided by the construction service firm / inspector to the Village. The recommendation shall certify that inspection services were completed per Village requirements and observed construction was in conformance to plans and specifications. A punch list of items to be completed for Final Acceptance shall accompany the recommendation of Preliminary Acceptance.

B. Upon final completion of the project a recommendation of Final Acceptance shall be provided by the construction services firm / inspector to the Village. The recommendation shall certify that inspection services were completed per Village requirements, observed construction was in conformance to plans and specifications, and that all punch list items have been completed.

9. Inspection Logs

A. Inspection logs shall include the following minimum information.

1) Project name and date of report.

2) Name of firm providing the inspection services, name of inspector, name of supervising engineer, and names of all contractors performing the work.

3) A detailed description of work performed including the following information:

a. Work type and location.

b. Weather.

c. Equipment.

d. Construction materials used (bedding, backfill, pipe material, pavement materials, etc.)

e. Construction item quantities installed.

f. Conflicts encountered and resolutions thereof.

g. All drain tiles encountered and methods of repair and /or connection to storm sewer system.

h. Testing and inspection information.

i. Any observed construction problems and actions taken.

j. Pertinent construction information to be used for record drawings or construction records.

B. An electronic copy of all inspections logs shall be provided to the Village.

10. Costs

A. All costs associated with construction services shall be paid for by the Developer /Owner.

END OF SECTION

SECTION 3.2
RESIDENTIAL SUBDIVISION CONSTRUCTION

1. Introduction

All residential subdivision construction shall be completed meeting the Village design and construction standards. Subdivision construction shall be completed in an orderly fashion avoiding non-compliance of standards and regulations. The following is a general outline of construction for subdivision construction. The exact construction schedule and work sequencing shall be identified for each project, approved by the Village, and discussed at the pre-construction meeting.

2. Compliance with the following chapters is required:

A. Chapter 395 of the Village Municipal Code – Land Division and Development Control.

B. Chapter 150 of the Village Municipal Code – Contractor Qualification Ordinance.

C. Chapter 405 of the Village Municipal Code - Village Standard Construction Specifications.

D. Chapter 370 of the Village Municipal Code - Building and Mechanical Code

3. Prerequisites

A. Prior to scheduling a pre-construction conference, the following items (as applicable) shall be completed and/or obtained and provided to the Village through the development review and approval process or identified in reference in Chapter 395.

1) Village approved engineering plans and project specifications.

2) Subdivisions – approved final plat.

3) Village approved landscaping plan.

4) Village approved street signage plan.

5) Village approved street light plan.

6) Village approved street pavement markings plan.

7) Executed contract documents.

8) Certificates of insurance.

9) Performance and payment bonds as applicable.

10) Executed developer’s agreement.

11) All project related permits.

12) Irrevocable letter of credit and required cash payments and deposits.

4. Design Engineer Coordination

A. Prior to construction, the subdivision design engineer must schedule and coordinate with the Village to have the following completed.

1) Transfer of electronic utility information for the pre-construction GIS update, in accordance with Section 4.2 of this manual.

2) Transfer of electronic and paper plan sets for Village use in construction related services.

B. The design engineer shall be readily available during the course of construction to answer any questions that may arise by the Village, contractor, or others pertaining to the design and plan drawings. The design engineer shall be responsible for making any plan changes due to errors or field conditions and distributing them to the developer, Village, Village's consulting engineer for construction inspection services, and contractor.

5. Contractors

A. Contractors shall comply with Chapter 150 of the Village Municipal Code "Contractor Qualification Ordinance of the Village of Pleasant Prairie" requiring pre-qualification of Contractors prior to obtaining bidding documents or submitting bids or acting as a contractor or sub-contractor on any public improvement project.

6. Preconstruction Conference(s)

A. A preconstruction conference shall be held, prior to commencing any construction activities in accordance with Section 3.0 of this manual. Separate pre-construction meetings shall be held for each of the following activities:

1) Mass grading, storm sewer, sanitary sewer, water main, and roadway construction.

2) Utility services (gas, electric, etc.).

3) Street lighting installation.

4) Street tree installation.

7. Subdivision Construction Schedule

A. Standard subdivision construction shall be completed in one phase such that all improvements are completed prior to building permits being issued. These improvements include but are not limited to the following:

1) Site grading / Erosion Control.

2) Sanitary sewer.

3) Water main.

4) Storm sewers and storm water management facilities.

5) Roadway.

   a. Composite roads to include aggregate base, curb and gutter, concrete base, and asphalt surface.

   b. Private asphalt roads shall include aggregate base, curb and gutter, asphalt binder, and asphalt surface. Construction phasing of private roads may be considered and subject to terms of the Development Agreement.

6) Sidewalks.

7) Street lighting.

8) Street signs.

9) Street trees.

10) Street Pavement markings.

11) Service utilities (i.e. gas, electric, phone, etc.)

B. Preliminary acceptance of improvements shall be scheduled to include all improvements unless otherwise approved by the Village to include partial acceptance of improvements near the end of the construction season with the following minimum items completed for the first requests.

   1) Site grading, sanitary sewers, water mains, storm sewers, and roadways.

C. Roadways shall be scheduled to be completed (paved) by October 15th and be preliminarily accepted by the Village prior to the winter season. If roadways are not paved and accepted prior to the winter season the Village may elect not to take responsibility of plowing the public roads, in which the Developer shall plow the roads as may be required by the Village for utility and emergency access purposes.

8. Survey / Construction Staking

A. All public and private improvements, including but not limited to, roadways, storm sewers, sanitary sewers, and water mains shall be staked by the Developer.

B. The Developer sets survey control for the entire site.

C. Survey control and staking information (including revisions and updates) shall be provided to the Village, Village's consulting engineer, and contractor.

D. The Village may perform quality assurance surveys during the project. Such surveys do not relieve the Developer of the responsibility for performing all surveys required to construct the project or errors / omissions that may be found.

E. Any identified or suspected errors in survey control(s) shall be immediately documented by the observing party. The Village, Village's consulting engineer, developer's surveyor, and contractor shall be immediately notified.

9. Utility Services (gas, electric, etc.)

A. The Developer or their authorized agent shall coordinate with all respective utility companies for services and distribution systems for the subdivision. Coordination shall begin during the project design and continue through construction.

B. Detailed gas, electric, and other service utility distribution system plans shall be submitted to the Village for review and approval. Utility road crossings shall be coordinated and identified ahead of the road construction schedule.

C. The Developer's contractor shall coordinate the installation of the casings/conduits for utility street crossings as part of the road construction. All casing/conduit street crossings within the road right-of-way shall be as-built surveyed by the Village's construction inspection services, placed on project record drawings, and field marked by the contractor for future location by the utility companies.

D. Upon Village approval of site grading as-built(s) and verification that site utility areas are within 4-inches of final grade, the developer shall notify We-Energies for utility installation.

E. Utility companies shall file work in the right-of-way permit applications for all utility work located within the Village right-of-way and coordinate their work schedule with the Village.

F. All utility work within Village right-of-way will require inspection by the Village.

G. The Developer's surveyor shall stake the limits of the utility easements and right-of-ways for utility installation reference.

H. Upon installation of utilities, the Developer's contractor shall re-grade and restore utility trenches.

I. A utility as-built survey shall be provided to the Village by the Developer's surveyor to verify that the locations of underground utility services have been constructed in pre-approved alignments and utility easements.

10. Erosion Control

A. The Developer is responsible for field staking erosion control measure locations for contractor's installation.

B. The Developer's contractor shall notify the Village Construction Engineer of erosion control device installation for inspection within 14- days of installation. Erosion control permit form EC-2 shall be submitted as part of Village notification.

C. The Developer's contractor shall provide the Village with a 48-hour notice of land disturbing activity. (From EC-3 of Erosion Control Permit).

D. The Developer's contractor is responsible for all required erosion control site inspections and documentation thereof as required by permits. The Village will make periodic independent inspections.

E. The Developer's contractor is responsible for maintaining temporary erosion control measures until the site is stabilized and removing all temporary erosion control measures upon stabilization of the site.

11. Site Grading

A. The Developer shall provide construction inspection services for site grading work (outside road right-of-ways) including construction of storm water management ponds.

B. The Developer's surveyor shall provide grading record drawings (as-built survey) of all lots, easement areas, outlots, and storm water ponds.

1) Grades for areas that are top-soiled to final grade shall be within 0.15 feet of final grade as identified on the Village approved grading plan.

2) Grades along the lot lines, or other areas, left to be top-soiled by the property owner(s) during home construction shall be left low within 0.3 to 0.5-feet of final grade as identified on the Village approved grading plan.

C. In completing the grading for single family lots, the proposed building pad area determined by the building setbacks, shall be graded to rough finished grade (0.3 to 0.5 feet of final grade), unless otherwise approved by the Village. Building pad areas may be kept 1.5-feet to 2.0-feet low, only with the approval of the Village.

D. The entire site shall be restored with temporary or permanent seeding per the plans and/or Village requirements.

12. Sanitary Sewer

A. The Village will provide construction inspection services for all public sanitary sewer construction in accordance Section 3.1 of this ordinance.

B. The contractor constructs sanitary sewer per plans and Village specifications and completes all punch list items.

C. The Village will prepare record drawings and data to update the Village's geographical information system in accordance with Sections 4.1 and 4.2 of this ordinance.

13. Water Main

A. The Village will provide construction inspection services for all public water main construction, in accordance with Section 3.1 of this ordinance.

B. The contractor constructs water mains per plans and Village specifications and completes all punch list items.

C. All water valves shall be keyed and/or tested by the Village.

D. The Village will prepare record drawings and data to update the Village's geographical information system in accordance with Sections 4.1 and 4.2 of this ordinance.

14. Storm Sewer

A. The Village will provide construction inspection services for all public storm sewer construction and the developer will provide construction services for private storm sewer construction in accordance with Section 3.1 of this ordinance.

B. The contractor constructs storm sewer per plans and Village specifications and completes all punch list items.

C. Construction services shall provide record drawings and data to update the Village's geographical information system for public and private storm sewers in accordance with Sections 4.1 and 4.2 of this ordinance

15. Roadway and Sidewalks

A. The Village will provide construction services for all public roadway and sidewalk construction and the Developer will provide construction services for all private roadway and sidewalk construction in accordance with Section 3.1 of this ordinance.

B. The contractor shall construct roadway and sidewalks per plans and Village Specifications.

C. Prior to paving, all water valves in pavement areas shall be re-keyed and checked by the Village. All manholes and valves shall be double checked by the contractor to ensure that they are set properly to grade. Any deficiencies found by these checks must be repaired prior to paving.

D. Construction services shall provide as-built information verifying that the curb and sidewalk elevations are in accordance with approved plans.

16. Street Signs

A. The Developer shall install street signs per the Village approved plans.

B. The Developer shall provide street sign location information for the Village's GIS update in accordance with Section 4.2 of this ordinance.

17. Street Trees

A. The developer's landscaper shall stake the public street tree locations.

B. The Village shall inspect, make field adjustments, and approve the street tree staking locations prior to the landscaper delivering and planting the trees.

C. The trees shall be installed per Village Approved plans and Village specifications.

D. The developer's landscaper shall submit an as-built street tree plan.

E. The Developer shall provide street tree information for the Village's GIS update, in accordance with Section 4.2 of this ordinance.

18. Street Lights

A. Street lights shall be installed by WE-Energies or in the case of private street lights by the developer's electrical contractor.

B. All necessary electrical permits from the Village's Building Department shall be applied for and obtained.

C. Street lights and electrical wiring shall be installed per Village approved plans and specifications and shall be coordinated with the Village.

D. The Developer's shall provide the Village with record drawings and as-built digital survey information of the electrical wiring and street light locations.

19. Acceptance of Improvements

A. Upon completion of specified improvement(s), the design engineer, developer, or contractor shall make a written request of acceptance in accordance with Section 1.0 of this ordinance.

B. The following documentation must be provided prior to request of acceptance.

1) Record drawings and as-built information in accordance with Sections 4.1 and 4.2 of this ordinance.

2) Construction inspection records.

3) Final lien waivers.

4) Other documentation that may be required by Village to satisfy that the project work is acceptable and the contractor's and developer's obligations have been fulfilled.

20. Residential Lot Development

After acceptance of improvements disturbed or damaged on Village property within the right of way caused by activities associated with home construction, shall be repaired / replaced by the respective lot owner or builder associated with the activity at their cost.

END OF SECTION

SECTION 4.0
RECORD DRAWINGS AND AS-BUILT DATA
COMMERCIAL / INDUSTRIAL / PRIVATE IMPROVEMENTS

1. Introduction

A. Record drawings and electronic digital files meeting Village requirements are required for all constructed improvements associated with commercial, industrial, or other approved private development projects.

B. Public Improvements and Private Residential Subdivision Improvements shall follow requirements in Sections 4.1 and 4.2.

2. Construction Requiring Record Drawings

A. Record drawings are required for the following items.

1) Buildings, parking lots, driveways, and other site plan features that have setback requirements.

2) Private water systems, storm sewer systems, and sanitary sewer systems.

3) Private storm water management facilities. (i.e. ponds, swales, open channels etc.)

4) Private street lights.

5) Private irrigation system piping within public right-of-ways or easements.

6) Site and lot grading.

7) Street tree plantings.

8) Any other site specific design feature that needs construction verification or permanent construction records as determined by the Village.

3. Record Drawings

A. Record drawings shall be completed by submitting as-built survey drawings of the project improvements.

B. The as-built survey shall contain the plan view of all utilities with either:

1) Data tables for as-built utility information (invert elevations, rim elevations, utility size(s), etc.); or

2) Overlaid design information neatly crossed out with legible as-built information provided.

C. As-built grading shall include topographic contours and spot grades to sufficiently show how the site is graded. The record drawing shall cover the entire grading limits and disturbed areas including designed high points, low points, swales, berms, and all other designed topographic features of the site.

4. "Record Drawing" Designation

A. Each applicable plan sheet which has been revised to reflect the constructed improvements shall have the following.

1) Notation and/or stamp indicating that the plans have been revised to conform to construction records "Record Drawing".

2) Firm name which prepared the "Record Drawing" and date of preparation.

3) If construction information is obtained by a source other than the firm preparing the "Record Drawing" the information source shall be noted on the plan.

4) Any record drawing disclaimer(s) for third party use, limits of accuracy, etc. shall be reviewed by the Village prior to inclusion.

5) All engineering plan sheets not changed and included in the overall "Record Drawing" plan set, shall have a notation "Not Revised to Reflect Construction Records".

5. Information Requirements

Minimal information requirements to be reflected on the "Record Drawings" are listed in the following sections.

A. Water System.

1) As-built location, size, and pipe material for all mains and services.

2) As-built locations for all appurtenances (valves, hydrants, etc.)

B. Sanitary System.

1) As-built location, size, and pipe material for all mains and services.

2) As-built lengths and slopes for sewer mains only.

3) As-built manhole rim and pipe invert elevations for all manholes, including sampling manhole.

4) Provide the following as-built information for services that are not directly connected to a manhole:

a. Distance of service from downstream manhole.

b. Riser height, if applicable.

C. Storm Water System.

1) As-built location, size, and pipe material for all mains, laterals, roof drainage collections systems, or other drainage systems.

2) As-built lengths and slopes for storm mains and culverts that convey significant offsite drainage, as determined by the Village.

3) As-built rim elevations on inlets, catch basins, manholes, and other facility structures.

4) As-built pipe invert elevations for all pipes within inlets, catch basins, manholes, end sections, headwalls, culverts, and other facilities.

5) Storm Water Management Ponds, swales, diversion berms, re-graded streams and channels upon final grading completion:

a. Provide as-built grading for storm water management pond(s), swale(s), diversion berm(s), and other storm water management feature(s) to sufficiently show how they were constructed and to accurately be able to calculate as-built pond volumes.

b. Submit certified calculations of as-built pond volume and verify that it equals or exceeds the required active storage volume.

c. Elevation of primary and secondary outlet structure devices. Verify installation and size of restrictors or outlet systems.

d. Elevation of normal water elevation.

e. Elevation of pond bottom and sediment storage depth.

f. Verify and show any pond design features such as safety shelf(s), forebay(s), baffle(s), liners, etc.

D. Street Lights and Signals.

1) As-built pole locations.

2) As-built electrical service wiring location and alignments.

3) Any other appurtenances (i.e. pull boxes, loop detectors, electrical boxes, controls etc.)

E. Irrigation System.

1) As-built irrigation piping location, alignments, control boxes, or valve locations within public road right-of-ways or utility easements.

F. Street Trees.

1) As-built street tree locations for trees planted within public right-of-ways or utility easements.

2) Identified street tree species.

6. Record Drawing Submittal Format

A. Record Drawings shall be submitted as an unprotected electronic pdf. The pdf shall be created directly from the drawing files, whenever possible (i.e. no scanned copies).

B. In addition to the pdf, a digital file of all the as-built data shall be submitted for the Village's Geographical Information System (GIS) update. The digital data shall meet the following requirements.

1) Acceptable Data Formats: GIS ESRI Shapefiles, coverages, AutoCAD files in .dxf, Microstation files in .dgn formats.

2) Data Projection: Horizontal coordinate system shall be NAD 83(2011).

3) Accuracy: All measurements must be in a tolerance of ± 0.1 feet horizontal and ± 0.1 feet vertical.

END OF SECTION

SECTION 4.1
RECORD DRAWINGS
PUBLIC IMPROVEMENTS AND PRIVATE RESIDENTIAL IMPROVEMENTS

1. Introduction

Record drawings are required for all constructed public improvements and private residential improvements. The record drawings shall provide a means of verification that the intent of the approved engineering design has been met and provide a record of constructed information.

2. Construction Requiring Record Drawings

A. Record drawings are required for the following infrastructure construction:

1) Public and private water systems, storm sewer systems, and sanitary sewer systems.

2) Public and private storm water management facilities (i.e. ponds, swales, open channels etc.).

3) Public and private street lights and signals including electrical wiring facilities.

4) Irrigation system piping.

5) Site and lot grading for subdivisions.

6) Street tree plantings.

7) Any other site specific design feature that needs construction verification or permanent construction records as determined by the Village.

3. Base Sheets

A complete set of the approved final engineering plans are to be utilized as the base sheets for the as-built record drawings. Design information shall be neatly crossed out so that they are legible to compare to the as-built record information.

4. "Record Drawing" Designation

A. Each applicable plan sheet which has been revised to reflect the constructed improvements shall have the following:

1) Notation and/or stamp indicating that the plans have been revised to conform to construction records "Record Drawing".

2) Firm name which prepared the "Record Drawing" and date of preparation.

3) If construction information is obtained by a source other than the firm preparing the “Record Drawing” the information source shall be noted on the plan.

4) Any record drawing disclaimer(s) for third party use, limits of accuracy, etc. shall be reviewed by the Village prior to inclusion.

5) All engineering plan sheets not changed and included in the overall “Record Drawing” plan set, shall have a notation “Not Revised to Reflect Construction Records”.

5. Information Requirements

At a minimum, the following information shall be reflected on the “Record Drawings” as listed in the following sections below.

A. Water System.

1) Name of company that constructed the water system.

2) Water main, hydrant lead and service pipe materials.

3) As-built elevations, lengths, sizes, and slopes.

4) As-built station of service tap and length of service to curb valves.

5) As-built station locations for valves, hydrants etc.

6) If water main alignment is different than shown on the Village approved plans, cross out the planned location and draw in the as-built location.

7) Document any other as-built information which are changes from the design information shown on the engineering plans (hydrant bury depths, valve depths, materials, offsets, etc.)

B. Sanitary System.

1) Name of company that constructed the sanitary system.

2) Sanitary sewer materials and classes of pipe.

3) As-built elevations, lengths, sizes, and slopes.

4) As-built manhole rim elevations and station locations.

5) As-built pipe invert elevations for all pipes in manholes.

6) Provide the following as-built sanitary sewer service information:

a. Distance of service from downstream manhole.

b. Length of lateral.

c. Riser height.

7) If sewer main alignment is different than shown on the Village approved plans, cross out the planned location and draw in the as-built location.

8) Document any other as-built information which are changes from the design information shown on the engineering plans.

C. Storm Water Facilities.

1) Name of company that constructed the storm sewer system.

2) As-built lengths, size, and slopes.

3) As-built rim elevations on inlets, catch basins, manholes, and other facility structures.

4) As-built pipe invert elevations for all pipes within inlets, catch basins, manholes, end sections, headwalls, culverts, and other facilities.

5) Provide the following for as-built storm water sump lateral information. Different strategies may be used depending on design. Prior approval should be obtained from the Engineering Department for alternative location information.

a. Distance of service from downstream manhole or outfall.

b. Length of lateral.

6) If storm sewer alignment is different than shown on the Village approved plans, cross out the planned location and draw in the as-built location.

7) Storm Water Management Ponds, swales, diversion berms, re-graded streams and channels upon final grading completion:

a. Provide as-built grading for storm water management pond(s), swale(s), diversion berm(s), and other storm water management feature(s) to sufficiently show how they were constructed and to accurately be able to calculate as-built pond volumes.

b. Submit certified calculations of as-built pond volume and verify that it equals or exceeds the required active storage volume.

c. Elevation of primary and secondary outlet structure devices. Verify installation and size of restrictors or outlet systems.

d. Elevation of normal water elevation.

e. Elevation of pond bottom and sediment storage depth.

f. Verify any pond design features such as safety shelf(s), forebay(s), baffle(s), liners, etc.

8) Document any other as-built information which are changes from the design information shown on the Village approved engineering plans.

D. Street Lights and Signals.

1) Name of company that installed the street lights and/or signal.

2) Pole locations.

3) Electrical service wiring location and alignments.

4) Any other appurtenances (i.e. pull boxes, loop detectors, electrical boxes etc.).

E. Irrigation system.

1) Irrigation piping location and alignments.

2) Control box location.

3) Valve locations.

F. Street Trees.

1) Street tree location.

2) Street tree species.

G. Site and Lot Grading.

1) Provide as-built grading including topographic contours to sufficiently show how the site is graded. The record drawing shall cover the entire grading limits and disturbed areas including designed high points, low points, swales, berms, and all other designed topographic features of the site.

2) Provide as-built lot line spot grades, in accordance with the master grading plan layout.

H. Benchmarks.

1) Provide list of existing valid benchmarks as well as new benchmarks on the NW bonnet flange bolt of all hydrants within the development.

6. Record drawing Submittal Format

A. Record Drawings shall be submitted as an unprotected electronic pdf of each individual sheet plus one combined pdf plan set. The pdf(s) shall be created directly from the drawing files, whenever possible (i.e. no scanned copies).

B. Digital drawing files of the “as-built” infrastructure and GIS attribute information shall be submitted in accordance with Chapter 4.2.

END OF SECTION

SECTION 4.2
GIS DATA FOR PUBLIC IMPROVEMENTS AND PRIVATE RESIDENTIAL IMPROVEMENTS

1. Introduction

The Village utilizes ESRI Geographic Information System (GIS) technology along with other integrated software to share, manage, and keep track of public improvements and private residential infrastructure assets and data. The Village utilizes GIS as an essential component of an integrated, multi-departmental system to support Village operations.

In order update and maintain infrastructure GIS asset management data and provide customer service during and after construction, digital GIS data submittals shall be required for all public utilities and private residential utilities as part of development.

2. Pre-Construction GIS Infrastructure Update

A. Prior to construction of any public or private water system, storm system, or sanitary system, or other public utility, the Village GIS system must be updated to include the planned utilities.

B. For the pre-construction GIS update, the design engineer shall provide the electronic design files of the public and private utilities to the Village in acceptable format.

3. As-Built GIS Infrastructure Update

A. Immediately after construction, surveyed “as-built” infrastructure data shall be provided to the Village in acceptable format. The “as-built” survey data shall include the actual locations of constructed infrastructure.

B. GIS data shall be accompanied with construction record drawings and a tabular attribute spreadsheet.

4. GIS Data Format Requirements

A. Acceptable Data Formats.

1) Graphical Data: GIS ESRI shapefiles, coverages, AutoCAD files in .dxf, Microstation files in .dgn file formats.

2) Tabular Data: Excel spreadsheet.

B. Data Projection.

1) In order to preserve the accuracy of the data, a defined projection shall be required. The required projection is NAD 83(2011).

C. Accuracy

1) All measurements must be in a tolerance of ± 0.1 feet horizontal and ± 0.1 feet vertical.

D. Data Layering and Location

1) Each feature listed must be represented as its own layer. The ID (Identification) field in the graphical and tabular data shall match. The ID's will be changed after they are entered into Village's system mapping to avoid duplication in the master system.

Data Features and Layer Naming Conventions:

FEATURE	DATA ELEMENT
General Mapping	
property line(s)	line
right-of-way	line
easement(s)	line
street name(s)	text
topographic contours (proposed)	line
control monuments	point
monument text	text
Sanitary Sewer	
sanitary sewer pipe	line
sanitary sewer pipe text	text
sanitary force main	line
sanitary force main text	text
sanitary manhole	point
sanitary manhole text	text
sanitary services	line
sanitary service text	text
Storm Sewer	
storm sewer pipe / culverts	line
storm sewer pipe text	text
storm manhole	point
storm manhole text	text
storm catch basins	point
storm inlets	point
storm laterals	line
storm lateral text	text
storm water ponds	polygon
flared end section	point
storm sewer outfall	point
swales / ditches	line
Water System	
water main pipe	line
water main pipe text	text
water valves	point
hydrants	point
curb box	point
water service	line

Irrigation System	
irrigation system pipe	line
irrigation valves	point
irrigation controls	point
Street Lighting	
light pole	point
light pole text	text
electrical wiring	line
appurtenances (pull boxes, junction boxes, controls etc.)	point
Street Trees	
street tree	point
street tree	text
Street Signs	
street sign	point
street sign	text

E. General Drawing Principles for GIS.

1) All polygons type features shall be completely closed.

2) Sewer Features:

a. All pipe segments between manholes shall be drawn with a single polyline.

b. All pipe segments must be snapped at endpoints intersecting at the center of the manhole. No gaps shall exist between pipe segments.

c. Sewer manhole(s), endwall(s), and/ or other surface features shall be shown in their true surveyed location.

3) Water Features:

a. Pipes shall begin and end at designated nodes. Node designations shall conform to the Village's system water model setup.

i. Nodes: Tees, crosses, hydrant tees, hydrants, termination plug / cap / valve, pumps or tanks.

ii. A preliminary plan mark-up showing planned water main node locations shall be provided to the Village for concurrence prior to completing the drawing or attribute tables.

b. Pipes shall be drawn through in-line valves; however valves shall have the ability to be overlaid on the water system, in their true location.

c. Curves may be digitized with enough vertices to capture the curve geometry, but they shall be single, continuous lines. Curves or arcs may also be used to designate curved pipe.

d. Surface features (valves and hydrants) shall be shown in their true surveyed location.

e. All water lines shall be continuous with pipe endpoints snapped to each other.

4) Irrigation Features:

a. Curves may be digitized with enough vertices to capture the curve geometry, but they shall be single, continuous lines. Curves or arcs may also be used to designate curved pipe.

b. Surface features (valves) shall be shown in their true surveyed location.

c. All water lines shall be continuous with pipe endpoints snapped to each other.

5) Street Light Features:

a. Electrical conduit shall begin and end at designated nodes.

i. Nodes: Pole(s), pull boxes, controllers, etc.

b. Curves may be digitized with enough vertices to capture the curve geometry, but they shall be single, continuous lines. Curves or arcs may also be used to designate curved pipe.

c. Surface features (poles, pull boxes, controllers, etc.) shall be shown in their true surveyed location.

d. All conduits shall be continuous with pipe endpoints snapped to each other.

6) Street Tree Features:

a. Tree trunks shall be shown in their true surveyed location.

7) Street Sign Features:

a. Signs shall be shown in their true surveyed location.

5. Feature Attribute(s)

A. The Village utilizes GIS's ability to connect virtual representations of spatial features to information (attributes) relevant to those features. While the number and content of attributes may vary greatly, depending on the source and use of the data, a minimal set of attributes shall be required to allow the data to be used by the Village. Data attributes shall be submitted in a tabular Excel spreadsheet format. The spreadsheet should be provided in an easy to follow format with the following general requirements:

1) Tabular identifications shall match the graphical / plan identifications and the Village's identification format.

2) Structure and pipe runs shall be entered in the sheets in the same order.

3) Pipe runs shall be entered in a consistent manner. (i.e. upstream to downstream or vice versa)

4) Pipe invert elevations shall be associated with pipe data attributes not manholes.

B. Storm and Sanitary Structures. (Manholes, catch basins, flared end sections, pipes, culverts, laterals, ponds, storm outfalls).

1) Manholes

a. Structure name (storm manhole, sanitary manhole).

b. Village of Pleasant Prairie GIS Facility ID.

c. As-built plan structure identification number (i.e. MH 6)

d. Size (i.e. 48-inch, 60-inch, etc.).

e. Rim elevation.

f. Depth (Depth from rim to lowest pipe invert measured in feet).

g. Frame / cover type (i.e. Neenah R-1550 Type “B” lid, Neenah R- Neenah R-1580 Type “B” lid).

h. Year constructed.

i. Acceptance date.

j. Warranty end date.

k. Entity of ownership. (i.e. VOPP)

l. Village record drawing number (i.e. A559).

m. Village record drawing sheet number (i.e. A559002).

2) Catch Basins and Inlets

a. Structure name (i.e. catch basin, inlet).

b. Village of Pleasant Prairie GIS Facility ID.

c. As-built plan structure identification number (i.e. CB 6A)

d. Size (i.e. 2’x3’, 48-inch, etc.).

e. Rim elevation.

f. Depth (to outlet pipe invert, measured in feet).

g. Sump depth (i.e. 1-foot).

h. Frame / grate type. (i.e. Neenah R-3067-L, Neenah R-3501-R, Neenah R-2560-E1)

i. Year constructed.

j. Acceptance date.

k. Warranty end date.

l. Entity of ownership.

m. Village record drawing number (i.e. A559).

n. Village record drawing sheet number (i.e. A559002).

3) Storm Sewers and Sanitary Sewers – Pipe data

a. Structure name (storm pipe, sanitary pipe).

b. Village of Pleasant Prairie GIS Facility ID.

c. Size (inches).

d. Slope (percent).

e. Upstream invert elevation.

f. Downstream invert elevation.

g. Material. (i.e. RCP, HDPE)

h. Class pipe. (i.e. III, IV)

i. Year constructed.

j. Acceptance date.

k. Warranty end date.

l. Entity of ownership.

m. Village record drawing number (i.e. A559).

n. Village record drawing sheet number (i.e. A559002).

4) Storm Culvert Data

a. Structure name (culvert).

b. Village of Pleasant Prairie GIS Facility ID.

c. Upstream pipe end (i.e. FES, projecting).

d. Size (inches).

e. Upstream invert elevation.

f. Downstream invert elevation.

g. Material.

h. Class pipe. (i.e. III, IV)

i. Year constructed.

j. Acceptance date.

k. Warranty end date.

l. Village record drawing number (i.e. A559).

m. Village record drawing sheet number (i.e. A559002).

5) *Storm and Sanitary Lateral Data*

a. Structure name (sanitary lateral, storm lateral).

b. Village of Pleasant Prairie GIS Facility ID.

c. Size (inches).

d. Material. (i.e. PVC)

e. Distance from downstream manhole (feet).

f. Riser height (for sanitary).

g. Year constructed.

h. Acceptance date.

i. Warranty date.

j. Entity of ownership.

k. Village record drawing number (i.e. A559).

l. Village record drawing sheet number (i.e. A559002).

6) *Storm Water Management Ponds*

a. Structure name (storm water management pond).

b. Village of Pleasant Prairie GIS Facility ID.

c. Identification (plan storm water pond number).

d. Type: retention (wet), detention (dry), infiltration.

e. Normal water elevation.

f. Design 100-year water elevation.

g. Pond bottom elevation.

h. Year constructed.

i. Entity of ownership.

j. Maintenance agreement: (yes , no)

k. Village record drawing number (i.e. A559).

l. Village record drawing sheet number (i.e. A559002).

7) *Storm Sewer Outfalls and Endwalls*

a. Structure name (pond inlet, pond outlet structure, storm outfall, or storm outfall to navigable water).

b. Village of Pleasant Prairie GIS Facility ID.

c. As-built plan structure identification number (i.e. AEW 4.1)

d. Location (pond or waterway name).

e. Size.

f. Device type (i.e. apron endwall, pond outlet – multistage riser, etc.).

g. WPDES designation (minor outfall, major outfall).

h. Year constructed.

i. Acceptance date.

j. Warranty end date.

k. Entity of ownership. (i.e. VOPP)

l. Village record drawing number (i.e. A559).

m. Village record drawing sheet number (i.e. A559002).

C. Water System Data (pipes, valves, plug/cap, hydrants, and laterals)

1) *Fitting Summary* (Reducers, tees, crosses, plugs/caps, etc.)

a. Structure name (node).

b. Village of Pleasant Prairie GIS Facility ID.

c. Node reference description (i.e. 8”x8” tee, 8”x6” hydrant tee, 8” plug, etc.).

d. Year constructed.

e. Acceptance date.

f. Warranty end date.

g. Entity of ownership. (i.e. VOPP)

h. Village record drawing number (i.e. A559).

i. Village record drawing sheet number (i.e. A559002).

2) *Water Pipe Data* (mains and hydrant leads)

a. Structure name (water main, hydrant lead).

b. Village of Pleasant Prairie GIS Facility ID.

c. Diameter (inches).

d. Pipe material (i.e. PVC, HDPE).

e. Pipe roughness coefficient.

f. Year constructed.

g. Acceptance date.

h. Warranty end date.

i. Entity of ownership. (i.e. VOPP)

j. Village record drawing number (i.e. A559).

k. Village record drawing sheet number (i.e. A559002).

3) *Valve(s)* (Valves 4” and larger)

a. Structure name (main valve, hydrant valve, service valve).

b. Village of Pleasant Prairie GIS Facility ID.

c. Valve type (i.e. BFV, GV, PRV).

d. Valve size.

e. Manufacturer.

f. Model number.

g. Year constructed.

h. Acceptance date.

i. Warranty end date.

j. Entity of ownership. (i.e. VOPP)

k. Village record drawing number (i.e. A559).

l. Village record drawing sheet number (i.e. A559002).

4) Fire Hydrants

a. Structure name (hydrant).

b. Village of Pleasant Prairie GIS Facility ID.

c. Manufacturer. (i.e. Mueller)

d. Manufacturer model number. (i.e. Super Centurion A-423)

e. Screw thread type. (i.e. Storz connection)

f. Bury depth (i.e. 6.5’)

g. Year constructed.

h. Acceptance date.

i. Warranty end date.

j. Entity of ownership. (i.e. VOPP)

k. Village record drawing number (i.e. A559).

l. Village Record drawing sheet number (i.e. A559002).

5) *Water Service Laterals*

a. Structure name (water service).

b. Village of Pleasant Prairie GIS Facility ID.

c. Size (inch).

d. Material (i.e. HDPE).

e. Curb valve manufacturer. (i.e. Mueller)

f. Curb valve model number. (i.e. B-25155N)

g. Year constructed.

h. Acceptance date.

i. Warranty end date.

j. Entity of ownership (i.e. VOPP)

k. Village record drawing number (i.e. A559).

l. Village record drawing sheet number (i.e. A559002).

D. Irrigation System Data (pipes, valves).

1) *Public Irrigation Mainline Pipe Data*

a. Structure identification.

b. Diameter (inches).

c. Pipe material (i.e. HDPE).

d. Year constructed.

e. Acceptance date.

f. Warranty end date.

g. Entity of ownership (i.e. VOPP, Association name).

h. Village record drawing number (i.e. A559).

i. Village record drawing sheet number (i.e. A559002).

2) *Valve(s)*

a) Structure identification.

b) Valve size.

c) Manufacturer.

d) Model number.

e) Year constructed.

f) Acceptance date.

g) Warranty end date.

h) Entity of ownership (i.e. VOPP, Association name).

i) Village record drawing number (i.e. A559).

j) Village record drawing sheet number (i.e. A559002).

E. Street Light Data (Poles, conduits, pull boxes, controls).

1) Conduit Data

a. Structure identification.

b. Diameter (inches).

c. Pipe material. (i.e. PVC)

d. Year constructed.

e. Acceptance date.

f. Warranty end date.

g. Entity of ownership (i.e. VOPP, Association name).

h. Village record drawing number (i.e. A559).

i. Village record drawing sheet number (i.e. A559002).

2) Poles

a) Structure identification.

b) Pole height.

c) Pole manufacturer.

d) Pole model number.

e) Fixture manufacturer.

f) Fixture model number.

g) Year constructed.

h) Acceptance date.

i) Warranty end date.

j) Entity of ownership (i.e. VOPP, Association name).

k) Village record drawing number (i.e. A559).

l) Village Record drawing sheet number (i.e. A559002).

F. Street Tree Data.

1) Tree Data

a) Village of Pleasant Prairie GIS Facility ID .

b) Common name.

c) Botanical Latin name.

d) Year planted.

e) Acceptance date.

f) Warranty end date.

g) Village record drawing number (i.e. A559).

h) Village record drawing sheet number (i.e. A559002).

G. Street Sign Data.

1) Sign Data

a) Village of Pleasant Prairie GIS Facility ID.

b) Sign type (i.e. stop, yield, left arrow)

c) WDOT sign plate designation (i.e. R1-1)

d) Sign size (i.e. 30”, 24”x30”)

e) Year installed.

f) Acceptance date.

g) Warranty end date.

h) Village record drawing number (i.e. A559).

i) Village record drawing sheet number (i.e. A559002).

END OF SECTION

SECTION 5
VILLAGE STANDARD CONSTRUCTION SPECIFICATIONS

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VILLAGE STANDARD CONSTRUCTION SPECIFICATIONS
VS-0100 GENERAL TERMS AND CONDITIONS

1.0 Section Description

A. Basic description of general terms and conditions for public improvement project construction.

2.0 Definitions of Parties

A. Village: The "Village" or "Owner" is the Village of Pleasant Prairie also including their representative consulting engineers.

B. Developer: The "Developer" is the company, person, or organization developing the project. The "Developer" shall be the same identification in the Developer's Agreement with the Village.

C. Engineer: The "Design Engineer" is the Engineer of Record for the project consisting of the company or organization who prepared the construction engineering plans.

D. Contractor: The "Contractor" is the company hired by the Developer or Village to construct the improvements as identified in the construction engineering plans and the Developer's Agreement.

3.0 Preliminary Matters

A. Construction plans must be reviewed and approved by the Village prior to construction commencement. Although plans are reviewed by the Village, it does not relieve the Developer from compliance of Village Ordinances or these standard construction specifications. Should there be a discrepancy between plans and these construction standards, the construction standards shall govern unless otherwise approved or specified by the Village.

B. All required easement(s), licenses, and/or local, county, State, and federal permits must be obtained prior to construction commencement.

C. Contractors shall comply with Chapter 150 of the Village Municipal Code "Contractor Qualification Ordinance of the Village of Pleasant Prairie" requiring pre-qualification of Contractors prior to obtaining bidding documents or submitting bids or acting as contractor or subcontractor on any public improvement project.

D. Prior to construction commencement, a pre-construction conference must be held at the Village Offices. The pre-construction conference shall be scheduled and moderated by the Design Engineer.

E. The Contractor shall have a complete set of the village approved plans and specifications at the project site at all times. Specifications shall include:

(1) Village of Pleasant Prairie Standard Construction Specifications.

(2) "Standard Specifications" for Sewer and Water Construction in Wisconsin", if applicable.

(3) "State Specifications"; and

(4) Other documents pertaining to the project.

4.0 Specifications

A. Utility Construction

(1) The "Standard Specifications for Sewer and Water Construction in Wisconsin", current edition and addendums, will govern all utility work performed on this project and hereinafter will be referred to as the "Standard Specifications".

a. Part I, General Conditions, from the "Standard Specifications" are not applicable to Village Construction.

B. Road Construction

(1) The State of Wisconsin, Department of Transportation, "Standard Specifications for Highway and Structure Construction", current edition, and all "Interim Supplemental Specifications"; will govern all road work performed on this project and hereinafter will be referred to as the "State Specifications".

a. Part I, General Requirements and Covenants, from the "State Specifications" are not applicable to Village Construction projects, except those sections specifically referenced in these contract documents.

b. All references to the "Department" or "State" (The "Department" of Transportation of the "State" of Wisconsin) shall be interpreted to mean the Owner.

c. All references to metric unit(s) shall be converted to their nearest whole equivalent Standard unit(s) (U.S. Standard) in accordance with the conversion tables shown in the Appendix of the "State Specifications".

C. Village of Pleasant Prairie Standard Construction Specifications

(1) The Village of Pleasant Prairie Standard Construction Specifications will govern all utility and road work performed on this project and hereinafter will be referred to as "Village Specifications". In the event of a discrepancy between these "Village Specifications" and either the "Standard Specifications" or the "State Specifications", these "Village Specifications" shall govern.

5.0 Alternate Materials

A. The Contractor may furnish alternate materials in place of those specified in these Village Specifications where "or equal" is stated and when the following provisions have been complied with.

"If the Contractor wishes to substitute an alternative material as an "equal" to the material specified, he shall first submit a detailed description of such to the Village for their review and approval/disapproval. The Contractor shall not install any alternate materials prior to receiving approval for their use. Only those materials listed in these Village Specifications or approved as alternates shall be used on this project."

6.0 Regulatory Requirements

A. Permits / Licenses

(1) Contractor shall have a copy and be familiar with all permits / licenses and their respective provisions. All work requiring permits or licenses shall abide by the governing permit / license provisions where they exceed the requirements in these specifications.

(2) Contractor shall obtain and provide a copy to the Village all permits that are associated with specific construction methods or circumstances that were not obtained through the plan approval process. These may include but are not limited to WDNR well permits, offsite construction easement agreements made by Contractor or Developer, off-site disposal permits, etc.

(3) Spoil Disposal within Village Boundary

a. The Contractor shall provide the Village with the location(s) of all spoil disposal sites within the Village, prior to construction. No disposal of materials within the Village shall occur unless a Village Land Disturbance Permit and/or other required Village, County, State or Federal approvals have been obtained for the specific disposal site. The Contractor will be responsible for removing spoil and restoring any site(s) that are used for improper disposal of spoil material.

B. Compliance with Laws, Safety, Means and Methods

(1) The Contractor, his subcontractors, agents and employees, shall at all times, observe and comply with all Federal and State Laws, ordinances, codes and regulations which in any manner affect the conduct of the work.

(2) The Contractor shall be responsible for compliance with all Federal, State, and local laws, including OSHA Standards, and with any other applicable laws, ordinances, rules, regulations and orders of any public body having jurisdiction for the safety or persons or property or to protect them from damage, injury or loss. The Contractor shall provide all safeguards, safety devices and protective equipment and shall be responsible for initiating, maintaining and supervising all safety precautions and programs utilized by the Contractor and his sub-contractors in the performance of their work and shall take any other actions necessary to protect the life and health of employees on the job and safety of the public and to protect property in connection with the performance of work on this project.

(3) The contractor shall be responsible for the construction means, methods, techniques or procedures, equipment, and for safety precautions or programs, unless such means and equipment are specified in these Village Specifications.

(4) Protection of Unattended Trenches

a. Unattended trenches shall be secured in a safe manner and suitable for protection of the public. Providing the method of protection, equipment, personal, and materials needed to secure trenches is the sole responsibility of the Contractor. If the Contractor does not have adequate means to protect the trench then the trench shall be backfilled prior to leaving the trench unattended. If the Village determines that the Contractor has failed to adequately protect an unattended trench the Village shall provide the minimum protection necessary, in their opinion, to protect the public. The cost of the Village implementing protective measures shall be charged to the Contractor and/or Developer. Minimum protection requirements are listed below:

i. All trenches shall be either completely covered by a steel plate no less than 3/4" thick or protected by orange plastic snow fencing. Snow fence shall be in good condition with no voids greater than 4-inches, minimum height of 4-feet, no greater than 4-inches off the ground, securely fastened and upright.

ii. Trenches within right of ways or easements open to any public traffic shall be delineated with reflective signs and/or flashing yellow lights and protected by barriers suitable to prevent vehicles from entering the trench. Depending on the location and traffic speed suitable barriers may include construction barrels, barricades, barrier wall, Contractor's equipment, etc.

7.0 Notification of Utilities

A. Utility Location and Coordination.

(1) The locations of utilities shown on the Plans are from existing record(s) and/or field locations and may not be complete or accurate. The Contractor shall contact Digger’s Hotline at (800) 242-8511, as well as other utilities not served by Digger’s Hotline but having facilities in the work area, at least three (3) full business days prior to construction to notify the utilities to locate their underground facilities.

B. Utility Protection

(1) It shall be the responsibility of the Contractor to protect all utilities that are encountered in his work operations. The Contractor shall contact utilities to determine their procedure and schedule for supporting and/or relocating utilities and shall notify any above ground utility such as electric and telephone companies to relocate or reinforce any poles, ties or anchors which may be on or near the line of the proposed utility or weakened by excavation for the proposed utility or within road construction grading limits.

END OF SECTION

VILLAGE STANDARD CONSTRUCTION SPECIFICATIONS
VS-0200 SANITARY SEWER

1.0 Section Description

A. This section includes requirements for sanitary sewer materials and construction.

B. Related Sections Include:

(1) Section VS-0100 General Terms and Conditions

(2) Section VS-0600 Underground Warning Tape and Tracer Wire

(3) Section VS-0601 Backfilling Utility Trenches

(4) Standard Details

2.0 Open Cut Sanitary Sewer Pipe and Lateral Materials

A. Sanitary sewer pipe material shall be polyvinyl chloride (PVC). Pipe shall conform to the following:

(1) Polyvinyl Chloride (PVC) sewer pipe, 4 inch through 15 inch diameter, meeting the requirements of ASTM D3034, SDR-35 (unless loading requires a stronger pipe), with a minimum pipe stiffness of 46 psi or SDR-26 with a minimum pipe stiffness of 115 psi, and having integral bell type flexible elastomeric joints meeting the requirements of ASTM D3212. Gaskets shall meet the requirements of ASTM F477. PVC material shall have a cell classification of 12454B, 12454C, 12364C or 13364B, except that 12364C and 13364B shall have a minimum modulus of elasticity of 500,000 psi.

(2) Polyvinyl Chloride (PVC) large diameter solid wall sewer pipe (18-inch to 27-inch) meeting the requirements of ASTM F679, wall thickness T-1 (SDR 35), with a minimum pipe stiffness of 46 psi and having integral bell type flexible elastomeric joints meeting the requirements of ASTM D3212. Gaskets shall meet the requirements of ASTM F477. PVC material shall have a minimum cell classification of 12454C or 12364C and a minimum modulus of elasticity of 500,000 psi. Lateral pipe material shall conform to the requirements of Paragraph 1 above.

(3) Pipe installed by open cut shall be manufactured by JM Eagle Inc., Diamond Plastics Corporation, or Northern Pipe Products Inc.

B. Well Protection

(1) Sanitary sewer pipe material located within 25 to 50 feet of private wells, shall be Polyvinyl Chloride (PVC) pressure pipe conforming to AWWA C-900, Class 150, DR-18, or AWWA C905, P.R. 235, SDR-18, with integral elastomeric bell and

spigot joints or alternate materials approved by the Village of Pleasant Prairie and the Wisconsin Department of Natural Resources.

a. Main line wye and tee connections shall be pressure pipe, but laterals and risers may be constructed of gravity sewer pipe materials.

C. Substitute Materials

(1) Substitute sewer pipe materials proposed to be used due to loading, special project circumstances, design considerations, or as an “equal” shall be submitted to the Village Engineer for review and approval or disapproval prior to their use. Contractor shall not install any substitute materials prior to receiving written approval for their use.

3.0 Directionally Drilled Sanitary Sewer Pipe and Lateral Materials

A. Sanitary sewer pipe material shall be fusible polyvinyl chloride (PVC) unless the use of restrained joint PVC pipe has been approved of by the Village Engineer. Directionally drilled sanitary sewer pipe materials shall conform to the following:

(1) General.

a. Contractor may, upon prior approval from the Village Engineer, select a lesser SDR rating (stronger pipe) appropriate to the job site conditions, the capability of his “pull-in” equipment, and his methods of operation.

b. The maximum job site pull-in force shall not exceed the manufacturer’s recommended safe pull-in force.

c. Directionally drilled pipe shall sit undisturbed for a minimum of 48-hours to allow for settlement of the directionally drilled pipe prior to extension of the pipe or installation of any manholes, fittings or appurtenances unless otherwise approved by the Village.

d. When recommended by the pipe manufacturer, the contractor shall install measures to protect against contraction or expansion of the pipe. Possible recommended measures may include, but are not limited to, concrete wall anchors and/or additional joint restraint beyond the completed directionally drilled pipe sections.

(2) Fusible PVC.

a. Fusible polyvinyl chloride (PVC) pipe meeting the requirement of AWWA C900 (4 inch through 36 inch diameter) with cast iron O.D. and thermal butt fused joints between pipe sections. Joint gaskets shall not be required. PVC material shall have a cell classification of 12454 as defined in ASTM D1784..

i. Pipe shall be Fusible PVC® by Underground Solutions, Inc.

ii. Pipe used for sanitary sewer shall be colored green.

(3) Restrained joint PVC pipe (if approved by the Village Engineer).

a. Restrained joint polyvinyl chloride (PVC) pipe meeting the requirement of ASTM D2241, SDR 21 (4 inch through 8 inch diameter) or SDR 26 (10 inch through 12 inch diameter), iron pipe size (IPS) O.D. and restraining jointing systems with built-in sealing gaskets. PVC material shall have a cell classification of 12454 as defined in ASTM D1784.

i. Restrained joint pipe shall be Certa-Flo® by North American Pipe Company or equal.

iii. Pipe used for sanitary sewer shall be colored green.

4.0 Sanitary Laterals

A. Install sewer laterals at a typical 2.08% (1/4-inch per foot) grade unless otherwise approved by the Village. Minimum lateral grade is 1.04% (1/8-inch per foot) and maximum grade is 4.16% (1/2-inch per foot).

B. All laterals exceeding 100-feet in length shall have cleanouts installed on them. Cleanouts shall be placed at 100-foot maximum spacing or as directed / approved by the Village.

C. Lateral(s) shall be installed by boring under existing pavement or shoulder areas, unless otherwise approved by the Village.

D. Place lateral(s) outside existing or future driveways.

E. Lateral connections.

(1) Lateral connections to sewer mains 18-inches in diameter or less at the time of construction shall be made with wyes.

(2) Lateral connections to existing sewers shall be made with INSERTA-TEE brand three-piece service connection or pre-approved equal. The service connection shall include a PVC hub conforming to the requirements of ASTM D3034-SDR 26, rubber sleeve conforming to ASTM C477, and stainless steel band.

F. Risers

(1) Sanitary sewer risers shall be constructed in accordance with the Village Standard Details. The riser installation detail to be used shall be determined by the Village.

G. Marker Stakes

(1) Marker stakes shall be installed over the end of each lateral installed. The marker shall be a minimum of 2”x4” hardwood plank. The marker shall be placed vertically with its top 2-feet above finished surface grade. The bottom of the stake shall be extended to the top of pipe at the cap location.

5.0 Sanitary Manholes

A. Standard Manhole

(1) Sanitary manholes shall be constructed in accordance with Chapter 3.5.0 and File No. 12, 13, and 15 of the “Standard Specifications”, these Village Specifications and the Village Standard Details.

(2) All manhole bases (benches) shall be poured in place in accordance with Subsection 3.5.5(b) of the “Standard Specifications”. Precast manhole bases or precast integral base units are allowed in accordance with Subsection 3.5.5(c), however, no precast base units with preformed benches are allowed on sanitary sewer relay projects or other situations which may require field changes in the designed drop between pipes within the manhole.

(3) Manholes shall be precast 48-inch inside diameter with eccentric cones.

(4) Manhole frames shall be Neenah R-1550 unless otherwise indicated on the plans. All covers shall be Type “B” self-sealing and non-rocking. Manhole frames shall be centered on the top of the cone.

(5) Manhole steps shall be OSHA approved and fabricated using 1/2-inch minimum diameter steel ASTM A615 Grade 60 reinforcing rod with molded plastic covering. Manhole step placement shall be such that the first step is located a maximum distance of 8-inches from the top of the cone section. Steps shall not be placed within adjusting rings.

(6) Adjusting rings.

a. Manhole adjusting rings shall be used to bring manhole rims to grade. Adjusting rings heights shall not have a total ring height less than 3-inches or greater than 12-inches. No manhole shall have more than four adjusting rings. The inside diameter of the adjusting rings shall match that of the opening in the manhole flat cover or eccentric cone. Adjusting rings shall be concrete or polypropylene as specified below:

i. Concrete adjusting rings.

1. Concrete rings with one line of steel centered within the ring.

2. The top of manhole castings shall be set 1/4 inch below the newly finished asphalt surfaces, finished grade of concrete pavement, or elevations per the plan within grass or lawn areas. Casting shall be placed level within grass areas or match the slope of the adjacent finished surface in all other areas. Manhole frames shall be adjusted to the maximum extent possible by using adjusting rings of various thicknesses and tapers. Adjusting rings shall be set with butyl rubber sealant troweled into a 1/4 inch thick layer over the entire mating surface of the top of cone and all adjusting rings. The butyl rubber sealant shall be EZ-Stik or Kent-Seal butyl base sealant in trowelable grade or equal. After placing rings, minor permanent shimming of the

casting to obtain the necessary elevation and slope shall be performed. Temporary wedging is not permitted. Shims shall have a minimum surface area of 8 square inches and be made of steel, or other non-degradable material approved by the Village. Shims shall be placed at a minimum of three locations between the casting and top adjusting ring to prevent rocking of the casting. After the shims have been correctly placed the Contractor shall then trowel the butyl rubber sealant or non-shrink grout, if approved by the Village, over the mating surfaces and then place the casting onto the manhole. Installing the butyl or grout between the adjusting ring and casting by pushing, tuckpointing, or any other method, from the outside of the rings is not permitted. Contractor shall take care to prevent the butyl rubber sealant from getting on the interior surface of the rings and frame within the chimney.

ii. Polypropylene adjusting rings.

1. Expanded polypropylene adjusting rings shall be Pro-Ring™ as manufactured by Cretex Specialty Products, Waukesha, Wisconsin, or approved equal.

2. The top of manhole castings shall be set 0 to 1/2 inch below the newly finished asphalt surfaces and concrete pavement, or elevations per the plan within grass or lawn areas. Casting shall be placed level within grass areas or match the slope of the adjacent finished surface in all other areas. Manhole frames shall be adjusted to the maximum extent possible by using adjusting rings of various thicknesses and tapers installed in accordance with the manufacturer's recommendations and instructions.

(7) Manhole lifting holes. All lifting holes in precast manhole sections shall be plugged using rubber plugs supplied by the manhole supplier, non-shrink grout or other approved method. Non-shrink grout shall fill the entire void and shall be troweled at each face to provide smooth surfaces. Cement mortar shall not be used to plug lifting holes.

(8) Manhole Riser Joints. Joints for precast manhole riser sections shall be made with rubber "O"-ring gaskets, a continuous ring of butyl rubber sealant (EZ-Stick or Kent-Seal in rope form) or equal. The butyl sealant shall be 1-inch diameter equivalent or as recommended by the manhole manufacturer.

a. An external sealing wrap shall be placed at all joints between pre-cast manhole sections. The external sealing wrap shall meet, or exceed, the requirements of ASTM C-877, Type III. External joint seals shall be EZ-WRAP, as manufactured by Press-Seal Gasket Corporation, or pre-approved equal.

(9) Chimney Seal

a. An external sealing wrap shall be placed on the entire manhole chimney from the casting to the 6-inches below the top of the manhole cone section and

installed in accordance with the Village Standard Detail. The external sealing wrap shall be EZ-WRAP, as manufactured by Press-Seal Gasket Corporation, or approved equal.

