Village of Matteson Department of Public Works

Engineering Notes:

Governance

Plan Preparation

Traffic Control

Materials Testing and Inspection

General Construction Notes

Underground Utilities

Village Standards Street Lighting

Standard Specifications for Water & Sewer Main Construction in Illinois

Approved Materials for Sanitary Sewer & Storm Sewer Installations

Approved Materials for Water Main Installations

Village Approved Hydrant – EJIW Watermaster 5BR250

Trench Details Hydrant Detail Duratron Sac-Nut Modules

Harrington Integral Hydrant Storz™

Utility Permit Processing

Governance

The Municipal Code of Ordinances for the Village of Matteson along with the latest editions of the "Standard Specifications for Road and Bridge Construction" prepared by the Illinois Department of Transportation (IDOT), the "Standard Specifications for Water and Sewer Main Construction in Illinois" prepared by the Illinois Environmental Protection Agency (IEPA), the American Water Works Association Manual (AWWA), the American Society for Testing and Materials Standards (ASTM) and the Ordinances of the Metropolitan Water Reclamation District of Greater Chicago shall govern the construction of all improvements except as modified or permitted by the Village Engineer.

Matteson's Codes of Ordinances

IDOT - Standard Specifications/ Highway Standards

MWRDGC - Metropolitan Water Reclamation District of Greater Chicago

Plan Preparation

Plans shall be prepared on 36 in. x 24 in. (full-sized) working sheets for the preliminary and pre-final and final design stages. To provide consistency in the submittals of plans, the sheets should typically be assembled in the recommended sequence as follows:

1. **Cover Sheet;** Location map, vicinity map, scale, North Arrow, Engineer's title block, project title block, USGS benchmark, Professional Engineer seal and signature, Insurance and indemnifications, revision dates, previous detention permit number(s), Owner, Professional Design Firm number, contacts, Village of Matteson's zoning for property, project number, drainage certificates, applicable permits, project's gross area and sheet index.

2. **General Notes;** Applicable project notes, Village of Matteson Engineering notes, MWRD notes, storm sewer, sanitary sewer and water main notes, abbreviations, drawing legend for existing and proposed work and roadway typical sections.

3. **Summary of Quantities;** earth excavation, embankment, pavement improvements, underground improvements, trench backfill, erosion control and lighting improvements.

4. **Topographical Survey;** Map scaled at 1" = 50' or less, wetlands, lakes, ponds, normal water elevation, on or near site buildings, existing spot elevations, elevations on site and within 100' of site, lowest floor and lowest point of entry for each building within 100' of improvement, elevation along property lines and at property corners at 50' minimum spacing, elevations at on and off site building corners, finished floor, top of foundation, existing contour lines corresponding with spot elevations, structures, utilities, location of water mains, hydrants, valve boxes, vaults, "B" boxes and services, stubs etc. Legend, North arrow, Professional Land Surveyor's seal and signature, USGS benchmark, drainage and utility easements.

5. **Demolition Plan;** Water service abandonment, sanitary service abandonment, silt fence and soil erosion plan, building structures to be demolished, site clearing and grubbing proposed, soil remediation proposed, existing well to be abandoned, existing septic to be abandoned and other utilities to be abandoned.

6. **Geometric Plan;** Lot dimensions, building or structure dimensions, parking area dimensions, turning radii, alignments, ties, benchmarks, vertical curve data, horizontal curb datum and control points. Show schematics for reference tie locations which will include: the applicable centerline station, applicable control tie(s) and the complete description of the features used to determine the other facilities.

7. **Grading Plan;** Storm water submittal requirements, general topographic Information, location of wetlands, lakes, ponds with normal water elevation noted. Top of floor elevation, corner spot elevation of all existing buildings on or adjacent to site. Existing spot elevations on site and within 100' of site, identification of lowest floor and lowest point of entry for each building, existing and proposed elevations along property lines and at property corners, proposed top of foundation, finish floor and building corner elevations, existing and proposed contour lines corresponding with existing and proposed spot elevations, sidewalk pitches. Location, size rim and invert elevations of existing and proposed storm sewers, manholes, culverts and ditches and other major and minor storm water systems. Proposed spot elevations for curbs, islands, sidewalks and structures.

8. **Storm Water Pollution Prevention Plan;** Obtain National