B. Sampling Manhole

(1) Sampling manholes shall meet the specifications of a Standard Sanitary Manhole with the following additional provisions. (Refer to Village standard sampling manhole detail)

a. A primary flow measuring device shall be installed. The primary flow measuring device shall be a Palmer-Bowlus flume with integral approach section. Flume sizes shall be based upon the lateral pipe size and shall be installed per manufactures specifications and tolerances. Flumes shall be manufactured by Plasti-Fab, Ken Co Plastics, or pre-approved equal.

b. No horizontal alignment changes are allowed at the sampling manhole.

c. No pipe joints within 4-feet of the manhole exterior.

d. Sampling manhole shall be located to allow easy access for Village utility crews and shall be within pavement areas but not in parking stalls.

e. Contractor is directed to pay special attention to the stairs as shown in the Village Standard Detail:

i. Manhole step placement shall be such that the first step is located a maximum distance of 8-inches from the top of the cone section. Steps shall not be placed within adjusting rings.

ii. A minimum of 19-inches horizontal clearance is required at the opening from the step.

f. Sampling manhole frames and covers shall be Neenah R-1642 with Type “B” self-sealing lids, non-rocking. Manhole frames shall be centered on the top of the cone.

C. Drop Manhole

(1) New manholes.

a. Outside drop manholes shall be constructed the same as a Village standard manhole except that the drop shall be in accordance with Section 3.5.8(d) and File No. 20 of the “Standard Specifications”. Inside drops are not allowed on new manholes.

(2) Existing manholes.

a. Outside drops constructed on existing manholes shall be in accordance with File No. 22 of the "Standard Specifications." Inside drops may only be installed on existing manholes if approved by the Village and WDNR.

D. Waterproof Manhole

(1) Waterproof manholes shall be constructed the same as a Village standard manhole except that they shall be furnished without adjusting rings and with bolted waterproof frames and lids.

a. Waterproof frames and lids shall be Neenah R-1916-C watertight frame and bolted lid. All fasteners shall be stainless steel.

b. Frames shall be fastened directly to the manhole cone section or flat top with stainless steel anchors.

E. Doghouse Manholes

a. Doghouse style manholes are not permitted for use on sanitary sewers.

6.0 Laying of Pipe

A. Pipes shall be laid in accordance with chapter 3.2.0 of the “Standard Specifications”, as specified and/or modified below:

(1) Pipes shall be laid with the bell end pointing upgrade regardless of the method of installation used.

B. Sanitary sewer bedding and cover material shall conform to the appropriate sections of the “Standard Specifications”, as specified and/or modified below:

(1) PVC Pipe – Sections 3.2.6(i), as modified below (Note that the bedding section is essentially Class “B” Bedding including placing a minimum of 12-inches of cover material over the top of the pipe.):

a. Crushed pea gravel will not be allowed for use as bedding material. Cover material shall be the same material as for bedding and shall conform to Section 8.43.2(a).

b. Delete the following sentence from Paragraph 3.2.6(b)2. and 3.2.6(i)1.:

“If crushed stone chips or other material conforming to Section 8.43.2(a) are used as cover material, no compaction or staging is required.”

c. Place bedding material to the springline of the pipe and compact prior to placing cover material. Compaction of bedding material at the level of the pipe springline shall include working bedding material under the haunches of the pipe using shovels or other suitable means. The Contractor shall take care to completely work bedding material under the haunches of the pipe to provide adequate side support.

d. Place and compact cover material in one or more lifts after compacting bedding material. Place a minimum of 12-inches of cover material over the pipe.

7.0 Connection to Existing Sewers and Manholes

A. Sewer Stub Connections

(1) Sewer connections to existing sewer stubs of different type of material or joint shall be made with a pre-approved watertight adaptor.

B. Manhole Pipe Connections

(1) Connections of pipes to manholes shall be made in accordance with Section 3.5.7 of the “Standard Specifications”. All field tapped holes for connecting sewer pipe to manholes shall be made by coring.

(2) All plastic pipe shall be connected to manholes by means of flexible watertight pipe to manhole seals in accordance with Subsection 3.5.7(c). Manhole seals shall be Kor-N-Seal, Link Seal or pre-approved equal. All clamps, bolts, etc. of pipe to manhole seals shall be stainless steel. If Link Seal connectors are used, the bolt heads shall be placed on the inside of manholes.

C. Plug Downstream Manhole

(1) Place temporary plugs in all downstream (receiving) manholes to prevent groundwater and debris from entering the existing sewer system. Plugs shall remain in place until authorized to be removed by the Village.

8.0 Field Tiles

A. Tile lines crossed by the trench shall be replaced with polyvinyl chloride (PVC) sewer pipe meeting the requirements of ASTM D-3034, SDR-35, with rubber gasket joints. The PVC pipe shall be extended for a minimum distance of 2-feet outside the edge of the undisturbed trench wall. The tile to PVC pipe connection shall be made with compatible fittings, adaptors, or encased in concrete. The size of the new PVC pipe shall be equal or greater than the field tile it is connected to.

B. Damaged field tile shall be repaired the same day as the damage occurs so that flow of water will not be unreasonably restricted.

C. Tile lines shall <u>not</u> be connected to the sanitary sewer system.

9.0 Pipe Flotation

A. Pipes installed below the groundwater elevation shall be protected against flotation. The Contractor shall lower the groundwater elevation until after adequate cover has been placed to secure pipes.

10.0 Insulation

A. Sewer lines shall be insulated wherever the depth of cover is less than five (5) feet and where noted on plans. Insulation shall be in accordance with Chapter 4.17.0 of the “Standard Specifications”.

11.0 Underground Warning Tape and Tracer Wire

A. Underground warning tape and tracer wire shall be installed with all underground sanitary sewer systems in accordance with Village Specifications VS-0600 “Underground Warning Tape and Tracer Wire”.

12.0 Abandoning Sewers, Laterals, and Manholes

A. Sewers and laterals.

(1) All inactive (dead) sanitary sewer main and lateral, except laterals to possible future development, shall be abandoned in accordance with the Village Standard Details.

B. Manholes.

(1) Manholes to be removed shall be removed and disposed of by the Contractor except that all salvageable manhole castings shall be delivered to Public Works.

(2) Manholes to be abandoned shall be abandoned by removing the casting and manhole sections to a depth of 3 feet below finished grade. Manhole frames and covers shall be salvaged and delivered to Public Works. Cut a 6 inch diameter hole in the bottom of manholes to provide drainage. Backfill remaining manhole sections and the excavation with slurry within roadway limits or granular material thoroughly compacted in 8 inch maximum lifts elsewhere.

12.0 Salvaged Castings

A. Removed castings shall be delivered to the Village of Pleasant Prairie Public Works Department, 8600 Green Bay Road, Pleasant Prairie, WI 53158.

13.0 Testing and Inspection

A. Deflection Testing

(1) Polyvinyl chloride (PVC) sewer pipe shall be deflection tested with an approved go-no-go acceptance testing device. The test shall not be conducted until after all backfill has been placed and consolidated and after riser pipes and sewer laterals have been installed. The entire length of the sewer pipe shall be tested.

(2) PVC pipe shall not be deflection tested until at least 14 days after all backfill has been placed, including backfilling of laterals and risers. Initial deflection testing shall be done using a 95% mandrel.

(3) All sections failing to pass the test shall be repaired and retested, however, if at least 30 days have elapsed since the pipe was repaired and backfilled, the Contractor will be allowed to retest the sewer lining using a 92.5% mandrel.

B. Leakage Testing

(1) Low Pressure Air Test. Amend Paragraph 3.7.1 of the "Standard Specifications" to read in part: "Sanitary sewers less than or equal to 36-inches in diameter shall be tested for leakage using the low pressure air test. The length of laterals included in the test section shall be included in determining the test time".

C. Sewer Stub Inspection

(1) All sewer stubs shall be visually inspected by the Contractor by lamping. Long sewer stubs shall be lamped from both ends of the pipe as required.

(2) The pipe shall be inspected for leakage, excessive deflection, offset joints, or any other unacceptable conditions. All leaking joints and other defects shall be corrected.

(3) Contractor may test existing stub(s) for leakage and deflection to insure that defects in the existing stub do not adversely affect the testing of new adjoining sewer. Note that existing stubs will be tested with the new sewer when the new line is tested.

D. Televising Sewers

(1) All sewers lines will be televised by the Village after they have successfully passed deflection and leakage testing and after forming manhole flowlines and benches prior to acceptance of the work.

a. Contractor shall clean all sewers and manholes prior to televising.

(2) All defects identified by the televising inspection shall be corrected and any dirt, gravel or foreign material removed from the sewer prior to acceptance by the Village. All lines that were either repaired or cleaned shall be re-televised by the Village.

(3) Sewers shall be re-televised near the end of the 1-year warranty period. All defects identified by the warranty period televising shall be corrected. All lines that were repaired shall be re-televised by the Village.

(4) All televising and re-televising of sewers by the Village is at the Developer's cost.

E. Manhole Vacuum Testing

(1) The Contractor shall vacuum test all sanitary manholes for leakage, regardless of the sewer diameter, in accordance with Subsection 3.7.6 of the "Standard Specifications". Any manholes that fail the vacuum test shall be repaired and retested.

(2) Amend subsection 3.7.6 to include the following: "The chimney and casting shall be in place before vacuum testing manholes."

F. Manhole Infiltration Inspection

(1) The Contractor, accompanied by the Village, shall re-inspect all manholes approximately one (1) year after completing work or as directed by the Village prior to the end of the warranty / correction period to check for manhole infiltration and to observe the general condition of the manhole. All active or flowing leaks and any other necessary repairs shall be corrected prior to final acceptance of the work.

END OF SECTION

VILLAGE STANDARD CONSTRUCTION SPECIFICATIONS
VS-0300 STORM SEWER

1.0 Section Description

A. This section includes requirements for storm sewer materials and construction.

B. Related Sections Include:

(1) Section VS-0100 General Terms and Conditions

(2) Section VS-0600 Underground Warning Tape and Tracer Wire

(3) Section VS-0601 Backfilling Utility Trenches

(4) Standard Details

2.0 Storm Sewer Pipe and Materials

A. Storm sewer pipe material shall be as indicated on official approved plans conforming to the following:

(1) Reinforced concrete sewer pipe (RCP) meeting the requirements of ASTM C-76 with rubber gasket joints conforming to ASTM C-443.

a. RCP shall be furnished for classes of pipe shown on the plans.

(2) Reinforced concrete horizontal elliptical sewer pipe (RCHEP) meeting the requirements of ASTM C-507 with rubber gasket joints conforming to ASTM C-443.

a. RCHEP shall be furnished for the classes of pipe shown on the Plans.

(3) High Density Polyethylene Pipe (HDPE) with corrugated exterior and smooth interior and provided with watertight bell and spigot joints with rubber gaskets. 4-inch through 10-inch diameter pipes shall meet the requirements of AASHTO M-252 and 12-inch through 60-inch diameter pipes shall meet the requirements of AASHTO M-294.

a. HDPE pipe shall be manufactured by Advanced Drainage Systems, Inc. of Columbus Ohio, Prinsco, Inc. of Willmar Minnesota, or approved equal.

b. End sections used with HDPE pipe shall be reinforced concrete apron endwalls.

c. HDPE pipes shall only be installed in locations, as pre-approved by the Village.

d. Pipes indicated as RCP on Village approved plans may not be HDPE, unless approved by the Village in writing.

3.0 Sump Pump Laterals

A. Sump pump laterals shall be installed at locations as approved by the Village. Laterals shall be constructed adjacent to and left of the water service wherever possible.

B. Sump pump laterals shall be 42-inches deep wherever possible.

C. Sump pump laterals shall be 4-inch PVC meeting the requirements of ASTM D3034, SDR-26, with integral bell type flexible elastomeric joints meeting ASTM D-3212.

D. Sump pump laterals shall extend to the right-of-way line and shall be constructed without vertical breaks or bends.

E. Sump pump laterals shall be connected to the storm sewer by a precast tee or cored rubber boot. Lateral pipe shall not protrude into the interior of the storm sewer pipe.

F. Minimum lateral grade is 1.04% (1/8-inch per foot).

G. Laterals stubs shall be capped at the lot line. Marker stakes shall be installed over the end of each lateral installed. The marker shall be a minimum of 2”x4” hardwood plank. The marker shall be placed vertically with its top 2-feet above finished surface grade. The bottom of the stake should be extended to the top pipe at the cap location.

H. All laterals exceeding 100-feet in length shall have cleanouts installed on them. Cleanouts shall be placed at 100-foot maximum spacing or as directed / approved by the Village.

4.0 Storm Manhole

A. Standard Manhole

(1) Storm sewer manholes shall be constructed in accordance with Chapter 3.5.0 and File Nos. 12, 13, and 15 of the “Standard Specifications” and these Village Specifications.

(2) All manhole bases (benches) shall be poured in place in accordance with Subsection 3.5.5(b) of the “Standard Specifications”. Precast manhole bases or precast integral base units are allowed, however, no precast base units with preformed benches are allowed. All manhole benches shall be poured in place.

(3) Manholes shall be precast with eccentric cones. Flat top slabs with offset openings may be used for shallow manholes where there is not sufficient depth to install cones.

(4) Manhole frames shall be Neenah R-1550 unless otherwise indicated on the plans. All covers shall be Type “B” self-sealing and non-rocking. Manhole frames shall be centered on the top of the cone or flat top.

(5) Manhole steps shall be OSHA approved and fabricated using 1/2-inch minimum diameter steel ASTM A615 Grade 60 reinforcing rod with molded plastic covering. Manhole step placement shall be such that the first step is located a maximum distance of 8-inches from the top of the cone section or the bottom of flat top. Steps shall not be placed within adjusting rings. Manholes less than 4-feet deep do not require steps.

(6) Adjusting rings.

a. Manhole adjusting rings shall be used to bring manhole rims to grade. Adjusting rings heights shall not have a total ring height less than 3-inches or greater than 12-inches. No manhole shall have more than four adjusting rings. The inside diameter of the adjusting rings shall match that of the opening in the manhole flat cover or eccentric cone. Adjusting rings shall be concrete or polypropylene as specified below:

i. Concrete adjusting rings.

1. Concrete rings with one line of steel centered within the ring.

2. The top of manhole castings shall be set 1/4 inch below the newly finished asphalt surfaces, finished grade of concrete pavement, or elevations per the plan within grass or lawn areas. Casting shall be placed level within grass areas or match the slope of the adjacent finished surface in all other areas. Manhole frames shall be adjusted to the maximum extent possible by using adjusting rings of various thicknesses and tapers. Adjusting rings shall be set with butyl rubber sealant troweled into a 1/4 inch thick layer over the entire mating surface of the top of cone and all adjusting rings. The butyl rubber sealant shall be EZ-Stik or Kent-Seal butyl base sealant in trowelable grade or equal. After placing rings, minor permanent shimming of the casting to obtain the necessary elevation and slope shall be performed. Temporary wedging is not permitted. Shims shall have a minimum surface area of 8 square inches and be made of steel, or other non-degradable material approved by the Owner. Shims shall be placed at a minimum of three locations between the casting and top adjusting ring to prevent rocking of the casting. After the shims have been correctly placed the Contractor shall then trowel the butyl rubber sealant or non-shrink grout, if approved by the Village, over the mating surfaces and then place the casting onto the manhole. Installing the butyl or grout between the adjusting ring and casting by pushing, tuckpointing, or any other method, from the outside of the rings is not permitted. Contractor shall take care to prevent the butyl rubber sealant from getting on the interior surface of the rings and frame within the chimney.

ii. Polypropylene adjusting rings.

1. Expanded polypropylene adjusting rings shall be Pro-Ring™ as manufactured by Cretex Specialty Products, Waukesha, Wisconsin, or approved equal.

2. The top of manhole castings shall be set 0 to 1/2 inch below the newly finished asphalt surfaces and concrete pavement, or elevations per the plan within grass or lawn areas. Casting shall be placed level within grass areas or match the slope of the adjacent finished surface in all other areas. Manhole frames shall be adjusted to the maximum extent possible by using adjusting rings of various thicknesses and tapers installed in accordance with the manufacturer's recommendations and instructions.

(7) Manhole lifting holes. All lifting holes in precast manhole sections shall be plugged using rubber plugs supplied by the manhole supplier, non-shrink grout or other approved method. Non-shrink grout shall fill the entire void and shall be troweled at each face to provide smooth surfaces. Cement mortar shall not be used to plug lifting holes.

(8) Manhole Riser Joints. Joints for precast manhole riser sections shall be made with rubber "O"-ring gaskets, a continuous ring of butyl rubber sealant (EZ-Stick or Kent-Seal in rope form) or equal. The butyl sealant shall be 1-inch diameter equivalent or as recommended by the manhole manufacturer.

a. An external sealing wrap shall be placed at all joints between pre-cast manhole sections. The external sealing wrap shall meet, or exceed, the requirements of ASTM C-877, Type III. External joint seals shall be EZ-WRAP, as manufactured by Press-Seal Gasket Corporation, or pre-approved equal.

(9) Chimney Seal.

a. An external sealing wrap shall be placed on the entire manhole chimney from the casting to the 6-inches below the top of the manhole cone section and installed in accordance with the Village Standard Detail. The external sealing wrap shall be EZ-WRAP, as manufactured by Press-Seal Gasket Corporation, or approved equal.

B. Inlet Manhole

(1) Inlet manholes shall be constructed in accordance with the provisions of a Standard Manhole except as provided below.

a. For curb inlet manholes use flat top slabs with opening. Sizes shall match specified frame and grate.

(2) Frame and Covers

a. Beehive grate manhole covers shall be Neenah R-2560-E1 or equal.

b. Neenah R-3067-L (vertical face curb).

c. Neenah R-3501-R (mountable curb).

d. Neenah R-3290-A with a type A grate may replace existing frames and covers in proposed depressed curb head locations.

(3) Inlet manholes shall not have sumps.

C. Tee-Line Manholes

(1) Tee-line manholes shall be constructed in accordance with File No. 16 of the "Standard Specifications" and the pertinent provisions included in the Standard Manhole subsection above.

D. Junction Box Manholes

(1) Junction box manholes shall be constructed in accordance with details included in the plans and pertinent provisions included in the Standard Manhole subsection above. Junction box details must be in plans which are approved by the Village Engineer for the project.

5.0 Catch Basin

A. Catch basins shall be constructed in accordance with the Village standard catch basin details.

B. Catch basins shall be precast, unless otherwise approved by the Village.

(1) 24"x36" rectangular catch basins shall be installed in vertical face curb sections.

(2) 24"x30" rectangular catch basins shall be installed in mountable curb sections.

(3) Round catch basins may only be installed if approved by the Village. Round catch basins greater than 3-feet in depth, measured from the inlet flow line to the bottom of the sump, shall be provided with steps in accordance with Section 4.0 Storm Manhole of these Specifications.

C. Catch Basin Frame and Chimney

(1) Catch basin frames and grates shall be Neenah R-3067-L on vertical face curb and R-3501-R on mountable curb. Neenah R-3290-A with a type A grate may replace existing frames and covers in proposed depressed curb head locations.

(2) The castings shall be set to match the proposed curb and gutter flange elevations. Flowline of proposed curb and gutter shall be adjusted within 3' of the catch basin to match the casting flowline. Curb box on R-3067 castings shall be adjusted to a height of 7-inches to match the proposed back of curb elevation. Frame base shall be placed at the same longitudinal slope as the proposed curb and gutter and level from front to back.

(3) The frames shall be adjusted to the maximum extent possible by using adjusting rings of various thicknesses. Adjusting rings shall be concrete with one line of steel centered within the ring. Adjusting rings shall be set with butyl rubber sealant

troweled into a 1/4 inch thick layer over the entire mating surface of the structure and all adjusting rings. The butyl rubber sealant shall be EZ-Stik or Kent-Seal butyl base sealant in trowelable grade or equal. After placing rings, minor permanent shimming of the casting to obtain the necessary elevation and slope shall be performed. Temporary wedging is not permitted. Shims shall have a minimum surface area of 8 square inches and be made of steel, or other non-degradable material approved by the Village. Shims shall be placed at each corner of the casting between the casting and top adjusting ring to prevent rocking of the casting. After the shims have been correctly placed the Contractor shall then trowel the butyl rubber sealant or non-shrink grout, if approved by the Village, over the mating surfaces and then place the casting onto the manhole. Installing the butyl or grout between the adjusting ring and casting by pushing, tuckpointing, or any other method, from the outside of the rings is not permitted. Contractor shall take care to prevent the butyl rubber sealant from getting on the interior surface of the rings and frame within the chimney.

D. Chimney Seal

(1) An external sealing wrap shall be placed on the entire catch basin chimney from the casting to 6-inches below the top of the catch basin section and installed in accordance with the Village Standard Detail. The external sealing wrap shall be EZ-WRAP, as manufactured by Press-Seal Gasket Corporation, or approved equal.

6.0 Laying of Pipe

A. Pipes shall be laid in accordance with chapter 3.2.0 of the “Standard Specifications”, as specified and/or modified below:

(1) Pipes shall be laid with the bell end pointing upgrade regardless of the method of installation used.

B. Storm sewer bedding and cover material shall conform to appropriate sections of the “Standard Specifications”, as specified or modified below. Unless otherwise approved by the Village Engineer, Class “B” Bedding shall be used.

(1) Class “B” Bedding shall conform to File No.4 and paragraph 3.2.6(b)(concrete pipe) or paragraph 3.2.6(i) (PVC and HDPE) of the “Standard Specifications”, as modified below.

a. Crushed pea gravel will not be allowed for use as bedding material. Cover material shall be the same material as for bedding and shall conform to Section 8.43.2(a).

b. Delete the following sentence from Paragraph 3.2.6(b)2. and 3.2.6(i)1.:

“If crushed stone chips or other material conforming to Section 8.43.2(a) are used as cover material, no compaction or staging is required.”

c. Place bedding material to the springline of the pipe and compact prior to placing cover material. Compaction of bedding material at the level of the pipe springline shall include working bedding material under the haunches of the pipe using shovels or other suitable means. The Contractor shall take care to completely work bedding material under the haunches of the pipe to provide adequate side support.

d. Place and compact cover material in one or more lifts after compacting bedding material. Place a minimum of 12-inches of cover material over the pipe.

7.0 Manhole / Catch Basin Pipe Connections

A. Connections of pipes to manholes and catch basins shall be made in accordance with Section 3.5.7 of the "Standard Specifications", as modified below. All field tapped holes for connecting sewer pipe to manholes shall be made by coring.

(1) Rigid Pipe. Reinforced concrete pipe shall be connected by means of brick and mortar per Subsection 3.5.7(a)1.b.

(2) Flexible Pipe. Corrugated polyethylene pipe (HDPE) and polyvinyl chloride pipe (PVC) shall be connected by either an approved flexible pipe to manhole seal or by means of brick and mortar per Subsection 3.5.7(a)1.b. Install a rubber gasket around the pipe, centered on the manhole or catch basin wall, when forming mortared connections.

8.0 Field Tile Connections

A. All field tile(s) encountered during the construction shall be connected to the new storm sewer, unless otherwise directed by the Village to make reconnection repairs only.

B. Tile lines crossed by the trench shall be replaced with polyvinyl chloride (PVC) sewer pipe meeting the requirements of ASTM D-3034, SDR-35, with rubber gasket joints. The PVC pipe shall be extended for a minimum distance of 2-feet outside the edge of the undisturbed trench wall. The tile to PVC pipe connection shall be made with compatible fittings, adaptors, or encased in concrete. The size of the new PVC pipe shall be equal or greater than the field tile it is connected to. Connections to storm sewers shall be cored.

C. Damaged field tile shall be repaired the same day as the damage occurs so that flow of water will not be unreasonably restricted.

D. Damaged tile shall be connected to new storm sewers wherever possible.

9.0 Tracer Wire

A. Tracer wire shall be installed with all underground storm sewer in accordance with Village Specifications VS-0600 "Underground Warning Tape and Tracer Wire".

10.0 Pipe Joint Restraint (End Sections)

A. End sections and adjacent two pipe sections shall be secured to each other using joint ties.

11.0 Inlet / Outlet Grates

A. Install steel grating on the ends of endwalls which are 15-inches in diameter or greater, unless otherwise approved by the Village. Steel grating shall be in accordance with Village Standard Details and as specified below.

B. Galvanized steel grating:

(1) After fabrication, the entire grating shall be hot-dipped with a galvanized coating.

(2) Inlet/outlet grates (trash racks) shall be placed over both the inlet and outlet end sections.

12.0 Rip-Rap

A. Riprap shall comply with Section 606 of the “State Specifications”, as modified below.

B. Materials. Riprap shall comply with Subsection 606.2 of the “State Specifications” except that concrete slabs may not be substituted for stone. Riprap dimensions shall be as specified in Subsection 606.2.1 and will be to the approximate sizes and thicknesses listed below.

(1) Light Riprap: Size(inches) = 4 to 16; Thickness(inches) = 12

(2) Medium Riprap: Size(inches) = 5 to 20; Thickness (inches) = 18

(3) Heavy Riprap: Size(inches) = 6.5 to 20; Thickness (inches) = 24

(4) Extra Heavy Riprap: Size(inches) = 8 to 30; Thickness (inches) = 30

C. Placing Rip-Rap

(1) Lay stones perpendicular to the slope with close, broken joints, firmly bed in the slope, and thoroughly compact. Chink spaces between stones to make the finish surface even and tight.

(2) Light Riprap shall be place by hand with larger stones in lower courses. Medium, Heavy, and Extra-Heavy Riprap may be placed by mechanical means, not dumping, that produces work within reasonable tolerances of the typical section(s). Fill voids with smaller pieces.

(3) Riprap shall be placed on a layer of geotextile fabric. Place fabric in accordance with Subsection 654.3.6 and 654.3.7 of the “State Specifications”.

a. Light Riprap. Fabric shall be geotextile fabric, Type R (Riprap) meeting the minimum values specified in Subsection 654.2.6 of the “State Specifications”.

b. Medium, Heavy, and Extra Heavy Riprap. Fabric shall be geotextile fabric, Type HR (Heavy Riprap) meeting the minimum values specified in Subsection 654.2.7 of the “State Specifications”.

13.0 Testing and Inspection

A. Televising Sewers

(1) All sewers lines will be televised by the Village after forming manhole flowlines and benches prior to acceptance of the work.

a. Contractor shall clean all sewers and manholes prior to televising.

(2) All defects identified by the televising inspection shall be corrected and any dirt, gravel or foreign material removed from the sewer prior to acceptance by the Village. All lines that were either repaired or cleaned shall be re-televised by the Village.

(3) Sewers shall be re-televised near the end of the 1-year warranty period. All defects identified by the warranty period televising shall be corrected. All lines that were repaired shall be re-televised by the Village.

(4) All televising and re-televising of sewers by the Village is at the Developer’s cost.

END OF SECTION

VILLAGE STANDARD CONSTRUCTION SPECIFICATIONS
VS-0400 WATER MAIN

1.0 Section Description

A. This section includes Village requirements for water main materials and construction.

B. Related Sections Include:

(1) Section VS-0100 General Terms and Conditions

(2) Section VS-0600 Underground Warning Tape and Tracer Wire

(3) Section VS-0601 Backfilling Utility Trenches

(4) Standard Details

2.0 Made in the USA

A. All water main materials including, but not limited to, pipe, tubing, valves, valve boxes, hydrants, joint restraint, fittings, and fasteners shall be manufactured in the USA.

3.0 Open Cut Water Main Pipe Materials

A. Water main pipe material shall be polyvinyl chloride (PVC).

(1) Polyvinyl chloride (PVC) pipe shall meet the requirement of AWWA C900 (4 inch through 12 inch diameter) or AWWA C905 (14 inch through 30 inch diameter), DR18, pressure rating of 235, with cast iron O.D., and integral elastomeric bell and spigot joints.

a. Do not furnish cable bonding or other methods of providing electrical conductivity on valves, hydrants, and fittings located within sections of water main constructed with PVC pipe.

b. Pipe shall be installed the same year it was manufactured unless approved by the Village Engineer.

4.0 Directionally Drilled Water Main Pipe Materials

A. Water main pipe material shall be fusible polyvinyl chloride (PVC) or high density polyethylene (HDPE) unless the use of restrained joint PVC pipe has been approved of by the Village Engineer. Directionally drilled water main pipe materials shall conform to the following:

(1) General.

a. Contractor may, upon prior approval from the Village Engineer, select a lesser DR rating (stronger pipe) appropriate to the job site conditions, the capability of his “pull-in” equipment, and his methods of operation.

b. The maximum job site pull-in force shall not exceed the manufacturer’s recommended safe pull-in force.

c. Directionally drilled pipe shall sit undisturbed for a minimum of 48-hours to allow for settlement of the directionally drilled pipe prior to extension of the pipe or installation of any fittings or appurtenances unless otherwise approved by the Village.

d. When recommended by the pipe manufacturer, the contractor shall install measures to protect against contraction or expansion of the pipe. Possible recommended measures may include, but are not limited to, concrete wall anchors and/or additional joint restraint beyond the completed directionally drilled pipe sections.

(2) Fusible PVC.

a. Fusible polyvinyl chloride (PVC) pipe meeting the requirement of AWWA C900 (4 inch through 36 inch diameter) with cast iron O.D. and thermal butt fused joints between pipe sections. Joint gaskets shall not be required. PVC material shall have a cell classification of 12454 as defined in ASTM D1784.

i. Pipe shall be Fusible C-900® by Underground Solutions, Inc.

ii. Pipe used for water main shall be colored blue.

(3) Fusible HDPE.

a. High density polyethylene (HDPE) water main (4 inch through 36 inch diameter) shall meet the requirements of AWWA C906, DR 11, with cast iron O.D. Pipe material shall have a cell classification of PE 3408/PE 3608 (345464C) as specified in ASTM D3350.

i. HDPE pipe has a greater wall thickness than PVC and DI pipe resulting in a smaller inside diameter. Unless the plans specifically state HDPE pipe, the HDPE pipe installed shall be larger diameter than that shown on the plans so that the inside diameter is the same as, or larger, than the adjacent pipe sections.

ii. Pipe used for water main shall be striped blue.

(4) Restrained joint PVC pipe (if approved by the Village Engineer).

a. Restrained joint polyvinyl chloride (PVC) pipe meeting the requirement of AWWA C900 (4 inch through 24 inch diameter), DR18, cast iron O.D. and restraining jointing systems with built-in sealing gaskets. PVC material shall have a cell classification of 12454 as defined in ASTM D1784.

i. Restrained joint pipe shall be Certa-Lok® by North American Pipe Company or equal.

ii. Pipe used for water main shall be colored blue.

5.0 Fittings

A. Fittings shall be ductile iron or cast iron, cement mortar lined with internal and external bituminous coating and meeting the requirements of AWWA Standard C110 (ANSI 21.10). Fittings shall be supplied with mechanical joints and rubber gaskets.

(1) Ductile iron mechanical joints fittings meeting the requirements of AWWA Standard C153 for “compact fittings”, 3-inch through 24-inch size, may be used in place of the fittings specified above.

B. All water main nuts, bolts, and rods including connections to mains, fittings, valves and hydrants, shall be stainless steel. Nuts shall have a colored fluoropolymer lubricant coating to prevent galling.

6.0 Valves and Valve Boxes

A. Resilient-Seated Gate Valves. Resilient seated gate valves shall meet the requirements of AWWA C515.

(1) Resilient-seated gate valves shall be furnished with mechanical joints with rubber gaskets, iron body, stainless steel fasteners, bronze mounted, resilient wedge, non-rising stem, “O”-ring stem seals, 2-inch square operating nut opening to the left (counterclockwise), and rated at 200 psi working pressure.

(2) All 6-inch and 8-inch valves shall be resilient-seated gate valves unless otherwise approved by the Village.

(3) Resilient-seated gate valves shall be American Flow Control Series 2500, Clow F-6100, or Mueller A-2362.

B. Butterfly Valves. Butterfly valves shall be AWWA rubber-seated butterfly valves meeting the requirements of AWWA C504, Class 150B.

(1) Butterfly valves shall be furnished with mechanical joints with rubber gaskets, cast iron body for buried services, stainless steel operator nuts and bolts, underground operator with a 2-inch square operating nut opening to the left (counterclockwise), and rated at 150 psi working pressure.

(2) All 12-inch and larger diameter valves shall be butterfly valves.

(3) The valve operator shall be on the side of the main closest to the centerline of roadway or center of easement.

(4) Butterfly valves shall be Pratt “Groundhog”, Kennedy, Dresser “M&H”, Clow, or Mueller “Lineseal III”.

C. Valve Boxes. Valve boxes shall be two (2) piece cast iron valve boxes consisting of a bottom (5-1/4" shaft diameter) section and screw type top section with cover marked "WATER". Valve box sections must be installed with the bell section above the spigot so that soil cannot drop into the threads.

(1) Acceptable manufactures include: Tyler 6850 series and Bingham and Taylor 4905.

(2) If additional sections are required to adjust the valve box to grade the top section must be removed and replaced with a taller section. Internal extensions are not permitted.

(3) Valve boxes for gate valves shall be installed with the Valve Box Adaptor II and butterfly valves with the Butterfly Valve Adaptor as manufactured by Adaptor, Inc., of Oak Creek, Wisconsin, or equal. Valve box adapters shall be furnished for the specific size and model valve to be equipped.

D. Valve Stem Extensions. Valve stem extensions shall not be installed regardless of the valve depth.

E. Tapping Valves and Sleeves. Tapping valves shall be similar to the AWWA gate valves specified in these provisions except for the end connection (usually flanged) to the tapping sleeve and oversized seat rings to permit entry of the tapping machine cutter.

(1) Tapping sleeves shall be supplied by the manufacturer of the tapping valves.

F. Cutting-In Valves and Sleeves. Cutting-in valves shall be similar to the AWWA gate valves specified in these provisions except that they shall be provided with special gaskets allowing assembly on various types of pipe.

(1) Cutting in sleeves shall be supplied by the manufacturer of the cutting-in valves.

7.0 Hydrants

A. Standard Hydrant. Hydrants shall be Mueller Super Centurion No. A-423 conforming to the following specifications.

(1) Hydrants shall be compression type, with 5-1/4 inch bottom valve and 6-inch mechanical joint inlet connection, "O"-ring packing, safety flange construction, meeting the requirements of AWWA Standard C502 and meeting specifications for 300 PSI test pressure and 150 PSI working pressure. Fasteners shall be stainless steel.

(2) Hydrants shall have two 2-1/2 inch hose nozzles with nut type nozzle caps with gasket and chains and one factory installed 5 inch Storz connection with cap manufactured by Mueller.

(3) Hydrants shall have 1-1/4 inch pentagon operating nut opening to the left (counter-clockwise).

(4) Hydrants, excluding the Storz connection and cap, shall be factory painted with epoxy as directed below:

a. Publicly owned and maintained (Village) fire hydrants.

i. Village fire hydrants shall be Mueller red, Sherwin Williams Polane F63RL15.

b. Privately owned and maintained fire hydrants.

i. System pressure hydrants - fire hydrants connected to the Village water system, on system pressure, shall be blue, Sherwin Williams Polane F63RXL9667.

ii. Pressurized hydrants - fire hydrants connected to fire loops or other private pressurized system (i.e. fed by a fire pump and not the Village system pressure) shall be yellow, Sherwin Williams Polane F63YL14.

(5) Hydrant markers.

a. Hydrant markers shall be installed on all new hydrants.

i. Hydrants markers shall be 5-foot tall fiberglass marker with reflective white and red sheeting. The marker shall be connected to a spring mounted on a flat bracket which is to be secured to the hydrant bonnet. Markers shall be Tapco part number 2673-00001 or equal.

(6) Install 24-inches of #1 stone at the base of the hydrant around the weep holes.

(7) Joint restraint and buttressing. Restrain all hydrants in accordance with Section 9 (Joint Restraint and Buttressing) of these Water Main specifications and the Village Standard Details.

(8) Hydrant height. Hydrants shall be furnished for the depth of bury shown on the plans or as measured in the field. No hydrant bury shall be less than 6.5'. Vertical bends or offset fittings (6" x 6" thru 6" x 24") may be used to provide additional adjustment. The use of barrel extensions is not permitted. The distance from the ground line to the centerline of the lowest nozzle shall be from 18 to 23 inches.

a. A tag indicating the bury height shall be provided with every hydrant. Bury tag shall have raised text and fastened to the hydrant using a flange bolt.

(9) Hydrant locations.

a. Along urban roadways, place hydrants 5-feet behind the back of curb or as approved by the Village.

b. Along rural roadways, place hydrants 1-foot off the right of way (rural roadway areas), to a maximum of 15-feet off the edge of pavement or as approved by the Village.

(10) Temporary hydrant cover. Temporarily cover new hydrants during construction with polyethylene bags, securely fastened in place, until after the water main has been tested and placed in service.

B. Hydrant Valve, Valve Box and Lead.

(1) Hydrant valve and valve box.

a. Hydrant valve and valve box shall conform to the requirements for gate valves and valve boxes of these Provisions.

b. Valve locations. Place hydrant valves 3-feet off the hydrant as shown in the Village standard hydrant assembly details unless otherwise approved or directed by the Village.

(2) Hydrant leads.

a. Hydrant leads shall be six (6) inch C900 PVC pipe.

b. Restrain hydrants leads. Restrain hydrant leads in accordance with Section 9 (Joint Restraint and Buttressing) of these Water Main specifications and the Village Standard Details.

C. Hydrant Retrofits.

(1) Where indicated on the plans existing Mueller Centurion 200, 250, and Modern fire hydrants with treaded steamer nozzles shall be retrofit with a 5 inch Storz connection with cap manufactured by Mueller. If existing hydrant is identified to be retrofit but is not a Mueller Centurion 200, 250 or Modern fire hydrant, Contractor is unable to retrofit the hydrant, or if the Village determines the existing hydrant is in disrepair, the hydrant shall be replaced with a Village Standard Hydrant as specified above.

a. Hydrant shall be retrofit by removing the existing threaded streamer insert and replacing with a new Muller Storz connection in accordance with the manufacturer's recommendations. Retrofit Mueller Storz part number is 287305.

8.0 Laying of Pipe

A. Pipes shall be laid in accordance with the Chapter 4.3.0 of the "Standard Specifications" except where modified below:

(1) Cut pipe ends are only permitted at mechanical joints. Cut pipe ends may not be inserted into the bell of a pipe unless approved by the Village.

(2) Delete subsection 4.3.4. Wood blocking is not permitted.

B. Polyvinyl Chloride (PVC) Pipe. Bedding and cover material shall be crushed stone chips conforming to subsection 8.43.2(a) of the “Standard Specifications”. Crushed pea gravel will not be allowed for use as bedding or cover material.

C. Trench Section. The trench section shall conform to Section 4.3.3 and File No. 36 of the “Standard Specifications”, as amended below:

(1) Bedding and cover shall be placed in a minimum of three separate lifts to ensure adequate compaction of these materials, with one lift of bedding material ending at or near the springline of the pipe. The Contractor shall take care to completely work bedding material under the haunch of the pipe to provide adequate side support.

(2) Amend Section 4.3.3 and File No. 36 of the “Standard Specifications” to require a minimum of 12-inches of cover material over the top of the pipe.

9.0 Polyethylene Wrap

A. Polyethylene wrap shall be provided on all fittings, joint restraint and ductile iron water main.

(1) All joint restraint systems, including strapping/rodding, shall be enclosed within the wrap.

(2) Wrap all fittings.

(3) Wrap all valve boxes.

(4) Wrap all hydrant barrels, but be careful not to plug weep holes.

B. Polyethylene wrap shall meet the requirements of AWWA Standard C-105 (ANSI A21.5) using Class C (black) polyethylene material with 8 mils minimum thickness and shall be installed as specified in Section 4.4.4 of the “Standard Specifications”.

(1) Fold and tape loose wrap material to minimize air entrapment which could cause the material to be punctured when backfilling.

10.0 Joint Restraints and Buttressing

A. Restraining Fittings, Valves, Sleeves, and dead ends.

(1) Restrain all fittings (bends, tees, caps, and plugs), valves, sleeves, and dead ends.

(2) Buttress all fittings in addition to joint restraint.

(3) Concrete Buttresses. All horizontal bends, tees, caps, plugs, and dead ends shall be provided with poured in-place concrete buttresses, in addition to joint restraint, in accordance with Village Standard Details.

B. Joint Restraint Systems

(1) Restrain all fittings (bends, tees, caps, and plugs), valves, and sleeves using MEGALUG restrained joints as manufactured by EBAA Iron Sales, Inc. of Eastland, Texas or as provided below.

a. Tyler Mechanical Joint Restraint. Joint restraint for mechanical joint pipe and fittings used with either ductile iron or PVC pipe may be provided using Tyler Mechanical Joint Restraint (MJR) System on 4-inch through 12-inch diameter pipe.

(2) All joint restraint nuts and bolts shall be stainless steel. Nuts shall have a colored fluoropolymer lubricant coating to prevent galling.

C. Restraining Vertical Bends, Offsets, Horizontal Bends, Dead Ends, and Tees

(1) Changes in grade of the water main made by vertical bends or offsets shall be restrained by strapping in accordance with File No. 47 of the "Standard Specifications" or by Joint Restrain Systems provided for in section above.

(2) Restraining for horizontal bends and dead ends shall be in accordance with File No. 47A with minimum lengths from center of fitting listed below:

Pipe Size (in)	Horizontal Bends (degrees)				Dead end
	11 ¼	22 ½	45	90	
4 to 8	5-ft	5-ft	10-ft	25-ft	45-ft
10 to 12	5-ft	10-ft	15-ft	35-ft	65-ft
14 to 16	10-ft	10-ft	20-ft	40-ft	80-ft
18 to 24	10-ft	10-ft	25-ft	50-ft	120-ft

(3) Tees. At a minimum restrain all joints within 20-feet of the centerline of the Tee (on both the main and branch lines), unless otherwise shown on the plans.

D. Restrained Hydrant and Leads

(1) Restrain hydrants with concrete buttresses and by restraining all joints to the main. Provide concrete buttresses and joint restraint as specified above and as shown in the Village Standard Details.

a. Buttresses shall be poured against firm undisturbed earth. If it is not possible to pour hydrant buttresses against undisturbed earth due to the hydrant being parallel to the main or any other reason the entire hydrant lead from the hydrant tee to the hydrant shall be strapped and rodded in addition to the buttress being poured against the disturbed earth.

(2) Restrain all joints within 20-feet of the centerline of the hydrant tee.

E. Restrained Joint – Water Service Stubs

(1) All 4-inch and larger water service piping shall be restrained from the mainline tee to the service shut-off valve. All joints along the entire stub shall be restrained and the end of the piping braced with a concrete buttress.

F. Restrained Joint – Cut-In Tees on Existing Mains

(1) Cut-in tee connections shall be restrained from the mainline cut-in tee to the new shut-off valve. All joints between the new cut-in tee and the new shut-off valve shall be restrained. Concrete buttress shall be installed at the shut-off valve if the piping is not to be extended at the time of the shut-off valve installation.

11.0 Minimum Cover and Insulation

A. Where possible water main and service piping shall have a minimum of 6-feet cover except provide 5-feet minimum cover at ditch crossings. Water mains and services which do not meet these minimum cover requirements shall be insulated or offset as specified below:

(1) Insulation

a. Unless directed by the Village to offset per subsection (2) below, water mains and services shall be insulated wherever the depth of cover is more than 4-feet but less than 5-feet, passes within two feet of an underground structure which may experience freezing temperatures and at locations as directed by the Village Engineer.

b. Insulation shall consist of two 2-inch thick (4-inch total thickness) closed cell extruded polystyrene foam boards (XPS) on the top and sides of the pipe.

c. Install insulation in accordance with the Village Standard Detail Drawing.

(2) Offset

a. Water mains and services with less than 4-feet of proposed cover shall be offset to obtain a minimum of 6-feet cover except provide 5-feet minimum cover at ditch crossings.

12.0 Sewer Crossings

A. Center one full length of water main pipe on sewers wherever water main crosses over or under a sanitary or storm sewer so that both water main joints will be as far from the sewer as possible.

13.0 High Points in Water Main

A. The Contractor shall install water main at the grades per the Village approved plans with no high points constructed in the main except at hydrant locations and as approved by the Village. If a high point which could trap air cannot be prevented, then an air release assembly shall be constructed at that point. The Village reserves the right to order the Contractor to relay water mains placed at the wrong grade.

14.0 Operation of Valves and Hydrants

A. All valves and hydrants will be operated by or under the supervision of the Village Public Works Department. Contractor shall coordinate valve and hydrant operations with the Director of Public Works.

15.0 Water Service Disruption

A. The Contractor shall coordinate his work with the Village when connecting to existing water main(s) or any other work that may require water service disruption. Work shall be scheduled, sequenced, and performed to minimize inconvenience and disruption caused by temporary discontinuance of water service.

(1) Contractor shall provide the Village with a plan of their water service disruption work at the preconstruction conference or soon thereafter (prior to critical work scheduling) to coordinate the water service disruption work schedule, resident or business notifications, and Village expectations and requirements for the disruption. Contractor must coordinate and have a mutual understanding with the Village with respect to the water disruption work, prior to commencing work.

(2) Resident water service may only be shut down between the hours of 8:30 a.m. and 4:30 p.m. Water service to residences shall not be shut down for a period longer than eight (8) hours, before 7:30 a.m., after 4:30 p.m., or on weekends without approval from the Village.

(3) Water service to businesses shall not be shut down for a period longer than two (2) hours unless satisfactory arrangements are made with the businesses affected.

(4) Contractor shall notify residence(s) and businesses of planned water service disruptions, in advance of their work. In no case shall notifications be made less than 24-hours in advance, unless emergency work is being performed. Contractor must notify and coordinate with effected businesses and residence both in writing and personal contact regarding planned water service disruptions. A copy of written notifications must be provided to the Village along with a log of personal contacts made.

(5) Contractor shall take whatever measures are necessary to return service at the end of each working day, including the use of temporary valves and plugs.

(6) The Village reserves the sole authority to prohibit the shutdown of a water main, if in the opinion of the Village that the said shutdown would affect the public health, safety, and welfare or seriously damage a business that is reliant upon the delivery of municipal water.

16.0 Water Services (Within ROW or Public Water Main Easements)

A. Water Service Pipe

(1) Water service piping for all new and relaid services from ¾-inch through 2-inch diameter shall be polyethylene (PE) tubing (copper tube size) conforming to AWWA C-901 and ASTM D2737, PE 4710, DR 9.0 (250 psi working pressure).

a. Use 1-1/2-inch diameter standard residential service.

(2) Use compression type mechanical fittings for corporation stop and curb valve. Flared fittings shall not be used.

(3) Join PE pipe to PE pipe using heat-fusion connections.

(4) All connections to polyethylene tubing to corporation stops and curb valves shall be reinforced with liner/insert stiffeners.

B. Corporation Stops. Corporation stops 1 ½-inch and 2-inch size shall be Mueller B-25008N with cc threads.

(1) All 1 ½ -inch and 2-inch stops shall be installed using double strap service clamps. Service clamps shall have a ductile iron body and stainless steel straps or shall be 100% stainless steel.

C. Curb Valves. Curb valves 1 ½- inch and 2-inch size shall be Mueller H-15209N.

D. Curb Boxes. Curb boxes (1 ½- inch and 2-inch size) shall be Mueller H-10336 arch pattern curb box with a H-10400 foot piece, or equal.

(1) Curb boxes shall be furnished with foot piece and stationary rod for 6-1/2 feet of bury.

E. Installation

(1) Water service piping shall be installed in accordance with Chapter 5.5.0 of the "Standard Specifications" and the following provisions.

a. Do not connect services to the water main until after the main has been tested and a safe water sample obtained.

b. Insert the corporation stop into the water main while the main is in service and under pressure.
c. Do not backfill the water service trench until after the service has been checked for leaks and the service piping thoroughly flushed.

(2) Install water service piping with 6-1/2 feet minimum cover except provide 5-feet minimum cover at ditches.

(3) Tapping PVC Water Main. PVC water main shall be tapped using double strap service clamps. Corporation stops installed on PVC pipe shall be furnished with AWWA tapered threads conforming to AWWA C-800.

a. Service clamps for 1-1/2", and 2" services shall have a minimum total width of 3-inches.

b. Tap PVC pipe using a shell cutter with internal teeth. Do not use a standard drill and tap for direct tapping under pressure.

c. Place Teflon tape on corporation stop threads prior to installation. Corporation stops shall be torqued to a maximum of 35 ft.-lb. or as recommended by the manufacturer.

d. The tap shall be located at least 3-feet from the following:

i. The back of the bell where the bell transitions to the barrel of the pipe.

ii. The spigot insertion line.

iii. Joint restraint hardware.

iv. Adjacent service taps.

(4) Water Service and Curb Valve Location

a. Curb valves shall be placed one half (0.5) foot from the right-of-way line, unless otherwise approved by the Village, with the residence side of the curb valve capped or plugged. Curb boxes shall be set to finished yard grade.

b. Place water service outside existing or future driveways.

(5) Water Service Testing

a. After the curb valve has been installed the water service shall be flushed to verify the corporation valve is open.

17.0 Underground Marking Tape and Tracer Wire

A. Underground marking tape and tracer wire shall be installed with all underground water mains and services in accordance with Village Specification VS-0600.

18.0 Village Inspection of Valves

A. Village shall inspect and key all valves for alignment and functionality upon completion of the work and prior to roadway paving.

19.0 Abandoning Water Mains, Services and Appurtenances

A. Mains and Services.

(1) All inactive (dead) water main and laterals, except mains or laterals to possible future development, shall be abandoned as shown in the Village Standard Details.

B. Abandoning Valves and Valve Boxes.

(1) The procedure for abandoning valves and valve boxes, including hydrant valves and curb stops, shall be as specified below:

a. Abandoned valves shall be closed and left in place unless it is stated on the Plans to remove and salvage the valve(s) for the Village.

b. Valve boxes shall be abandoned by removing the cover and top section(s) to a depth of 3 feet below the final grade. Backfill remaining valve box sections and excavation with slurry within roadways or granular material elsewhere.

(2) Valves which are removed shall be salvaged for the Village.

C. Abandoning Hydrants.

(1) The Contractor shall remove and salvage all hydrants shown on the Plans to be abandoned, removed or replaced.

20.0 Salvaged Valves and Hydrants

A. Valves and hydrants removed as part of the project shall be delivered to the Village of Pleasant Prairie Public Works Department, 8600 Green Bay Road, Pleasant Prairie, WI 53158.

21.0 Hydrostatic Testing

A. General

(1) All test shall be performed as specified in Chapter 4.15.0 of the "Standard Specifications", except that the water main shall pass a combination leak/pressure test at a pressure of 150-psi for a duration of two consecutive hours with no allowable water loss. The Village shall be present at all times during the testing.

(2) The contractor shall furnish all labor, equipment, and material to complete the testing.

(3) Temporary Air-Release.

a. Trapped air shall be bled off (by tapping the main) when filling the main with water and/or removed by flushing through hydrants.

b. Temporary air-release may be provided by tapping 1-inch corporation stops into the high points of pipe or into the plug on dead end lines. After flushing and testing is completed, the temporary taps shall be abandoned in place.

c. The contractor shall provide temporary flushing hydrants if required to flush dead end lines.

B. Test Sections

(1) The Contractor has the option to test the entire new water main as one continuous section or in segments per his discretion.

(2) Connections to existing mains need not be tested, however, the Contractor shall sterilize and flush all connecting mains. The intersecting main(s) shall be subjected to line pressure and any visible defects repaired prior to backfilling.

22.0 Disinfection

A. General Requirements

(1) The water main shall be disinfected in accordance with Section 4.3.12 and Chapter 4.16.0 of the "Standard Specifications".

(2) The Contractor shall take all necessary samples of the water and provide any equipment necessary to take these samples. All water sample collections shall be witnessed by the Village. The Contractor shall deliver the samples to an approved laboratory for testing.

B. Safe Samples

(1) Prior to hydrostatic testing at least two (2) safe sample must be obtained from each of the segments to be hydrostatically tested. The time between the first and second sample at any location shall be greater than 16-hours and the samples may not be taken on the same day. Additional samples may also be required from:

a. Representative locations from each of the test sections to establish that all of the mains are free of contamination.

b. Dead end lines.

c. Connections to existing mains.

(2) Water main segments shall not be placed in service until after safe water samples have passed.

C. Procedures for disinfecting Connections to Existing Mains

The following procedures apply when existing mains are wholly or partially dewatered. Existing mains that are isolated by an existing valve require no disinfection. After the appropriate procedures have been completed, the existing main may be returned to service prior to completion of bacteriological testing to minimize disruption to service.

(1) Apply liberal quantities of hypochlorite to wet trenches at or near the connection to the existing main. Use hypochlorite tablets if water is being pumped from the trench to prolong protection as hypochlorite is slowly released as the tablets dissolve.

(2) Swab the interior of all pipe and fittings located between the connection to the existing main and the closest new valve (including connection pipe and fittings) with a one percent hypochlorite solution.

(3) Flush the connection to the existing main, from both directions toward the connection if valve and locations permit, as soon as the connection has been

completed and the nearest new valve installed and secured. Flush through the new main until all discolored water is eliminated.

(4) Should the water main connection be severely contaminated by dirty water or other means, the existing main and connection shall be disinfected by slug chlorination in accordance with the procedures specified below:

a. Continue to isolate the section of contaminated main.

b. Shut off all service connections.

c. Place hypochlorite tablets in the connection to the new main.

d. Flush the main to remove particulates.

e. Slowly close the contaminated main with a 300 mg/l free chlorine concentration for a period of at least 15-minutes.

f. Flush the main until the water is free of noticeable chlorine odor.

g. Open service connections and return the main to service.

(5) Take bacteriological samples to provide a record for determination the effectiveness of the procedure. Samples may be required from both sides of the connection.

a. If unsatisfactory tests are recorded, the Village will determine the necessary corrective action. Take daily samples until two consecutive safe samples have been recorded.

D. Rechlorination

(1) Should any test prove unsatisfactory, the water main shall be sterilized by the Contractor by such methods as he deems necessary and samples taken until acceptable results are obtained.

E. Flushing

(1) All water mains, including dead end mains and all hydrants, and all water services shall be flushed. Water services shall be flushed, with a minimum amount of water equivalent to the volume of the service pipe, until the water is visibly clean.

a. The Contractor shall use suitable methods for disposing of flushing water to prevent surface erosion.

b. The Contractor shall provide temporary flushing hydrants as required.

(2) Water for testing and flushing will be furnished by the Village at the Contractor's expense. The Contractor shall notify the Village prior to commencing flushing and shall coordinate his operations with the Village in order not to deplete the water supply. Water usage may be restricted to periods of low demand (night time or weekend hours) if water usage is high during normal working hours. All flushing of

new mains and services shall be done under the direct supervision of the Village or their representative.

(3) The Contractor shall meter all water used for flushing purposes. A complete record of all water used for flushing, including amounts and dates, shall be kept by the Contractor and provided to the Village.

a. The Contractor shall use a flushing meter provided by the Village. The meter shall be returned, in good condition, immediately after completing flushing operations. The Contractor shall be responsible for any damage to flushing meters.

F. Swabbing Water Main

(1) All piping installed outside of water main test segments shall be disinfected by swabbing with 1% hypochlorite solution and thoroughly flushed. The entire interior surfaces of all pipes and fittings shall be thoroughly swabbed. The diameter of swabs used in pipe shall match the interior pipe diameter and provide resistance when swabbing the pipes. Pipes shall be swabbed with a pumping motion with all surfaces wiped several times. The Contractor shall use extreme care to insure the cleanliness of all water main materials used.

END OF SECTION

VILLAGE STANDARD CONSTRUCTION SPECIFICATIONS
VS-0500 ROADWAY AND SIDEWALK

1.0 Section Description

A. This section includes requirements for roadway materials and construction.

B. Related Sections Include:

(1) Section VS-0100 General Terms and Conditions

(2) Standard Details

2.0 Subgrade Preparation

A. The Contractor shall grade and prepare the road subgrade for base aggregate dense placement. All excavation and grading work shall comply with the provisions of Section 205 (Roadway and Drainage Excavation), 207 (Embankment), 211 (Preparation of Foundation) and 213 (Finishing Roadway) of the “State Specifications”.

B. All topsoil from within the traveled roadway to two (2) feet minimum beyond the back of curb shall be removed.

C. Methods for stabilizing poor subgrades shall be approved by the Village prior to work being completed. Village may require a Geotechnical analysis and design for stabilizing poor subgrades.

D. Proof-rolling.

(1) Prior to placing granular sub base or base course material, the Contractor shall test the subgrade strength by proof-rolling. Proof-rolling shall involve running a fully loaded tri-axle dump truck with a minimum weight of 70,000-lbs over the entire roadway base (pavement plus shoulders) width at a normal walking speed. Soft, yielding areas or depressions in the subgrade shall be removed and backfilled with granular backfill in accordance with “excavation below subgrade” below. Aggregate base course shall not be placed until the subgrade has successfully completed the proof-roll testing. Proof-rolling must be witnessed and inspected by the Village. The Contractor must coordinate with the Village for inspection and provide a scale ticket verifying the weight of the truck exceeds 70,000-lbs at the time of proof-rolling.

3.0 Excavation Below Subgrade

A. Deposits of frost–heave material, unstable silty soils, water bearing soil, topsoil or other undesirable foundation materials shall be removed from the area within the roadway slopes to such depths as directed or approved by the Village. This work shall be done in accordance with Subsection 205.3.4 of the “State Specifications”

B. Granular backfill for excavation below subgrade shall comply with Section 209 of the “State Specifications”.

(1) Pit run gravel will generally be acceptable as granular backfill.

4.0 Base Aggregate Dense

A. Base aggregate dense shall be constructed in accordance with Section 305 of the "State Specifications," and the typical section(s) as approved by the Village. The Contractor shall furnish and place base course material as required to construct the base course to grade.

(1) Aggregate shall be crushed gravel, crushed limestone, crushed concrete, or approved equal.

B. Gradation. Base aggregate dense shall conform to the following gradations; as specified in Subsection 305.2.2.

(1) Top layer: 1-1/4-inch (4" minimum thickness); ¾-inch (Traffic Bond) must be used if roadway is not being paved within the same construction season and the road is open to public traffic.

(2) Lower layer(s): 1-1/4-inch (4" minimum thickness).

C. Standard Compaction

(1) Crushed aggregate base course shall be compacted in accordance with Subsection 305.3.2 of the "State Specifications," as modified below.

a. Compacted layers shall be 6-inches or less, unless otherwise approved by the Village.

b. Moisture shall be added by tank wagon as required for maximum compaction.

c. Standard compaction shall consist of compacting each layer of the base course to the degree that no further appreciable consolidation is evidenced under the action of the compaction equipment.

d. Compaction shall be performed by specialized compaction equipment including, pneumatic-tire rollers, vibratory rollers or other approved compaction equipment.

D. Proof-rolling

(1) Prior to placing asphaltic or concrete pavement, the Contractor shall test the base course strength by proof-rolling. Proof-rolling shall involve running a fully loaded tri-axle dump truck with a minimum weight of 70,000-lbs over the entire roadway base (pavement plus shoulders) width at a normal walking speed. Soft, yielding areas or depressions in the base course shall be removed, replaced with clean crushed aggregate base course, compacted in 6 inch maximum lifts and retested. Proof-rolling must be witnessed and inspected by the Village. The Contractor must coordinate with the Village for inspection and provide a scale ticket verifying the weight of the truck exceeds 70,000-lbs at the time of proof-rolling.

E. Dust Control

(1) The Contractor shall minimize the dispersion of dust from the base course, including shoulders, during construction and maintenance operations until after placement of the surface course.

(2) Dust control shall be accomplished by the application of water or other approved dust control material as required by the Village.

5.0 Base Aggregate Open Graded

A. Open graded base shall be constructed in accordance with Section 310 of the "State Specifications," and the typical section(s) and details as approved by the Village. The Contractor shall furnish and place material as required to construct the base course to grade and install the underdrain.

B. Standard Compaction

(1) Crushed aggregate base course shall be compacted in accordance with Subsection 310.3 of the "State Specifications," as modified below.

a. Compacted layers shall be 6-inches or less, unless otherwise approved by the Village.

b. Standard compaction shall consist of compacting each layer of the base course to the degree that no further appreciable consolidation is evidenced under the action of the compaction equipment.

c. Compaction shall be performed by specialized compaction equipment including pneumatic-tire rollers, vibratory rollers or other approved compaction equipment.

C. Proof-rolling

(1) Prior to placing asphaltic or concrete pavement, the Contractor shall test the base course strength by proof-rolling. Proof-rolling shall involve running a fully loaded tri-axle dump truck with a minimum weight of 70,000-lbs over the entire roadway base (pavement plus shoulders) width at a normal walking speed. Soft, yielding areas or depressions in the base course shall be removed, replaced with clean crushed aggregate base course, compacted in 6 inch maximum lifts and retested. Proof-rolling must be witnessed and inspected by the Village. The Contractor must coordinate with the Village for inspection and provide a scale ticket verifying the weight of the truck exceeds 70,000-lbs at the time of proof-rolling.

D. Dust Control

(1) The Contractor shall minimize the dispersion of dust from the base course, including shoulders, during construction and maintenance operations until after placement of the surface course.

(2) Dust control shall be accomplished by the application of water or other approved dust control material as required by the Village.

6.0 Concrete Masonry (Pavement, Curb and Gutter, Sidewalk)

A. Grade of Concrete

(1) All concrete shall be Grade A or A-FA, air-entrained, as specified in Subsection 501 of the “State Specifications”, unless otherwise approved by the Village.

a. All concrete shall be “ready-mix”.

B. Curing

(1) Concrete pavement, curb and gutter, and sidewalk shall be cured in accordance with the requirements of Subsection 415.3.12 of the “State Specifications”, except that all concrete shall be cured by the Impervious Coating Method as specified in Subsection 415.3.12.2.

(2) Clear curing compound may only be used on colored concrete, all other cure shall be white. Cure shall be installed to have complete and uniform coverage.

(3) A type 2, class A water based wax curing compound conforming to ASTM C309 shall applied to concrete which is to be overlaid with HMA pavement. Cure placed on all other placed concrete shall be a Poly-alpha-methylstyrene (PAM) liquid curing compound conforming to Subsection 415.2.4 of the "State Specifications".

C. Test Specimens

(1) The Contractor shall take two representative concrete samples in accordance with ASTM C-31 for 7 day and 28 day compression testing in accordance with ASTM C-39 from approximately every 300-feet of roadway, 500 feet of curb and gutter, and 400 feet of sidewalk or as directed by the Village.

(2) Test cylinders shall be six inches in diameter by 12-inches in height.

(3) The Contractor shall field cure, care for and ship the test cylinders to the testing laboratory. Copies of the test results shall be provided to the Village.

D. Cold Weather Work

(1) Cold weather work shall be in accordance with Section 415 of the “State Specifications”.

(2) Concrete pavement shall not be placed when the air temperature is less than 36-degrees, unless approved by the Village.

(3) For composite HMA /PCC roadways, concrete base shall not be placed if there is insufficient time in the construction season to place the asphalt surface layer, unless otherwise approved by the Village.

7.0 Concrete Curb and Gutter

A. Concrete curb and gutter shall conform to the Standard Village Curb Detail, unless otherwise approved by the Village and shall be constructed in accordance with Section 601 of the “State Specifications”.

B. Concrete curb and gutter shall be constructed on a layer of compacted base aggregate dense base course, placed to a thickness matching the subgrade elevation of the curb and gutter to the subgrade elevation of the adjacent pavement.

C. Curb and gutter placed abutting concrete pavement, including HMA / PCC composite road sections, shall be constructed with tie bars. Place #4 x 2’0” long at 3’ c-c.

D. Contraction Joints

(1) Adjacent to Concrete Pavement

a. Contraction joints in curb and gutter adjoining concrete pavement, including HMA / PCC composite road sections, shall be spaced to match joints in the abutting concrete pavement as shown in the jointing plan.

(2) Adjacent to Asphaltic Pavement

a. Contraction joints in curb and gutter adjoining asphaltic pavement shall be spaced at intervals of 10-feet or as directed by the Village.

b. Place contraction joints three feet from each side of curb inlets.

(3) If the Contractor elects to saw-cut the joints, the joints shall be saw cut the same day when normal or rapid concrete setting conditions prevail. If conditions exist that retard the setting of the concrete, the saw-cutting of the joints shall be delayed until the concrete has set sufficiently to preclude raveling during the sawing. If shrinkage cracks develop prior to saw-cutting, the cracked sections of concrete shall be removed to such an extent that the normal joint spacing will still exist. Contraction joints constructed by saw-cutting shall be a minimum of 2-inches in depth.

E. Expansion Joints

(1) Expansion joints shall be placed as outlined in Subsection 601.3.6 of the “State Specifications”. Joint filler shall be ¾-inch expansion fiber material.

(2) Adjacent to Concrete Pavement

a. Expansion joints in curb and gutter adjoining concrete pavement, including HMA / PCC composite road sections, shall be placed to match expansion joints in the abutting concrete pavement.

(3) Adjacent to Asphaltic Pavement

a. Expansion joints in curb and gutter adjoining asphaltic pavement shall be placed at the following locations:
   i. At 300 foot maximum spacing on both tangents and curves.

F. Opening to Traffic

(1) Traffic shall not be allowed on curb and gutter for a period of 7 days after placing or until the concrete has attained a compressive strength of at least 3,000 pounds per square inch as determined by cylinder breaks.

G. Tapered Curb Ends

(1) A tapered curb section shall be constructed at the ends of the curb and gutter. The tapered section shall be 3-feet long and end with a 2-inch high curb. A contraction joint shall be placed at the end of the tapered section.

H. Concrete curb and gutter shall be backfilled with compacted excavated material or granular material, except for the top 4-inches which shall be topsoil. All backfilling shall be completed within two weeks of curb and gutter installation. Roadways shall not be open to any traffic until backfilling has been completed. The Contractor shall immediately restore any backfill that settles.

I. Curb and Gutter Replacement Sections

(1) Damaged curb / gutter sections shall be removed to the nearest joint.

(2) Base aggregate dense base course shall be compacted prior to installing new curb/gutter.

(3) Curb and gutter constructed adjacent to existing curb and gutter shall be installed using two (2) No.4 (1/2-inch), 18-inch long tie bars, evenly spaced, driven 9-inches into the existing curb and gutter.

8.0 Concrete Pavement

A. Concrete pavement shall be constructed in accordance with Section 415 of the “State Specifications” as amended herein.

B. Joints

(1) Jointing Plan

a. Contractor shall prepare a jointing plan for concrete pavement unless already provided for in the project construction plans. The jointing plan must be submitted to the Village for review and approval. Concrete pavement may not be placed until the jointing plan has been approved of by the Village. Pavement installed which does not match the jointing plan must be removed and replaced at the Contractor’s cost to match the jointing plan.

b. Longitudinal joints shall be constructed along the centerline of the pavement, along the edges of traffic lanes, and at locations shown on the plans in accordance with “State Specifications”.

c. Transverse Joints

i. 7-inch Concrete Pavement (or less than 8-inches): Transverse joints shall be constructed at normal 10-foot spacing and as shown on the plans.

ii. 8-inch (or more) Concrete Pavement: Transverse joints shall be constructed at normal 10-foot or 15-foot spacing and as shown on the plans.

iii. Transverse joints shall be located to match joints in the adjacent curb and gutter (separately poured curb and gutter) or shall extend through integrally poured curb and gutter.

d. Isolation Joints / Boxouts (Structures)

i. Form isolation joints (boxouts) around structures; i.e., manholes, valve boxes and catch basins.

ii. Adjust transverse joints passing within 5-feet of a structure to pass through the structure or boxout.

C. Pavement Ties Bars and Dowel Bars

(1) All longitudinal joints, including construction joints, shall be constructed using tie bars conforming to Subsection 505.2.6 of the “State Specifications”.

(2) Transverse joints, shall be constructed with dowel bars, if required on the plans for collector or industrial roads or other roads as required by the Village. Dowel bars shall conform to Subsection 505.2.6 of the “State Specifications”.

D. Surface Finish

(1) The final surface shall conform to Subsection 415.3.8 of the “State Specifications”. When a concrete base for a composite HMA / PCC roadway the surface finish shall provide sufficient texture to obtain a good mechanical bond between the HMA and PCC.

E. Protection of Utilities.

(1) The Contractor shall temporarily plug valve boxes during paving operations to prevent material from entering the valve box. Temporary plugs shall be Mud Plug manufactured by Infact Corporation or approved equal.

(2) Manholes located within limits of concrete placed by a paver or finished with a mechanical screed shall have the castings left below the finished grade of concrete or the castings temporarily removed and the manholes plated or boxed

out with wood during paving operations. Upon the concrete setting up the Contractor shall sawcut the box out, set the manhole rim to grade and repair the concrete pavement in accordance with these Village Construction Specifications.

F. Opening to Traffic

(1) The pavement shall be opened to traffic in accordance with Subsection 415.3.15 of the "State Specifications". In general, traffic shall not be allowed for a period of at least seven (7) days when temperatures are generally 70-degrees (F) or higher during the period or after test cylinders show a compressive strength of 3,000 psi or more.

9.0 Concrete Sidewalk

A. The construction of concrete sidewalks shall comply with Section 602 of the "State Specifications" and Village Standard Details.

B. Standard sidewalk thickness shall be 5-inches except at driveways where the sidewalk shall match the thickness of the adjacent concrete drive with a minimum thickness of 6-inches provided.

C. Standard sidewalk width shall be 5-feet unless a wider sidewalk section is identified in the plans.

D. Sidewalk shall have a broomed finish.

E. Concrete sidewalks shall be constructed on a compacted gravel base. The gravel base shall be base aggregate dense 1-1/4-inch. The base shall be constructed to the following minimum thicknesses:

(1) Concrete sidewalk: minimum 4-inch thick base

(2) Concrete sidewalk at driveways: minimum 6-inch thick base

F. Joints shall be placed and constructed in accordance with Subsection 602.3.2.5 of the "State Specifications" and these Special Provisions.

(1) Expansion Joints: Place one-half (1/2) inch expansion joints as directed below:

a. Through sidewalks at uniform intervals of not more than 96 feet.

b. At joints with intersecting sidewalks.

c. Between sidewalk and back of curb and gutter. Construct the sidewalk grade ¼ inch higher than the back of curb elevation where they meet.

d. At the intersection of 5-inch sidewalk with (6 inch) drives.

e. Place one inch expansion joints between sidewalk and buildings or other rigid structures.

(2) Contraction Joints: Place contraction joints at a 5-foot typical spacing. Contraction joint spacing shall typically match adjacent sidewalk sections.

G. Handicap Ramps. Handicap ramps and detectable warning fields shall be constructed in accordance with standard WDOT details or Village approved project plan details. Detectable warning fields within public sidewalks shall be natural finish cast iron and included on the Wisconsin DOT approved products list.

H. Opening to Traffic

(1) Pedestrian traffic shall not be allowed for a period of at least 3 days after placing concrete and vehicular traffic shall be excluded for a period of at least 7-days after placing or until the concrete has attained a compressive strength of at least 2,500 psi.

10.0 Asphaltic Concrete Pavement

A. Asphaltic concrete pavement shall comply with Section 450, 455, and Section 460 of the "State Specifications" as modified below. The pavement mix shall be approved by the Village for each project**.** The pavement mix shall be comprised of virgin and/or recycled aggregate and asphaltic materials unless otherwise specified.

(1) Aggregate

a. The aggregate in the pavement mix shall be in accordance with Subsection 460.2.2.3 of the "State Specifications." Aggregate gradation shall conform to No. 3 (19.0 mm) aggregate for lower layers, No. 4 (12.5 mm) aggregate for the upper layer and either No. 4 (12.5 mm) or No. 5 (9.5 mm) for driveways and parking areas.

(2) Asphalt Cement

a. Asphalt cement shall conform to Subsection 455.2.4 of the "State Specifications" and shall be performance grade PG 58-28 S. Asphalt cement content shall be in accordance with State approved mixes.

(3) Pavement Mix

a. Prior to beginning construction, the Contractor shall provide the Village with copies of current state approvals for the pit, mixing plant and design mixes for materials proposed to be used on this project.

b. Asphaltic mixture shall be produced and incorporated in the work on the basis of a job-mix formula. The Contractor shall be responsible for the asphaltic job-mix design report, conforming to Subsection 460.2.7, and shall submit a signed copy of the report to the Village for review at least two weeks prior to plant startup for paving production.

c. Pavement mixtures shall be in accordance with Subsections 460.1 and 460.2 of the "State Specifications" and shall be the types noted as specified below, unless otherwise adjusted by the Village:

i. LT 58-28 S: Residential streets and parking lots.

ii. MT 58-28 S: Industrial, commercial, arterial and collector streets.

B. Pavement Compaction

(1) All pavements shall be built in accordance with the Maximum Density Method per Subsection 460.3.3 of the “State Specifications.” The maximum specific gravity value shall be indicated on the asphaltic job-mix design report.

(2) Minimum required density shall be in accordance with Subsection 460.3.3.1 of the “State Specifications.”

(3) Incentive for Asphalt Concrete Pavement Density, Subsection 460.5.2.3 shall not apply to the specifications for this project.

C. Recycled Asphaltic Concrete Pavement

(1) The Contractor may use recycled asphaltic concrete pavement for all layers.

a. The recycled pavement shall consist of a mix of salvaged asphaltic pavement materials, presently stockpiled for use by the Contractor, and the required amounts of aggregate and asphalt cement. The recycled pavement shall be in accordance with a State approved mix calculated for the stockpiled material and comply with Section 460 of the “State Specifications.” The Contractor shall submit a copy of the job-mix formula to the Village.

D. Butt Joints

(1) The Contractor shall construct butt joints wherever the new pavement overlay butts up to existing pavements; including at intersecting streets, project ends, all driveways and as shown on the Plans.

(2) Butt joints may be constructed by removing a section of pavement by sawcutting or by milling down a minimum of 1.75-inches of pavement. Butt Joints shall be constructed in neat straight lines at right angles to the street.

E. Pavement Passes and Thickness

(1) Pavement layers and thicknesses shall be as shown on the plans. Lower layer and upper layer passes shall be staggered to prevent joints from extending through the entire asphaltic pavement. The longitudinal joint(s) in the upper layer shall be located in the centerline of the pavement and/or at edges of traffic lanes.

F. Tack Coat

(1) A tack coat shall be applied to each lower layer (including concrete base for composite HMA / PCC road structures) prior to placing the succeeding layer. Apply the tack coat the same day that next layer is placed.

(2) Tack coat material shall be an asphalt emulsion, conforming to Subsection 455.2.5 of the "State Specifications", diluted with an equal amount of water and applied at a minimum rate of 0.05 gallons per square yard. Contractor shall increase the rate if needed to effectively bond the overlying material.

(3) The Contractor shall sweep the pavement area with a power broom or street sweeper to remove dust, dirt, clay or other objectionable material prior to placing the tack coat.

(4) Surfaces of all structures shall be protected from being spattered or marred by tack coating operations.

G. Temperature of Asphalt Placed

(1) All asphalt (both upper and lower layers) shall be delivered to the project site at a temperature not less than 250ºF.

H. Cold Weather Work

(1) Asphaltic pavement shall not be placed when the air temperature is less than 36 ºF unless approved by the Village.

(2) Paving done during the period between October 15th and May 1st shall require Village approval and be in accordance with Subsection 450.3.2.1.2 of the "State Specifications".

I. Construction Equipment

(1) The paver shall have sufficient power and traction to operate on grades. Screed extensions with static extensions shall not exceed 12 inches. Automatic control systems shall be used unless otherwise determined by the Village.

(2) Vibratory rollers shall conform to Subsection 450.3.1.5 of the "State Specifications".

J. Construction Requirements

(1) Prior to placing asphaltic base or surface courses, all required corrections of filling potholes, sags, and depressions shall be made.

(2) All edges of existing abutting asphaltic pavements shall be saw-cut immediately prior to paving to form a straight firm joint, unless otherwise waived by the Owner.

(3) All rolling shall be performed during daylight hours or as approved by the Engineer.

11.0 Underdrains

A. Underdrains shall conform to Section 612 of the "State Specifications" and the Village Standard Details as amended herein.

(1) Materials

a. Underdrain pipe shall be perforated corrugated polyethylene (HDPE), polyvinyl chloride (PVC), or acrylonitrile-butadiene-styrene (ADS) drainage pipe conforming to Subsection 612.2.

b. Geotextile fabric shall be Type DF (Drainage Filtration) conforming to Subsection 645.2.2.4 of the "State Specifications"

(2) Construction

a. Underdrain pipe shall be generally laid parallel to the longitudinal grade of the roadway. Grades less than 0.5% require Village approval. Pipe underdrain grade shall never be less than 0.25%.

b. Place Type DF geotexile fabric as shown on the Edgedrain Village Standard Detail.

c. The invert of the underdrain shall be located a minimum depth of 6-inches below the top of subgrade.

d. Pipe underdrain shall discharge to catch basins. Underdrains shall be connected to catch basins by means of flexible watertight seals.

e. Upper end of underdrain sections shall be capped below grade within the underdrain trench adjacent to the up gradient structure or at construction limits. At the roadway longitudinal grade highpoints the contractor may cap the underdrains in each direction or run a continuous pipe splitting the flow direction at or near the highpoint. Pipe caps shall factory made to match the underdrain pipe.

f. Backfill excavation with base aggregate open graded conforming to Subsection 310.2 of the “State Specifications.”

g. Storm sewer laterals and drain tiles shall not be connected to underdrains.

12.0 Residential Driveway Culvert Pipe

A. Residential driveway culvert pipe installation shall conform to Sections 520 and 521 of the “State Specifications” and the Village Standard Details as amended herein. All other roadway and driveway culverts shall be reinforced concrete pipe conforming to the Village Storm Sewer Specifications unless otherwise approved by the Engineer.

(1) Materials

a. Driveway culverts shall be Type I galvanized steel culvert pipe conforming to 521.2 of the “State Specifications” with a minimum thickness of 16 gage (0.064 inches).

b. Apron endwalls are not required.

(2) Construction

a. The installation of culverts shall comply with Section 520.3 of the “State Specifications” as amended herein.

i. Culverts shall be placed in trenches excavated through existing ground or through compacted embankments.

ii. The trench shall be wide enough to permit thorough compaction of backfill material. The bottom of the trench shall be shaped by means of a template so that at least 10% of the outside diameter of the pipe will be in contact with the bottom of the trench or laid in accordance with the Village Storm Sewer specifications with bedding material. Backfill the trench with granular material in accordance with the Village Standard Specifications.

13.0 Street Signs

A. Street signs shall conform to Section 634 and 637 of the “State Specifications” and Village Standard Details as amended herein.

(1) Signs

a. Sign base material shall be aluminum for all signs up to 36-inches x 36-inches.

b. All signs shall be furnished with reflective sheeting.

(2) Sign Support Posts

a. All signs shall be mounted on steel support posts.

i. Posts shall be galvanized 2.375″ o.d. steel pipe, 0.095″ wall, powder coated black and equipped with an anti-rotation steel anchor plate manufactured by Custom Products Corporation or approved equal. The anchor plate shall be secured to the post by welding.

ii. Posts shall be driven in the ground to a depth of 4’ below proposed grade. Excavating the post hole is not permitted. Post installation shall be plumb.

iii. Posts shall be furnished with a black finial or cap.

(3) Hardware

a. All hardware for all sign installation shall be mounted to the support in a manner to prevent rotation of the sign. Backbraces shall be mounted to the

sign to provide adequate support at the top and bottom of the sign to prevent bending. All hardware for signs shall be mounted to the sign by use of aluminum or stainless steel bolts.

END OF SECTION

VILLAGE STANDARD CONSTRUCTION SPECIFICATIONS
VS-0600 UNDERGROUND WARNING TAPE AND TRACER WIRE

1.0 Section Description

A. This section includes requirements for underground warning tape and tracer wire. Underground warning tape shall be installed with all sanitary sewer, force main, water main and electrical conduit installed by open cut construction. Tracer wire shall be installed with all water main, storm sewer, sanitary sewer, force main, electrical conduit, and underground utilities.

B. Related Sections Include:

(1) Section VS-0200 Sanitary Sewer

(2) Section VS-0300 Storm Sewer

(3) Section VS-0400 Water Main

(4) Section VS-0800 Street Lighting

(5) Standard Details.

2.0 Underground Warning Tape

A. Materials

(1) Underground marking tape for use in open cut construction shall be non-detectable and a minimum of 3-inches wide.

(2) Marking tape for:

a. Sanitary sewer and laterals shall be green and state “sewer” within the warning text.

b. Water mains and services shall be blue and state “water” within the warning text.

c. Force mains shall be green and state “sewer” within the warning text.

d. Electrical conduit shall be red and state “electric” within the warning text.

B. Installation.

(1) Place the marking tape approximately 2-foot above the top of pipe.

3.0 Tracer Wire Systems

A. Materials

(1) Tracer Wire

a. Tracer wire for use in open cut construction shall be 10 gauge copper clad steel wire conforming to ASTM C910/910M with a High Density Polyethylene (HDPE) or High Molecular Weight Polyethylene (HMWPE) insulation for underground installation.

b. Tracer wire for use in horizontal directional drilling shall be SoloShot Xtreme 7x7 stranded CCS as manufactured by Copperhead Industries, LLC of Monticello, Minnesota or equal.

c. Tracer wire for:

i. Water mains and services shall be blue.

ii. Sanitary sewer and laterals shall be green.

iii. Force mains shall be green.

iv. Storm sewers and laterals shall be brown.

v. Electric conduit shall be red.

(2) Connectors

a. Connectors shall be rated for direct bury and filled with silicone waterproof sealant. Acceptable wire connectors include SnakeBite™ Locking Connectors, DryConn® 3-way Direct Bury Lug, or equal. Wire nut style connectors are not acceptable.

(3) Grounding Anode

a. Ground rods shall be bare magnesium anodes, minimum of 1.5 lbs or equal. Wire to grounding anodes shall be a minimum of 12 AWG.

(4) Access Box

a. Tracer wire access boxes shall have and ABS plastic body, minimum length of 14-inches and a cast iron lid matching the color of the tracer wire for the utility specified above. Access boxes shall be Copperhead model SnakePit® Lite Duty, Bingham & Taylor model P200NFG, CP Test & Valve model Mini Test Station or equal.

B. Installation

(1) General

a. Tracer wire systems shall be installed in accordance with the manufacturers' recommendations, the Village Standard Details for tracer wire, and as directed below.

(2) Tracer Wire

a. In open cut construction, place the tracer wire at the springline of the main or lateral and tape to the pipe at a minimum of 10 foot intervals.

b. For horizontal directional drilling type construction and electrical conduit, tape the tracer wire to the pipe at 5-foot intervals leaving sufficient slack to accommodate the stretching of the pipe during pull-back. Tracer wire within directional drilling sections shall be continuous with no splices.

c. Tracer wire shall not be looped. To prevent looping within existing tracer wire systems, tracer wire shall not be connected to existing tracer wire unless otherwise directed by the Village. Looping of tracer wire can make tracer wire difficult to detect.

d. Wire splices and connections shall be made with prefabricated waterproof tracer wire connecters.

e. Damaged wire shall be removed and replaced with a new section of wire. Connections shall be made with approved waterproof connectors.

(3) Grounding Anodes

a. Grounding anodes shall be driven into undisturbed soil at dead ends, stubs and access box locations as shown in the Village Standard Details. Ground wire at access box locations shall connect to the access box.

(4) Tracer Wire Access Box

a. Tracer wire access boxes shall be installed at the following locations and in accordance with the Village Standard Details:

i. Water mains: Electrical connections to tracer wire identifying water mains and laterals shall be provided by extending the tracer wire through a Tracer Wire Access Box located in back of all hydrants and water lateral curb boxes / valve boxes. The Tracer Wire Access Box at the laterals will be relocated to the building at the time the water service is extended for a building connection.

ii. Sanitary sewer: Electrical connections to tracer wire identifying sanitary sewers and laterals shall be provided by extending the tracer wire through a Tracer Wire Access Box located at the end of all laterals. The Tracer Wire Access Box will be relocated to the building at the time the lateral is extended for a building connection.

iii. Storm sewer: Electrical connections to tracer wire identifying storm sewers and laterals shall be provided by extending the tracer wire through a Tracer Wire Access Box located at the end of all laterals. The Tracer Wire Access Box will be relocated to the building at the time the lateral is extended for a building connection.

iv. Sanitary, storm, and water laterals (from Right-of-Way to Building): Tracer wire from public laterals shall be extended / connected to the private lateral service and the electrical connections to tracer wire(s) identifying sanitary, storm, and water service laterals shall be provided by extending the tracer wire for each utility through a Tracer Wire Access Box at the building. When extending a water, sanitary, or storm service with a Tracer Wire Access Box by the curb box or lateral termination, the Tracer Wire Access Box shall be removed and replaced in the locations per these provisions.

v. Force mains: Electrical connections to tracer wire identifying force mains shall be provided by extending the tracer wire through a Tracer Wire Access Box in lawn areas located at the termini of the force main, adjacent to all valves and at all roadway intersections. If the force main is within pavement the access box shall be installed just beyond the edge of pavement in the lawn at these locations. Extend the tracer wire, perpendicular to the main, to the access box at a minimum depth of 3-feet.

vi. Electrical conduit: Electrical connections to tracer wire identifying electrical conduit shall be provided by extending the tracer wire through a Tracer Wire Access Box located at the control panel, the last street light run, and at one light or traffic signal pole in every quadrant of an intersection.

C. Testing

(1) The Contractor shall test all tracer wire for electrical continuity prior to acceptance of the main or service lateral to which it is accessory. Testing shall be done in the presence of the Village.

END OF SECTION

VILLAGE STANDARD CONSTRUCTION SPECIFICATIONS
VS-0601 UTILITY TRENCH BACKFILL

1.0 Section Description

A. This section includes requirements for backfilling utility trenches.

2.0 Materials

A. Excavated Material Backfill shall be in accordance with Subsection 8.43.5 of the "Standard Specifications".

B. Granular Material Backfill shall be in accordance with Subsection 209.2 of the "State Specifications".

C. Slurry Material Backfill material shall be placed in a clean concrete mixer truck and thoroughly mixed in the following quantities for each cubic yard required:

-1,350 lbs sand
-750 lbs #1 stone
-1,150 lbs #2 stone
-25 gals water (0 to -0.5 gal variance)

3.0 Trench Backfill

A. Excavated material backfill may only be used in approved locations, outside of existing or proposed pavements, roadways, road shoulders or other improved surface, unless otherwise directed by the Village to use granular or slurry backfill.

(1) In such a case where excavated material backfill is approved in a location of a future surface improvement area, the following areas shall have granular backfill in place of excavated material backfill:

a. Trenches within fifteen (15) feet of manholes (measured from the center of manholes).

b. Trenches within ten (10) feet of catch basins and valve boxes.

B. Granular material backfill shall be used in the following locations, unless otherwise directed by the Village to use slurry backfill or excavated material backfill:

(1) Trenches within or extending 5-feet within proposed new public roadway areas in which the roadway paving schedule requires granular material, as determined by the Village.

(2) Trenches within and extending 3-feet beyond driveways or parking areas.

(3) Trenches parallel to existing roadways or other improved surfaces but within one-to-one (1'H: 1'V) slopes extending downward and outward from the edges of such improved surfaces.

C. Slurry backfill shall be used in the following locations, unless otherwise directed or approved by the Village to use granular backfill:

(1) Trenches located within existing roadways and gravel shoulders.

(2) Trenches extending within 5-feet of roadway pavement.

4.0 Consolidation

A. Amend Subsection 2.6.14 of the "Standard Specifications" to read in part:

"All granular and excavated material backfill shall be consolidated through mechanical compaction by means of a backhoe boom-mounted compactor. Either a vibratory compactor or compaction wheel is acceptable if it can meet the densities specified below. The backhoe used for compaction shall be equal in reach to the backhoe used for excavating the trench; i.e., capable of reaching the bottom of the trench with no additional shelf excavation. Backfill shall be compacted in eighteen (18) inch maximum lifts, before compaction, unless noted otherwise below, except that the first lift shall be two (2) feet in depth. The Contractor shall take all precautions necessary to protect utilities from being damaged during backfilling and compaction operations."

(1) Granular backfill shall be compacted to a minimum of 95% Standard Proctor Density.

(2) Excavated material backfill shall be compacted to a density equal to 100% of the density of the undisturbed material in adjacent trench walls.

(3) Topsoil layer shall not be compacted.

B. If there is a question as to whether or not the specified density has been achieved, the Village may require that a soil testing firm, selected by the Village, be brought in to determine the backfill density. All testing costs shall be paid for by the Contractor.

C. If the Contractor desires to use alternate compaction equipment or backfill depths greater than those specified, documentation must be submitted to the Village substantiating the adequacy of the proposed compaction method. Alternate compaction methods may not be used unless approved by the Village. The Village may require density testing by an approved soil testing firm to field verify backfill densities.

END OF SECTION

VILLAGE STANDARD CONSTRUCTION SPECIFICATIONS
VS-0602 SITE RESTORATION AND SURFACE REPLACEMENT

1.0 Section Description

A. This section includes minimum requirements for general site restoration and surface replacement.

B. Related Sections Include:

(1) Section VS-0100 General Terms and Conditions

(2) Section VS-0500 Roadway and Sidewalk Construction

2.0 General

A. Wherever any surface improvements such as any sidewalk, driveway, curb, gutter, terraced area, shoulder, pavement, culvert, lawn, ditch, fence, sign, mailbox or other property damaged by the Contractor's operations, they shall be repaired or replaced to the Village's satisfaction.

(1) Contractor shall consult with the Village regarding restoration / repairs of any pavement or structure regarding special requirements that the Village may have.

B. The Contractor shall keep the sites of his operations clean during construction and remove all rubbish or debris on a daily basis.

C. The Contractor shall take all precautions necessary to protect adjacent road pavements, including shoulders, from being damaged.

D. Contractor shall comply with all project plan and permit restoration provisions and specifications.

E. Site restoration and surface replacements shall be completed in a timely fashion during the course of construction operations or as directed by the Village.

3.0 Pavement Restoration

A. Gravel roads, road shoulders, and driveway repair shall be "in-kind" except as otherwise specified by the Village or where the existing thickness is less than the following minimum thickness(s), the minimum section (specified below) shall be placed.

(1) A minimum of 10-inches of dense graded base shall be placed over gravel roads.

(2) A minimum of 8-inches of dense graded base shall be placed over gravel road shoulders, parking areas and driveways.

B. Asphalt pavement repairs shall be "in-kind" except as otherwise specified by the Village or where the existing pavement thickness is less than the following minimum

pavement thickness(s), the minimum pavement section (specified below) shall be placed.

(1) Roadway asphalt pavement shall be replaced with a minimum of 10-inches of base aggregate dense and 5-inches of asphaltic concrete pavement (3-inch lower layer; 2-inch upper layer).

(2) Asphaltic driveways and parking areas shall be replaced with the following minimum thicknesses.

a. Residential – 6” aggregate base and 3” asphaltic pavement (upper layer).

b. Commercial / Industrial – 8” aggregate base and 4” asphaltic pavement (2.25” lower layer; 1.75” upper layer).

C. Concrete roadway pavement shall be replaced “in-kind” and shall be full width from joint to joint and from seam to seam unless otherwise approved by the Village. Concrete pavement replacement shall be anchored in accordance with WDOT detail S.D.D. 13 C 9-12. (Concrete Pavement Repair and Replacement).

(1) Concrete mix shall be high early strength.

(2) Concrete pavement repairs of existing non-doweled concrete pavement do not need to be doweled, however, tie bars for longitudinal joints are required.

(3) Concrete driveways along rural roadway sections (located within Village right-of-way) shall be replaced with asphalt unless otherwise directed by the Village.

D. Composite pavement restoration, concrete base with asphalt overlay, shall be anchored in accordance with WDOT detail S.D.D. 13 C 9-12.

(1) Pavement repairs shall be “in-kind” except as otherwise specified by the Village or where the existing pavement thickness is less than the following minimum pavement thicknesses, the minimum pavement section (specified below) shall be placed.

a. Residential and commercial – 8” aggregate base, 7” concrete, and 1.75” asphaltic upper layer.

b. Industrial – 8” aggregate base, 8” concrete, and 1.75” asphaltic upper layer.

(2) Concrete mix shall be high early strength.

(3) Concrete pavement repairs of existing non-doweled concrete pavement do not need to be doweled, however, tie bars for longitudinal joints are required.

E. Saw-cutting and milling shall be in neat straight lines, at right angles to the street or drive, to produce a clean joint for pavement restoration.

F. Damaged concrete pavements and driveways, sidewalks and curb and gutter shall be removed and replaced to existing joints unless otherwise allowed by the Engineer.

G. Roadway, curb and gutter, and sidewalk repairs shall meet Village Specifications.

(1) See section VS-0500 for roadway, curb and gutter, and sidewalk specifications.

4.0 Lawn Restoration

A. All damaged or destroyed grass or terrace areas shall be restored with four (4) inches minimum of topsoil, seed, mulch and/or erosion matting as specified below and as directed by the Village.

(1) Topsoil shall comply with Section 625 of the “State Specifications”.

(2) Fertilizer shall comply with Section 629 of the “State Specifications”. Apply Type A fertilizer at 7 pounds per 1,000 square feet.

(3) Seeding shall comply with Section 630 of the “State Specifications”.

a. All restored lawns areas shall be seeded with mixture No. 40 and shall be distributed at a rate of four (4) pounds per 1,000 square feet unless approved by the Village.

(4) Mulching shall comply with Section 627 of the “State Specifications”. All seeded areas shall be mulched, unless a vegetative erosion control mat is used. Areas to be mulched with no erosion control matting shall be limited to small areas not on slopes with minimal erosion potential.

(5) Install erosion control mat over all restored lawn or grass areas unless approved otherwise by the Village. Erosion matting shall comply with WDNR technical standard 1052.

a. Erosion matting shall be Class I Type B, double netted for all areas except on residential lawns. Residential lawns in which mowing may be accomplished within a couple weeks may, shall be Class I Type B (Urban) mat.

(6) Maintenance and Monitoring.

a. The Contractor shall maintain all seeded areas which includes the destroying of noxious weeds within the seeded areas by cutting or by other means and prevent the weed plants from maturing to the bloom or flower stage. The term “noxious weeds” as defined here shall constitute plant life other than those included within the seed mixture specified. The Contractor shall maintain and monitor seeded areas upon initial seeding and throughout the Warranty Period to assure uniform and consistent growth of the specified seed as determined by the Village.

b. Correct damage form erosion, gullies, washouts, traffic or other causes by filling with topsoil, tamping, re-fertilizing, reseeding, replacing erosion mat and installing measures to prevent reoccurrence of the damage.

c. Maintain and monitor seeded areas upon initial seeding and throughout the Warranty Period to ensure uniform and consistent growth of the specified seed, as determined by the Village. Water seeded areas as required to establish proper growth. Fully established growth will be determined when the average seed growth coverage is a consistent 85% of the seeded area with uniform density and color, is capable of resisting erosion, and growth is a minimum height of 3-inches.

5.0 Survey Monuments

A. Contractor's attention is directed to Section 2.1.4 of the "Standard Specifications" requiring the Contractor to protect survey monuments from being damaged. The Contractor shall hire a Wisconsin Registered Land Surveyor prior to removing and disturbing any survey monuments to tie in the location of these monuments prior to their removal. All damaged or disturbed survey monuments shall be replaced by a Wisconsin Registered Land Surveyor.

B. Section Corner Monuments. The Contractor shall notify and coordinate with the County Surveyor prior to removal or disturbance of any Section Corner Monuments in order for the County Surveyor to tie in these monuments prior to their removal.

END OF SECTION

VILLAGE STANDARD CONSTRUCTION SPECIFICATIONS
VS-0603 MANHOLE AND VALVE ADJUSTMENTS (EXISTING UTILITIES)

1.0 Section Description

A. This section includes requirements for adjusting existing manholes and water valves. This section pertains to adjustments on existing utilities. New manholes shall be constructed in accordance with Sections VP-0200 and VP-0300 and Village Standard Details.

B. Related Sections Include:

(1) Section VS-0100 General Terms and Conditions

(2) Section VS-0200 Sanitary Sewer

(3) Section VS-0300 Storm Sewer

(4) Section VS-0400 Water Main

(5) Section VS-0601 Backfilling Utility Trenches

(6) Section VS-0602 Site Restoration and Surface Replacement

2.0 Manhole Adjustment Using Adjustment Rings (Existing Manholes)

A. The Contractor shall adjust existing manhole castings to grade by adding or removing adjusting rings. Manholes requiring less than 3-inches or more than 12-inches of adjusting rings between the frame and manhole cone or flat top shall be reconstructed to grade in accordance with Subsection 3.0 below. After removing the manhole casting and all existing rings, the Contractor shall clean the casting, manhole, and adjusting ring mating surfaces to remove all loose mortar and other substances. The Contractor shall take precautions to prevent gravel and other materials from entering the manhole. All materials falling into the manhole shall be removed by the Contractor. Adjusting rings shall match the dimensions of the existing structure. If existing rings are not the same dimensions as the existing structure or they are damaged they must be replaced with new adjusting rings of the correct size.

(1) Manholes within concrete or composite pavement limits shall be plated during paving operations as required in Section VS 0500 of these Village Specifications.

B. Adjusting rings.

(1) Manhole adjusting rings shall be used to bring manhole rims to grade. Adjusting rings heights shall not have a total ring height less than 3-inches or greater than 12-inches. No manhole shall have more than four adjusting rings. The inside diameter of the adjusting rings shall match that of the opening in the manhole flat cover or eccentric cone. Adjusting rings shall be concrete or polypropylene as specified below:

a. Concrete adjusting rings.

i. Concrete rings with one line of steel centered within the ring.

ii. The top of manhole castings shall be set 1/4 inch below the newly finished asphalt surfaces, finished grade of concrete pavement, or elevations per the plan within grass or lawn areas. Casting shall be placed level within grass areas or match the slope of the adjacent finished surface in all other areas. Manhole frames shall be adjusted to the maximum extent possible by using adjusting rings of various thicknesses and tapers. Adjusting rings shall be set with butyl rubber sealant troweled into a 1/4 inch thick layer over the entire mating surface of the top of cone or flat top and all adjusting rings. The butyl rubber sealant shall be EZ-Stik or Kent-Seal butyl base sealant in trowelable grade or equal. After placing rings, minor permanent shimming of the casting to obtain the necessary elevation and slope shall be performed. Temporary wedging is not permitted. Shims shall have a minimum surface area of 8 square inches and be made of steel, or other non-degradable material approved by the Village. Shims shall be placed at a minimum of three locations between the casting and top adjusting ring to prevent rocking of the casting. After the shims have been correctly placed the Contractor shall then trowel the butyl rubber sealant or non-shrink grout, if approved by the Village, over the mating surfaces and then place the casting onto the manhole. Installing the butyl or grout between the adjusting ring and casting by pushing, tuckpointing, or any other method, from the outside of the rings is not permitted. Contractor shall take care to prevent the butyl rubber sealant from getting on the interior surface of the rings and frame within the chimney.

b. Polypropylene adjusting rings.

i. Expanded polypropylene adjusting rings shall be Pro-Ring™ as manufactured by Cretex Specialty Products, Waukesha, Wisconsin, or approved equal.

ii. The top of manhole castings shall be set 0 to 1/2 inch below the newly finished asphalt surfaces and concrete pavement, or elevations per the plan within grass or lawn areas. Casting shall be placed level within grass areas or match the slope of the adjacent finished surface in all other areas. Manhole frames shall be adjusted to the maximum extent possible by using adjusting rings of various thicknesses and tapers installed in accordance with the manufacturer's recommendations and instructions.

C. Chimney Seal

(1) An external sealing wrap shall be placed on the entire manhole chimney from the casting to the 6-inches below the top of the manhole cone section and installed in accordance with the Village Standard Detail. The external sealing wrap shall be EZ-WRAP, as manufactured by Press-Seal Gasket Corporation, or approved equal.

3.0 Manhole Adjustments - Reconstruction (Existing Manholes)

A. Manholes that cannot be brought up to grade by adding or removing adjusting rings shall be adjusted to grade in accordance with the following procedures:

(1) Remove casting, rings, cone section, flat top and riser section(s) as required.

(2) Place new riser section(s), flat top and/or cone section, 3” to 12” of concrete adjusting rings and reset casting to grade. Salvaged materials in satisfactory condition may be reused if approved by Village.

a. Flat top sections shall not be installed on sanitary sewer manholes.

B. All manhole reconstructions shall be constructed in accordance with section VS-0200 for sanitary sewer manholes and VS-0300 for storm sewer manholes of these Village Specifications.

4.0 Catch Basin Adjustment Using Adjustment Rings (Existing Catch Basins)

A. The Contractor shall adjust existing catch basin castings to grade by adding or removing adjusting rings. After removing the casting and all existing rings, the Contractor shall clean the casting, catch basin, and adjusting ring mating surfaces to remove all loose mortar and other substances. The Contractor shall take precautions to prevent gravel and other materials from entering the catch basin. All materials falling into the catch basin shall be removed by the Contractor. Adjusting rings shall match the dimensions of the existing structure. If existing rings are not the same dimensions as the existing structure or they are damaged they must be replaced with new adjusting rings of the correct size.

B. The castings shall be set to match the proposed curb and gutter flange elevations. Flowline of proposed curb and gutter shall be adjusted within 3' of the catch basin to match the casting flowline. Curb box on R-3067 castings shall be adjusted to a height of 7-inches to match the proposed back of curb elevation. Frame base shall be placed at the same longitudinal slope as the proposed curb and gutter and level from front to back. The frames shall be adjusted to the maximum extent possible by using adjusting rings of various thicknesses. Adjusting rings shall be concrete with one line of steel centered within the ring. Adjusting rings shall be set with butyl rubber sealant troweled into a 1/4 inch thick layer over the entire mating surface of the structure and all adjusting rings. The butyl rubber sealant shall be EZ-Stik or Kent-Seal butyl base sealant in trowelable grade or equal. After placing rings, minor permanent shimming of the casting to obtain the necessary elevation and slope shall be performed. Temporary wedging is not permitted. Shims shall have a minimum surface area of 8 square inches and be made of steel, or other non-degradable material approved by the Village. Shims shall be placed at each corner of the casting between the casting and top adjusting ring to prevent rocking of the casting. After the shims have been correctly placed the Contractor shall then trowel the butyl rubber sealant or non-shrink grout, if approved by the Village, over the mating surfaces and then place the casting onto the manhole. Installing the butyl or grout between the adjusting ring and casting by pushing, tuckpointing, or any other method, from the outside of the rings is not

permitted. Contractor shall take care to prevent the butyl rubber sealant from getting on the interior surface of the rings and frame within the chimney.

C. External Chimney Seal

(1) An external sealing wrap shall be placed on the entire catch basin chimney from the casting to the 6-inches below the top of the catch basin section and installed in accordance with the Village Standard Detail. The external sealing wrap shall be EZ-WRAP, as manufactured by Press-Seal Gasket Corporation, or approved equal.

5.0 Valve Box Adjustments

A. The Contractor shall adjust valve boxes to grade by screwing or sliding the valve box top section to the required elevation.

(1) If the valve box cannot be adjusted to grade by screwing or adjusting the top section the top section must be removed and replaced with a taller section. Valve boxes must be installed with the bell section above the spigot so that soil cannot drop into the threads. Internal extensions are not permitted.

B. The Contractor shall coordinate with the Village Public Works Department regarding inspection of all valves and valve boxes, including hydrant valves, to ensure valve boxes are clean, valve nuts are accessible and valve is operational. Valves shall be inspected by the Public Works Department before beginning and after completing paving operations.

C. Valve boxes shall be set 1/4 inch below the newly finished asphalt and concrete pavement surfaces or at finished grade of grass or lawn areas. Valve boxes within concrete or composite pavement limits shall be plugged during paving operations as required in Section VS-0500 of these Village Specifications.

6.0 Backfill for Adjustments

A. Manhole and Catch Basin Adjustments Using Adjusting Rings.

(1) Manholes and catch basins located within pavement areas shall be backfilled using slurry unless otherwise approved to use granular backfill by the Village.

(2) Manholes located in lawn or grass areas shall be backfilled with granular material except for the top four inches which shall be topsoil.

B. Manhole Adjustments-Reconstruction.

(1) Manholes located within pavement areas shall be backfilled with slurry.

(2) Manholes located within lawn or grass areas shall be backfilled with granular material except for the top four inches which shall be topsoil.

C. Valve Box Section Replacement.

(1) Replaced valve box sections located within pavement areas shall be backfilled with slurry.

(2) Replaced valve box sections located within lawn or grass areas shall be backfilled with granular material except for the top four inches which shall be topsoil.

D. Refer to Section VS-0601 Backfilling Utility Trenches for additional backfill requirements.

END OF SECTION

VILLAGE STANDARD CONSTRUCTION SPECIFICATIONS
VS-0700 STREET TREES

1.0 Section Description

A. This section includes requirements for street tree installation.

B. Related Sections Include:

(1) Section VS-0100 General Terms and Conditions.

(2) Section VS-0602 Site Restoration and Surface Replacement.

2.0 Street Trees

A. Street tree species shall be approved by the Village. Approved street tree species are listed below.

Botanical name	Common Name
Acer x freemanii	Autumn Blaze Maple
Ulmus x 'Morton Glossy'	Elm (Triumph or Accolade)
Gleditsia triacanthos	Honeylocust
Syringa reticulate	Japanese Tree Lilac
Gymnocladus dioicus	Kentucky Coffeetree
Tilia cordata	Littleleaf Linden
Pyrus calleryana	Ornamental Pear (Chanticleer & Autumn Blaze)
Ginkgo biloba	Princeton Sentry Ginkgo
Acer rubrum 'October Glory'	Red Maple
Tillia x euchlora	Redmond Linden
Quercus rubra	Red Oak
Tillia Tomentosa	Silver Linden
Acer miyabei 'Morton'	Miyabe Maple – State Street

B. Tree species tags shall be on the tree when delivered for inspection.

C. All species shall be true to name and type and first class representatives of their species or variety. Trees of lower class quality will not be accepted.

3.0 Locations

A. Street tree locations as shown on the Village approved landscaping plan are general locations. The Contractor shall mark or stake the actual tree locations based on field conditions for Village review and concurrence, prior to installation.

B. Unless otherwise approved by the Village street trees shall be placed in groups of three to five trees of the same species in a row

C. Street trees are generally spaced 50-feet on center and 7-feet back of curb, unless planned otherwise.

D. Street trees shall not be placed on the common lot line between two properties. Trees must favor one lot to avoid landowner maintenance responsibility disputes.

E. Street trees shall be placed outside of vision triangles, a minimum of 10 feet from any fire hydrant, 7 feet from any driveway, storm sewer lateral, sanitary sewer lateral and water service and shall not block road signage.

4.0 Tree Planting

A. Trees shall have a minimum diameter of 2.5-inches and a minimum height of 6-feet above the ground when planted.

B. All plantings shall receive a 3-year slow release fertilizer packet (or equal) at a rate of 2 per caliper inch of tree.

C. Topsoil backfill shall be topsoil that is fertile friable natural loam surface soil reasonably free from subsoil, clay lumps, brush, weeds, and other liter, and free of roots stumps, stones larger than 1-inch and other extraneous toxic matter harmful to plant growth.

D. All trees shall be top dressed with a minimum of four inches of shredded hardwood mulch.

E. Trees shall be planted plumb as possible and the Contractor shall maintain tree plumbness throughout the warranty period. Trees shall have 3-anchor assemblies. Anchor assemblies shall be removed within or upon the warranty period.

F. Trees shall be watered immediately after installation.

G. Installation shall be in accordance with the tree planting detail.

5.0 Tree Establishment, Warranty, and Replacement

A. The tree establishment and warranty period shall be 2-year from final acceptance of all the plantings, unless a longer warranty period is established per separate agreement or plan approval conditions.

B. Initial maintenance services, including watering, for trees shall be provided by the Contractor. Maintenance shall begin immediately after trees are installed and shall continue throughout the warranty period until trees are acceptably healthy and well established but not less than the warranty period.

C. Trees that are not acceptably healthy during the warranty period shall be replaced, at the cost of the Contractor / Developer. The warranty period for tree replacements shall be extended for additional 1-year period. Tree replacement(s) and warranty period extensions shall continue until such time than an acceptably healthy tree is established.

D. Following the warranty period, street tree maintenance obligations becomes the responsibility of the abutting landowner, unless a separate agreement has been entered into for ongoing maintenance and tree replacement.

END OF SECTION

VILLAGE STANDARD CONSTRUCTION SPECIFICATIONS
VS-0800 STREET LIGHTS

1.0 Section Description

A. This section includes requirements for street lighting materials and construction for street lights to be owned and maintained by the Village of Pleasant Prairie.

B. Related Sections Include:

(1) Section VS-0100 General Terms and Conditions

2.0 Materials

A. Street lighting materials shall comply with the provisions of Section 651 (General Requirements for Electrical Work, 652 (Electrical Work), 653 (Pull Boxes and Junction Boxes), 654 (Bases), 655 (Electrical Wiring), Section 656 (Electrical Service), 657 (Poles, Arms, Standards, and Bases), and 659 (Lighting) of the "State Specifications," as modified below.

(1) All electrical splices to be made with weatherproof/underground wire nuts.

(2) Junction boxes and pull boxes shall be Quazite® underground enclosures manufactured by Hubbell Lenoir City, Inc. or approved equal.

(3) Poles and LED luminaires shall be furnished as noted on the plans.

(4) Conductor material shall be copper only.

(5) Conductor insulation shall be XHHW or approved equivalent.

3.0 Construction

A. Construct the light poles and luminaires (lighting standard) in accordance with the "State Specifications," plan details and the manufactures recommendations where applicable.

B. All electrical splices to be made with weatherproof/underground wire nuts.

C. In the meter breaker pedestal if only one grounding electrode is required, mechanically connect the stranded copper wire to it and then connect the grounding lug.

D. Where two or more cables networks occupy the same pull box, manhole, etc., bundle and tag each circuit network (i.e. A/B/N) with approved all-weather tags.

E. At each pull point or access point, indicate the line side bundle with a lap of blue tape.

F. Install all buried wiring within PVC conduit.

G. Fuse protection shall be provided at all light pole locations.

H. Notify the Village of Pleasant Prairie Building Inspection Department and request an inspection at least 2 business days before the date of the required inspection. In the event of deficiencies, request a re-inspection when the work is corrected. The Village electrical inspection will not authorize turn-on until the contractor corrects all deficiencies.

END OF SECTION

SECTION 6
VILLAGE STANDARD DETAILS

Listing of Standard Details / Detail Revision Date

Sanitary Sewer

SAN-1: Standard Sanitary Manhole / 1-23-20

SAN-2: Standard Sampling Manhole / 12-17-18

SAN-2A: Palmer-Bowlus Flume Detail (1 of 2) / 11-18-15

SAN-2B: Palmer-Bowlus Flume Detail (2 of 2) / 11-16-15

SAN-3: Sanitary Riser #1 / 1-23-20

SAN-4: Sanitary Riser #2 / 1-23-20

SAN-5: Sanitary Pipe Abandonment at Existing Manhole / 4-22-20

SAN-6: Sanitary Lateral Abandonment at Existing Main / 10-20-22

Storm Sewer

STM-1: Standard Storm Manhole / 1-23-20

STM-2: Standard Storm Manhole w/ Curb Inlet / 1-23-20

STM-3: Precast Rectangular Catch Basin / 12-17-18

STM-4: Standard Beehive Catch Basin / 1-23-20

STM-4A: 24-Inch Diameter Beehive Inlet / 1-4-21

STM-5: Standard Endwall Grate / 12-17-18

STM-6: Riprap Treatment at Endwalls / 10-20-22

STM-7: HDPE to RCP (Belled End) Connection Detail / 6-23-17

STM-8: Concrete Collar Pipe Repair / 4-29-20

Chimney Seal

CS-1: Chimney Seal Detail / 2-4-22

Water Main

W-1: Standard Hydrant Assembly / 8-19-19

W-1A: Standard Hydrant Assembly – Rural Roadway / 1-28-21

W-2: Air Release Hydrant Assembly / 8-22-19

W-3: Standard Gate Valve Box Setting / 11-16-15

W-4: Standard Butterfly Valve Box Setting / 11-16-15

W-5: Buttress for Bends / 8-4-16

W-5A: Buttress for Tees / 8-4-16

W-5B: Buttress for Dead Ends / 8-4-16

W-6: Hydrant Offsets / 8-4-16

W-7: Hydrant Parallel to Main / 1-23-20

W-8: Abandoning Valves and Water Main/Service Connections / 4-22-20

W-9: Water Main Vertical Offset / 5-24-21

W-10: Water Main Insulation / 8-31-22

Fire Department

FD-1: Pumper Pad FDC / 9-10-20

FD-2: Development Hydrant Bollard / 4-8-22

FD-3: Fire Lane Marking and Signing / 4-8-22

Tracer Wire

TW-1: Tracer Wire Access Box / 12-17-18

TW-2: Tracer Wire Installation on Sanitary & Storm Sewers / 3-2-22

TW-3: Tracer Wire Installation on Water Main / 12-17-18

TW-4: Tracer Wire Installation on Fire Hydrant / 12-17-18

TW-5: Tracer Wire Installation on Water Service / 12-17-18

Roadway

RD-1: Standard Residential Minor Street Section / 12-11-20

RD-2: Standard Residential / Commercial Collector Street Section / 12-11-20

RD-3: Standard Industrial Street Section / 12-11-20

RD-4: Standard Residential Boulevard Section / 12-11-20

RD-5: Standard Residential Cul-De-Sac Detail / 1-23-20

RD-6: Temporary Cul-De-Sac Turnaround Detail / 12-1-15

RD-7: Standard “Private” Minor Residential Street Section / 11-15-16

RD-8: Standard “Private” Residential Minor Street Cul-De-Sac Detail / 1-23-20

RD-9: Standard Curb & Gutter Details / 6-5-20

RD-10: Standard Concrete Sidewalk Detail / 1-23-20

RD-11: Standard Asphalt Shared Use Path Detail / 12-17-18

RD-12: Residential Driveway Detail – Urban Roadway / 12-11-20

RD-13: Residential Driveway and Culvert Detail – Rural Roadway / 12-11-20

RD-14: Edgedrain in Urban Roadway Detail / 1-26-21

RD-15: Utility Patch Detail (Composite and Concrete Roadways) / 12-17-18

RD-16: Utility Patch Detail (Asphalt Roadways) / 12-17-18

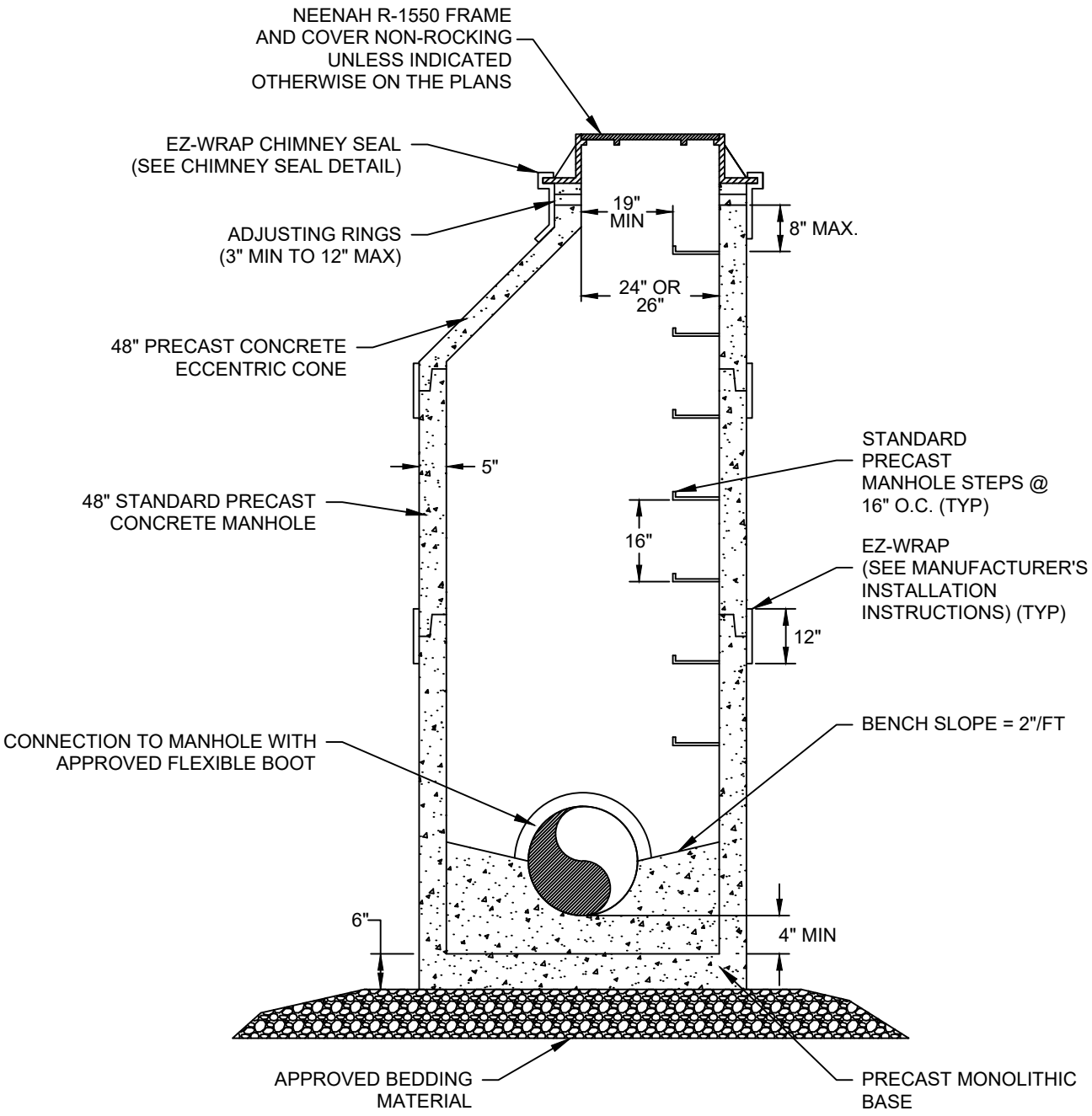
RD-17: Curb Head Sawcut Detail / 6-4-20

RD-18: Typical Roadway Sign Post Installation / 8-31-22

Landscaping

L-1: Standard Street Tree Planting Detail / 11-11-15

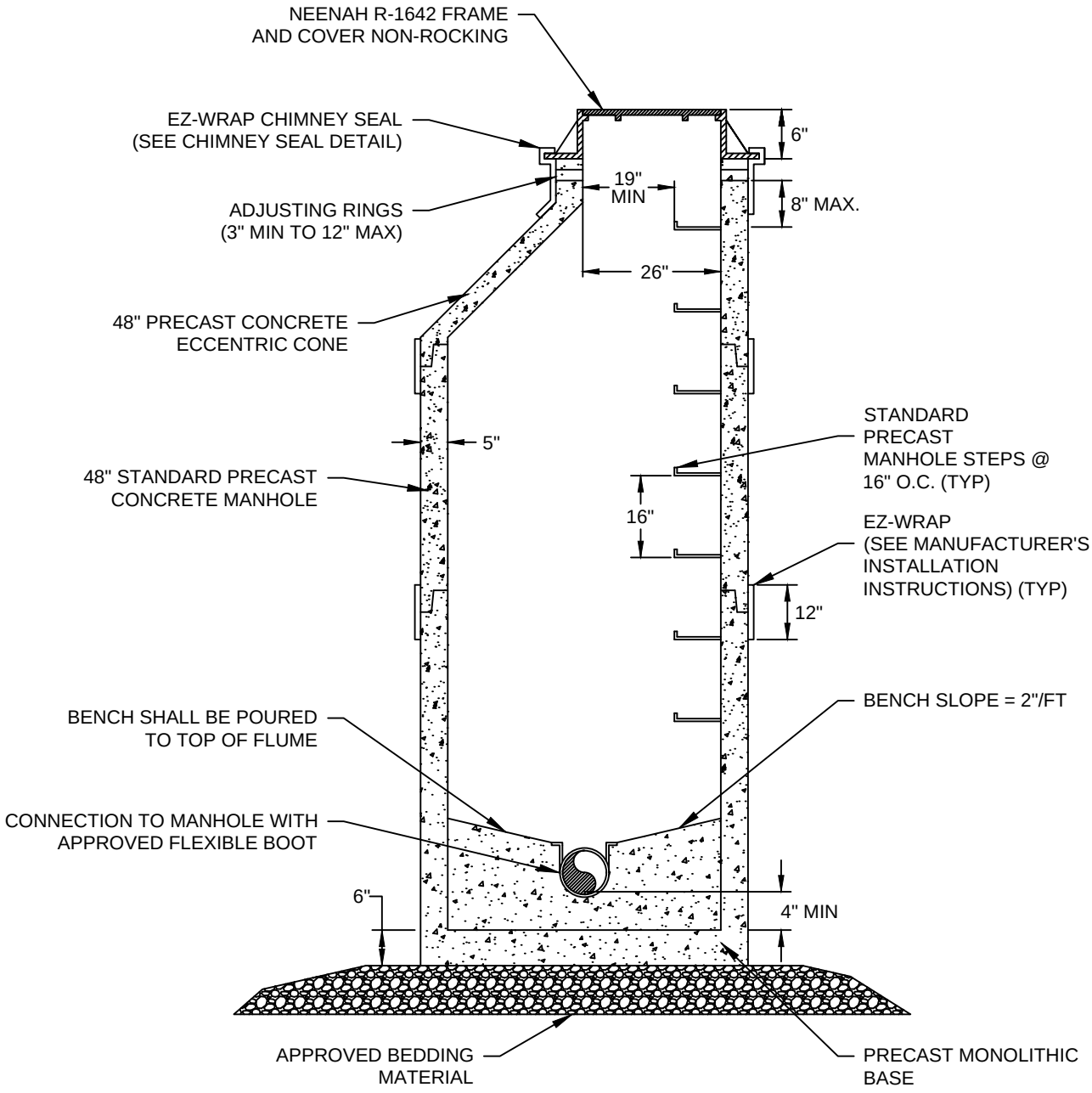
L-2: Standard Shrub Planting Detail / 11-18-15



NOTE:
REFER TO VILLAGE STANDARD SPECIFICATIONS FOR SANITARY SEWER.

SCALE: NTS

STANDARD SANITARY MANHOLE	DETAIL: SAN - 1
DATE: 1-23-20	VILLAGE OF PLEASANT PRAIRIE
APPROVED BY: MATT FINEOUR	KENOSHA COUNTY, WISCONSIN

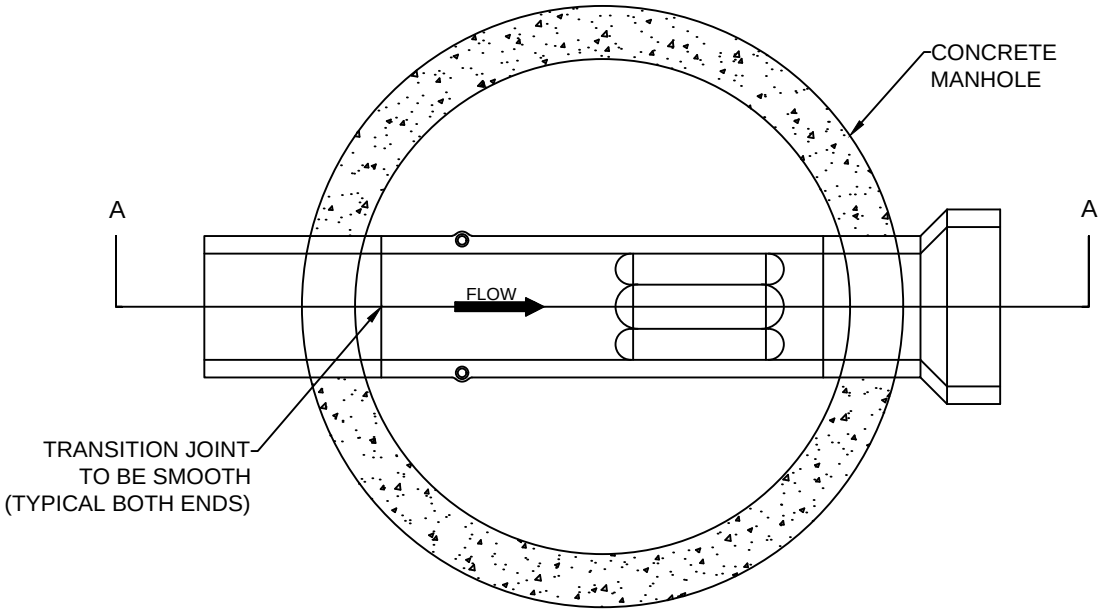


NOTES:

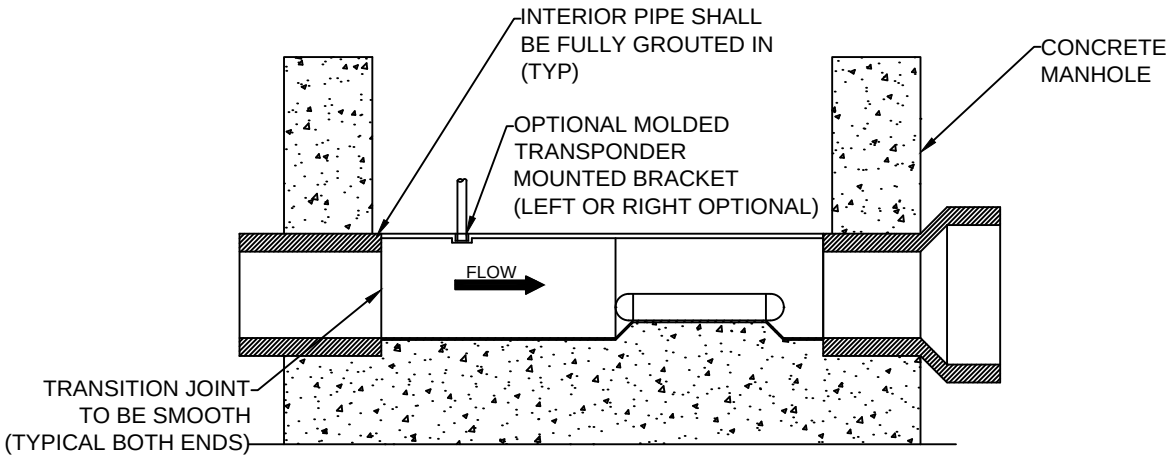
1. STANDARD SAMPLING MANHOLE SHALL HAVE A PALMER-BOWLUS FLUME WITH INTEGRAL APPROACH INSTALLED.
2. VILLAGE OF PLEASANT PRAIRIE DPW SHALL BE CONTACTED FOR FINAL INSPECTION OF SAMPLING MANHOLES.
3. SEE DETAIL SAN-2A AND SAN-2B FOR PALMER-BOWLUS FLUME DETAILS.
4. REFER TO VILLAGE STANDARD SPECIFICATIONS FOR SANITARY MANHOLES.

SCALE: NTS

STANDARD SAMPLING MANHOLE	DETAIL: SAN - 2
DATE: 12-17-18	VILLAGE OF PLEASANT PRAIRIE
APPROVED BY: MATT FINEOUR	KENOSHA COUNTY, WISCONSIN



TOP VIEW OF MANHOLE WITH FLUME



SECTION A-A ENLARGED

NOTE:

1. FLUME SHALL BE SET LEVEL INSIDE THE MANHOLE FOR PROPER TESTING PROCEDURES.
2. REFER TO VILLAGE STANDARD SPECIFICATIONS FOR SANITARY SEWER.

SCALE: NTS

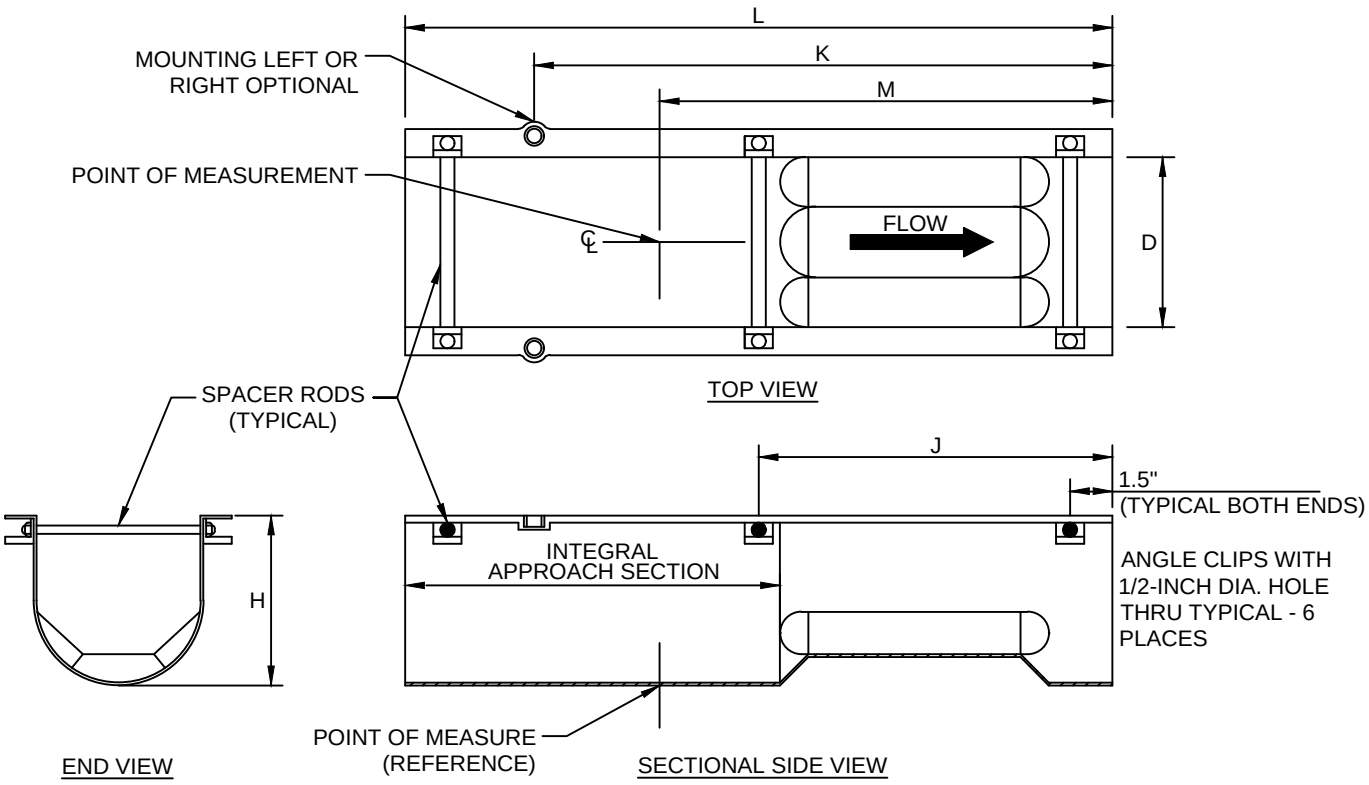
PALMER-BOWLUS FLUME DETAIL (1 OF 2)

DETAIL: SAN - 2A

DATE: 11-18-15

APPROVED BY: MATT FINEOUR

VILLAGE OF PLEASANT PRAIRIE
KENOSHA COUNTY, WISCONSIN



PIPE SIZE	D	H	M	K	J	L
4	4	6	11	15 7/16	6 1/2	17
6	6	8	16	20 7/16	12 1/2	25
8	8	10	21	25 7/16	16 1/2	33
10	10	12	26	30 7/16	20 1/2	41
12	12	14	31	35 7/16	24 1/2	49
15	15	17	38 1/2	42 15/16	30 1/2	61
18	18	20	46	50 7/16	36 1/2	73
21	21	23	53 1/2	57 15/16	42 1/2	85
24	24	26	61	65 7/16	48 1/2	97
27	27	29	68 1/2	72 15/16	54 1/2	109
30	30	32	76	80 7/16	60 1/2	121

NOTES:

1. DIMENSIONS ARE IN INCHES, UNLESS OTHERWISE SPECIFIED.
2. DIMENSIONS PROVIDED FOR REFERENCE ONLY.

SCALE: NTS

PALMER-BOWLUS FLUME DETAIL (2 OF 2)

DETAIL: SAN - 2B

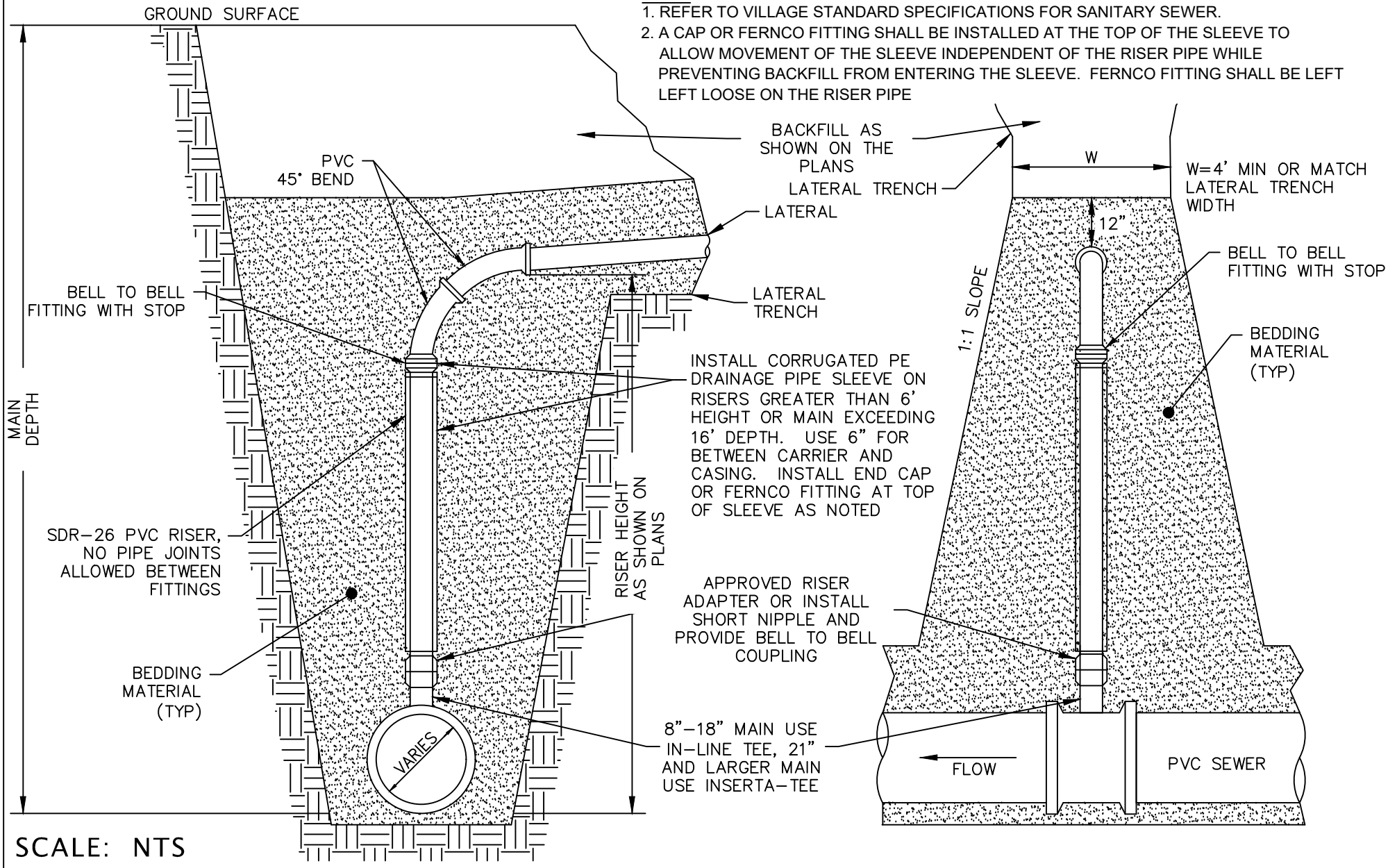
DATE: 11-16-15

APPROVED BY: MATT FINEOUR

VILLAGE OF PLEASANT PRAIRIE

KENOSHA COUNTY, WISCONSIN

NOTE:
1. REFER TO VILLAGE STANDARD SPECIFICATIONS FOR SANITARY SEWER.
2. A CAP OR FERNCO FITTING SHALL BE INSTALLED AT THE TOP OF THE SLEEVE TO ALLOW MOVEMENT OF THE SLEEVE INDEPENDENT OF THE RISER PIPE WHILE PREVENTING BACKFILL FROM ENTERING THE SLEEVE. FERNCO FITTING SHALL BE LEFT LEFT LOOSE ON THE RISER PIPE



SCALE: NTS

SANITARY RISER #1

DETAIL: SAN - 3

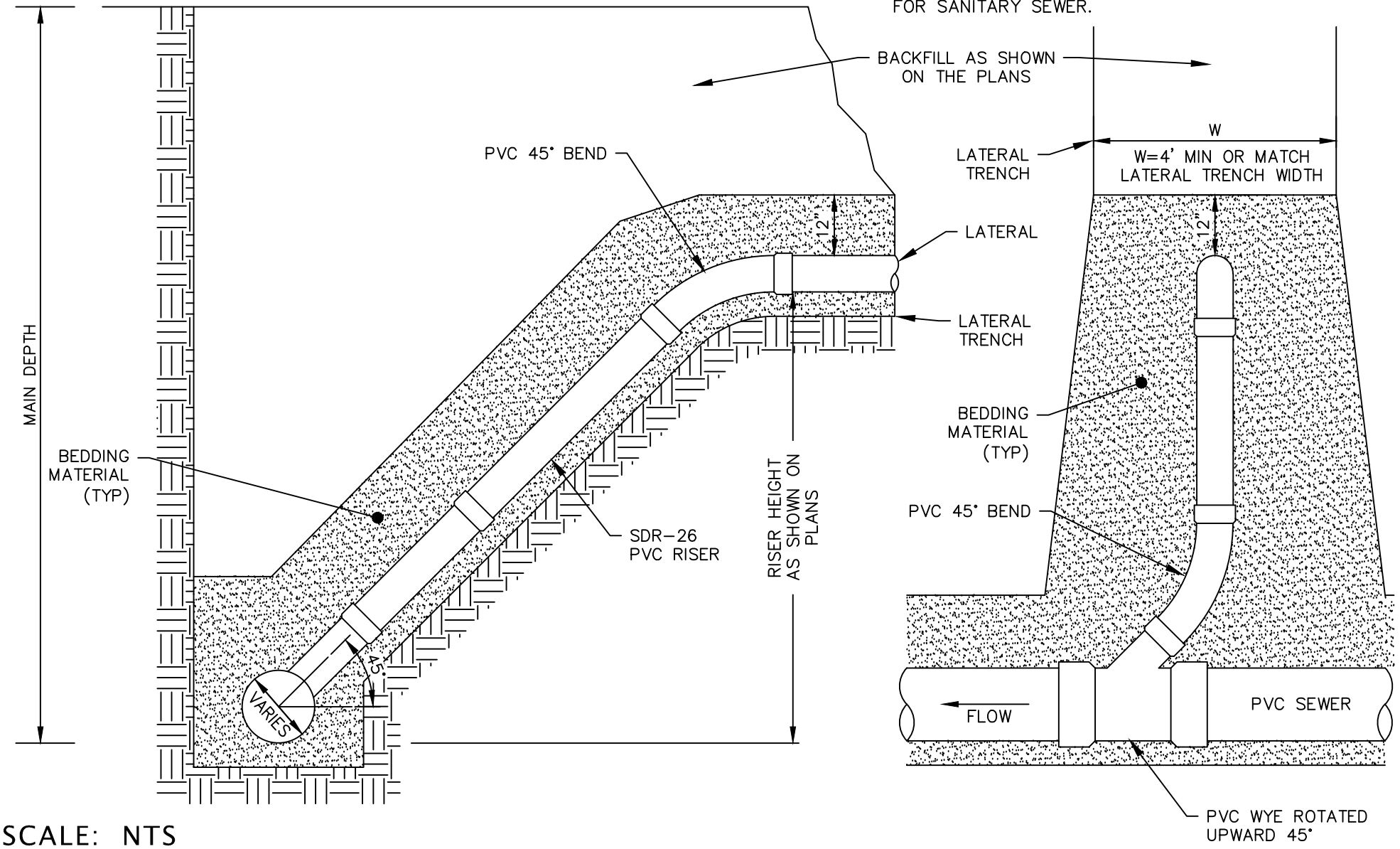
DATE: 1-23-20

APPROVED BY: MATT FINEOUR

VILLAGE OF PLEASANT PRAIRIE

KENOSHA COUNTY, WISCONSIN

NOTE:
1. REFER TO VILLAGE STANDARD SPECIFICATIONS FOR SANITARY SEWER.



SCALE: NTS

SANITARY RISER #2

DETAIL: SAN - 4

DATE: 1-23-20

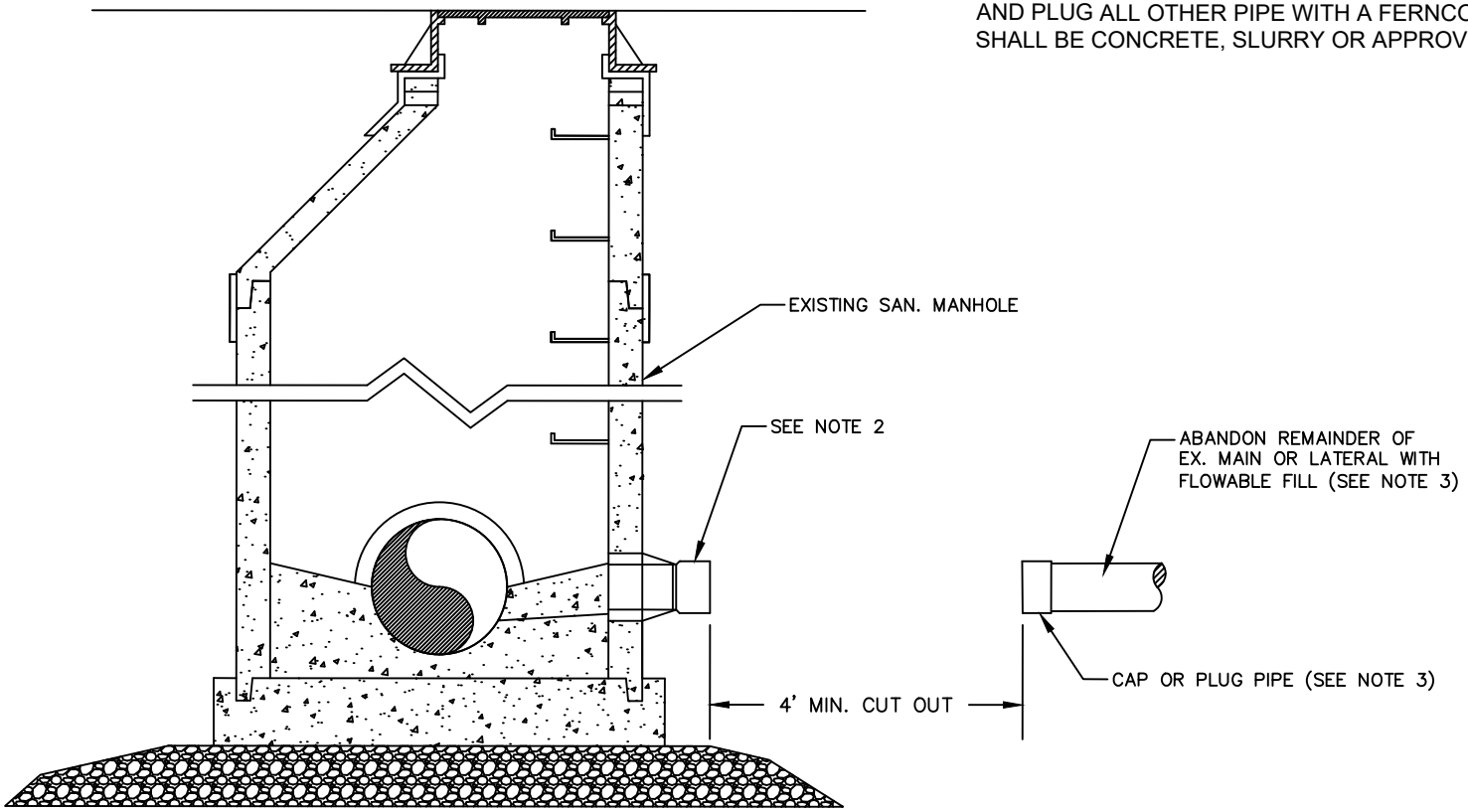
APPROVED BY: MATT FINEOUR

VILLAGE OF PLEASANT PRAIRIE

KENOSHA COUNTY, WISCONSIN

NOTES:

1. ALL INACTIVE (DEAD) SEWER MAIN AND LATERALS, EXCEPT MAINS OR LATERALS TO POSSIBLE FUTURE DEVELOPMENT, SHALL BE ABANDONED.
2. PIPE CONNECTIONS MADE BY A RUBBER BOOT SHALL BE ABANDONED AT THE MANHOLE BY REMOVING THE EXISTING PIPE FROM THE BOOT AND REPLACING IT WITH A PVC PLUG. ABANDON ALL OTHER PIPES BY CUTTING THE PIPE AT THE MANHOLE AND SEALING THE PIPE END WITH A FERNCO FLEXIBLE COUPLING AND PVC PLUG.
3. ABANDON THE REMAINDER OF THE EXISTING PIPE WITHIN 5' OF THE BACK OF CURB OR EDGE OF SHOULDER BY FILLING WITH A FLOWABLE FILL AND INSTALLING A CAP OR PLUG. PROVIDE A WATERTIGHT PVC CAP ON PVC PIPE AND PLUG ALL OTHER PIPE WITH A FERNCO AND PVC PLUG. FLOWABLE FILL SHALL BE CONCRETE, SLURRY OR APPROVED EQUAL.



SCALE: NTS

SANITARY PIPE ABANDONMENT AT EXISTING MANHOLE

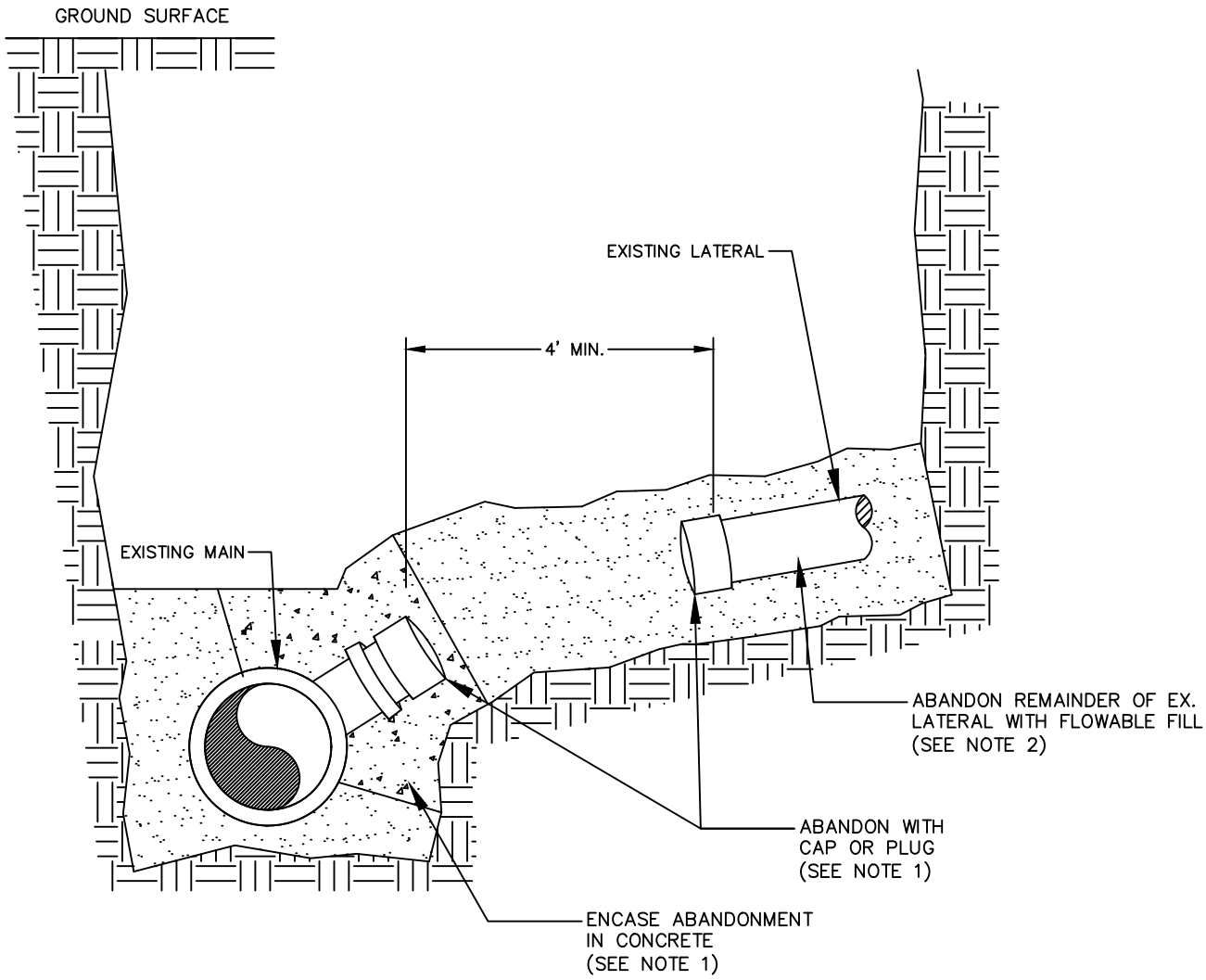
DETAIL: SAN - 5

DATE: 4-22-20

APPROVED BY: MATT FINEOUR

VILLAGE OF PLEASANT PRAIRIE

KENOSHA COUNTY, WISCONSIN

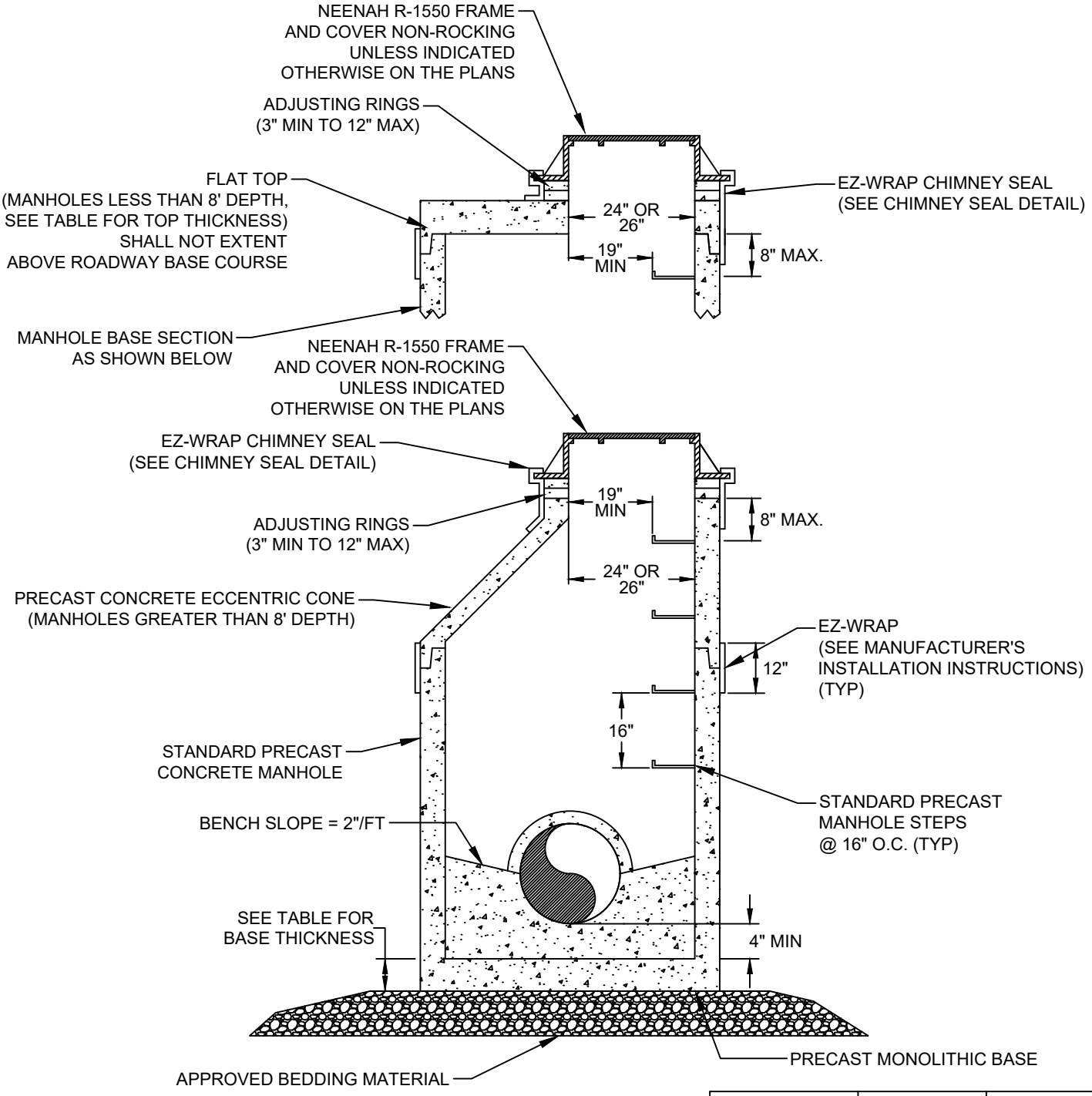


NOTES:

1. PVC LATERAL SHALL BE ABANDONED BY CUTTING THE PIPE NEAR THE WYE AND INSTALLING A WATERPROOF PVC CAP ON THE PIPE ENDS. ABANDON ALL OTHER PIPES BY CUTTING THE PIPE NEAR THE WYE, SEALING THE PIPE ENDS WITH A FERNCO FLEXIBLE COUPLING AND PVC PLUG OR WING-NUT STYLE RUBBER EXPANSION PLUG AND POURING A CONCRETE COLLAR AROUND THE WYE AND PLUG AS DIRECTED BY THE VILLAGE.
2. ABANDON THE REMAINDER OF THE EXISTING PIPE WITHIN 5' OF THE BACK OF CURB OR EDGE OF SHOULDER BY FILLING WITH A FLOWABLE FILL. FLOWABLE FILL SHALL BE CONCRETE, SLURRY OR APPROVED EQUAL.

SCALE: NTS

SANITARY LATERAL ABANDONMENT AT EXISTING MAIN	DETAIL: SAN - 6
DATE: 10-20-22	VILLAGE OF PLEASANT PRAIRIE
APPROVED BY: MATT FINEOUR	KENOSHA COUNTY, WISCONSIN



STRUCTURE DIAMETER	MIN WALL THICKNESS*	MIN BASE AND TOP THICKNESS*
4'	5"	6"
5'	6"	8"
6'	7"	8"
7'	8"	8"
8' AND GREATER	9"	8"

* MINIMUM THICKNESS SHALL NOT BE LESS THAN THAT REQUIRED TO MEET AASHTO H-20 LOADINGS

NOTE:
REFER TO VILLAGE STANDARD SPECIFICATIONS FOR STORM SEWER.

SCALE: NTS

STANDARD STORM MANHOLE

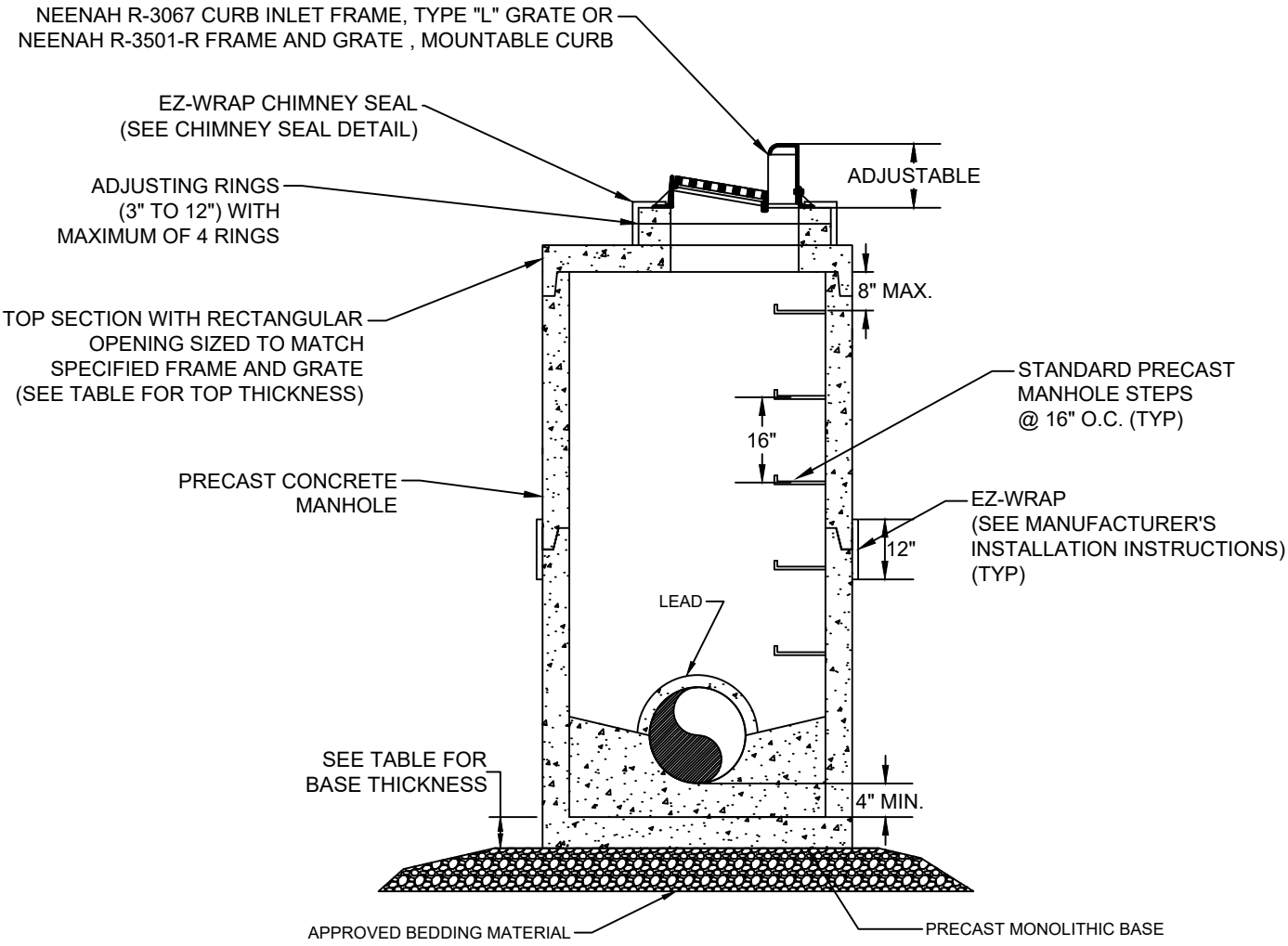
DETAIL: STM - 1

DATE: 1-23-20

APPROVED BY: MATT FINEOUR

VILLAGE OF PLEASANT PRAIRIE

KENOSHA COUNTY, WISCONSIN



STRUCTURE DIAMETER	MIN WALL THICKNESS*	MIN BASE AND TOP THICKNESS*
4'	5"	6"
5'	6"	8"
6'	7"	8"
7'	8"	8"
8' AND GREATER	9"	8"

* MINIMUM THICKNESS SHALL NOT BE LESS THAN THAT REQUIRED TO MEET AASHTO H-20 LOADINGS

NOTE:
REFER TO VILLAGE STANDARD SPECIFICATIONS FOR STORM SEWER.

SCALE: NTS

STANDARD STORM MANHOLE WITH CURB INLET

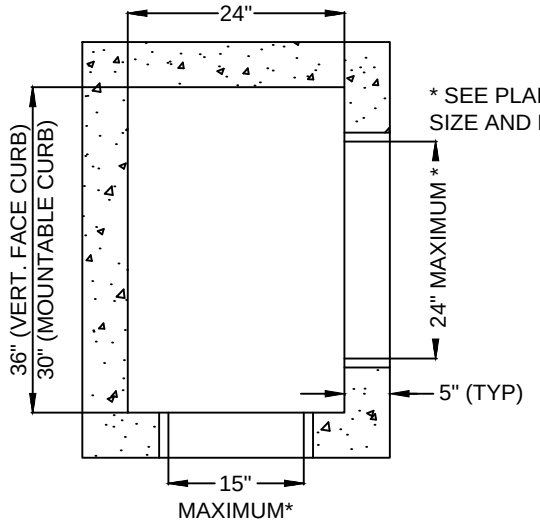
DETAIL: STM - 2

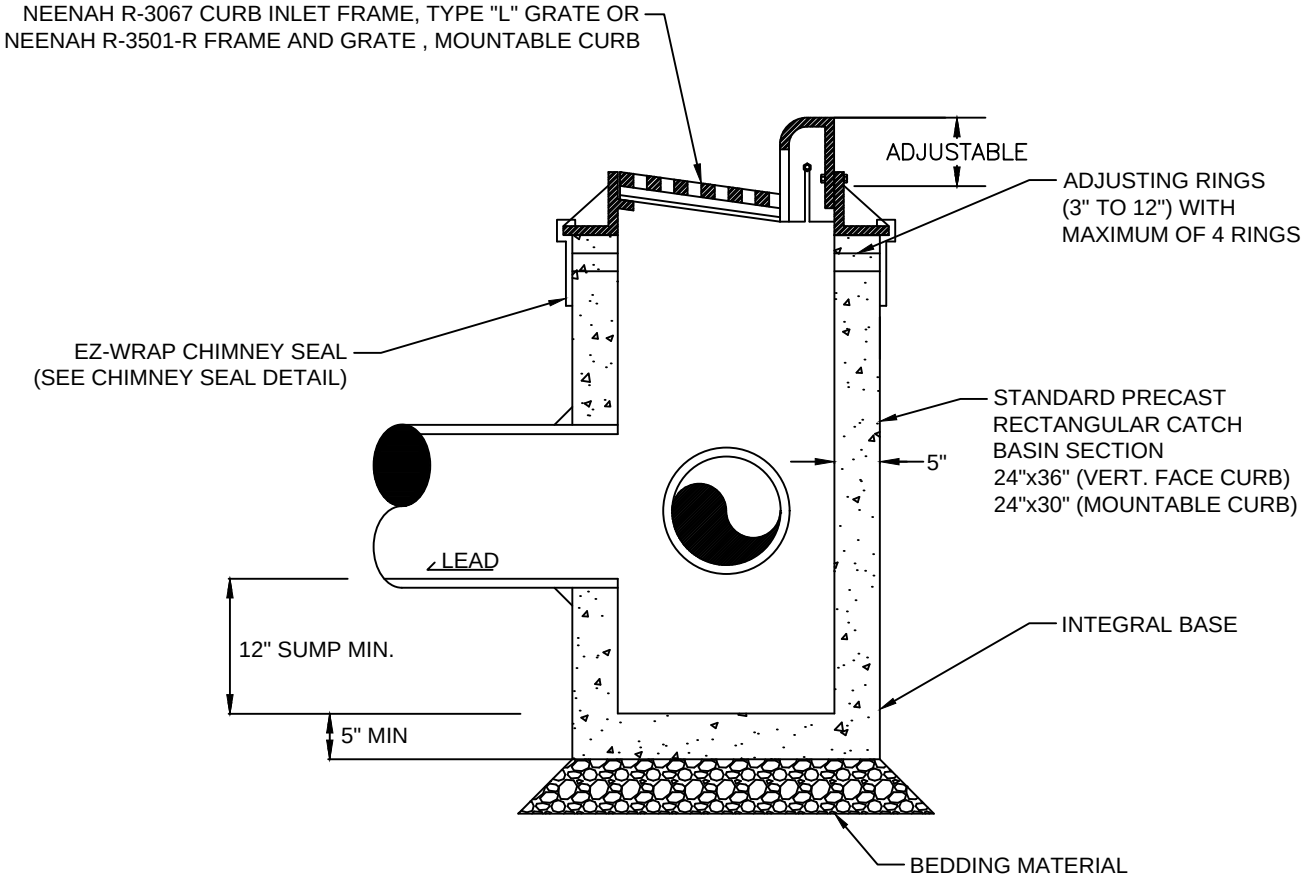
DATE: 1-23-20

APPROVED BY: MATT FINEOUR

VILLAGE OF PLEASANT PRAIRIE

KENOSHA COUNTY, WISCONSIN



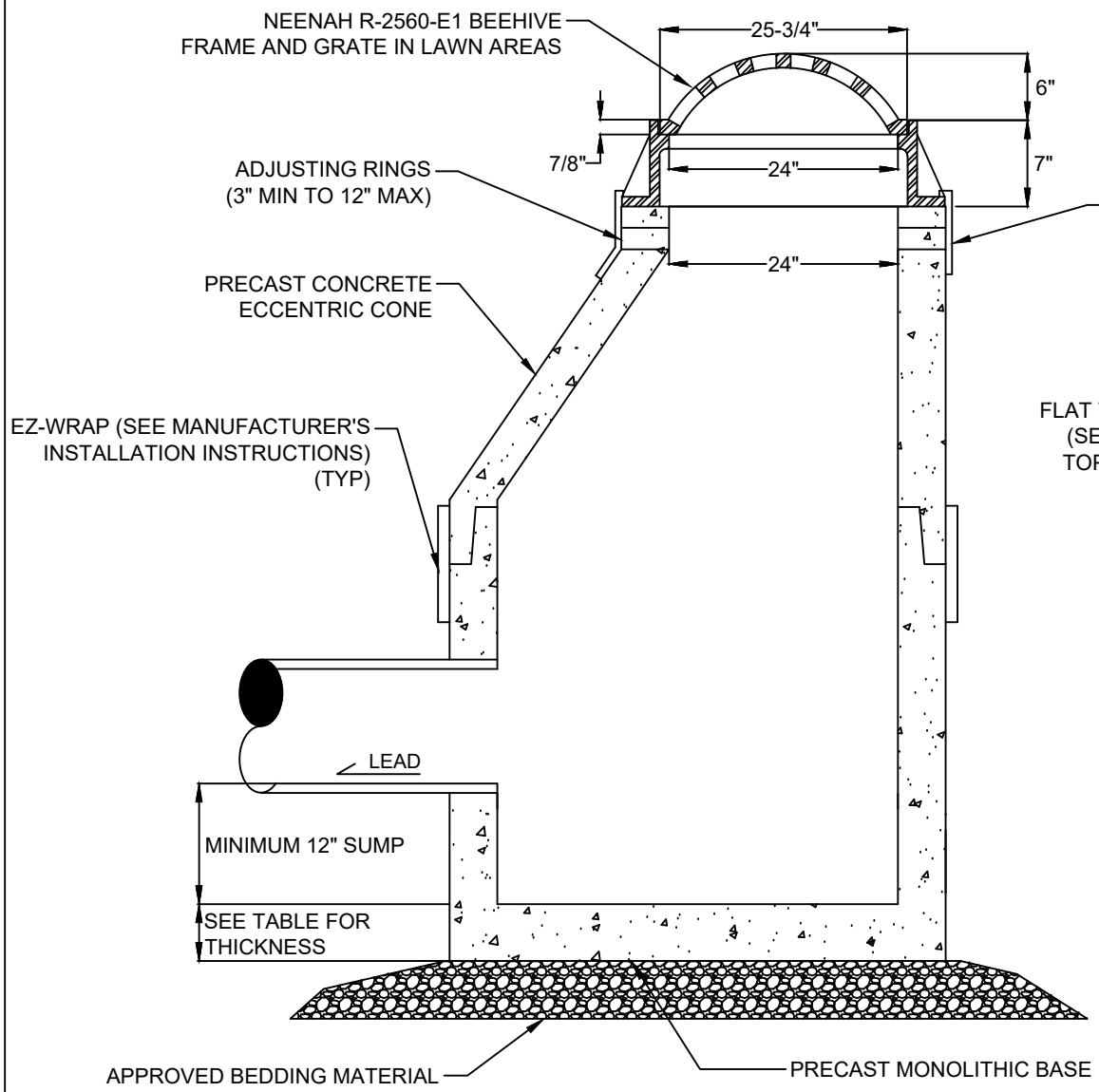


NOTE:

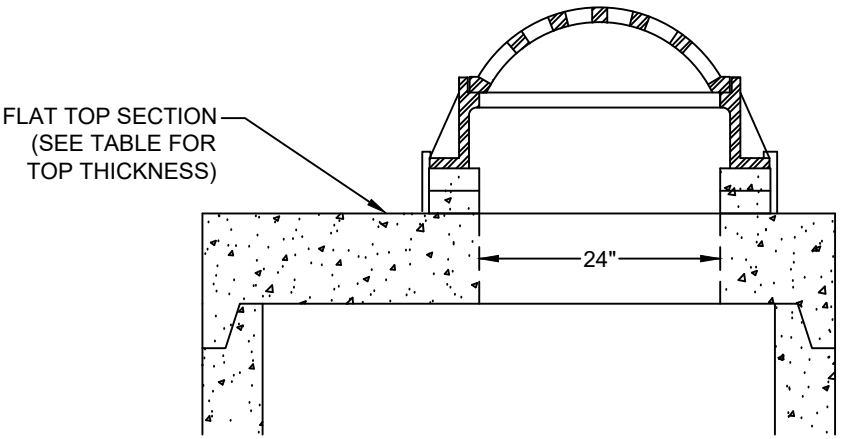
1. REFER TO VILLAGE STANDARD SPECIFICATIONS FOR STORM SEWER

SCALE: NTS

PRECAST RECTANGULAR CATCH BASIN	DETAIL: STM - 3
DATE: 12-17-18	VILLAGE OF PLEASANT PRAIRIE
APPROVED BY: MATT FINEOUR	KENOSHA COUNTY, WISCONSIN



BEEHIVE CATCH BASIN
WITH ALTERNATE FLAT TOP



NOTE:

1. REFER TO VILLAGE STANDARD SPECIFICATIONS FOR STORM SEWER

STRUCTURE DIAMETER	MIN WALL THICKNESS*	MIN BASE AND TOP THICKNESS*
4'	5"	6"
5'	6"	8"
6'	7"	8"
7'	8"	8"
8' AND GREATER	9"	8"

* MINIMUM THICKNESS SHALL NOT BE LESS THAN THAT REQUIRED TO MEET AASHTO H-20 LOADINGS

SCALE: NTS

STANDARD BEEHIVE CATCH BASIN

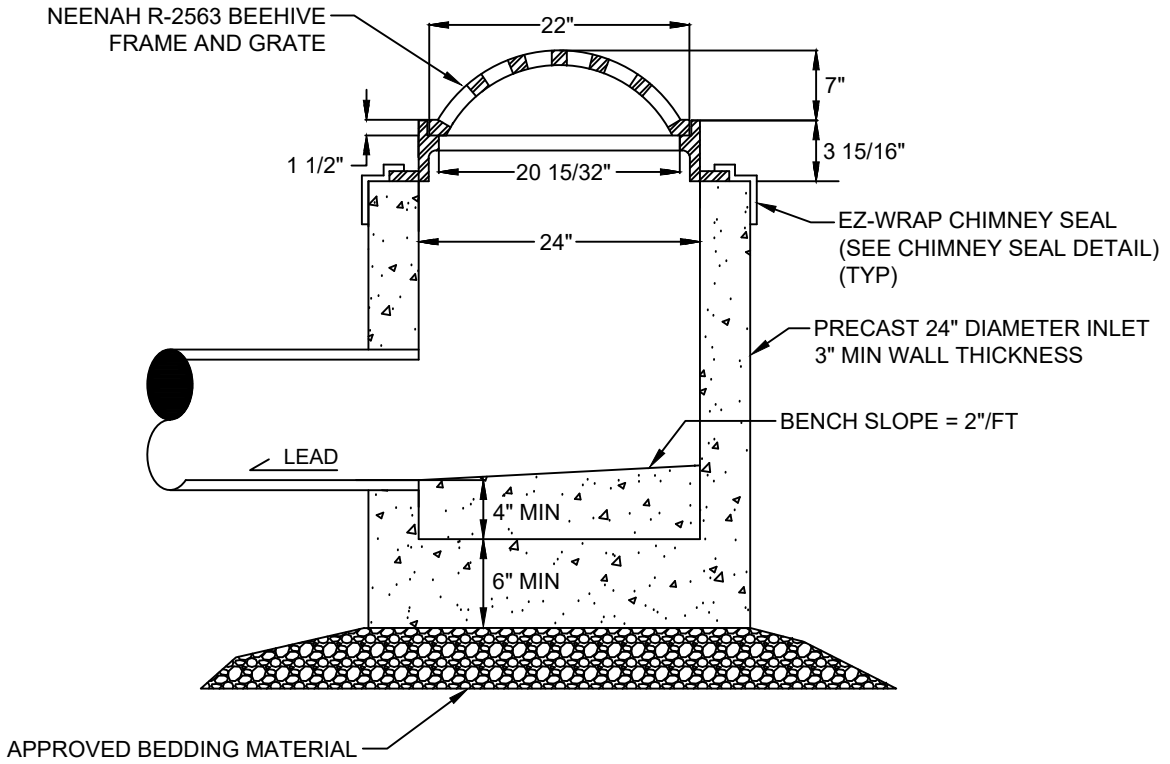
DETAIL: STM - 4

DATE: 1-23-20

APPROVED BY: MATT FINEOUR

VILLAGE OF PLEASANT PRAIRIE
KENOSHA COUNTY, WISCONSIN

ALL BEEHIVE INLETS/CATCH BASINS SHALL BE IN ACCORDANCE WITH DETAIL STM-4 UNLESS STM-4 CANNOT BE CONSTRUCTED DUE TO LACK OF OBTAINABLE DEPTH AND THIS 24-INCH DIAMETER INLET IS APPROVED BY THE VILLAGE ENGINEER



NOTES:

1. SET CASTING ON A TROWELED 1/4 INCH THICK LAYER OF BUTYL RUBBER SEALANT. THE BUTYL RUBBER SEALANT SHALL BE EZ-STICK OR KENT-SEAL BUTYL BASE SEALANT IN TROWELABLE GRADE OR EQUAL.
2. REFER TO VILLAGE STANDARD SPECIFICATIONS FOR STORM SEWER.

SCALE: NTS

24-INCH DIAMETER BEEHIVE INLET

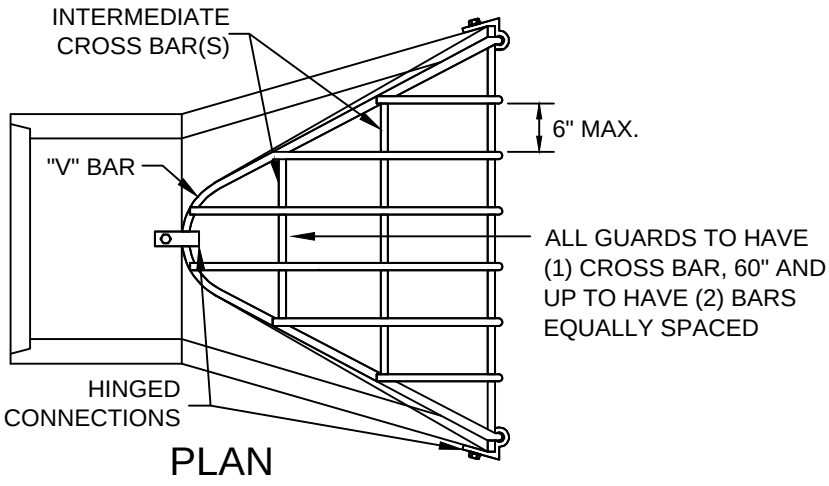
DETAIL: STM - 4A

DATE: 1-4-21

APPROVED BY: MATT FINEOUR

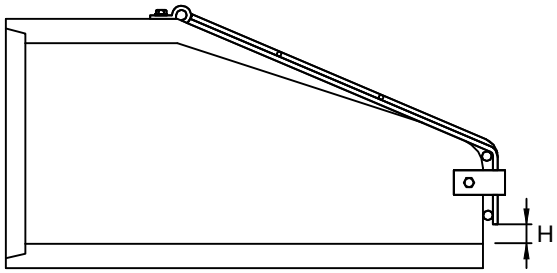
VILLAGE OF PLEASANT PRAIRIE

KENOSHA COUNTY, WISCONSIN

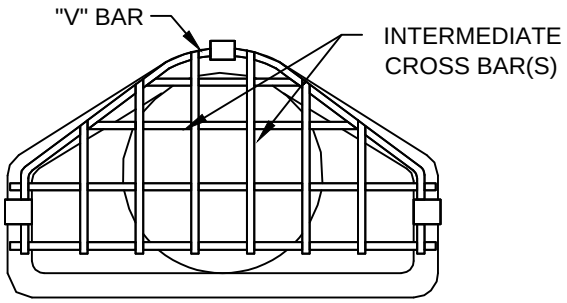


PLAN

ROUND		ARCH	
PIPE SIZE	H	PIPE SIZE	H
12"	2-1/2"	22"-29"	4"
15"	3"	36"-44"	5"
18"-24"	4"	51"-65"	6"
27"-36"	5"	73"-102"	7"
42"-54"	6"		
60"-72"	7"		
78"-90"	8"		



PROFILE



FRONT

NOTE:

1. REFER TO VILLAGE STANDARD SPECIFICATIONS FOR STORM SEWER.
2. SECURE THE LAST TWO PIPE SECTIONS, INCLUDING END SECTIONS, USING JOINT TIES.

	PIPE SIZE	BOLT DIA.	BAR DIA.
ROUND	12"-24"	5/8"	3/4"
	27"-48"	3/4"	1"
	54"-90"	1"	1-1/4"
ARCH	22"-29"	5/8"	3/4"
	36"-59"	3/4"	1"
	65"-88"	1"	1-1/4"
ELIPTICAL	14"-23"	5/8"	3/4"
	19"-30"	5/8"	3/4"
	24"-38"	3/4"	3/4"
	29"-45"	3/4"	3/4"
	34"-53"	3/4"	3/4"
	38"-60"	3/4"	3/4"
	43"-68"	1"	1"
	48"-76"	1"	1"
	53"-83"	1"	1"

SCALE: NTS

STANDARD ENDWALL GRATE

DETAIL: STM - 5

DATE: 12-17-18

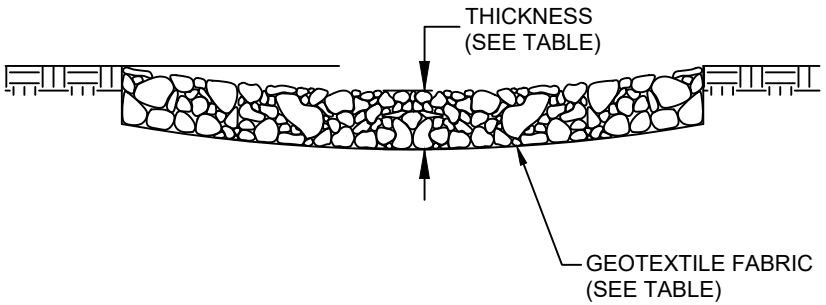
APPROVED BY: MATT FINEOUR

VILLAGE OF PLEASANT PRAIRIE

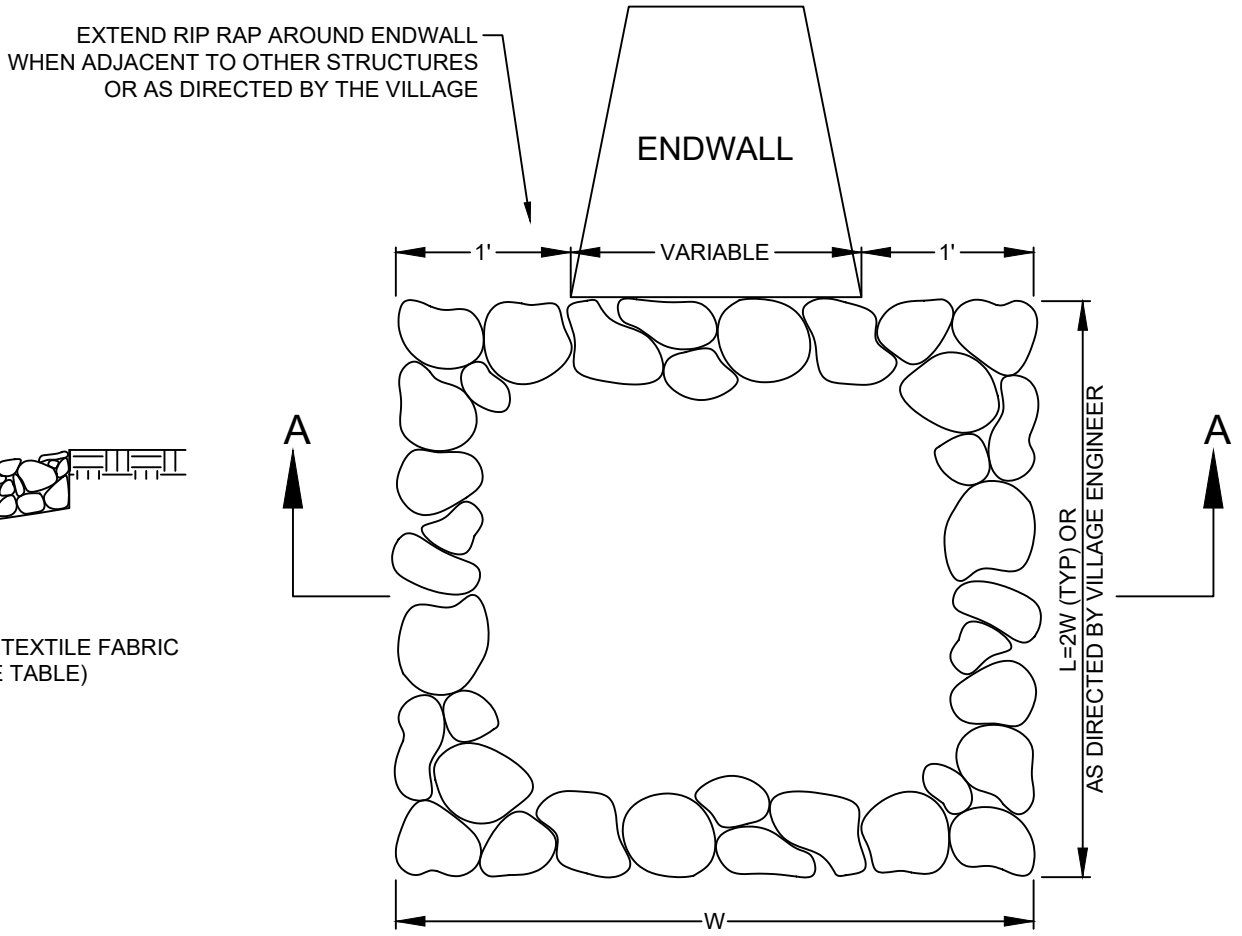
KENOSHA COUNTY, WISCONSIN

NOTE:
1. REFER TO VILLAGE STANDARD SPECIFICATIONS FOR STORM SEWERS

RIPRAP	RIPRAP THICKNESS	GEOTEXTILE FABRIC TYPE
LIGHT	12"	R
MEDIUM	18"	HR
HEAVY	24"	HR
EXTRA HEAVY	30"	HR



SECTION A-A



SCALE: NTS

RIPRAP TREATMENT AT ENDWALLS

DETAIL: STM - 6

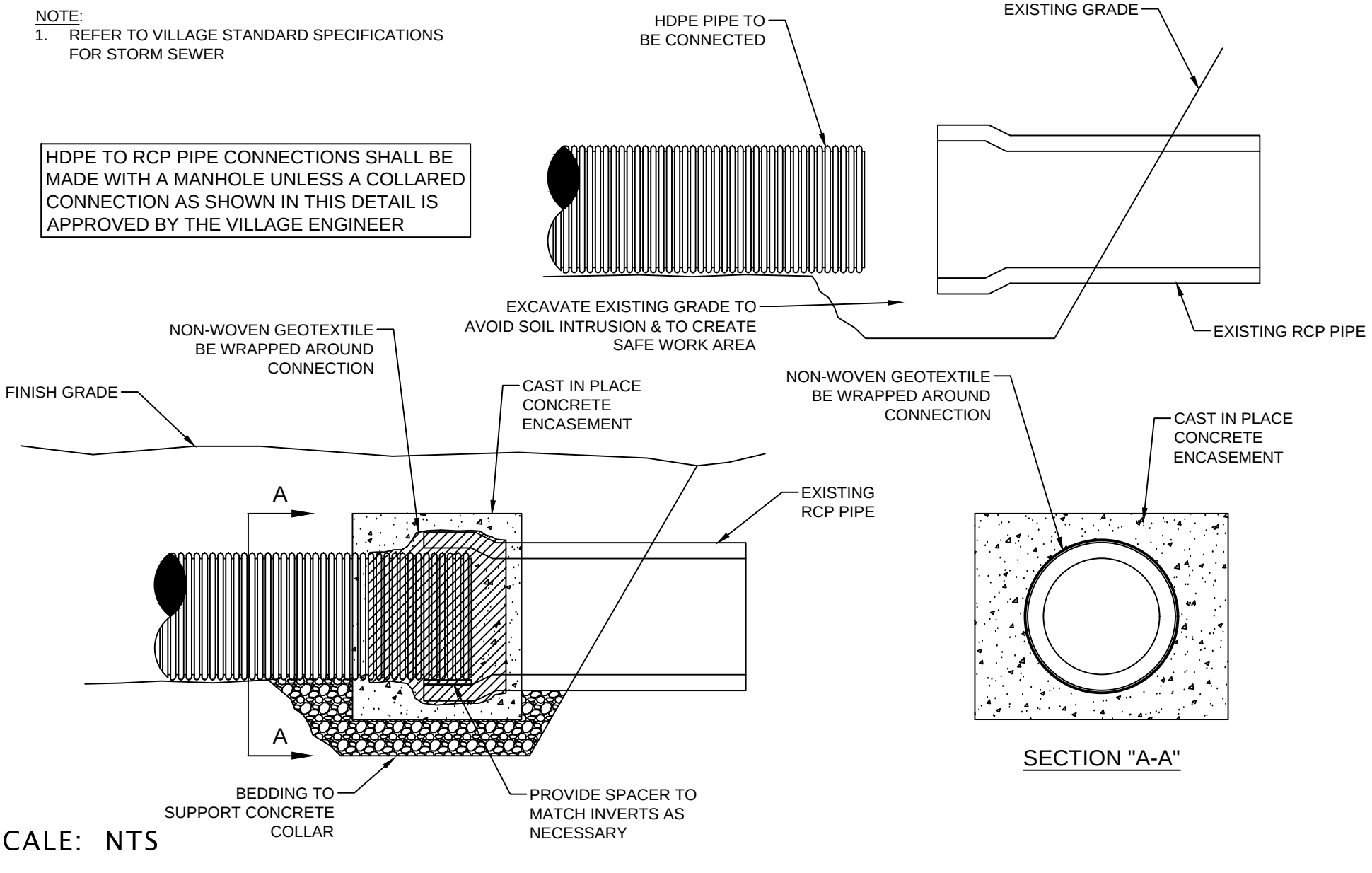
DATE: 10-20-22

APPROVED BY: MATT FINEOUR

VILLAGE OF PLEASANT PRAIRIE
KENOSHA COUNTY, WISCONSIN

NOTE:
1. REFER TO VILLAGE STANDARD SPECIFICATIONS FOR STORM SEWER

HDPE TO RCP PIPE CONNECTIONS SHALL BE MADE WITH A MANHOLE UNLESS A COLLARED CONNECTION AS SHOWN IN THIS DETAIL IS APPROVED BY THE VILLAGE ENGINEER



SECTION "A-A"

SCALE: NTS

HDPE TO RCP (BELLED END) CONNECTION DETAIL

DETAIL: STM - 7

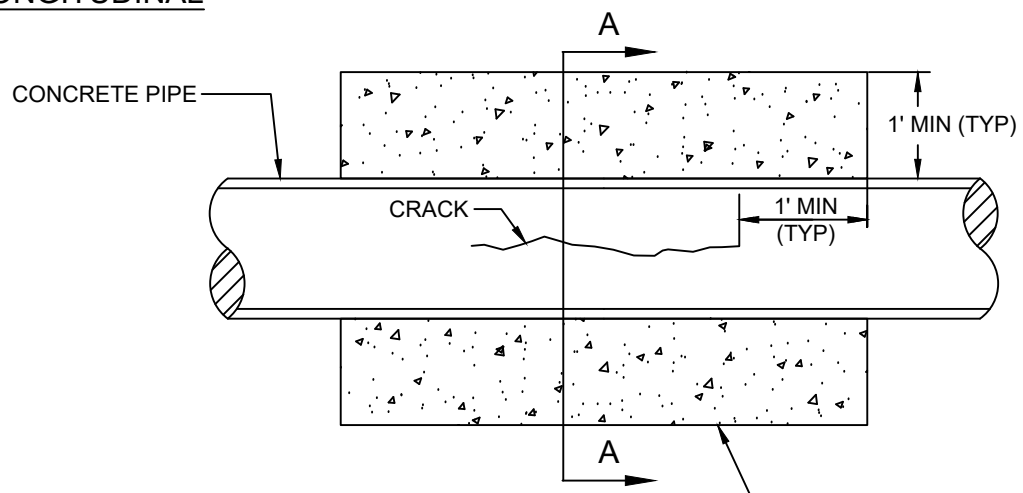
DATE: 6-23-17

APPROVED BY: MATT FINEOUR

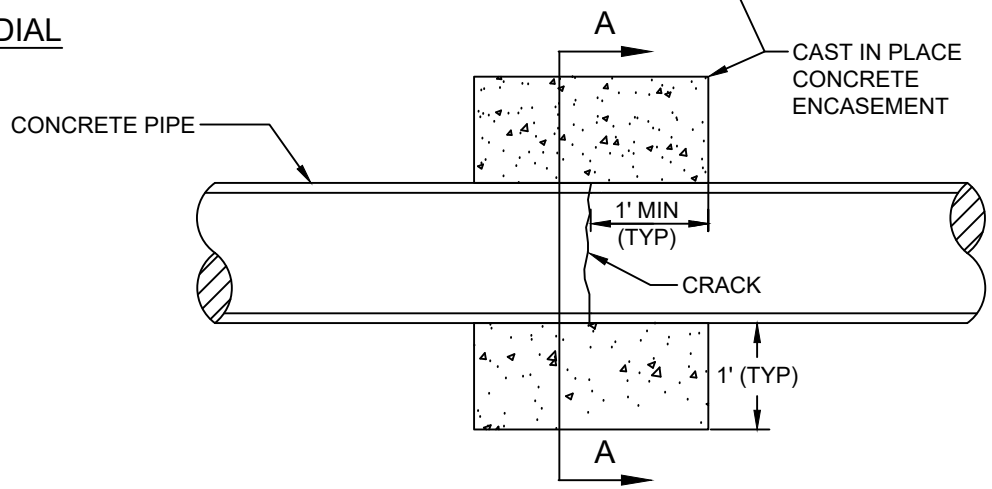
VILLAGE OF PLEASANT PRAIRIE

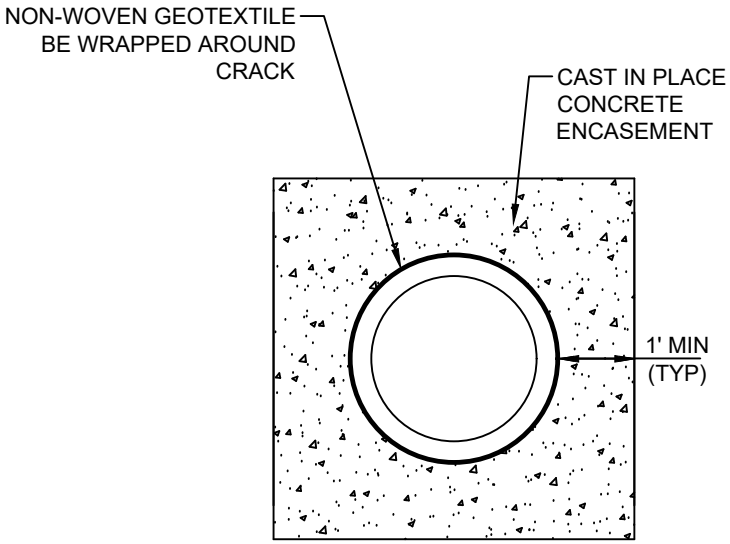
KENOSHA COUNTY, WISCONSIN

LONGITUDINAL



RADIAL

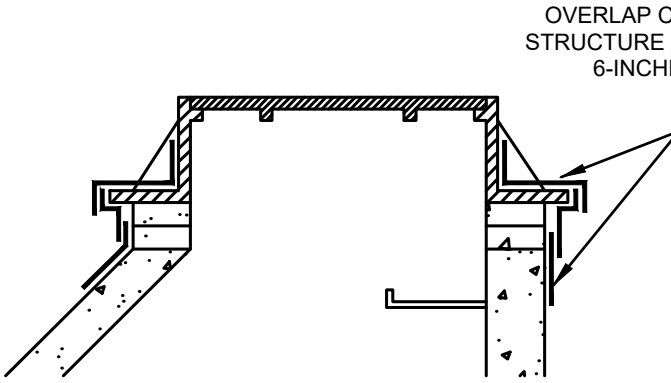




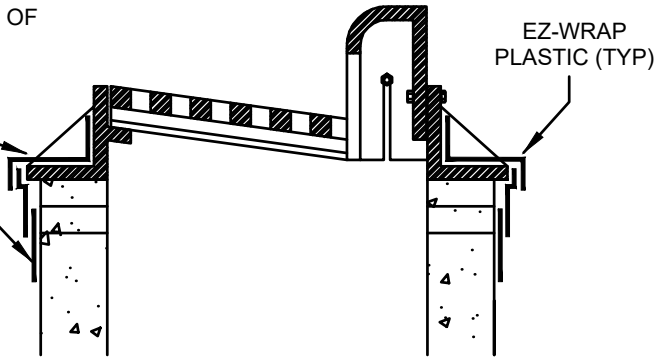
SECTION "A-A"

SCALE: NTS

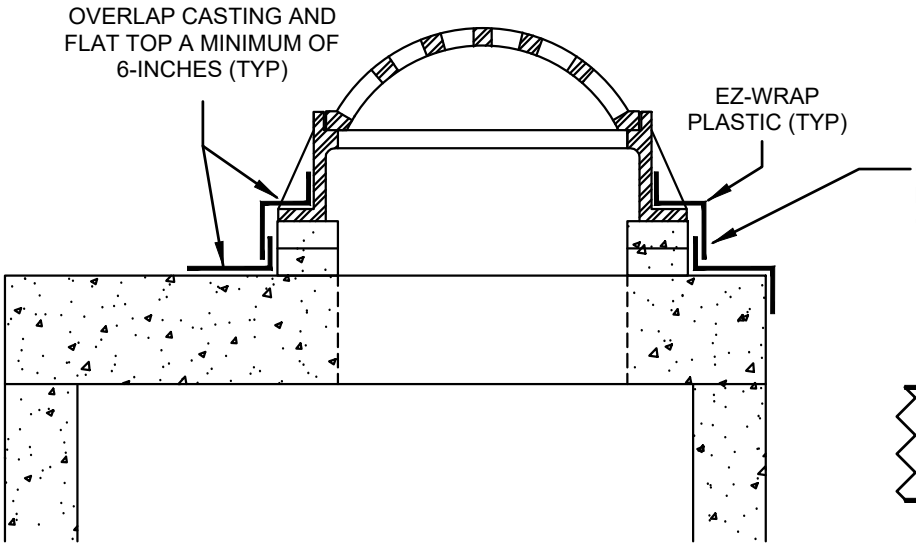
CONCRETE COLLAR PIPE REPAIR	DETAIL: STM – 8
DATE: 4-29-20	VILLAGE OF PLEASANT PRAIRIE
APPROVED BY: JOHN STEINBRINK	KENOSHA COUNTY, WISCONSIN



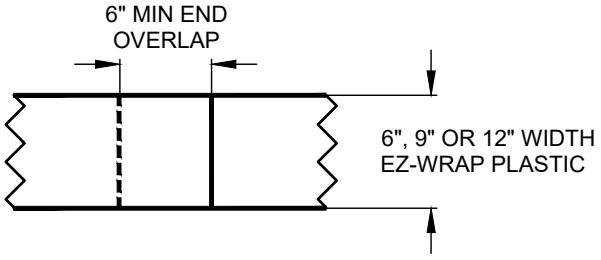
CONE SECTION MANHOLE INSTALLATION



CATCH BASIN INSTALLATION



FLAT TOP MANHOLE / INLET INSTALLATION



EZ-WRAP END OVERLAP DETAIL

SCALE: NTS

INSTALLATION INSTRUCTIONS:

1. CLEAN AND DRY THE EXTERIOR SURFACES OF THE CASTING, ADJUSTING RINGS, AND STRUCTURE TO BE WRAPPED. SURFACES AND MATERIALS SHALL BE ABOVE 32 DEGREES.
2. APPLY MANUFACTURER RECOMMENDED AEROSOL ADHESIVE OR EZ-PRIMER #4 TO ALL SURFACES TO BE WRAPPED. EZ-PRIMER SHALL BE APPLIED USING A CLEAN PAINT BRUSH OR ROLLER.
3. WAIT FOR SOLVENTS TO DISPENSE FROM THE TREATED SURFACE. EZ-PRIMER TREATED SURFACE SHALL BE DRY AND APPEAR SMOOTH AND CLEAN. AEROSOL ADHESIVE SHALL BE TACKY. DEPENDING ON THE TEMPERATURE THIS MAY TAKE 10-30 MINUTES FOR EZ-PRIMER OR 1-3 MINUTES FOR AEROSOL ADHESIVE.
4. CUT EZ-WRAP TO LENGTH. CUT ENDS SHALL OVERLAP A MINIMUM OF 6".
5. BEGINNING AT THE BOTTOM OF THE STRUCTURE CAREFULLY INSTALL THE EZ-WRAP TO THE DRY, TREATED SURFACES, REMOVING THE RELEASE PAPER AS YOU APPLY THE EZ-WRAP. DO NOT STRETCH THE EZ-WRAP. PRESS THE EZ-WRAP DOWN FIRMLY AND EVENLY AS YOU COVER THE SURFACES.
6. INSTALL EZ-PRIMER OR AEROSOL ADHESIVE OVER TOP 2-INCHES OF EZ-WRAP AND CUT END TO BE OVERLAID. ALLOW SURFACE TO DRY AS STATED IN STEP 3.
7. INSTALL NEXT SECTION OF EZ-WRAP. OVERLAP THE EZ-WRAP VERTICALLY A MINIMUM OF 2-INCHES. DO NOT STRETCH THE EZ-WRAP. PRESS THE EZ-WRAP DOWN FIRMLY AND EVENLY AS YOU COVER THE SURFACES.
8. REPEAT STEPS 6 AND 7 UNTIL THE ENTIRE CHIMNEY SECTION IS WRAPPED.

CHIMNEY SEAL DETAIL

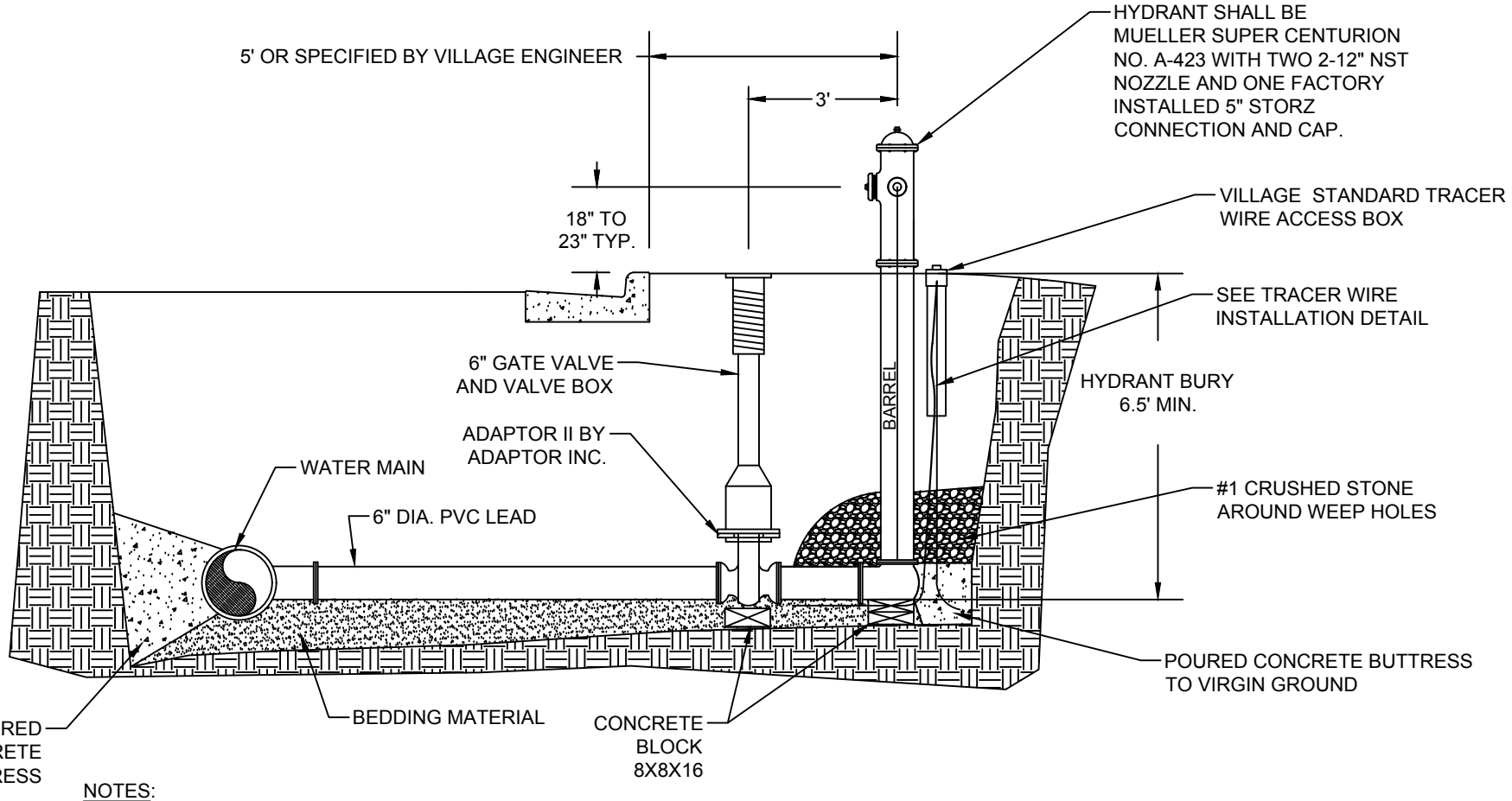
DETAIL: CS - 1

DATE: 2-4-22

APPROVED BY: MATT FINEOUR

VILLAGE OF PLEASANT PRAIRIE

KENOSHA COUNTY, WISCONSIN



NOTES:

1. MECHANICAL JOINTS FROM TEE TO VALVE AND FROM VALVE TO HYDRANT SHALL BE RESTRAINED WITH MEGALUGS AND STAINLESS STEEL BOLTS.
2. ALL FASTENERS SHALL BE STAINLESS STEEL.
3. HYDRANT EXTENSIONS ARE NOT PERMITTED
4. ALL HYDRANTS, EXCLUDING STORZ CONNECTION, SHALL BE FACTORY PAINTED WITH EPOXY AS IDENTIFIED BELOW:
   A. PUBLIC (VILLAGE) HYDRANTS SHALL BE MUELLER RED - SHERWIN WILLIAMS POLANE F63RL15
   B. PRIVATE HYDRANTS ON VILLAGE SYSTEM PRESSURE SHALL BE CAUTION BLUE - SHERWIN WILLIAMS POLANE F63RXL9667
   C. PRIVATE PRESSURED HYDRANTS ON FIRE LOOPS SHALL BE MUELLER YELLOW - SHERWIN WILLIAMS POLANE F63YL14
5. REFER TO VILLAGE STANDARD SPECIFICATIONS FOR WATER MAIN CONSTRUCTION

SCALE: NTS

STANDARD HYDRANT ASSEMBLY

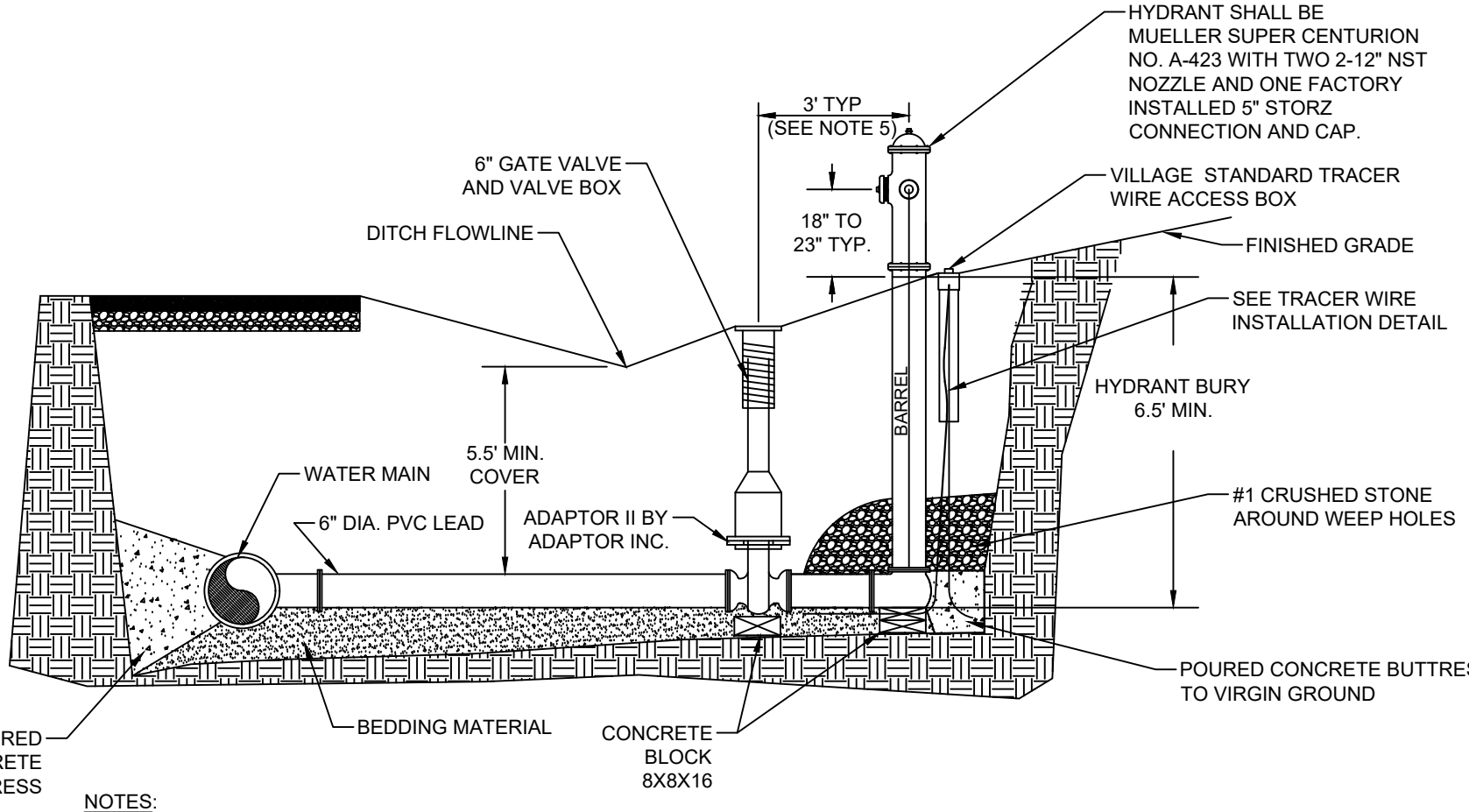
DETAIL: W - 1

DATE: 8-19-19

APPROVED BY: MATT FINEOUR

VILLAGE OF PLEASANT PRAIRIE

KENOSHA COUNTY, WISCONSIN



NOTES:

1. MECHANICAL JOINTS FROM TEE TO VALVE AND FROM VALVE TO HYDRANT SHALL BE RESTRAINED WITH MEGALUGS AND STAINLESS STEEL BOLTS.
2. ALL FASTENERS SHALL BE STAINLESS STEEL.
3. HYDRANT EXTENSIONS ARE NOT PERMITTED
4. ALL HYDRANTS, EXCLUDING STORZ CONNECTION, SHALL BE FACTORY PAINTED WITH EPOXY AS IDENTIFIED BELOW:
   A. PUBLIC (VILLAGE) HYDRANTS SHALL BE MUELLER RED - SHERWIN WILLIAMS POLANE F63RL15
   B. PRIVATE HYDRANTS ON VILLAGE SYSTEM PRESSURE SHALL BE CAUTION BLUE - SHERWIN WILLIAMS POLANE F63RXL9667
   C. PRIVATE PRESSURED HYDRANTS ON FIRE LOOPS SHALL BE MUELLER YELLOW - SHERWIN WILLIAMS POLANE F63YL14
5. UNLESS DIRECTED BY THE VILLAGE TO KEEP VALVE BOXES OUT OF THE DITCH FLOWLINE THE VALVE SHALL BE 3' OFF THE HYDRANT.
6. REFER TO VILLAGE STANDARD SPECIFICATIONS FOR WATER MAIN CONSTRUCTION

SCALE: NTS

STANDARD HYDRANT ASSEMBLY - RURAL ROADWAY

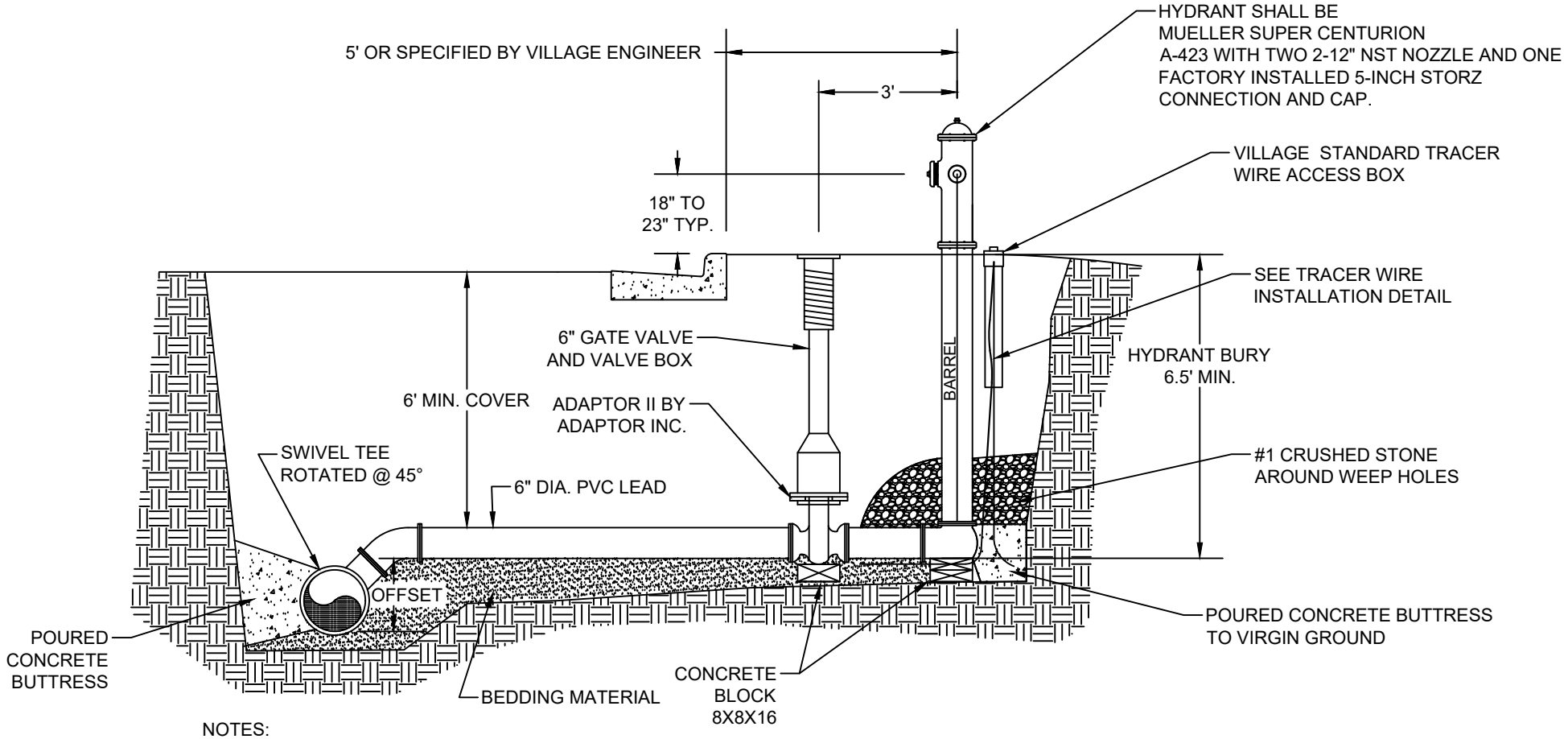
DETAIL: W – 1A

DATE: 1-28-21

APPROVED BY: MATT FINEOUR

VILLAGE OF PLEASANT PRAIRIE

KENOSHA COUNTY, WISCONSIN



MAIN DIA (IN.)	OFFSET (FT.)
16	1.6±
18	1.7±
20	1.9±
24	2.2±

NOTES:

1. MECHANICAL JOINTS FROM TEE TO VALVE AND FROM VALVE TO HYDRANT SHALL BE RESTRAINED WITH MEGALUGS AND STAINLESS STEEL BOLTS.
2. ALL FASTENERS SHALL BE STAINLESS STEEL.
3. HYDRANT EXTENSIONS ARE NOT PERMITTED.
4. ALL HYDRANTS, EXCLUDING STORZ CONNECTION, SHALL BE FACTOR PAINTED WITH EPOXY AS IDENTIFIED BELOW:
   A. PUBLIC (VILLAGE) HYDRANTS SHALL BE MUELLER RED - SHERWIN WILLIAMS POLANE F63RL15.
   B. PRIVATE HYDRANTS ON VILLAGE SYSTEM PRESSURE SHALL BE CAUTION BLUE - SHERWIN WILLIAMS POLANE F63RXL9667.
   C. PRIVATE PRESSURIZED HYDRANTS ON FIRE LOOPS SHALL BE MUELLER YELLOW - SHERWIN WILLIAMS POLANE F63YL14.
5. REFER TO VILLAGE STANDARD SPECIFICATIONS FOR WATER MAIN CONSTRUCTION.

SCALE: NTS

AIR RELEASE HYDRANT ASSEMBLY

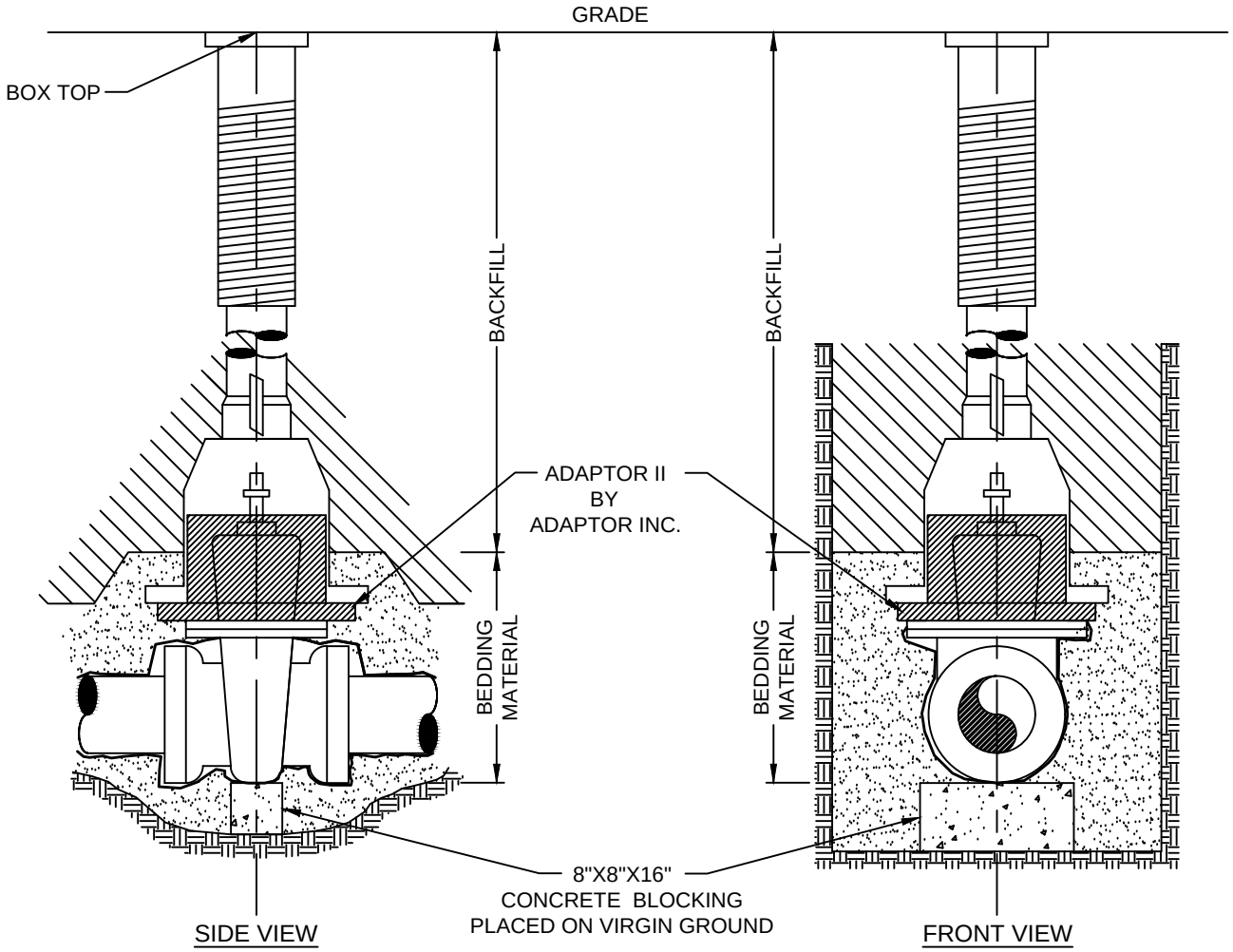
DETAIL: W – 2

DATE: 8-22-19

APPROVED BY: MATT FINEOUR

VILLAGE OF PLEASANT PRAIRIE

KENOSHA COUNTY, WISCONSIN



NOTE:

1. VALVE SHALL BE WRAPPED IN BLACK POLYETHYLENE.
2. REFER TO VILLAGE STANDARD SPECIFICATION FOR WATER MAIN

SCALE: NTS

STANDARD GATE VALVE BOX SETTING

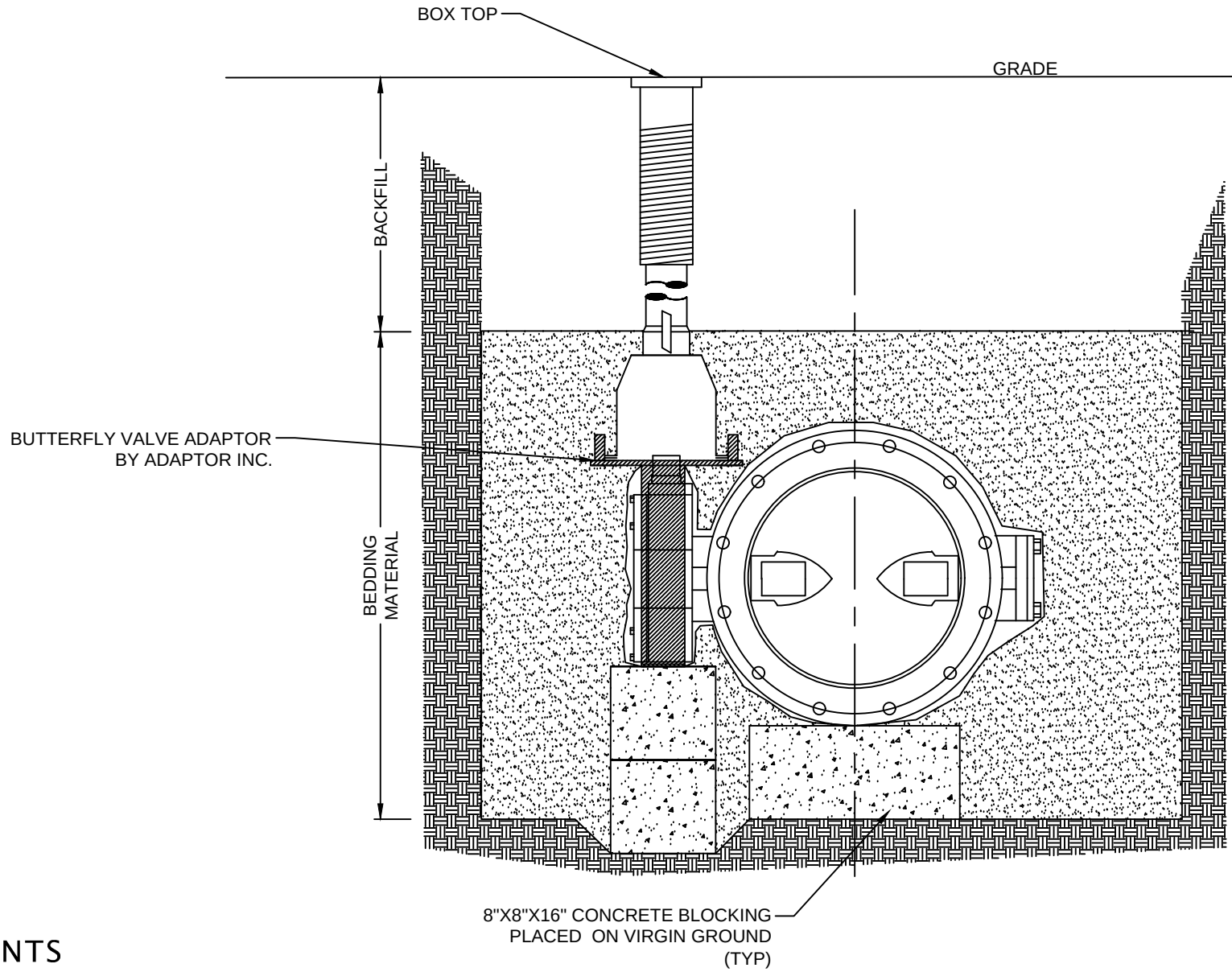
DETAIL: W - 3

DATE: 11-16-15

APPROVED BY: MATT FINEOUR

VILLAGE OF PLEASANT PRAIRIE

KENOSHA COUNTY, WISCONSIN



SCALE: NTS

STANDARD BUTTERFLY VALVE BOX SETTING

DETAIL: W - 4

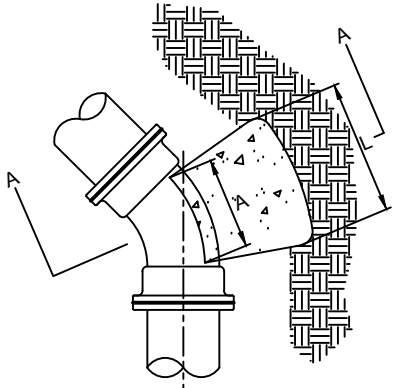
DATE: 11-16-15

APPROVED BY: MATT FINEOUR

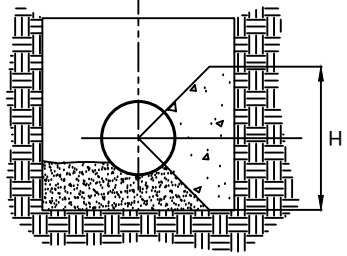
VILLAGE OF PLEASANT PRAIRIE

KENOSHA COUNTY, WISCONSIN

SCALE: NTS



PLAN



SECTION A-A

NOTES:

1. $L_{(WATER)}$ DIMENSIONS IN THE TABLE ARE BASED ON A WATER PRESSURE OF 150 PSI, AN EARTH RESISTANCE OF 2 TONS PER SQ. FT., A FACTOR OF SAFETY OF 1.5 AND IS TO BE USED FOR STANDARD WATER MAINS AND WATER SERVICES.
2. $L_{(FIRE)}$ DIMENSIONS IN THE TABLE ARE BASED ON A WATER PRESSURE OF 200 PSI, AN EARTH RESISTANCE OF 2 TONS PER SQ. FT., A FACTOR OF SAFETY OF 1.5 AND IS TO BE USED FOR FIRE LINES AND COMBINATION FIRE / WATER SERVICES.
3. DIMENSION (A) SHOULD BE AS LARGE AS POSSIBLE WITHOUT INTERFERING WITH MECHANICAL JOINT BOLTS.
4. SHAPE OF BACK OF BUTTRESS MAY VARY AS LONG AS POUR IS AGAINST FIRM UNDISTURBED EARTH AND SURFACE AREA (H x L) MATCHES THAT LISTED IN THE TABLE.
5. IF IN-SITU SOILS HAVE AN EARTH RESISTANCE OF LESS THAN 2 TONS PER SQ. FT. THE BUTTRESS AREA SHALL BE INCREASED PROPORTIONALLY.
6. ALL DUCTILE IRON PIPE AND FITTINGS SHALL BE WRAPPED IN POLYETHYLENE.
7. REFER TO VILLAGE STANDARD SPECIFICATIONS FOR WATER MAIN.

BUTTRESS DIMENSIONS

PIPE	$11\frac{1}{4}$ DEG. BEND			$22\frac{1}{2}$ DEG. BEND			45 DEG. BEND			90 DEG. BEND		
SIZE	H	$L_{(WATER)}$	$L_{(FIRE)}$	H	$L_{(WATER)}$	$L_{(FIRE)}$	H	$L_{(WATER)}$	$L_{(FIRE)}$	H	$L_{(WATER)}$	$L_{(FIRE)}$
4"	0'-8"	0'-5"	0'-5"	1'-1"	0'-6"	0'-6"	1'-3"	0'-10"	0'-10"	1'-4"	1'-6"	1'-6"
6"	1'-2"	0'-6"	0'-6"	1'-6"	0'-9"	0'-9"	1'-8"	1'-4"	1'-4"	1'-10"	2'-2"	2'-2"
8"	1'-3"	0'-9"	0'-9"	2'-0"	1'-0"	1'-0"	2'-0"	1'-11"	1'-11"	2'-4"	3'-0"	3'-0"
10"	1'-3"	0'-10"	1'-2"	2'-0"	1'-1"	1'-5"	2'-0"	2'-1"	2'-9"	2'-4"	3'-4"	4'-5"
12"	1'-4"	1'-2"	1'-6"	2'-6"	1'-2"	1'-7"	2'-6"	2'-4"	3'-2"	2'-8"	4'-1"	5'-5"
14"	1'-6"	1'-4"	1'-10"	3'-0"	1'-4"	1'-10"	3'-0"	2'-8"	3'-6"	3'-0"	4'-11"	6'-6"
16"	2'-0"	1'-4"	1'-9"	3'-0"	1'-9"	2'-4"	3'-0"	3'-5"	4'-7"	3'-0"	6'-4"	8'-5"
18"	2'-6"	1'-4"	1'-9"	3'-6"	1'-10"	2'-6"	3'-6"	3'-8"	4'-11"	3'-6"	6'-9"	9'-1"
20"	2'-9"	1'-6"	2'-0"	3'-9"	2'-2"	2'-10"	3'-9"	4'-2"	5'-7"	3'-9"	7'-9"	10'-4"
24"	3'-0"	1'-11"	2'-7"	4'-3"	2'-8"	3'-7"	4'-3"	5'-4"	7'-1"	4'-4"	9'-7"	12'-10"

BUTTRESS FOR BENDS

DETAIL: W – 5

DATE: 8-4-16

APPROVED BY: MATT FINEOUR

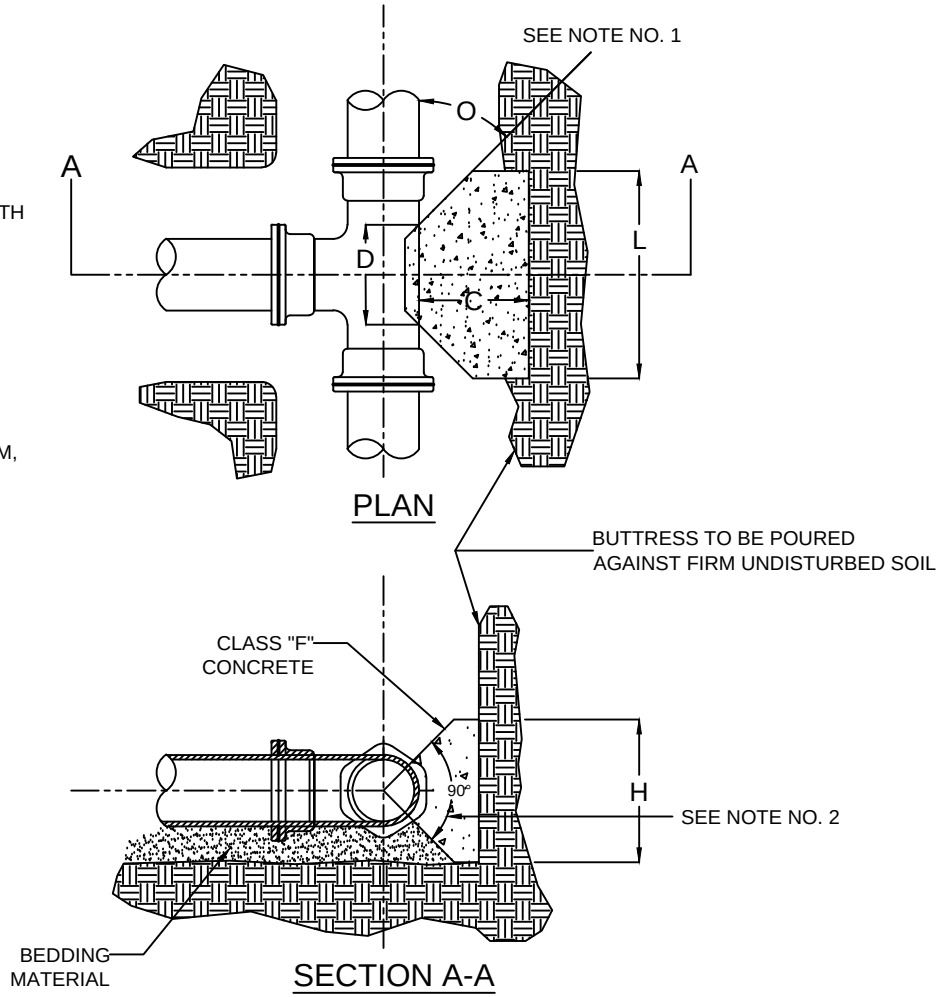
VILLAGE OF PLEASANT PRAIRIE

KENOSHA COUNTY, WISCONSIN

NOTES:

1. L (WATER) DIMENSIONS IN THE TABLE ARE BASED ON A WATER PRESSURE OF 150 PSI, AN EARTH RESISTANCE OF 2 TONS PER SQ. FT., A FACTOR OF SAFETY OF 1.5 AND IS TO BE USED FOR STANDARD WATER MAINS AND WATER SERVICES.
2. L (FIRE) DIMENSIONS IN THE TABLE ARE BASED ON A WATER PRESSURE OF 200 PSI, AN EARTH RESISTANCE OF 2 TONS PER SQ. FT., A FACTOR OF SAFETY OF 1.5 AND IS TO BE USED FOR FIRE LINES AND COMBINATION FIRE / WATER SERVICES.
3. SHAPE OF BACK OF BUTTRESS MAY VARY AS LONG AS POUR IS AGAINST FIRM UNDISTURBED EARTH AND SURFACE AREA (H x L) MATCHES THAT LISTED IN THE TABLE. CONCRETE SHALL BEAR ON FITTINGS AS SHOWN.
4. DIMENSION "C" SHOULD BE LARGE ENOUGH TO MAKE ANGLE "0" EQUAL TO OR LARGER THAN 45 DEG.
5. DIMENSION "D" EQUALS APPROX. I.D. OF PIPE LESS 2". AN EFFORT SHOULD BE MADE TO PREVENT CONCRETE FROM COVERING THE MECHANICAL JOINT BOLTS.
6. WHERE BUTTRESSES ARE NOT POSSIBLE BECAUSE OF POOR SOIL CONDITIONS OR LACK OF ROOM, STRAPPING SHALL BE PERMITTED IF APPROVED BY THE VILLAGE.
7. IF IN-SITU SOILS HAVE AN EARTH RESISTANCE OF LESS THAN 2 TONS PER SQ. FT. THE BUTTRESS AREA SHALL BE INCREASED PROPORTIONALLY.
8. ALL DUCTILE IRON PIPE AND FITTINGS SHALL BE WRAPPED IN POLYETHYLENE.
9. REFER TO VILLAGE STANDARD SPECIFICATIONS FOR WATER MAIN.

PIPE	TEE		
SIZE	H	L (WATER)	L (FIRE)
4"	1'-6"	1'-0"	1'-0"
6"	1'-8"	1'-9"	1'-9"
8"	2'-4"	2'-0"	2'-1"
10"	2'-4"	2'-4"	3'-1"
12"	2'-7"	3'-0"	4'-0"
14"	2'-10"	3'-8"	4'-10"
16"	2'-10"	4'-9"	6'-4"
18"	3'-6"	4'-10"	6'-5"
20"	3'-10"	5'-5"	7'-2"
24"	4'-8"	6'-2"	8'-3"



SCALE: NTS

BUTTRESS FOR TEES

DETAIL: W - 5A

DATE: 8-4-16

APPROVED BY: MATT FINEOUR

VILLAGE OF PLEASANT PRAIRIE

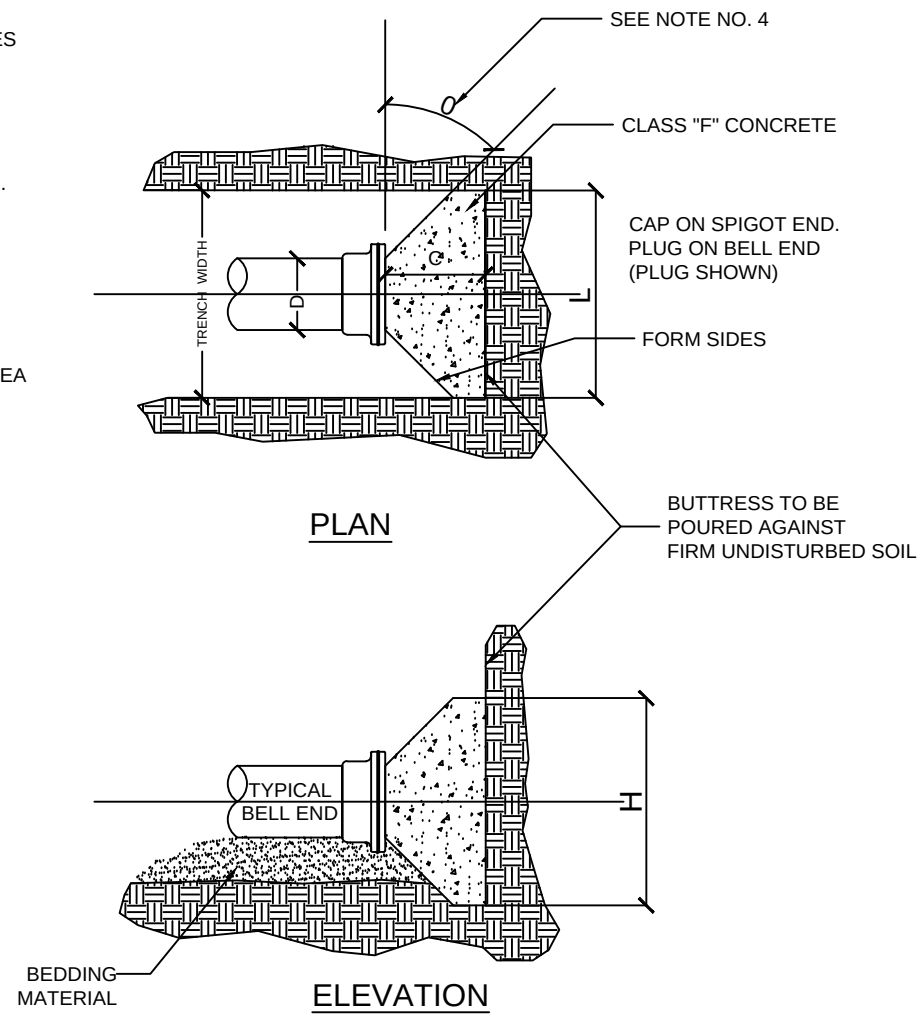
KENOSHA COUNTY, WISCONSIN

NOTES:

1. $L_{(WATER)}$ DIMENSIONS IN THE TABLE ARE BASED ON A WATER PRESSURE OF 150 PSI, AN EARTH RESISTANCE OF 2 TONS PER SQ. FT., A FACTOR OF SAFETY OF 1.5 AND IS TO BE USED FOR STANDARD WATER MAINS AND WATER SERVICES.
2. $L_{(FIRE)}$ DIMENSIONS IN THE TABLE ARE BASED ON A WATER PRESSURE OF 200 PSI, AN EARTH RESISTANCE OF 2 TONS PER SQ. FT., A FACTOR OF SAFETY OF 1.5 AND IS TO BE USED FOR FIRE LINES AND COMBINATION FIRE / WATER SERVICES.
3. SHAPE OF BACK OF BUTTRESS MAY VARY AS LONG AS POUR IS AGAINST FIRM UNDISTURBED EARTH AND SURFACE AREA (H x L) MATCHES THAT LISTED IN THE TABLE.
4. DIMENSION "C" SHOULD BE LARGE ENOUGH TO MAKE ANGLE "0" EQUAL TO OR LARGER THAN 45 DEG.
5. DIMENSION "D" EQUALS APPROX. I.D. OF PIPE LESS 2". AN EFFORT SHOULD BE MADE TO PREVENT CONCRETE FROM COVERING THE MECHANICAL JOINT BOLTS.
6. WHERE BUTTRESSES ARE NOT POSSIBLE BECAUSE OF POOR SOIL CONDITIONS OR LACK OF ROOM, STRAPPING SHALL BE PERMITTED IF APPROVED BY THE VILLAGE.
7. IF IN-SITU SOILS HAVE AN EARTH RESISTANCE OF LESS THAN 2 TONS PER SQ. FT. THE BUTTRESS AREA SHALL BE INCREASED PROPORTIONALLY.
8. ALL DUCTILE IRON PIPE AND FITTINGS SHALL BE WRAPPED IN POLYETHYLENE.
9. REFER TO VILLAGE STANDARD SPECIFICATIONS FOR WATER MAIN.

BUTTRESS DIMENSIONS

PIPE	DEAD ENDS		
SIZE	H	$L_{(WATER)}$	$L_{(FIRE)}$
4"	1'-6"	1'-0"	1'-0"
6"	1'-8"	1'-9"	1'-9"
8"	2'-4"	2'-0"	2'-1"
10"	2'-4"	2'-4"	3'-1"
12"	2'-7"	3'-0"	4'-0"
14"	2'-10"	3'-8"	4'-10"
16"	2'-10"	4'-9"	6'-4"
18"	3'-6"	4'-10"	6'-5"
20"	3'-10"	5'-5"	7'-2"
24"	4'-8"	6'-2"	8'-3"



SCALE: NTS

BUTTRESS FOR DEAD ENDS

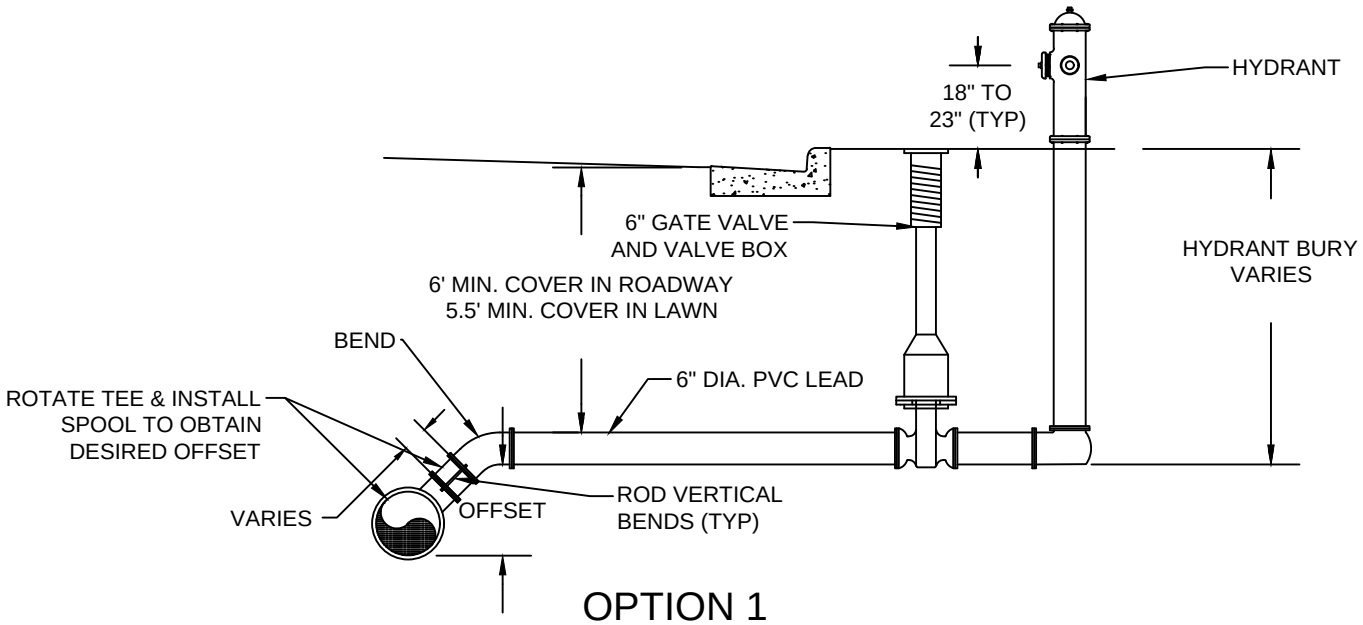
DETAIL: W - 5B

DATE: 8-4-16

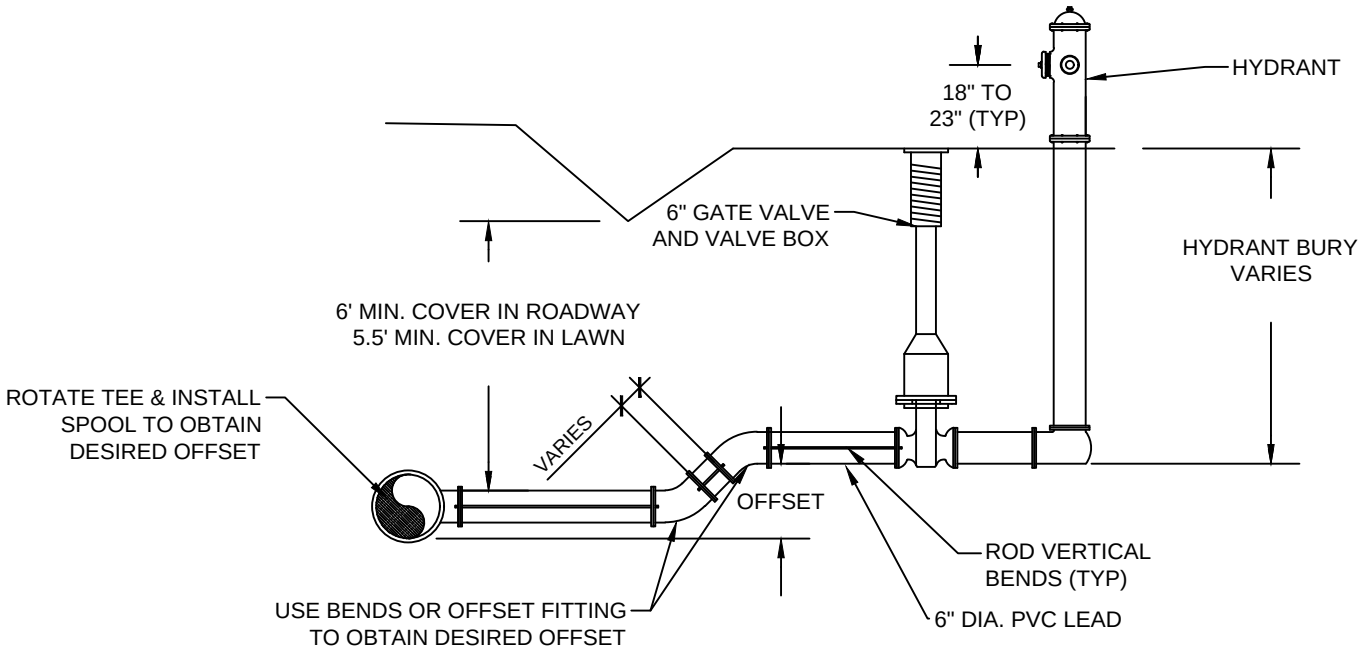
APPROVED BY: MATT FINEOUR

VILLAGE OF PLEASANT PRAIRIE

KENOSHA COUNTY, WISCONSIN



OPTION 1



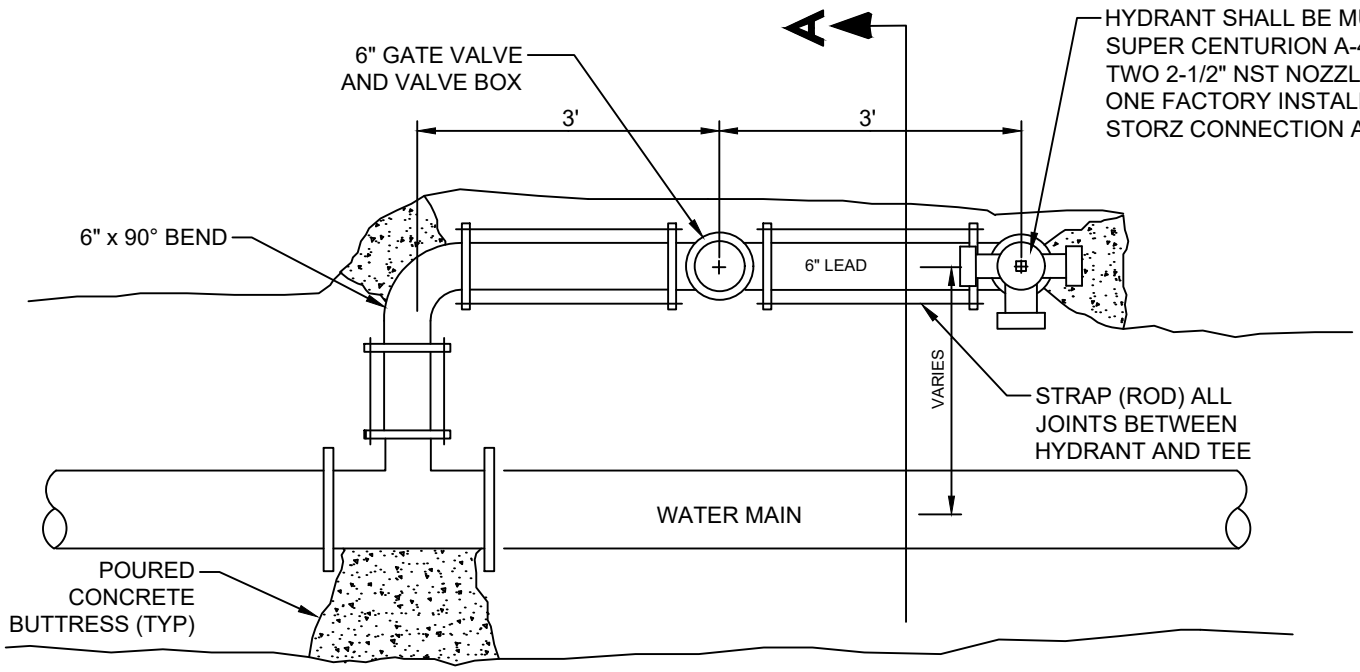
OPTION 2

NOTES:

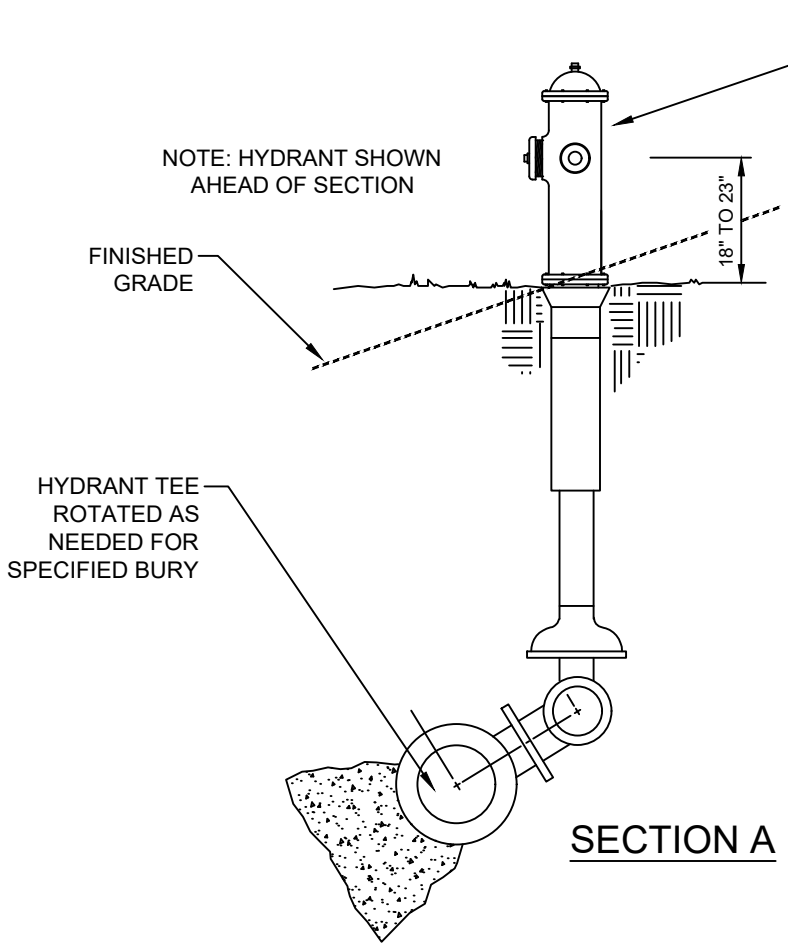
1. HYDRANT ASSEMBLY INSTALLATION SHALL BE IN ACCORDANCE WITH THE STANDARD HYDRANT ASSEMBLY DETAIL.
2. REFER TO THE VILLAGE STANDARD SPECIFICATIONS FOR WATER MAIN CONSTRUCTION.
3. ALL VERTICAL BENDS SHALL BE RODDED WITH STAINLESS STEEL HARDWARE.

SCALE: NTS

HYDRANT OFFSETS	DETAIL: W - 6
DATE: 8-4-16	VILLAGE OF PLEASANT PRAIRIE
APPROVED BY: MATT FINEOUR	KENOSHA COUNTY, WISCONSIN



PLAN VIEW



SECTION A

NOTES:
1. HYDRANT INSTALLATION SHALL BE IN ACCORDANCE WITH DETAIL W-1 EXCEPT WHERE MODIFIED.
2. ALL FASTENERS SHALL BE STAINLESS STEEL.
3. HYDRANT EXTENSIONS ARE NOT PERMITTED.
4. ALL HYDRANTS, EXCLUDING STORZ CONNECTION, SHALL BE FACTOR PAINTED WITH EPOXY AS IDENTIFIED BELOW:
   A. PUBLIC (VILLAGE) HYDRANTS SHALL BE MUELLER RED SHERWIN WILLIAMS POLANE F63RL15.
   B. PRIVATE HYDRANTS ON VILLAGE SYSTEM PRESSURE SHALL BE CAUTION BLUE SHERWIN WILLIAMS POLANE F63RXL9667.
   C. PRIVATE PRESSURED HYDRANTS ON FIRE LOOPS SHALL BE MUELLER YELLOW SHERWIN WILLIAMS POLANE F63YL14.
5. REFER TO VILLAGE STANDARD SPECIFICATIONS FOR WATER MAIN CONSTRUCTION.

HYDRANT PARALLEL TO MAIN DETAIL

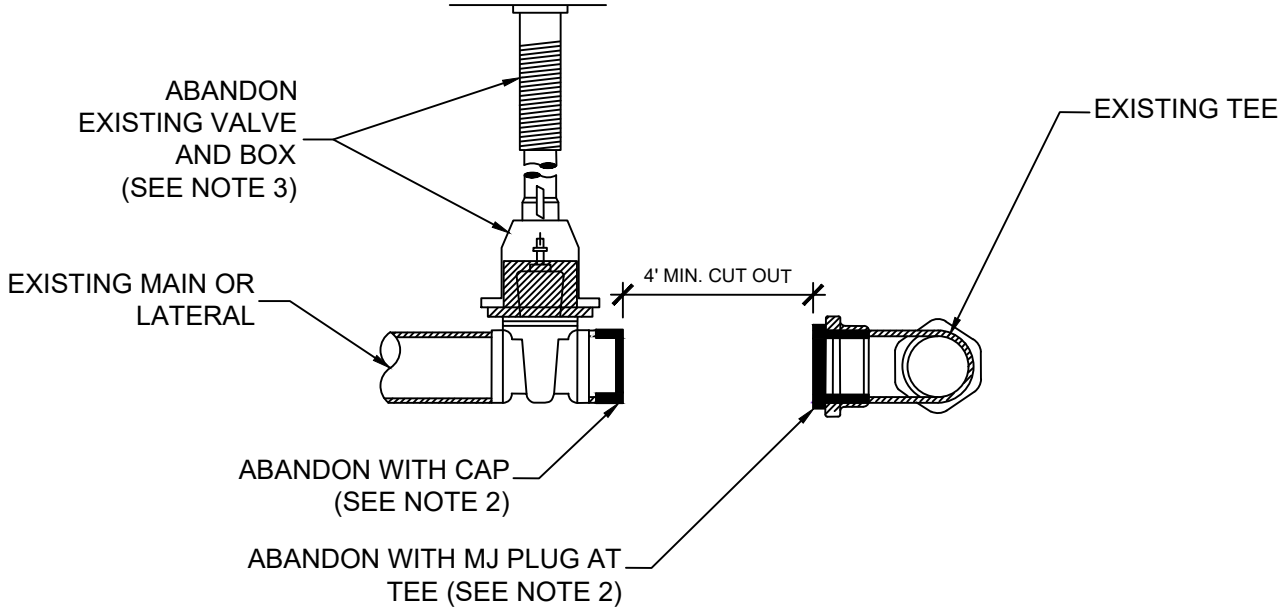
DETAIL: W - 7

DATE: 1-23-20

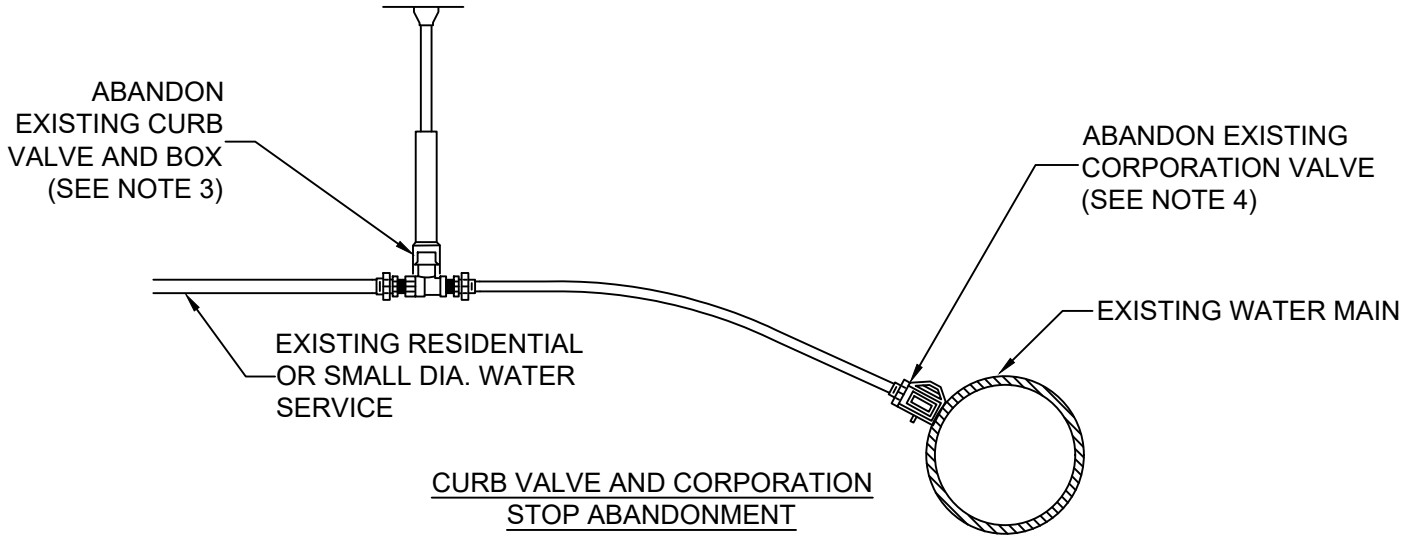
APPROVED BY: MATT FINEOUR

VILLAGE OF PLEASANT PRAIRIE

KENOSHA COUNTY, WISCONSIN



VALVE ABANDONMENT AND
MAIN/SERVICE ABANDONMENT AT TEE



CURB VALVE AND CORPORATION
STOP ABANDONMENT

NOTES:

1. ALL INACTIVE (DEAD) WATER MAINS AND LATERALS, EXCEPT MAINS OR LATERALS TO POSSIBLE FUTURE DEVELOPMENT, SHALL BE ABANDONED.
2. MAINS AND LATERALS CONNECTED TO EXISTING MAINS WITH A TEE SHALL BE ABANDONED AT THE TEE WHEN DIRECTED BY THE VILLAGE. ABANDONMENT AT THE MAIN LINE TEE SHALL BE COMPLETED BY REMOVING THE PIPE AND INSTALLING A PLUG ON THE TEE. THE REMAINING ABANDONED PIPE WITHIN 5' OF THE BACK OF CURB OR EDGE OF SHOULDER SHALL FILLED WITH A FLOWABLE FILL AND PLUGGED WITH A WATERPROOF PLUG OR CAP. FLOWABLE FILL SHALL BE CONCRETE, SLURRY OR APPROVED EQUAL. IF DETERMINED BY THE VILLAGE THAT THE EXISTING MAIN CANNOT BE SHUT DOWN FOR THE INSTALLATION OF THE PLUG ON THE TEE THEN ONLY THE SERVICE VALVE SHALL BE CLOSED.
3. ABANDONED VALVES SHALL BE LEFT IN PLACE UNLESS IT IS STATED ON THE PLANS TO REMOVE AND SALVAGE THE VALVE(S) FOR THE VILLAGE. VALVE BOXES SHALL BE ABANDONED BY REMOVING THE COVER AND TOP SECTION(S) TO A DEPTH OF 3 FEET BELOW THE FINAL GRADE. BACKFILL REMAINING VALVE BOX SECTIONS AND EXCAVATION WITH SLURRY WITHIN ROADWAYS OR GRANULAR MATERIAL ELSEWHERE.
4. SERVICE CONNECTIONS MADE TO MAIN WITH CORPORATION VALVES SHALL BE ABANDONED BY CLOSING THE CORPORATION VALVE AND PLUGGING THE SERVICE SIDE OF THE CORPORATION WITH A BRASS CAP.

ABANDONING VALVES AND WATER MAIN/SERVICE CONNECTIONS

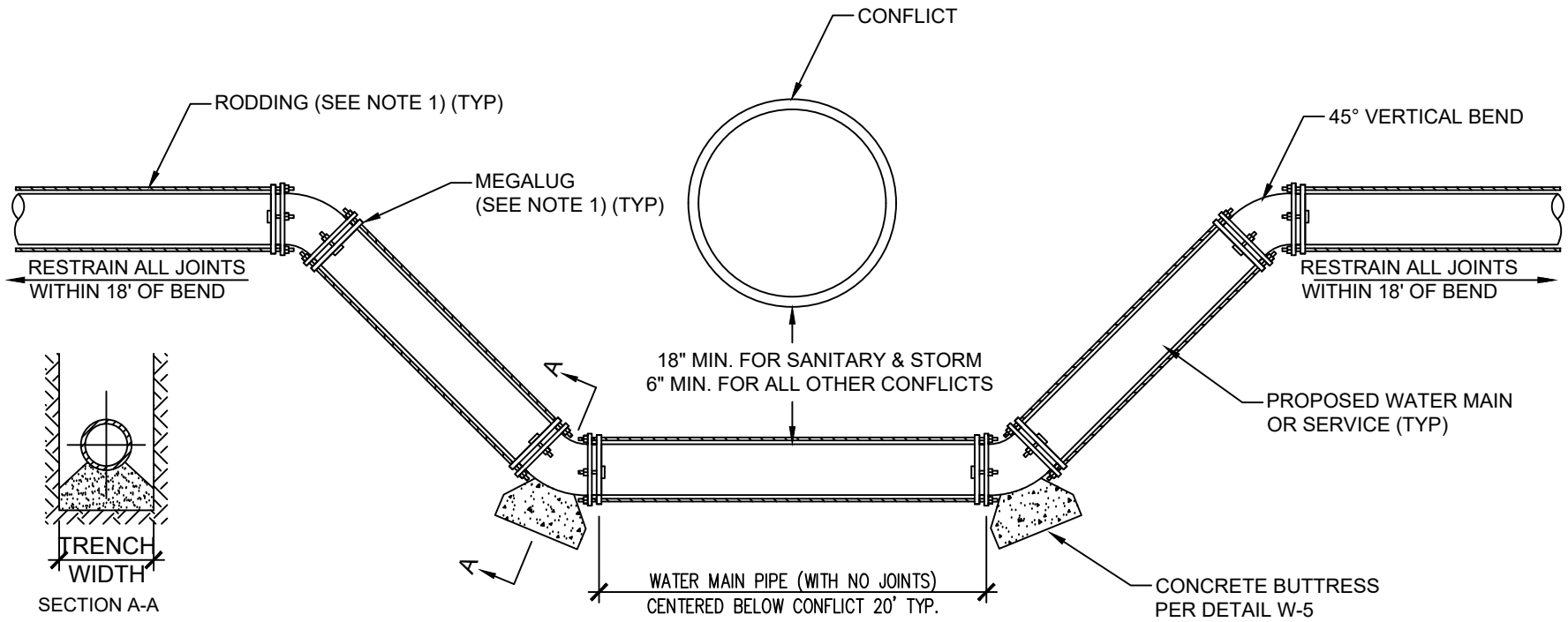
DETAIL: W - 8

DATE: 4-22-20

APPROVED BY: MATT FINEOUR

VILLAGE OF PLEASANT PRAIRIE

KENOSHA COUNTY, WISCONSIN



NOTES:

1. VILLAGE OF PLEASANT PRAIRIE PUBLIC WATER MAINS - ALL JOINTS SHALL BE RESTRAINED WITH MEGALUGS OR STAINLESS STEEL RODDING IN CONFORMANCE WITH FILE NO. 47 OF THE "STANDARD SPECIFICATIONS."
   PRIVATE FIRE MAINS AND COMBINATION FIRE/WATER MAINS - ALL JOINTS SHALL BE RESTRAINED WITH MEGALUGS AND STAINLESS STEEL RODDING IN CONFORMANCE WITH SUBSECTION 10.6.2.1.2 OF THE NFPA 24 STANDARD FOR THE INSTALLATION OF PRIVATE SERVICE MAINS AND THEIR APPURTENANCES.
2. ALL FASTENERS SHALL BE STAINLESS STEEL .
3. WHEN NOTED ON THE PLANS OR DIRECTED BY THE VILLAGE, INSULATION SHALL BE INSTALLED BETWEEN THE WATER MAIN AND CONFLICT.
4. REFER TO VILLAGE STANDARD SPECIFICATIONS FOR WATER MAIN CONSTRUCTION

SCALE: NTS

WATER MAIN VERTICAL OFFSET

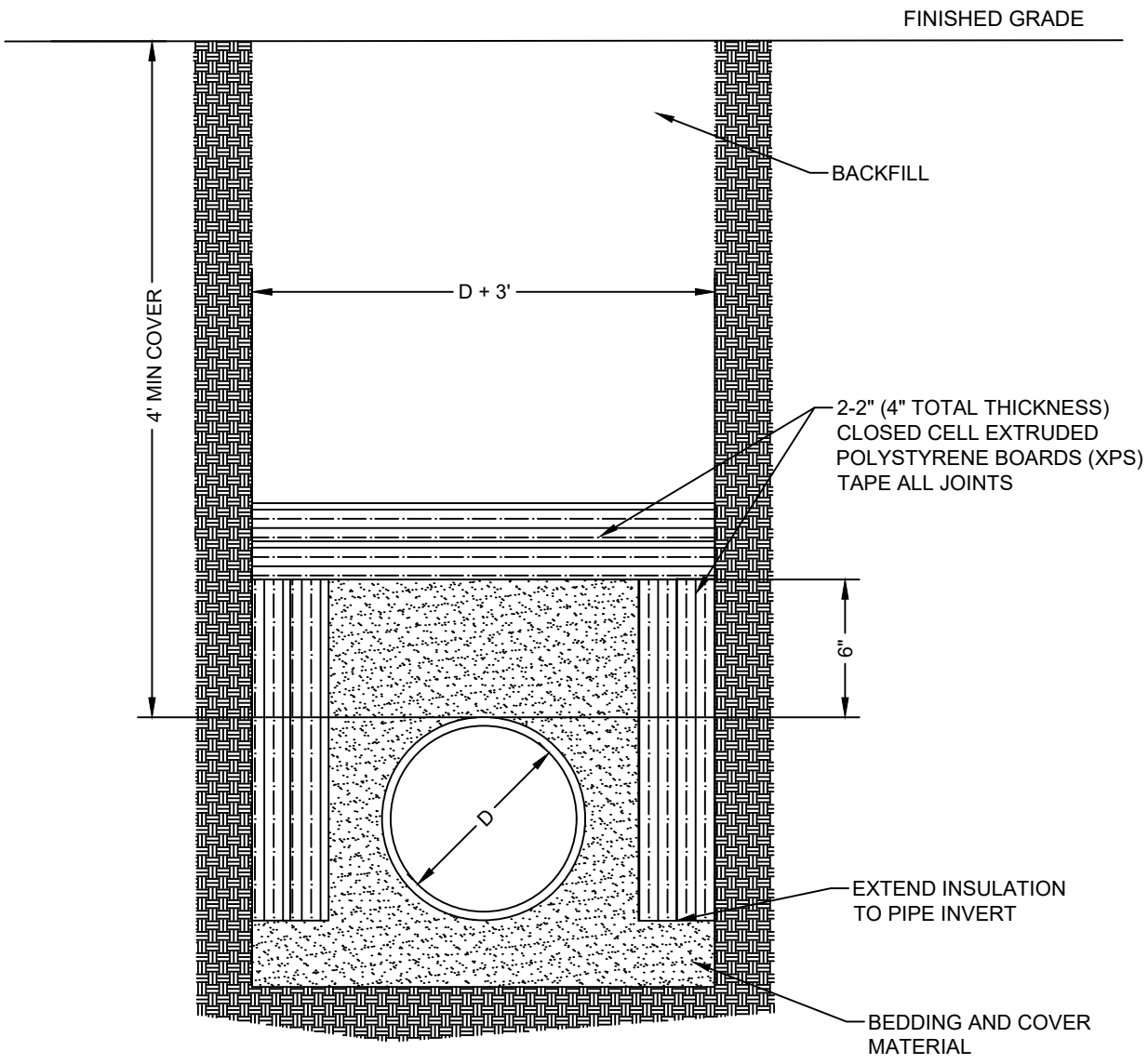
DETAIL: W – 9

DATE: 5-24-21

APPROVED BY: MATT FINEOUR

VILLAGE OF PLEASANT PRAIRIE

KENOSHA COUNTY, WISCONSIN



NOTES:

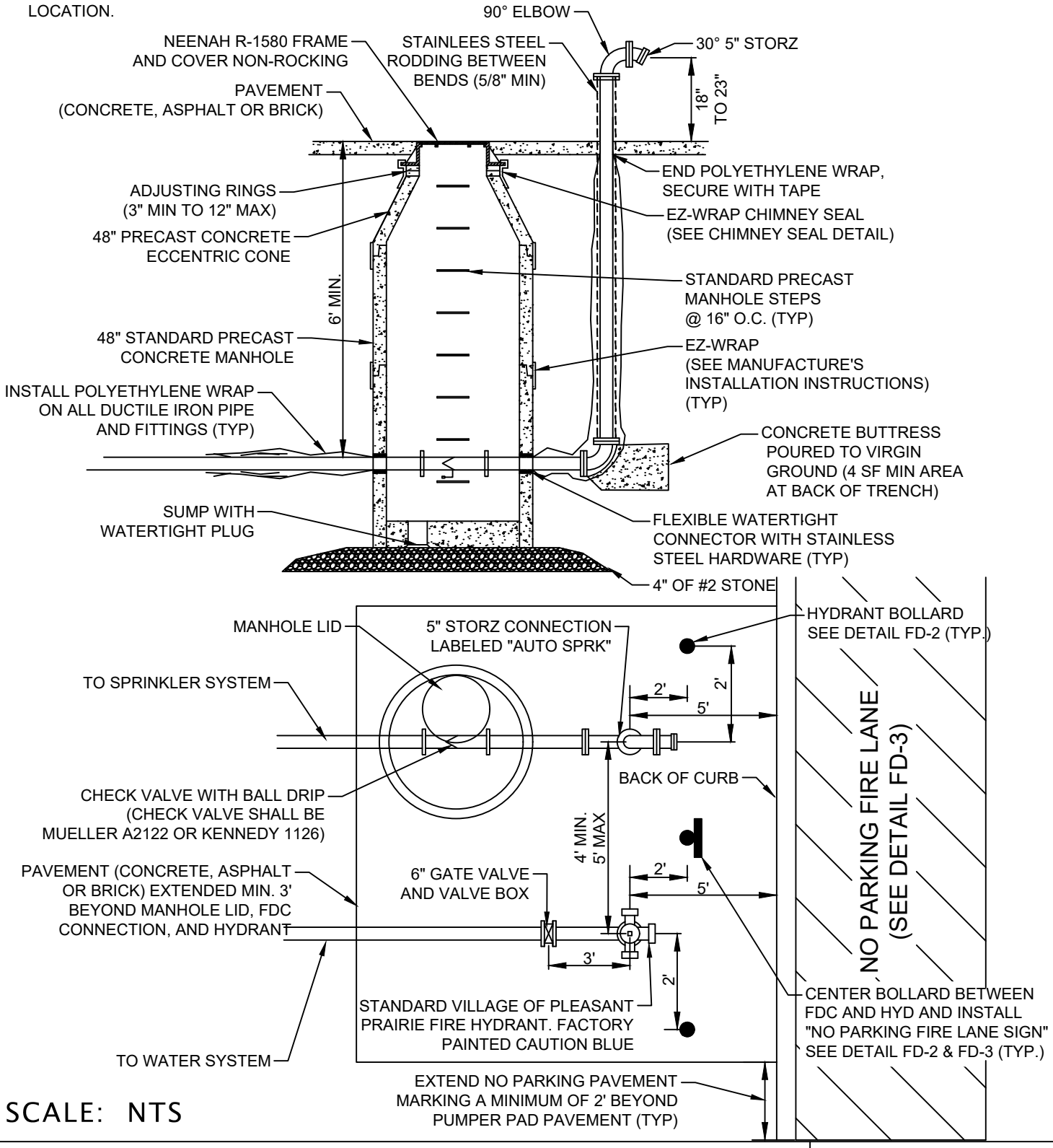
1. WATER MAINS WITH LESS THAN 6' OF COVER AND SERVICES WITH LESS THAN 5' OF COVER SHALL BE INSULATED EXCEPT WHERE NOTED BELOW:
   - 1.1. WATER MAINS AND SERVICES WITH LESS THAN 4' OF COVER SHALL BE OFFSET TO OBTAIN 6' OF COVER EXCEPT PROVIDE A MINIMUM OF 5' OF COVER ON SERVICES AT DITCH CROSSINGS.
   - 1.2. HYDRANTS SHALL NEVER HAVE LESS THAN 5.5' OF COVER.
2. LONG SIDE OF JOINTS SHALL BE PARALLEL WITH THE CENTERLINE OF THE PIPE. STAGGER JOINTS.
3. WITH EXCAVATED MATERIAL BACKFILL A 6" LAYER OF BEDDING SHALL BE PLACED ON TOP OF THE FOAM BOARDS.

SCALE: NTS

WATER MAIN INSULATION	DETAIL: W - 10
DATE: 8-31-22	VILLAGE OF PLEASANT PRAIRIE
APPROVED BY: MATT FINEOUR	KENOSHA COUNTY, WISCONSIN

NOTES:

1. SYSTEM SIZING SHALL BE COMPLETED BY A FIRE SUPPRESSION ENGINEER AND APPROVED OF BY THE VILLAGE OF PLEASANT PRAIRIE FIRE DEPARTMENT.
2. SYSTEM INSTALLATION MUST BE CONSTRUCTED UNDER THE ONSITE SUPERVISION OF A LICENSED SPRINKLER FITTER.
3. WHEN POSSIBLE THE CHECK VALVE WITH BALL DRIP SHALL BE PLACED WITHIN THE BUILDING BASEMENT REMOVING THE NEED FOR THE MANHOLE STRUCTURE. THE BALL DRIP SHALL BE A MIN. 6' BELOW THE SURFACE ELEVATION OF THE PUMPER PAD IN EITHER LOCATION.



SCALE: NTS

PUMPER PAD FDC DETAIL

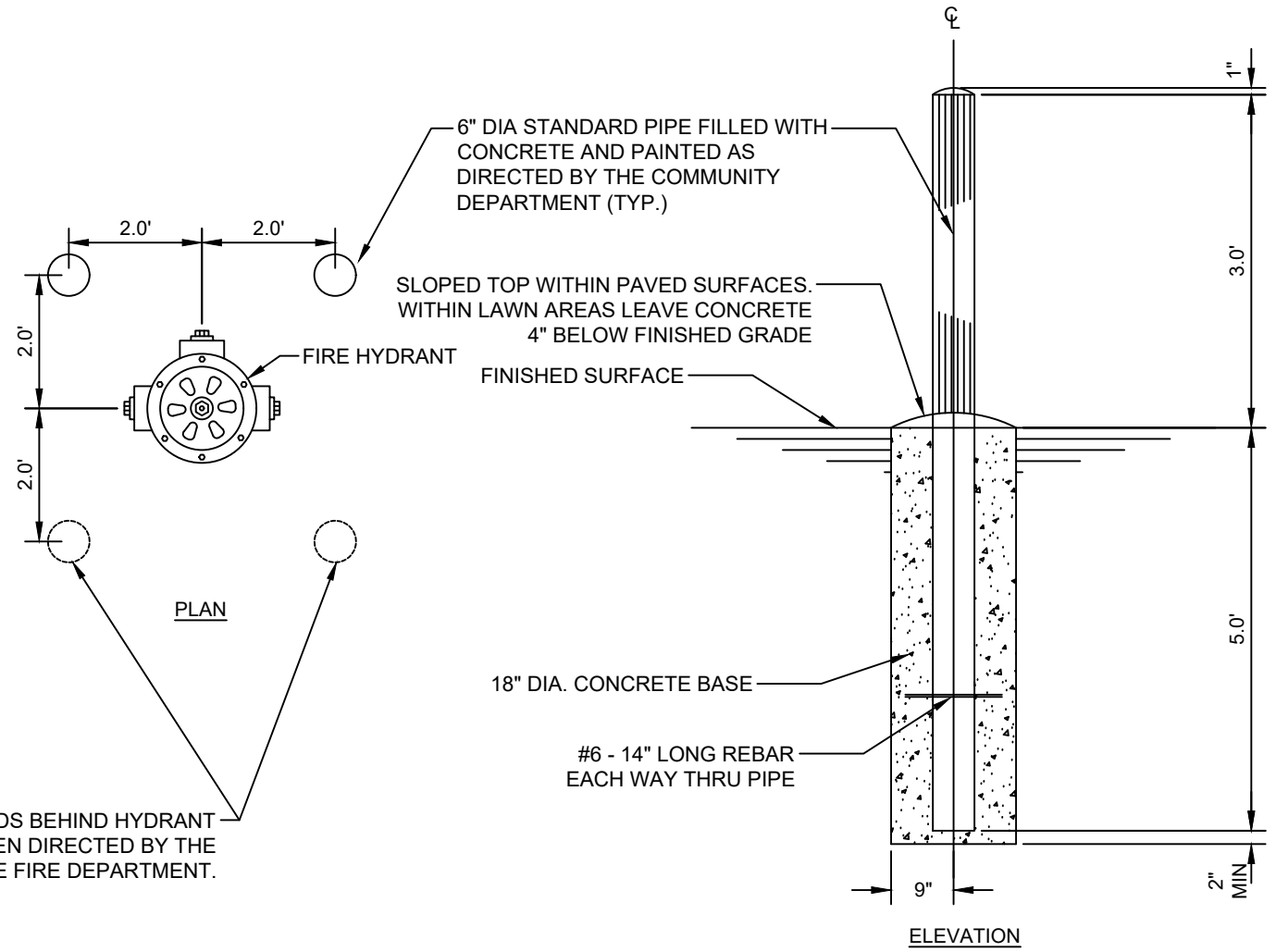
DETAIL: FD - 1

DATE: 9-10-20

APPROVED BY: C. ROEPKE

VILLAGE OF PLEASANT PRAIRIE

KENOSHA COUNTY, WISCONSIN



NOTES:

1. USE WITHIN DEVELOPMENTS WHERE HYDRANT MAY BE DAMAGED BY A VEHICLE, ADJACENT TO PARKING AREAS, OR AS DIRECTED BY FIRE DEPARTMENT.
2. HYDRANTS ALONG ROADWAYS, FIRE LANES AND DRIVE ISLES DO NOT TYPICALLY REQUIRE BOLLARDS.
3. HYDRANTS REQUIRING BOLLARDS SHALL BE NOTED AND THE BOLLARD LOCATIONS SHOWN ON PLANS.

SCALE: NTS

DEVELOPMENT HYDRANT BOLLARD

DETAIL: FD - 2

DATE: 4-8-22

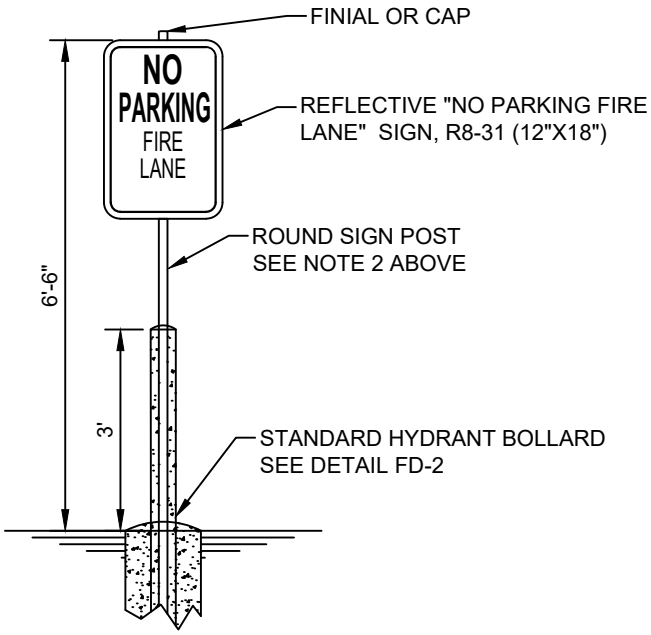
APPROVED BY: C. ROEPKE

VILLAGE OF PLEASANT PRAIRIE

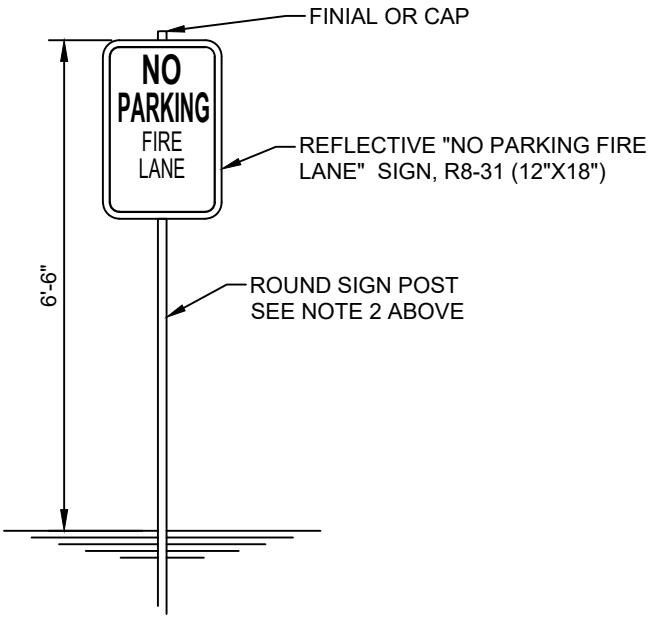
KENOSHA COUNTY, WISCONSIN

NOTES:

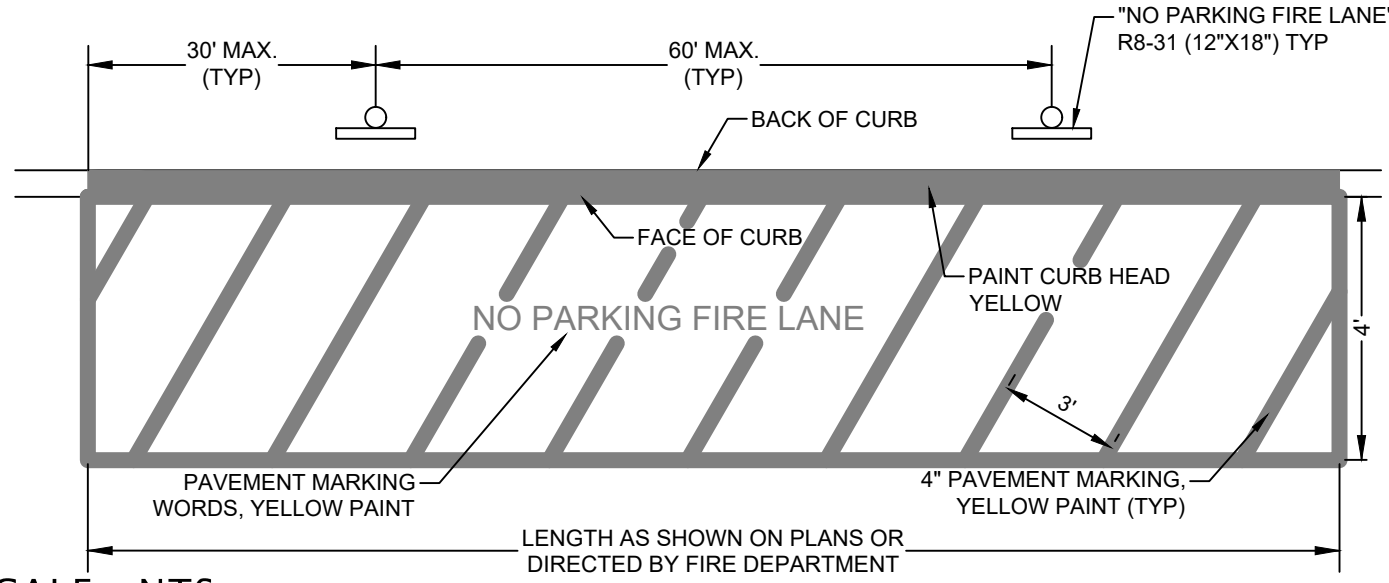
1. SIGNS SHALL BE SPACED NOT GREATER THAN SIXTY (60) FEET APART. NO PART OF THE FIRE LANE SHALL BE FURTHER THAN 30 FEET FROM A SIGN.
2. SIGNS SHALL BE MOUNTED ON ROUND 2-3/8" DIAMETER GALVANIZED STEEL POSTS POWDER COATED BLACK, DARK BRONZE OR OTHER COLOR APPROVED BY THE VILLAGE COMMUNITY DEVELOPMENT DEPARTMENT.
3. THE MINIMUM HEIGHT, MEASURED VERTICALLY FROM THE TOP OF THE SIGN TO THE TOP OF THE CURB, OR IN THE ABSENCE OF CURB, MEASURED VERTICALLY FROM THE TOP OF THE SIGN TO THE ELEVATION OF THE NEAR EDGE OF THE TRAVELED WAY SHALL BE 6'-6".
4. WHERE A CURB IS PROVIDED, TOP AND FACE SHALL BE PAINTED YELLOW. PAVEMENT MARKING STRIPES SHALL BE YELLOW, FOUR INCHES (4") WIDE AND EXTENDING OUTWARD TO A WIDTH OF FOUR (4) FEET FROM CURB FACE WITH THREE (3) FEET BETWEEN EACH STRIPE.
5. YELLOW PAVEMENT MARKING LETTERS NOT LESS THAN FOUR (4) INCHES IN HEIGHT AND NOT LESS THAN TWO (2) INCHES IN WIDTH WITHIN THE STRIPING (BETWEEN THE POSTED SIGNS) TO READ "NO PARKING FIRE LANE".
6. SIGNS AND PAINTING ARE TO BE MAINTAINED BY THE PROPERTY OWNER.



SIGN ON HYDRANT BOLLARD



SIGN ON STANDARD POST



SCALE: NTS

FIRE LANE MARKING AND SIGNING

DETAIL: FD - 3

DATE: 4-8-22

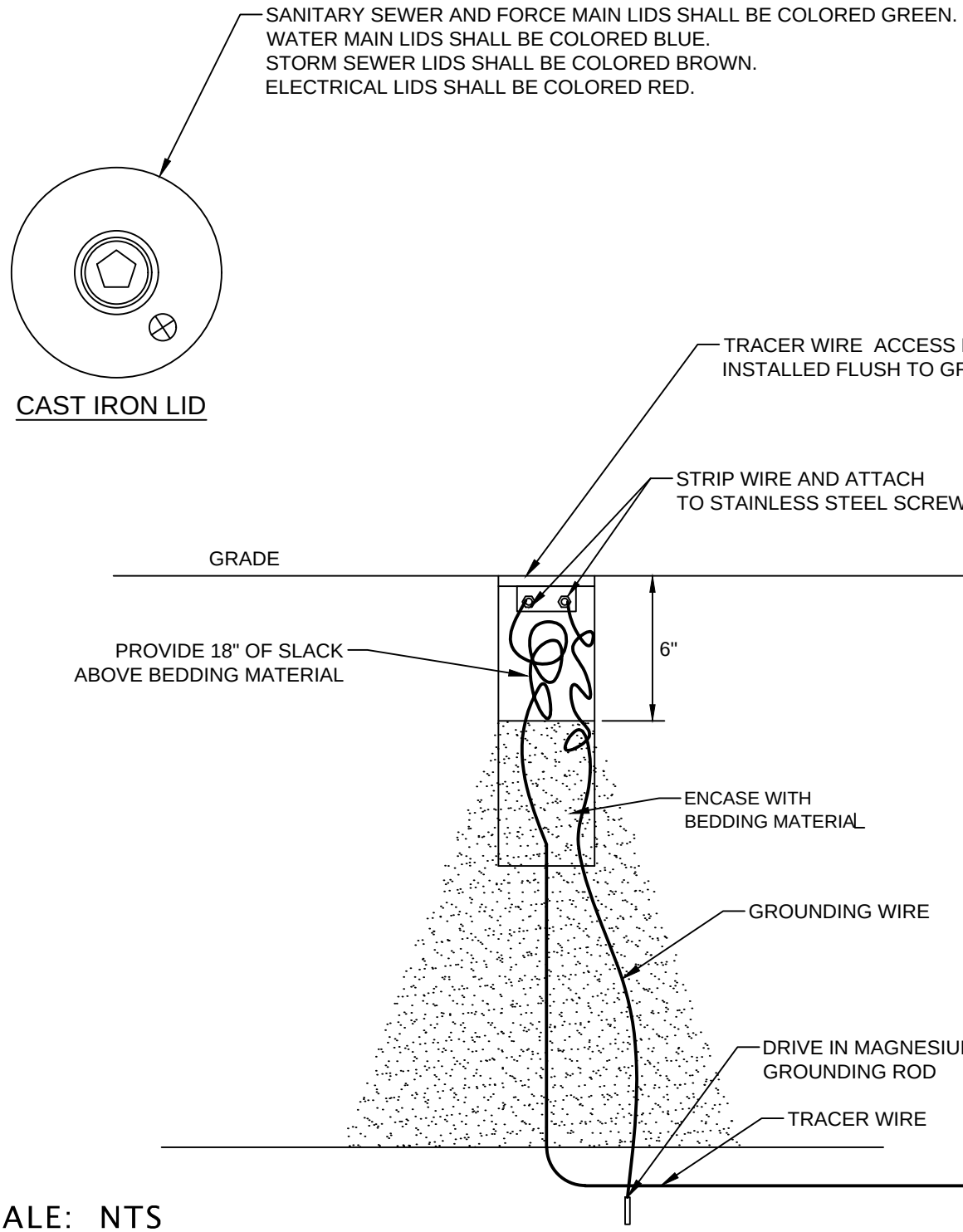
APPROVED BY: C. ROEPKE

VILLAGE OF PLEASANT PRAIRIE

KENOSHA COUNTY, WISCONSIN

NOTES

1. REFER TO VILLAGE STANDARD SPECIFICATIONS FOR TRACER WIRE.



SCALE: NTS

TRACER WIRE ACCESS BOX

DETAIL: TW - 1

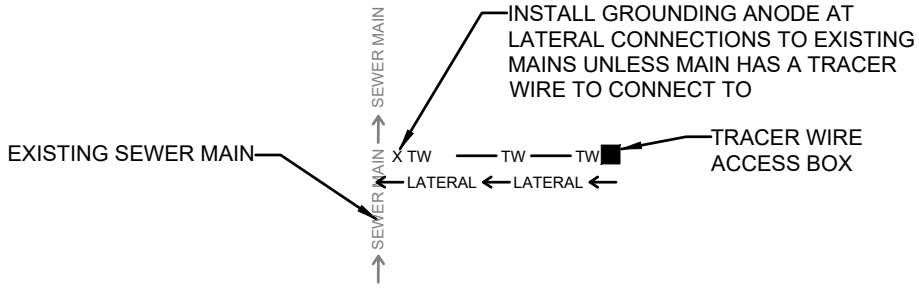
DATE: 12-17-18

APPROVED BY: MATT FINEOUR

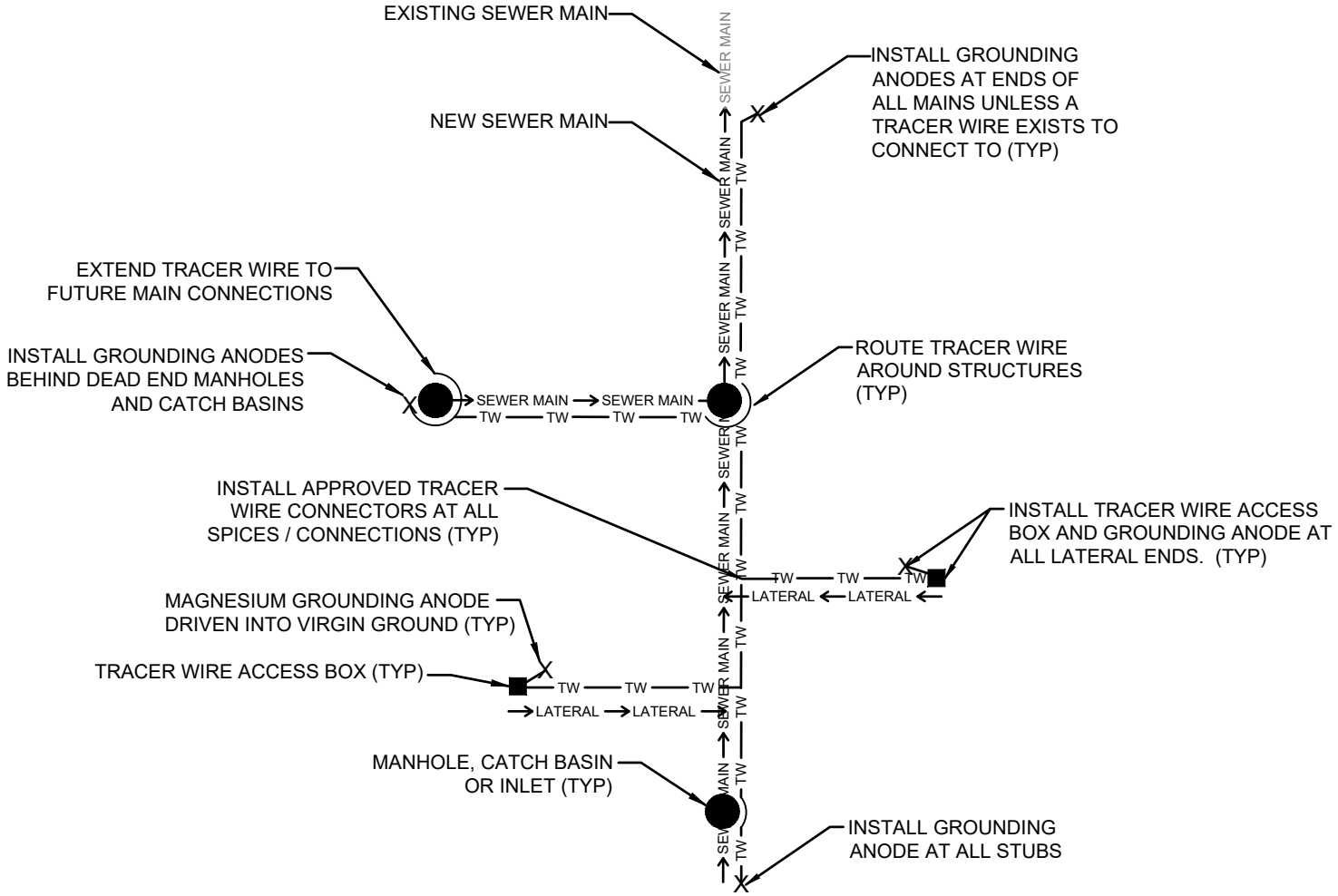
VILLAGE OF PLEASANT PRAIRIE

KENOSHA COUNTY, WISCONSIN

SCALE: NTS



NEW LATERALS ON EXISTING MAINS



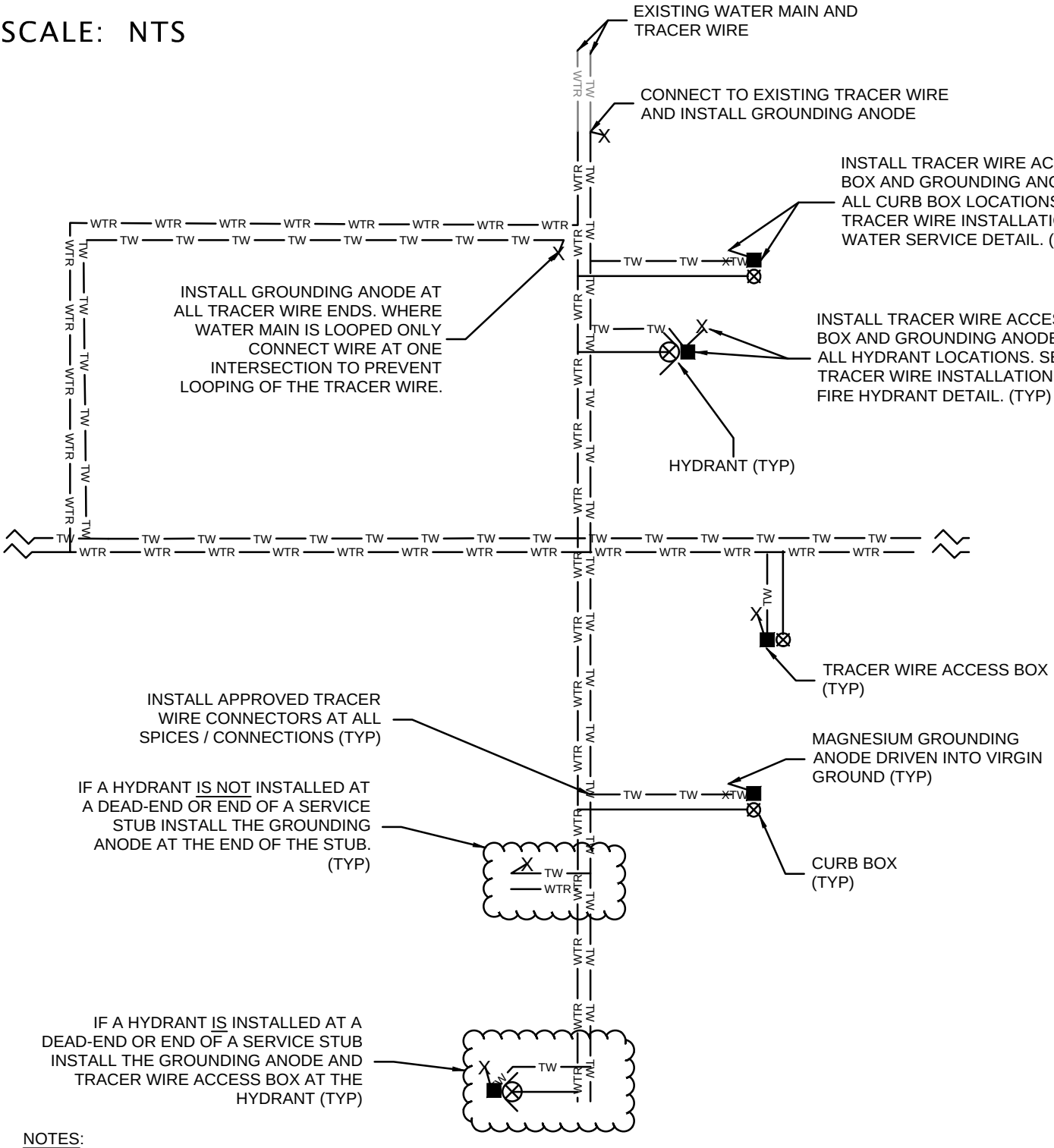
NEW MAINS

NOTES:

1. REFER TO SPECIFICATIONS FOR TRACER WIRE.
2. TRACER WIRE SHALL BE TAPED TO MAIN AND LATERALS. WIRE IS SHOWN OFF MAIN AND LATERALS FOR CLARITY.
3. RUN GROUND WIRE DOWN RISERS IF APPLICABLE.

TRACER WIRE INSTALLATION ON SANITARY & STORM SEWERS	DETAIL: TW - 2
DATE: 3-2-22	VILLAGE OF PLEASANT PRAIRIE
APPROVED BY: MATT FINEOUR	KENOSHA COUNTY, WISCONSIN

SCALE: NTS



NOTES:

1. REFER TO SPECIFICATIONS FOR TRACER WIRE.
2. CONNECT TO EXISTING TRACER WIRE AT ONLY ONE LOCATION UNLESS OTHERWISE DIRECTED BY THE VILLAGE.
3. TRACER WIRE SHALL BE TAPED TO MAIN AND SERVICES. WIRE IS SHOWN OFF PIPES FOR CLARITY.
4. TAKE CARE TO PREVENT LOOPS IN TRACER WIRE. LOOPING OF WIRE CAN MAKE THE WIRE DIFFICULT TO TRACE.

TRACER WIRE INSTALLATION ON WATER MAIN

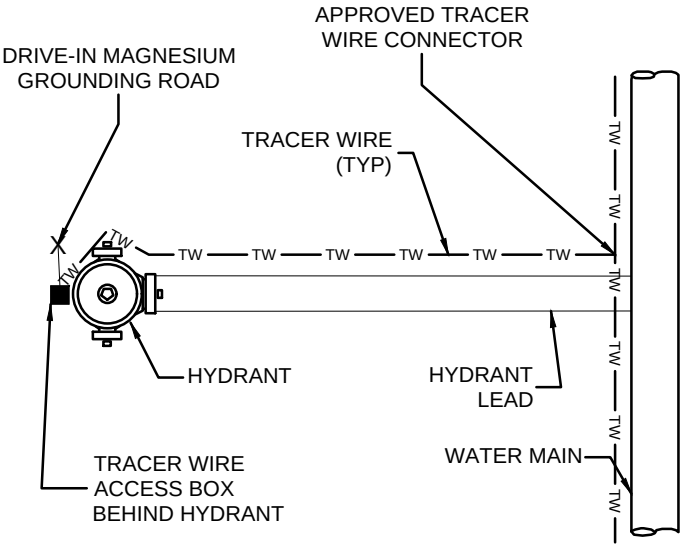
DETAIL: TW - 3

DATE: 12-17-18

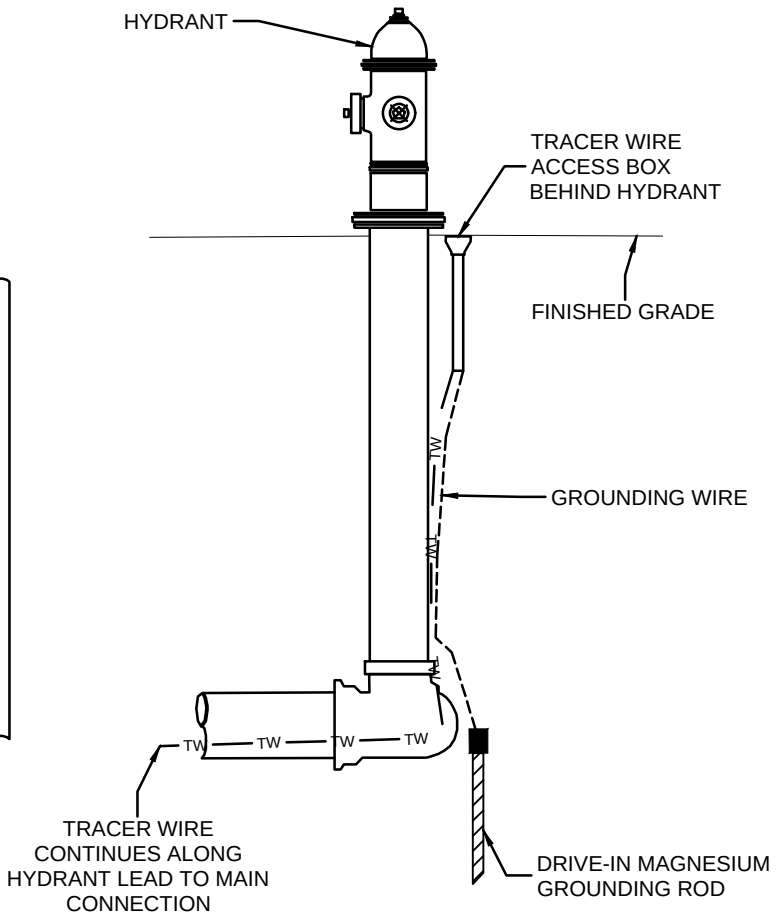
APPROVED BY: MATT FINEOUR

VILLAGE OF PLEASANT PRAIRIE

KENOSHA COUNTY, WISCONSIN



PLAN VIEW



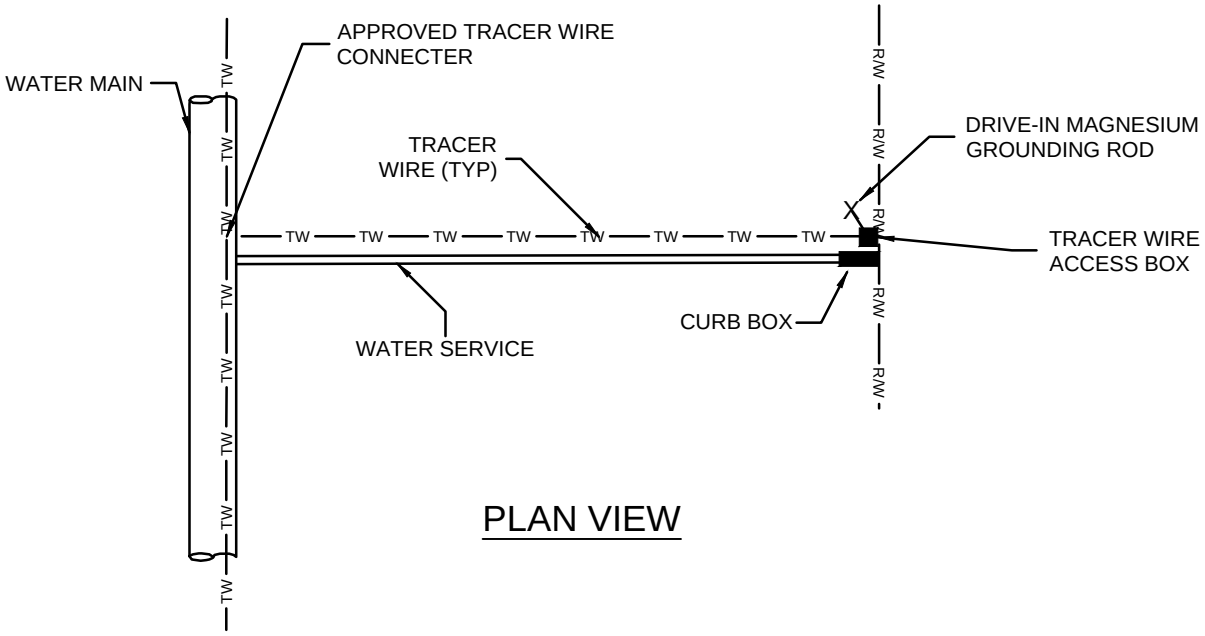
SECTION VIEW

NOTES:

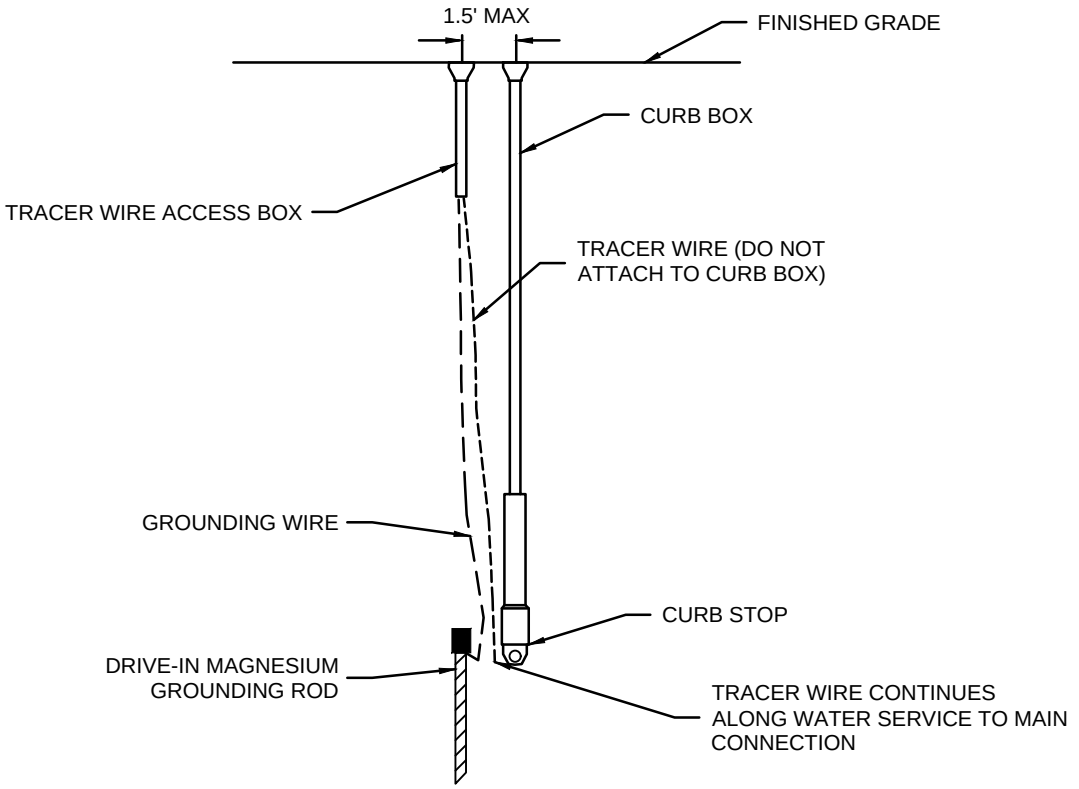
1. REFER TO SPECIFICATIONS FOR TRACER WIRE.
2. TRACER WIRE SHALL BE TAPED TO MAIN, LEAD AND HYDRANT. WIRE IS SHOWN OFF PIPES FOR CLARITY.
3. INSTALL GROUNDING ANODE BY DRIVING INTO VIRGIN GROUND AT THE HYDRANT SHOE.
4. TRACER WIRE ACCESS BOX SHALL BE INSTALLED DIRECTLY BEHIND ALL FIRE HYDRANTS.

SCALE: NTS

TRACER WIRE INSTALLATION ON FIRE HYDRANT	DETAIL: TW - 4
DATE: 12-17-18	VILLAGE OF PLEASANT PRAIRIE
APPROVED BY: MATT FINEOUR	KENOSHA COUNTY, WISCONSIN



PLAN VIEW

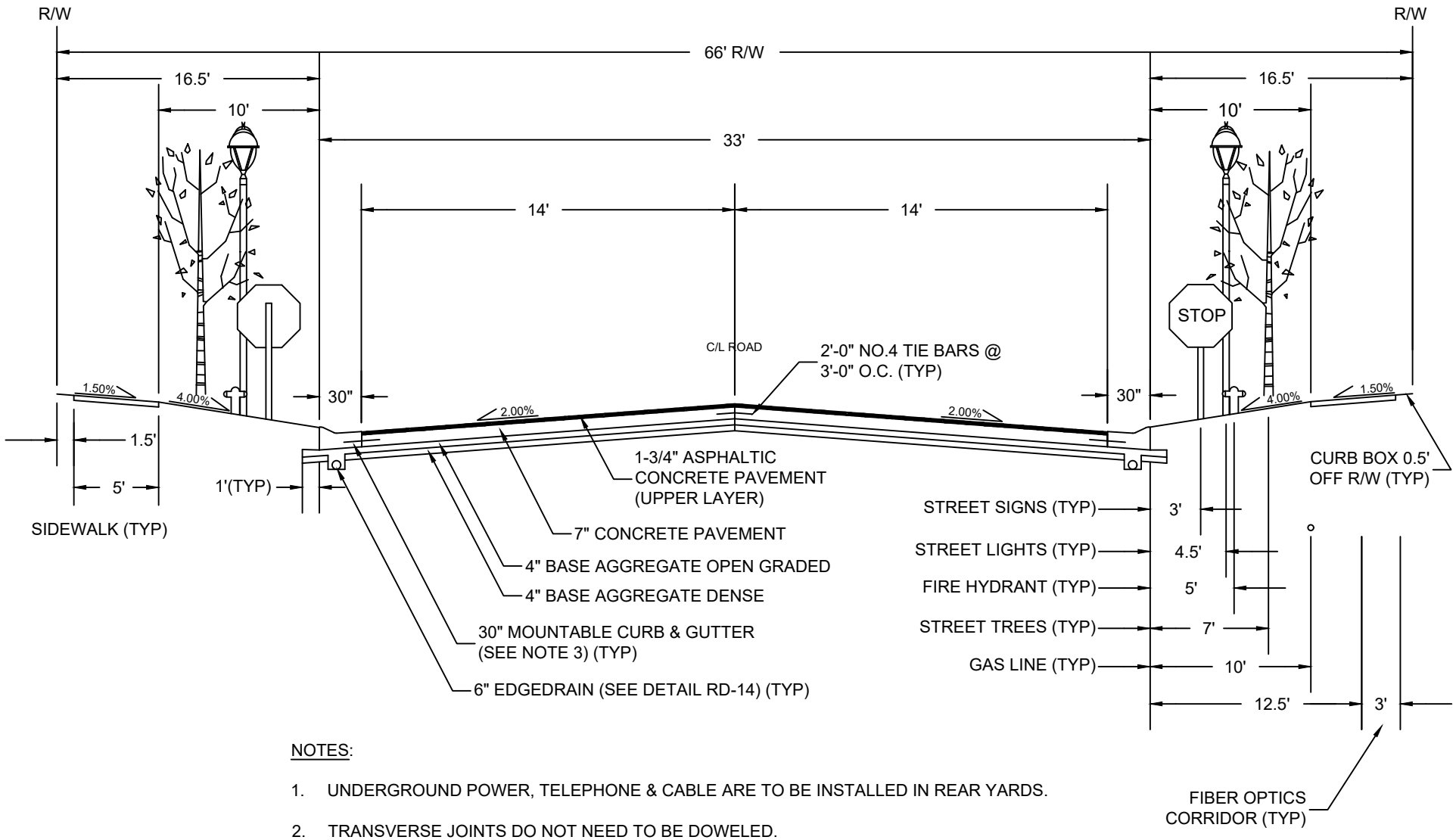


SECTION VIEW

NOTES:

1. REFER TO SPECIFICATIONS FOR TRACER WIRE.
2. TRACER WIRE SHALL BE TAPED TO MAIN AND SERVICES. WIRE IS SHOWN OFF PIPES FOR CLARITY.
3. INSTALL GROUNDING ANODE BY DRIVING INTO VIRGIN GROUND AT THE CURB STOP.

TRACER WIRE INSTALLATION ON WATER SERVICE	DETAIL: TW - 5
DATE: 12-17-18	VILLAGE OF PLEASANT PRAIRIE
APPROVED BY: MATT FINEOUR	KENOSHA COUNTY, WISCONSIN



NOTES:

1. UNDERGROUND POWER, TELEPHONE & CABLE ARE TO BE INSTALLED IN REAR YARDS.
2. TRANSVERSE JOINTS DO NOT NEED TO BE DOWELED.
3. GUTTER DEPTHS SHALL EXTEND TO THE BOTTOM OF THE ADJACENT CONCRETE PAVEMENT.

SCALE: NTS

STANDARD RESIDENTIAL MINOR STREET SECTION

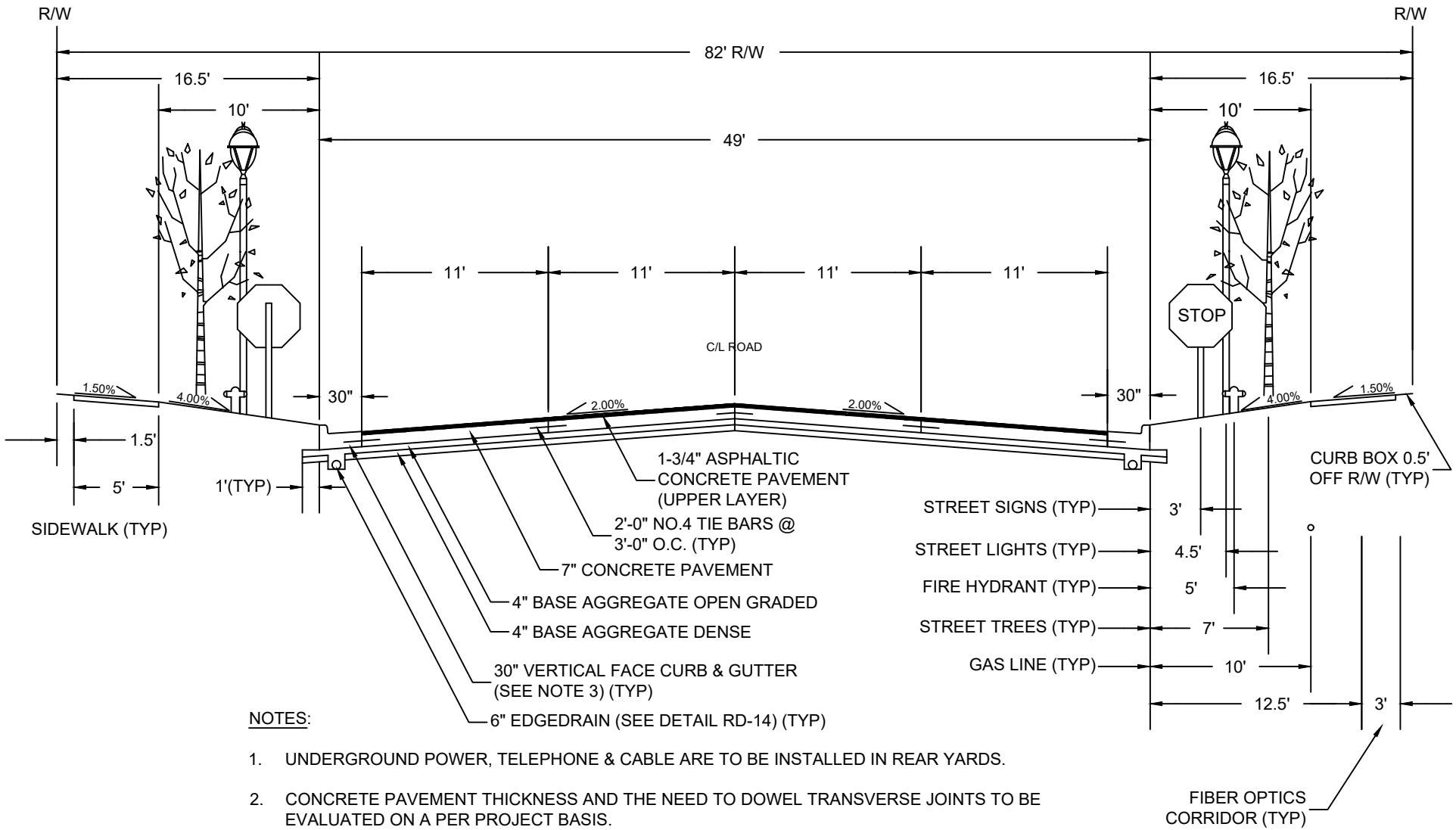
DETAIL: RD – 1

DATE: 12-11-20

APPROVED BY: MATT FINEOUR

VILLAGE OF PLEASANT PRAIRIE

KENOSHA COUNTY, WISCONSIN



NOTES:

1. UNDERGROUND POWER, TELEPHONE & CABLE ARE TO BE INSTALLED IN REAR YARDS.
2. CONCRETE PAVEMENT THICKNESS AND THE NEED TO DOWEL TRANSVERSE JOINTS TO BE EVALUATED ON A PER PROJECT BASIS.
3. GUTTER DEPTH SHALL EXTEND TO THE BOTTOM OF THE ADJACENT CONCRETE PAVEMENT.

SCALE: NTS

STANDARD RESIDENTIAL / COMMERCIAL COLLECTOR STREET SECTION

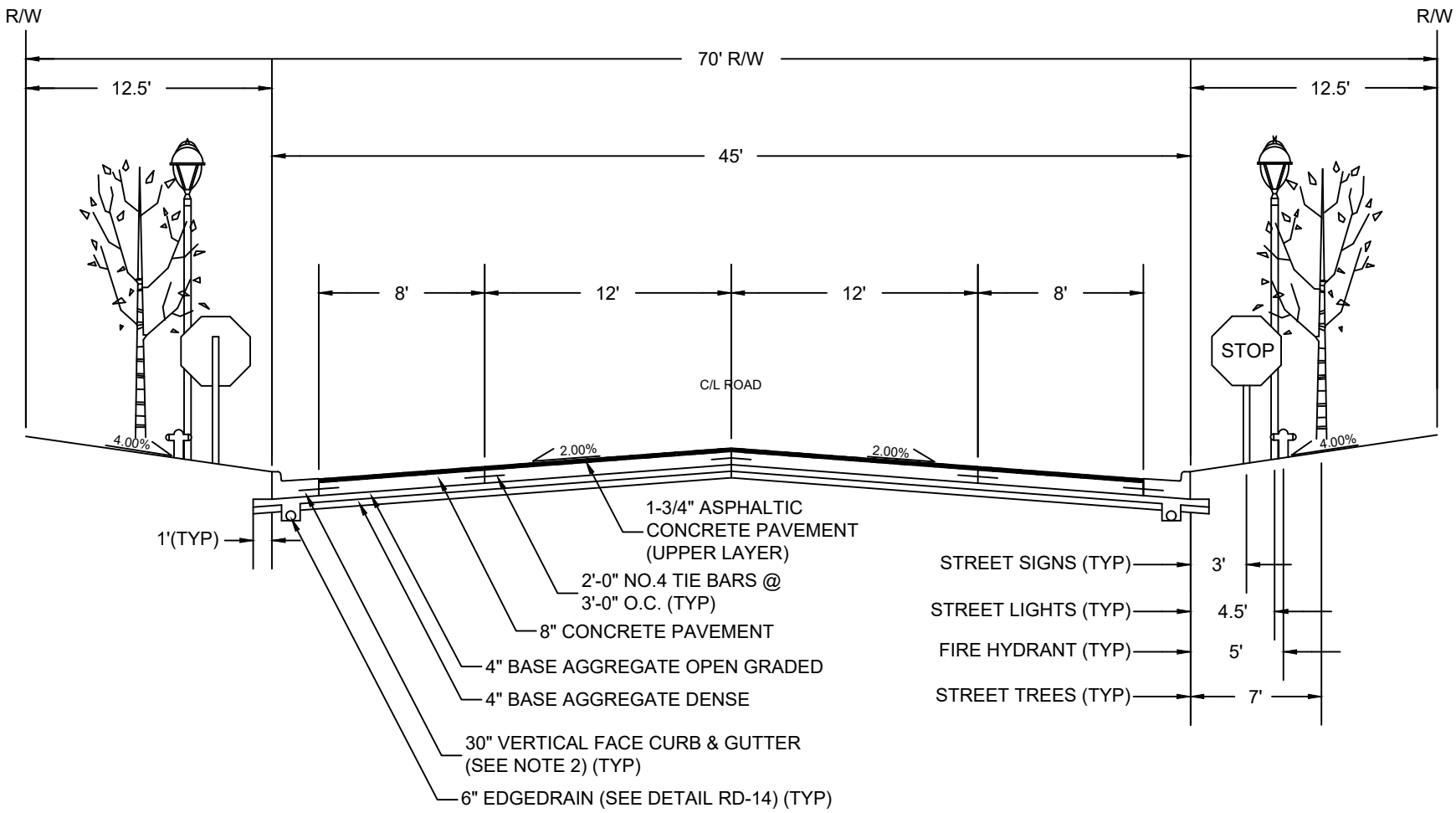
DETAIL: RD – 2

DATE: 12-11-20

APPROVED BY: MATT FINEOUR

VILLAGE OF PLEASANT PRAIRIE

KENOSHA COUNTY, WISCONSIN



NOTES:

1. ROAD DESIGN INCLUDING PAVEMENT SECTION, DOWELED TRANSVERSE JOINTS, ROAD WIDTH, ROW WIDTH AND INCLUSION OF SIDEWALKS, TO BE EVALUATED ON A PER PROJECT BASIS.

2. GUTTER DEPTH SHALL EXTEND TO THE BOTTOM OF THE ADJACENT CONCRETE PAVEMENT.

SCALE: NTS

STANDARD INDUSTRIAL STREET SECTION

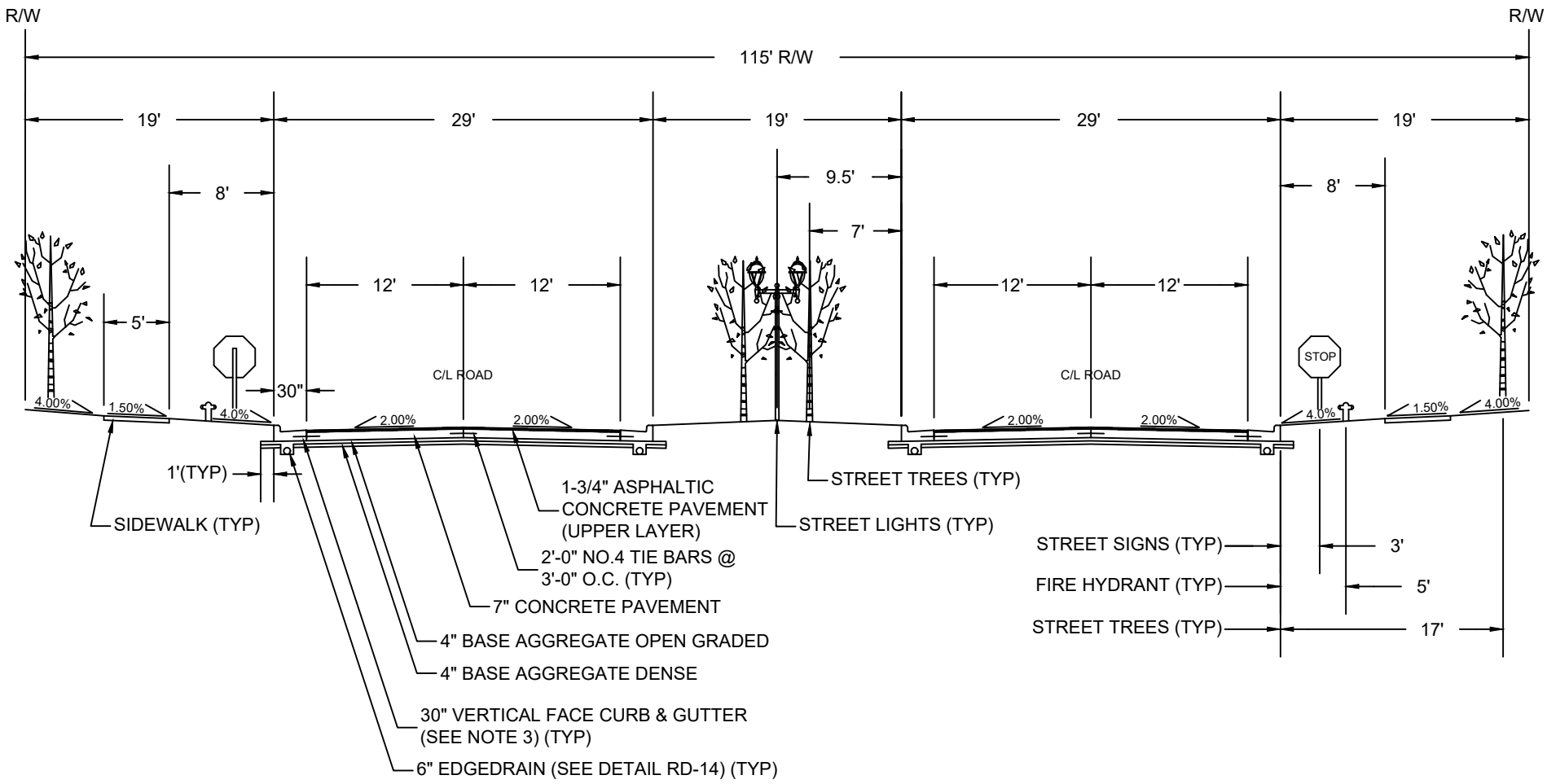
DETAIL: RD – 3

DATE: 12-11-20

APPROVED BY: MATT FINEOUR

VILLAGE OF PLEASANT PRAIRIE

KENOSHA COUNTY, WISCONSIN



NOTES:

1. UNDERGROUND POWER, TELEPHONE & CABLE ARE TO BE INSTALLED IN REAR YARDS.
2. CONCRETE PAVEMENT THICKNESS AND THE NEED TO DOWEL TRANSVERSE JOINTS TO BE EVALUATED ON A PER PROJECT BASIS.
3. GUTTER DEPTH SHALL EXTEND TO THE BOTTOM OF THE ADJACENT CONCRETE PAVEMENT.

SCALE: NTS

STANDARD RESIDENTIAL BOULEVARD SECTION

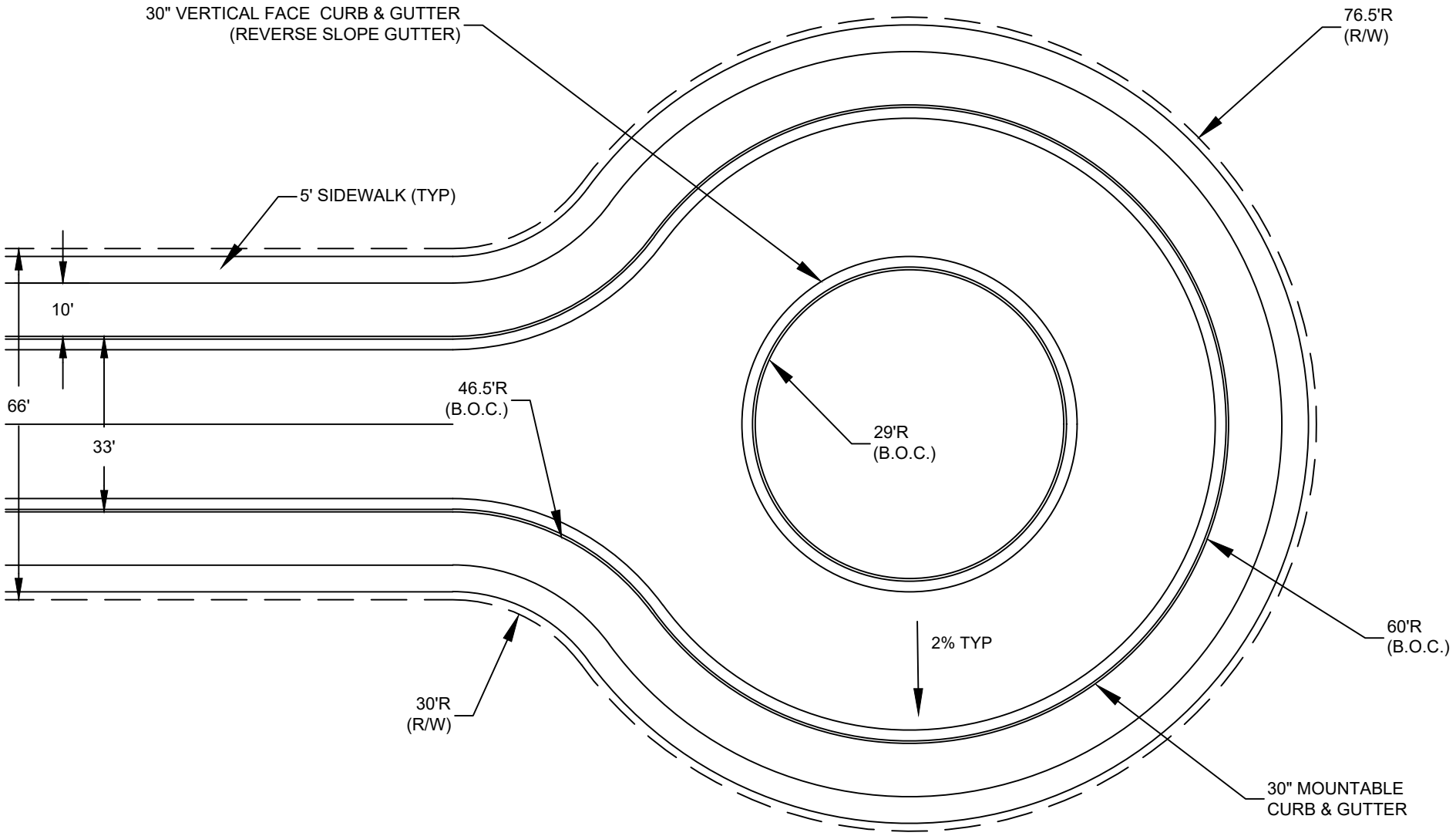
DETAIL: RD – 4

DATE: 12-11-20

APPROVED BY: MATT FINEOUR

VILLAGE OF PLEASANT PRAIRIE

KENOSHA COUNTY, WISCONSIN



SCALE: NTS

STANDARD RESIDENTIAL CUL-DE-SAC DETAIL

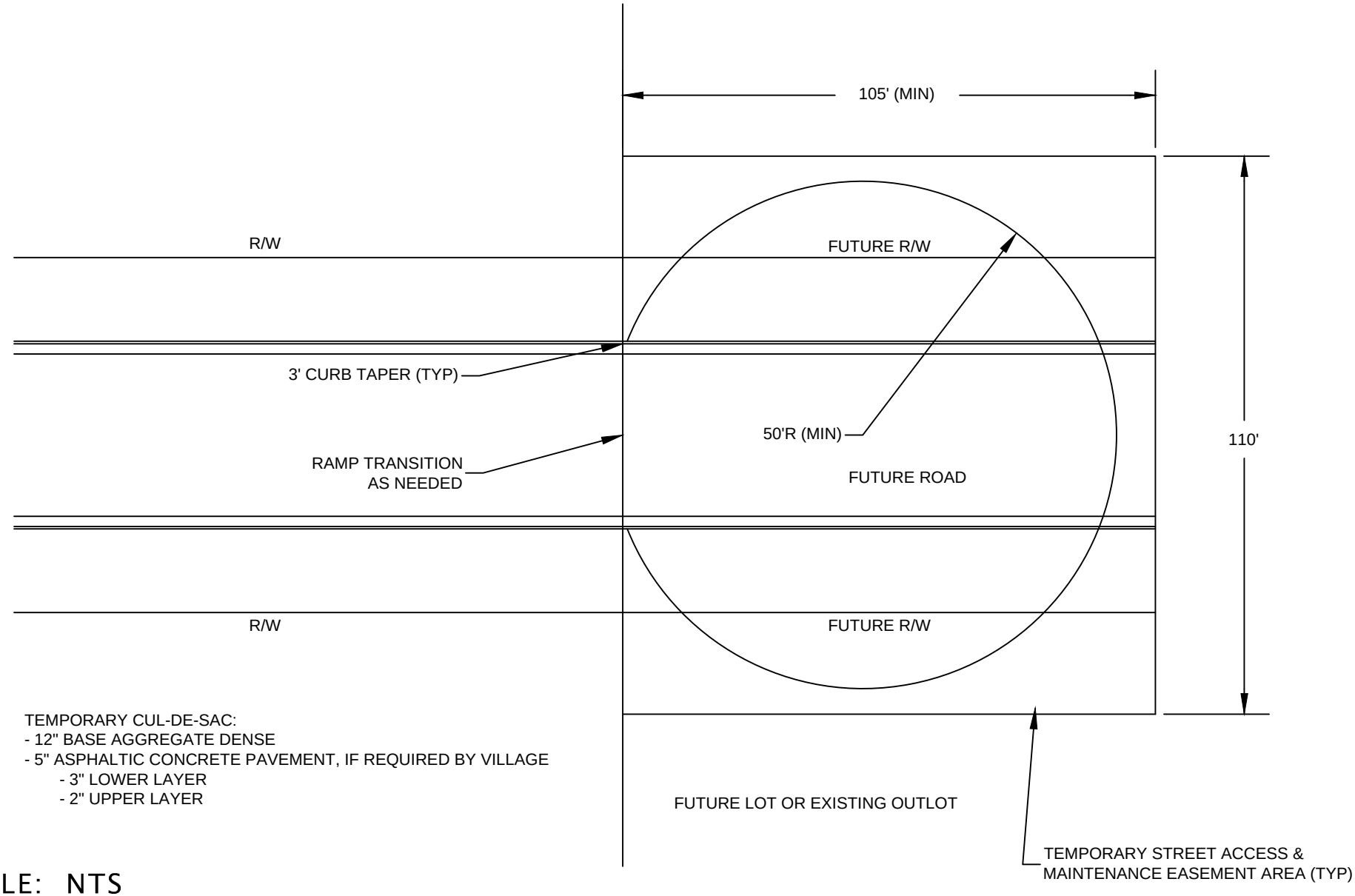
DETAIL: RD - 5

DATE: 1-23-20

APPROVED BY: MATT FINEOUR

VILLAGE OF PLEASANT PRAIRIE

KENOSHA COUNTY, WISCONSIN



SCALE: NTS

TEMPORARY CUL-DE-SAC TURNAROUND DETAIL

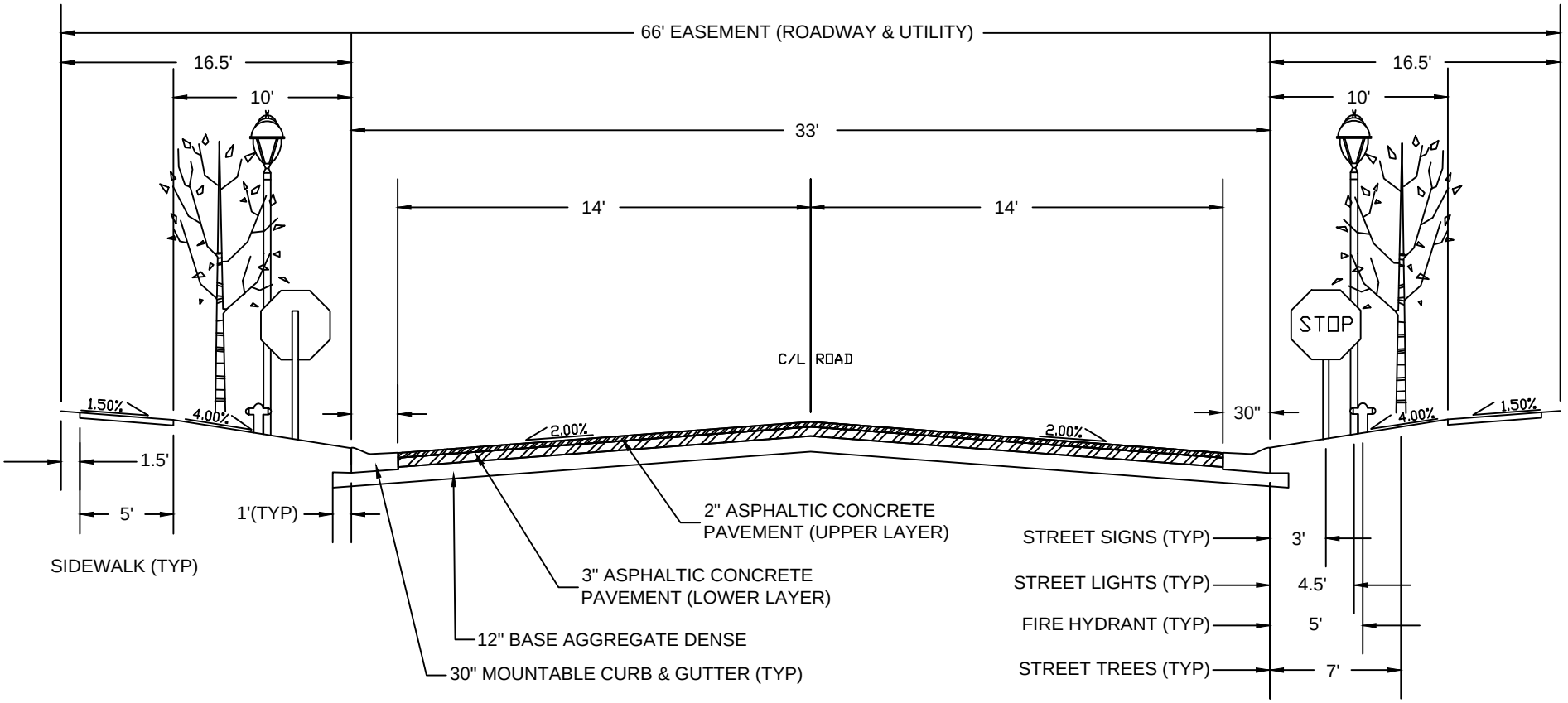
DETAIL: RD - 6

DATE: 12-1-15

APPROVED BY: MATT FINEOUR

VILLAGE OF PLEASANT PRAIRIE

KENOSHA COUNTY, WISCONSIN



NOTE:

1. ROADWAY EASEMENT WIDTH MAY VARY AND BE DECREASED (60' MIN.) OR INCREASED BASED ON DEVELOPMENT DESIGN INCLUDING LOCATION(S) OF SIDEWALK(S), PEDESTRIAN PATHS, LANDSCAPING, STREET TREES, UTILITIES ETC., AS MAY BE APPLICABLE.

SCALE: NTS

STANDARD "PRIVATE" MINOR RESIDENTIAL STREET SECTION

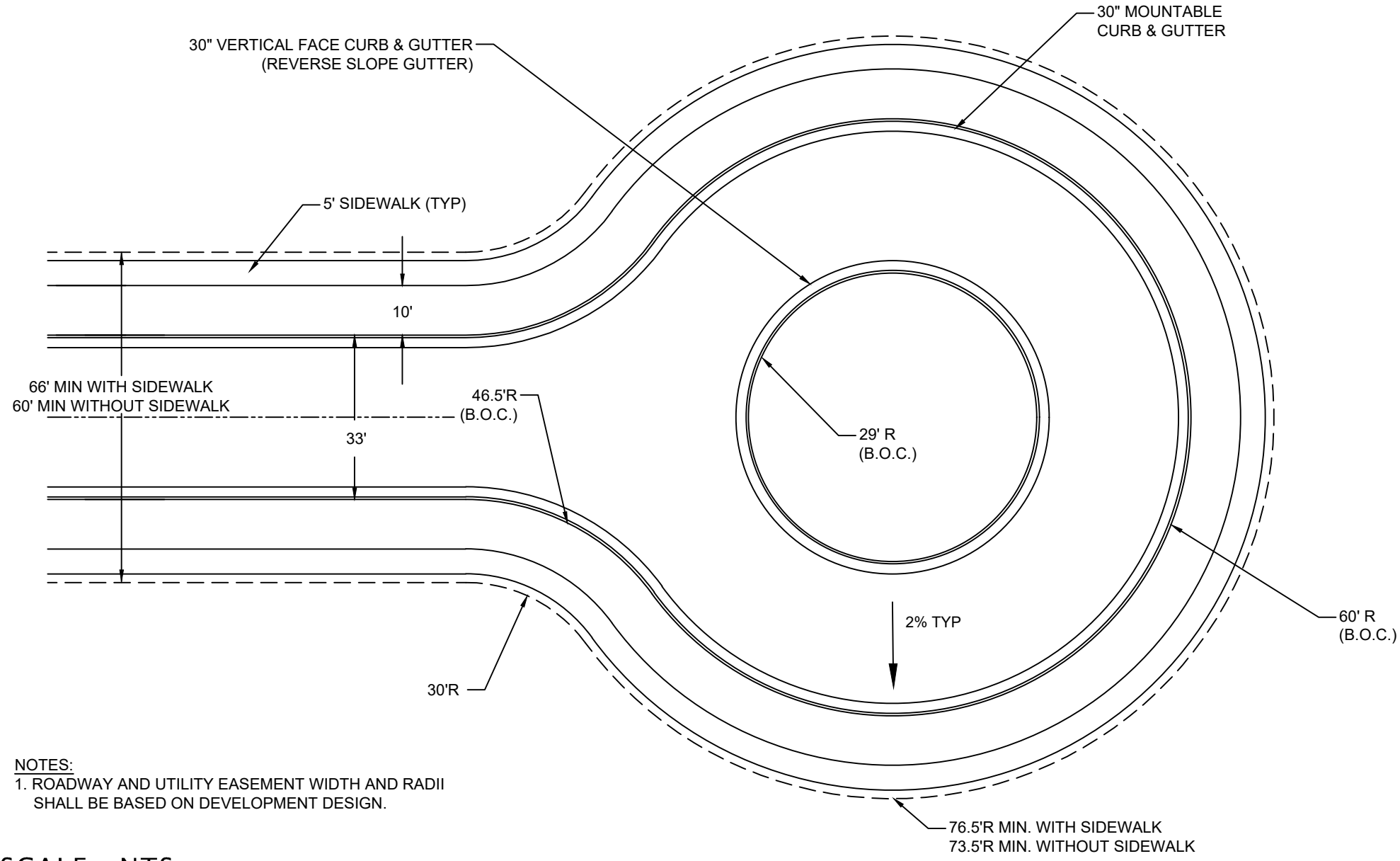
DETAIL: RD - 7

DATE: 11-15-16

APPROVED BY: MATT FINEOUR

VILLAGE OF PLEASANT PRAIRIE

KENOSHA COUNTY, WISCONSIN



NOTES:
1. ROADWAY AND UTILITY EASEMENT WIDTH AND RADII SHALL BE BASED ON DEVELOPMENT DESIGN.

SCALE: NTS

STANDARD "PRIVATE" MINOR RESIDENTIAL STREET CUL-DE-SAC DETAIL

DETAIL: RD - 8

DATE: 1-23-20

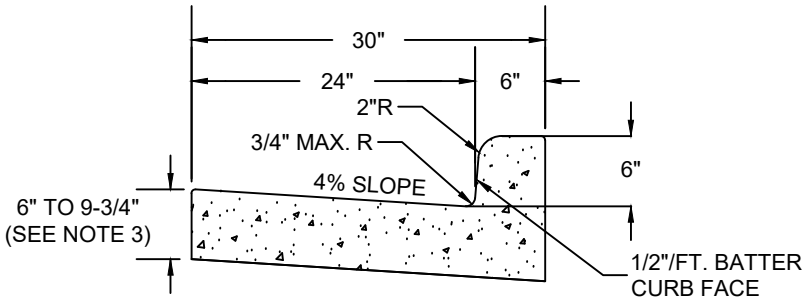
APPROVED BY: MATT FINEOUR

VILLAGE OF PLEASANT PRAIRIE

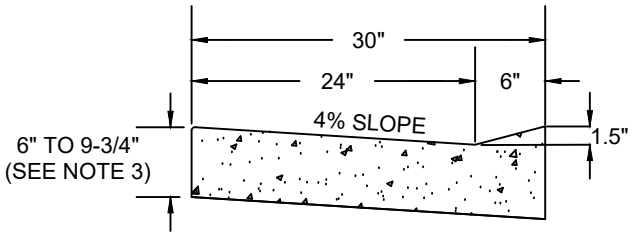
KENOSHA COUNTY, WISCONSIN

NOTES:

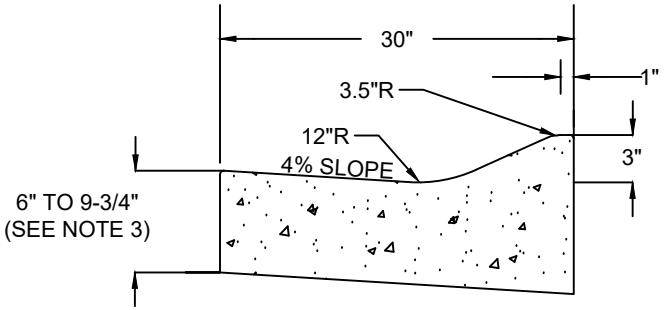
1. DAMAGED CURB / GUTTER SECTIONS SHALL BE REMOVED TO THE NEAREST JOINT.
2. CURB AND GUTTER CONSTRUCTED ADJACENT TO EXISTING CURB AND GUTTER SHALL BE INSTALLED USING TWO (2) NO.4 (1/2-INCH), 18-INCH LONG TIE BARS, EVENLY SPACED, DRIVEN 9-INCHES INTO THE EXISTING CURB AND GUTTER.
3. WHERE ADJACENT PAVEMENT SECTION CONTAINS CONCRETE THE GUTTER THICKNESS SHALL EXTEND TO THE BOTTOM OF THE ADJACENT CONCRETE PAVEMENT. CURB AND GUTTER SHALL BE TIED INTO ADJACENT CONCRETE PAVEMENT WITH #4 X 2'0" LONG TIE BARS AT 3' SPACING.



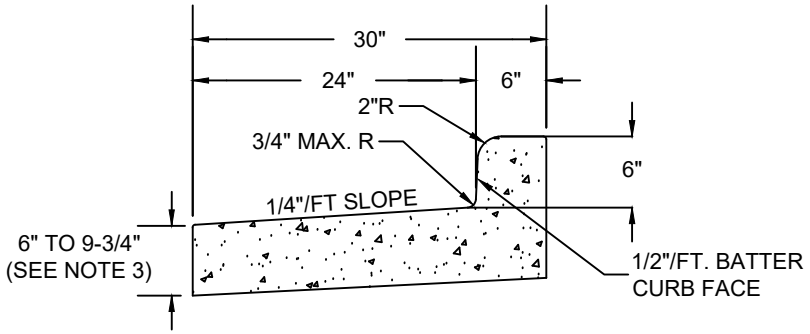
30" VERTICAL FACE CURB AND GUTTER



30" DEPRESSED CURB AND GUTTER AT DRIVEWAYS



30" MOUNTABLE CURB AND GUTTER



30" VERTICAL FACE CURB AND GUTTER (REVERSE SLOPE GUTTER)

SCALE: NTS

STANDARD CURB & GUTTER DETAILS

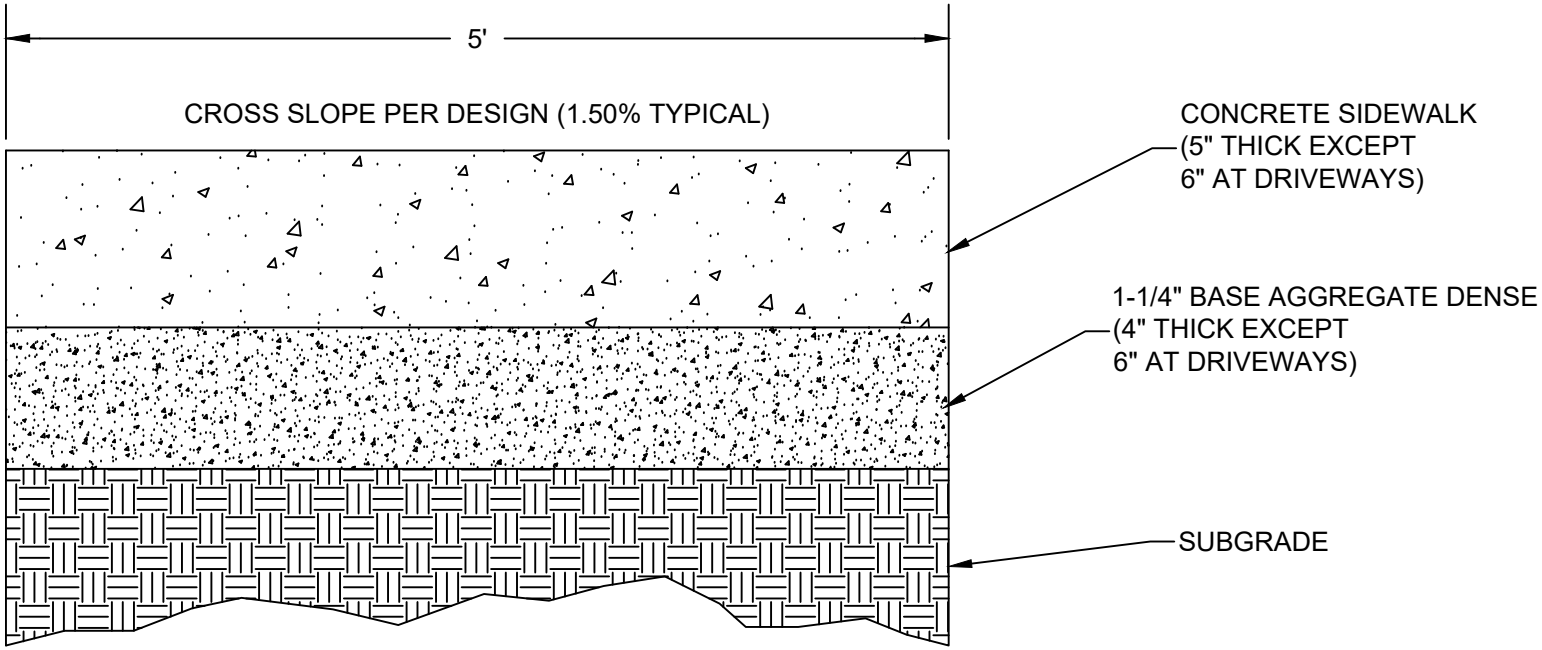
DETAIL: RD - 9

DATE: 6-5-20

APPROVED BY: MATT FINEOUR

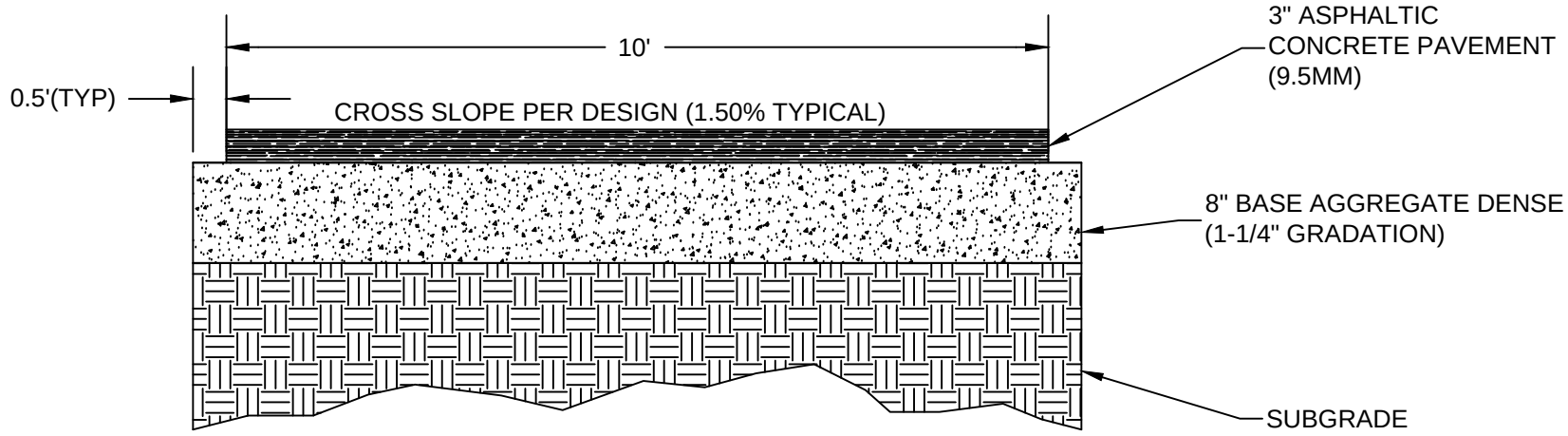
VILLAGE OF PLEASANT PRAIRIE

KENOSHA COUNTY, WISCONSIN



SCALE: NTS

STANDARD CONCRETE SIDEWALK DETAIL	DETAIL: RD - 10
DATE: 1-23-20	VILLAGE OF PLEASANT PRAIRIE
APPROVED BY: MATT FINEOUR	KENOSHA COUNTY, WISCONSIN



SCALE: NTS

STANDARD ASPHALT SHARED USE PATH DETAIL

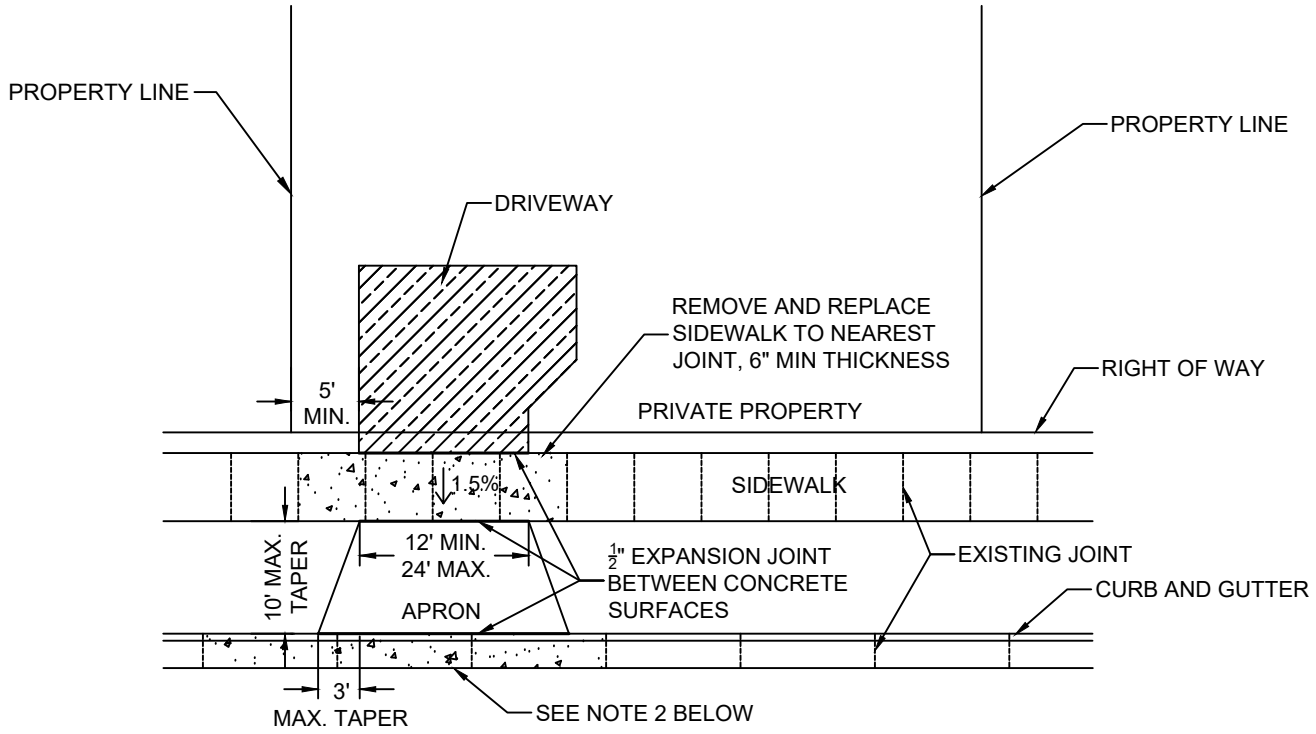
DETAIL: RD - 11

DATE: 12-17-18

APPROVED BY: MATT FINEOUR

VILLAGE OF PLEASANT PRAIRIE

KENOSHA COUNTY, WISCONSIN



NOTES:

1. DRIVEWAY APRONS SHALL BE CONCRETE IF INSTALLED ADJACENT TO SIDEWALK. EXISTING SIDEWALK AT DRIVEWAY CROSSINGS SHALL BE REMOVED AND REPLACED TO THE NEAREST JOINT.
2. EXISTING VERTICAL FACE CURB AND GUTTER SHALL BE REMOVED AND REPLACED WITH DEPRESSED CURB HEAD OR THE CURB HEAD REMOVED BY SAWCUTTING. EXISTING MOUNTABLE CURB AND GUTTER AT DRIVEWAYS SHALL REMAIN UNLESS SAWCUTTING OF THE CURB HEAD IS PERMITTED BY THE VILLAGE. SAWCUTTING OF CURB HEAD REQUIRES APPROVAL OF A WORK IN THE RIGHT OF WAY PERMIT ISSUED BY THE VILLAGE. DAMAGED CURB / GUTTER MAY NOT BE SAWCUT. SEE DETAIL RD-9 FOR REMOVING AND REPLACING CURB AND GUTTER AND RD-17 FOR SAWCUTTING CURB HEAD.
3. 1/2" EXPANSION JOINTS SHALL BE INSTALLED WHERE SHOWN IF CONCRETE SURFACE IS ON BOTH SIDES OF THE PROPOSED JOINT.
4. SIDEWALK AND CURB AND GUTTER JOINT SPACING SHALL MATCH ADJACENT.
5. MINIMUM DRIVEWAY AND SIDEWALK PAVEMENT THICKNESS WITHIN THE RIGHT OF WAY SHALL BE AS FOLLOWS:
   -CONCRETE DRIVEWAY AND SIDEWALK AT DRIVEWAY CROSSING SHALL BE 6" CONCRETE ON 6" GRAVEL BASE. SIDEWALK BEYOND THE DRIVEWAY LIMITS SHALL BE 5" CONCRETE ON 4" GRAVEL BASE.
   -ASPHALT SHALL BE 3" ASPHALT PAVEMENT ON 8" GRAVEL BASE.
   -GRAVEL SHALL BE 11".
   -BRICK SHALL HAVE A 8" GRAVEL BASE.
6. DRIVEWAY WITHIN THE RIGHT OF WAY SHALL BE PERPENDICULAR TO THE ROADWAY CENTERLINE UNLESS OTHERWISE APPROVED BY THE VILLAGE.
7. IF THE VILLAGE NEEDS TO REMOVE AND REPLACE THE DRIVEWAY OR APRON WITHIN THE RIGHT OF WAY THE VILLAGE WILL REPLACE THE DRIVEWAY AND/OR APRON WITH BROOM FINISHED CONCRETE, ASPHALT OR GRAVEL REGARDLESS OF THE EXISTING SURFACE (E.G., BRICK PAVERS, STAMPED CONCRETE, COLORED CONCRETE.)

SCALE: NTS

RESIDENTIAL DRIVEWAY DETAIL - URBAN ROADWAY

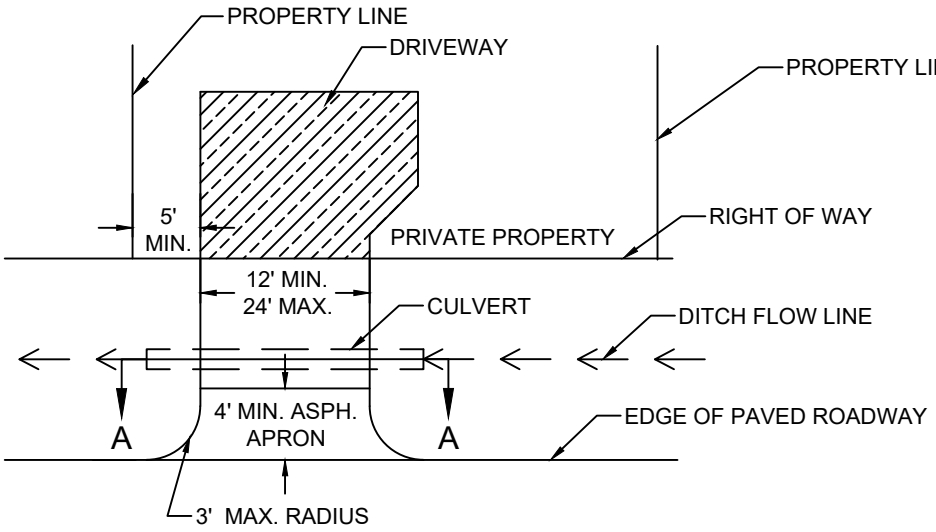
DETAIL: RD - 12

DATE: 12-11-20

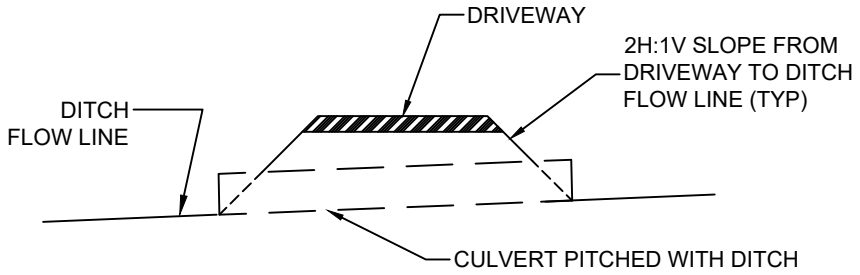
APPROVED BY: MATT FINEOUR

VILLAGE OF PLEASANT PRAIRIE

KENOSHA COUNTY, WISCONSIN



RURAL DRIVEWAY DETAIL



CULVERT SECTION A-A

NOTES:

1. A MINIMUM OF A 4' WIDE ASPHALT APRON SHALL BE INSTALLED ADJACENT TO THE EXISTING ROADWAY. MINIMUM PAVEMENT THICKNESS(S) WITHIN RIGHT OF WAY SHALL BE AS FOLLOWS:
   -ASPHALT APRON AND DRIVEWAY SHALL BE 3" ASPHALT PAVEMENT ON 8" GRAVEL BASE.
   -CONCRETE SHALL BE 6" CONCRETE ON 6" GRAVEL BASE.
   -GRAVEL SHALL BE 11".
   -BRICK SHALL HAVE A 8" GRAVEL BASE.
2. LANDSCAPING WALLS, RETAINING WALLS, HEADWALLS, ETC. SHALL NOT BE INSTALLED WITHIN THE RIGHT OF WAY. ONLY LAWN SURFACES ARE ALLOWED BEYOND THE DRIVEWAY LIMITS. LAWN GRADE SHALL BE A UNIFORM SLOPE FROM THE EDGE OF DRIVEWAY TO THE END OF THE CULVERT.
3. DRIVEWAY WITHIN THE RIGHT OF WAY SHALL BE PERPENDICULAR TO THE ROADWAY CENTERLINE UNLESS OTHERWISE APPROVED BY THE VILLAGE.
4. CULVERT DIAMETER SHALL BE NOT BE LESS THAN 12" OR THE DIAMETER OF THE UPSTREAM CULVERT. LARGER DIAMETER CULVERTS MAY BE REQUIRED IF DETERMINED BY THE VILLAGE.
5. CULVERT LENGTH SHALL NOT EXTEND BEYOND WHAT IS NECESSARY; DRIVEWAY WIDTH + 2H:1V SIDE SLOPES.
6. IF THE VILLAGE NEEDS TO REMOVE AND REPLACE THE DRIVEWAY OR APRON WITHIN THE RIGHT OF WAY THE VILLAGE WILL REPLACE THE DRIVEWAY AND/OR APRON WITH ASPHALT OR GRAVEL REGARDLESS OF THE EXISTING SURFACE (E.G., CONCRETE, BRICK PAVERS, STAMPED CONCRETE, COLORED CONCRETE.)

SCALE: NTS

RESIDENTIAL DRIVEWAY AND CULVERT DETAIL - RURAL ROADWAY

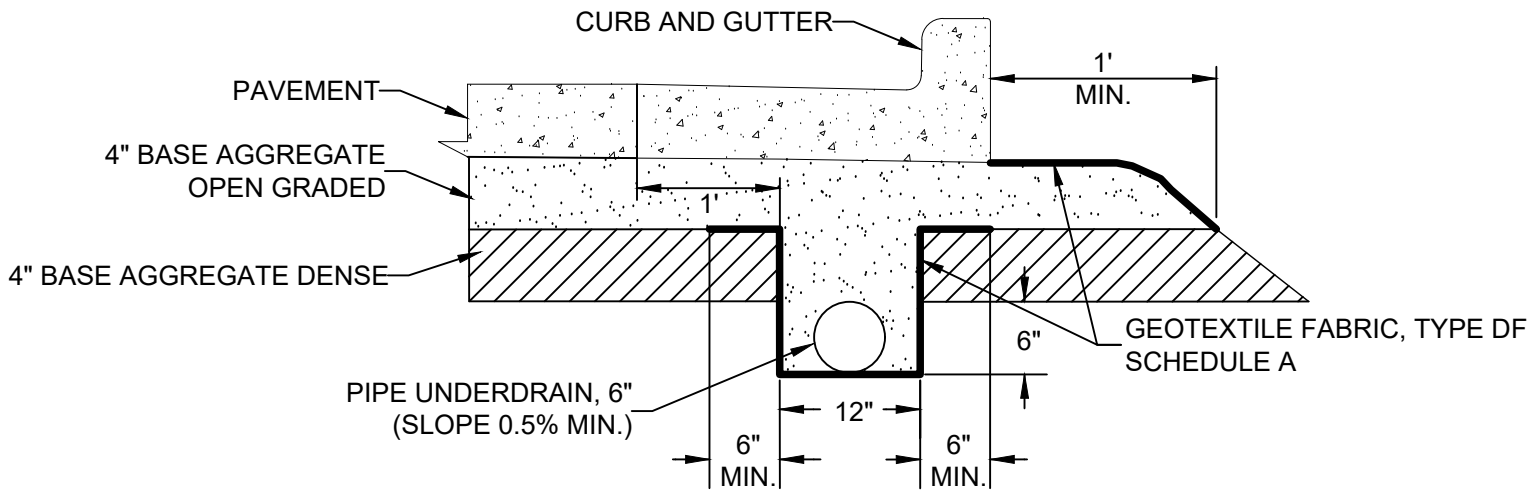
DETAIL: RD - 13

DATE: 12-11-20

APPROVED BY: MATT FINEOUR

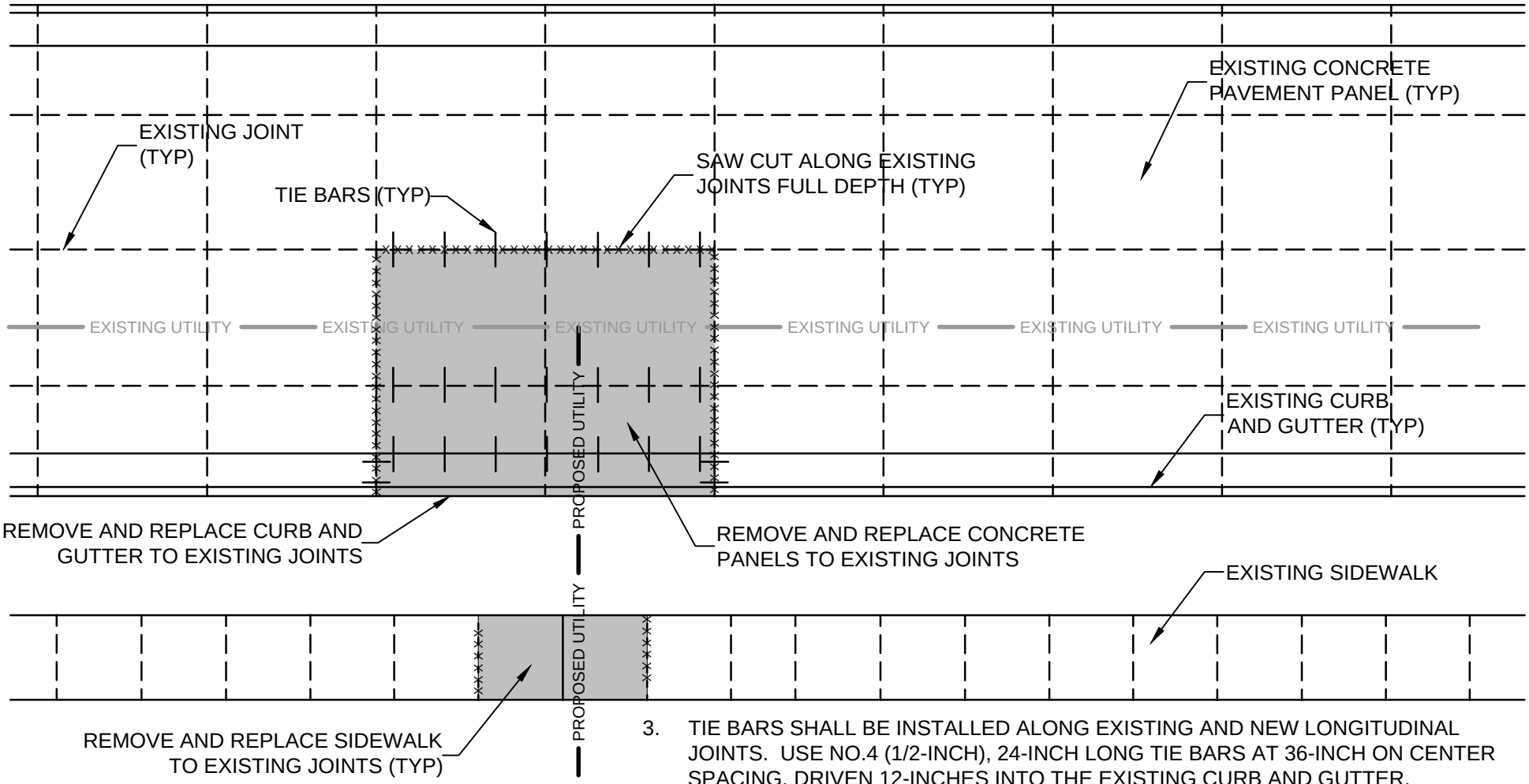
VILLAGE OF PLEASANT PRAIRIE

KENOSHA COUNTY, WISCONSIN



SCALE: NTS

EDGEDRAIN IN URBAN ROADWAY	DETAIL: RD – 14
DATE: 1-26-21	VILLAGE OF PLEASANT PRAIRIE
APPROVED BY: MATT FINEOUR	KENOSHA COUNTY, WISCONSIN



NOTES:

1. ANY PAVEMENT, CURB AND GUTTER OR SIDEWALK DAMAGED OR UNDERMINED SHALL BE REMOVED AND REPLACED TO THE NEAREST JOINT.
2. CURB AND GUTTER SHALL BE INSTALLED USING TWO (2) NO.4 (1/2-INCH), 18-INCH LONG TIE BARS, EVENLY SPACED, DRIVEN 9-INCHES INTO THE EXISTING CURB AND GUTTER.
3. TIE BARS SHALL BE INSTALLED ALONG EXISTING AND NEW LONGITUDINAL JOINTS. USE NO.4 (1/2-INCH), 24-INCH LONG TIE BARS AT 36-INCH ON CENTER SPACING, DRIVEN 12-INCHES INTO THE EXISTING CURB AND GUTTER.
4. EXISTING CONCRETE ROADWAY PAVEMENT SHALL BE REPLACED IN KIND OR WITH A MINIMUM OF 8-INCHES OF BASE AGGREGATE DENSE AND 8-INCHES OF CONCRETE PAVEMENT, WHICHEVER IS GREATER.
5. EXISTING COMPOSITE ROADWAY PAVEMENT SHALL BE REPLACED IN KIND OR WITH A MINIMUM OF 8-INCHES OF BASE AGGREGATE DENSE, 7-INCHES OF CONCRETE PAVEMENT (8-INCHES ON INDUSTRIAL ROAD AND COLLECTORS), AND 1.75-INCHES OF ASPHALTIC CONCRETE SURFACE, WHICHEVER IS GREATER.
6. REFER TO VILLAGE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

UTILITY PATCH DETAIL (COMPOSITE AND CONCRETE ROADWAYS)

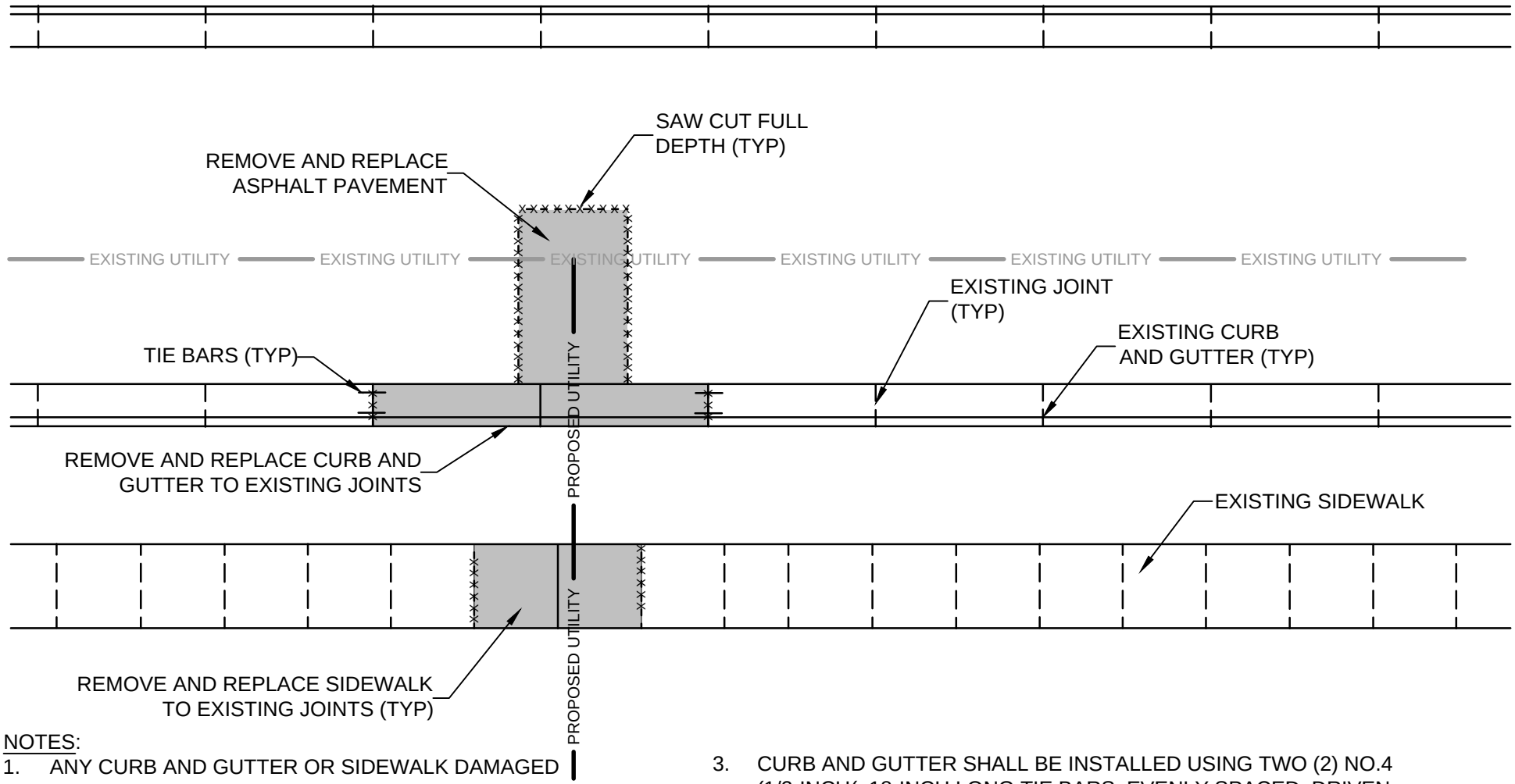
DETAIL: RD - 15

DATE: 12-17-18

APPROVED BY: MATT FINEOUR

VILLAGE OF PLEASANT PRAIRIE

KENOSHA COUNTY, WISCONSIN



NOTES:

1. ANY CURB AND GUTTER OR SIDEWALK DAMAGED OR UNDERMINED SHALL BE REMOVED AND REPLACED TO THE NEAREST JOINT.
2. ALL SAWCUTS SHALL BE PARALLEL OR PERPENDICULAR TO THE ROADWAY CENTERLINE OR DIRECTION OF TRAVEL. DAMAGED JOINTS AND UNDERMINED PAVEMENTS SHALL BE RE-SAWCUT AND THE DAMAGED/UNDERMINED MATERIAL REMOVED AND REPLACED.
3. CURB AND GUTTER SHALL BE INSTALLED USING TWO (2) NO.4 (1/2-INCH(, 18-INCH LONG TIE BARS, EVENLY SPACED, DRIVEN 9-INCHES INTO THE EXISTING CURB AND GUTTER.
4. EXISTING ASPHALT ROADWAY PAVEMENT SHALL BE REPLACED IN KIND OR WITH A MINIMUM OF 10-INCHES OF BASE AGGREGATE DENSE AND 5-INCHES OF ASPHALTIC CONCRETE PAVEMENT (3-INCH LOWER LAYER: 2-INCH UPPER LAYER), WHICHEVER IS GREATER.
5. REFER TO VILLAGE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

UTILITY PATCH DETAIL (ASPHALT ROADWAYS)

DETAIL: RD - 16

DATE: 12-17-18

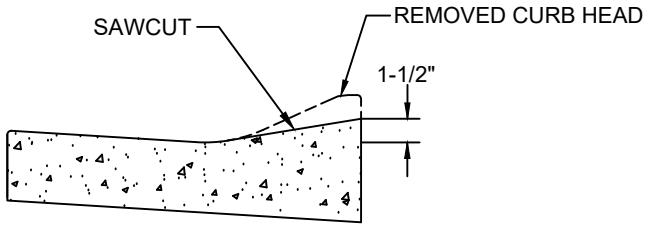
APPROVED BY: MATT FINEOUR

VILLAGE OF PLEASANT PRAIRIE

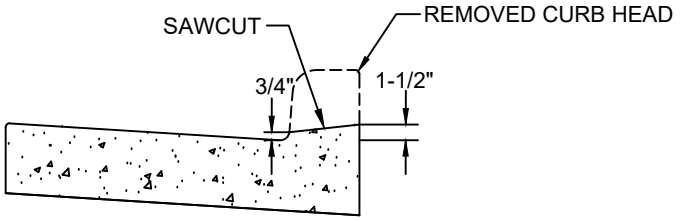
KENOSHA COUNTY, WISCONSIN

NOTES:

1. REMOVING THE CURB HEAD BY SAWCUTTING REQUIRES APPROVAL FROM THE VILLAGE PUBLIC WORKS DEPARTMENT.
2. DAMAGED SECTIONS SHALL BE BE REMOVED AND REPLACED TO THE NEAREST JOINT. DAMAGED CURB / GUTTER SECTIONS SHALL NOT BE SAWCUT. SEE DETAIL RD-9 FOR REPLACEMENT OF CURB AND GUTTER.
3. SAWCUTTING OF THE EXISTING CURB SHALL BE MADE BY A SAW SPECIFICALLY MADE FOR THAT PURPOSE. USE OF A HANDHELD CONCRETE SAW TO REMOVE THE CURB HEAD IS NOT PERMITTED.



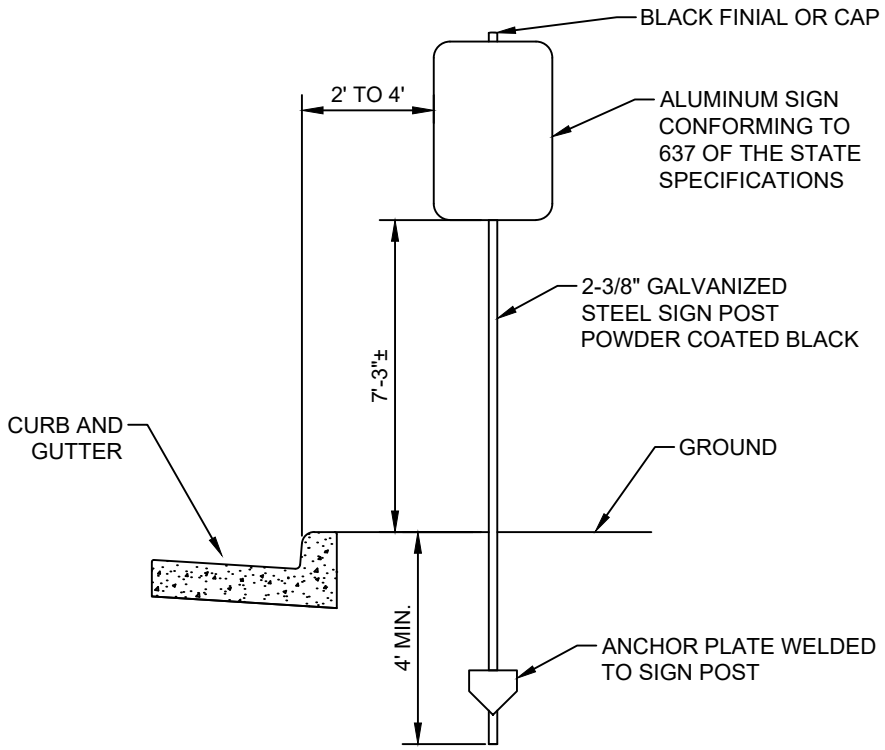
MOUNTABLE CURB AND GUTTER



VERTICAL FACE CURB AND GUTTER

SCALE: NTS

CURB HEAD SAWCUT DETAIL	DETAIL: RD - 17
DATE: 6-4-20	VILLAGE OF PLEASANT PRAIRIE
APPROVED BY: MATT FINEOUR	KENOSHA COUNTY, WISCONSIN



NOTES:

1. SIGN POST SHALL BE DRIVEN INTO THE GROUND. EXCAVATING THE POLE IS NOT PERMITTED. POST SHALL BE PLUMB.
2. ANCHOR PLATE SHALL BE SECURED TO THE POST BY WELDING.
3. SECURE SIGN TO POST WITH ALUMINUM OR STAINLESS STEEL HARDWARE.
4. RURAL ROADWAYS:
   - 4.1. THE BOTTOM OF THE SIGN SHALL BE 6'-3" ABOVE THE EDGE OF THE TRAVELED ROADWAY.
   - 4.2. THE EDGE OF THE SIGN SHALL BE 6' FROM THE EDGE OF PAVED SHOULDER OR 12' FROM THE EDGE OF PAVEMENT (EDGE LINE LOCATION) OR 2' FROM THE OUTSIDE EDGE OF GRAVEL, WHICHEVER IS GREATER UNLESS DIRECTED BY THE VILLAGE.
5. IF MULTIPLE SIGNS ARE ON THE SAME POST DISTANCE TO THE BOTTOM OF THE LOWEST SIGN SHALL BE REVISED TO 6'-3" ON URBAN ROADWAYS AND 5'-3" ON RURAL ROADWAYS.
6. SIGN OFFSET DISTANCE SHALL CONSISTENT WITH EXISTING SIGNS AND THROUGHOUT THE LENGTH OF THE PROJECT.
7. SEE THE WISCONSIN DOT SIGN PLATE MANUAL FOR ADDITIONAL INSTALLATION REQUIREMENTS FOR SIGNS AND FOR ALL SIGNS EXCEEDING 4' WIDTH OR 20 SQ FT

SCALE: NTS

TYPICAL ROADWAY SIGN POST INSTALLATION

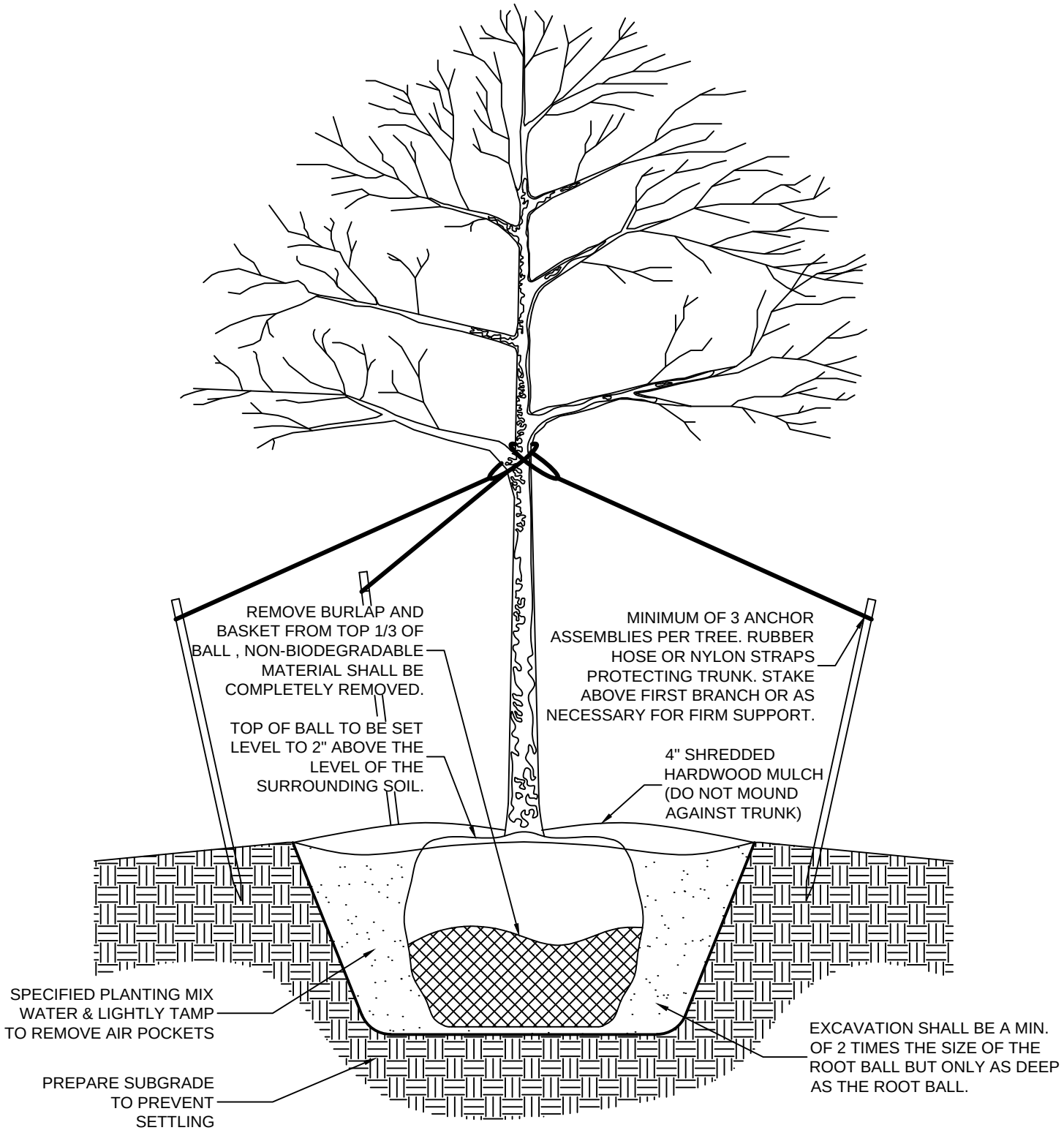
DETAIL: RD - 18

DATE: 8-31-22

APPROVED BY: MATT FINEOUR

VILLAGE OF PLEASANT PRAIRIE

KENOSHA COUNTY, WISCONSIN



SCALE: NTS

STREET TREE PLANTING DETAIL

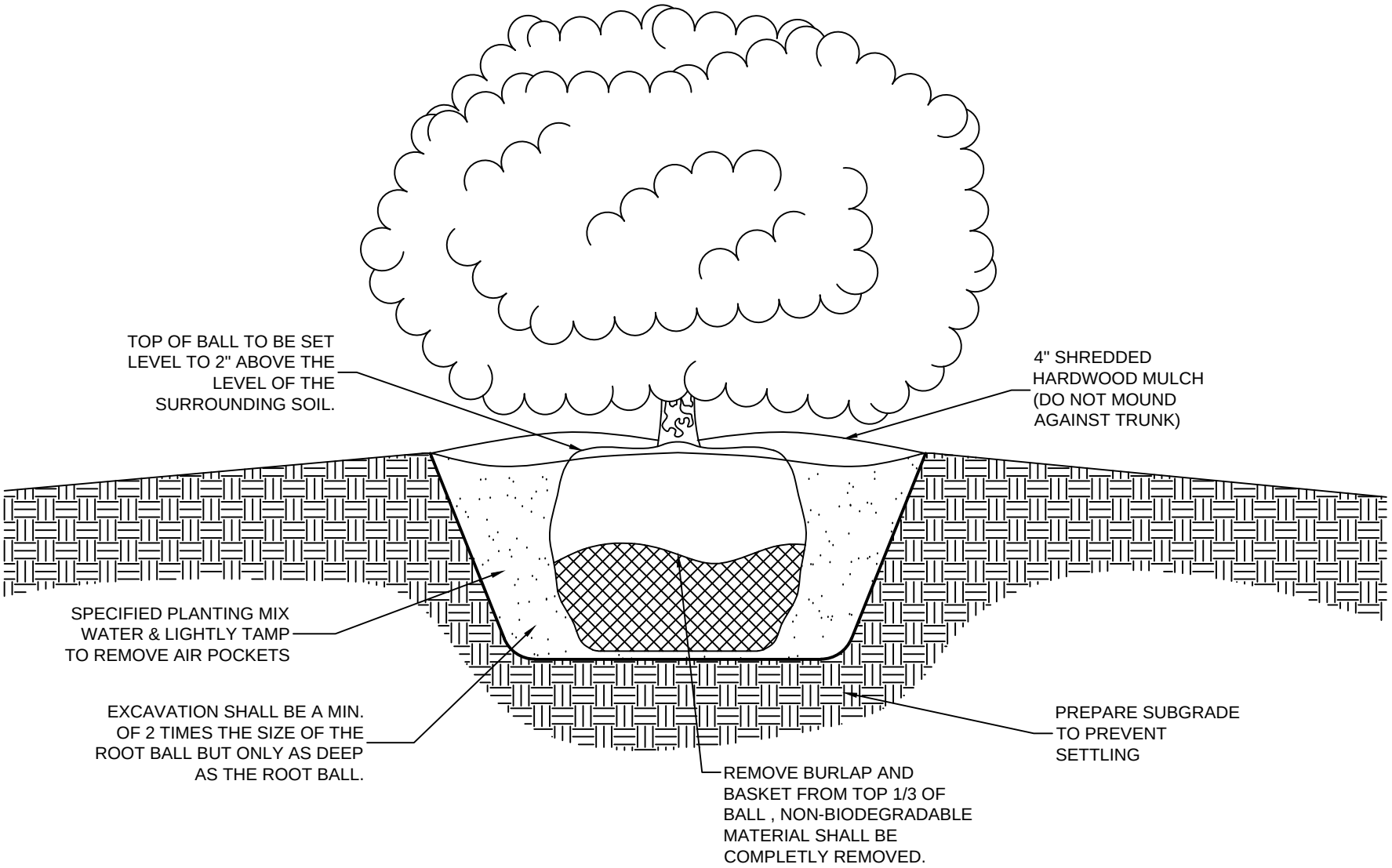
DETAIL: L - 1

DATE: 11-11-15

APPROVED BY: MATT FINEOUR

VILLAGE OF PLEASANT PRAIRIE

KENOSHA COUNTY, WISCONSIN



SCALE: NTS

SHRUB PLANTING DETAIL

DETAIL: L - 2

DATE: 11-18-15

APPROVED BY: MATT FINEOUR

VILLAGE OF PLEASANT PRAIRIE

KENOSHA COUNTY, WISCONSIN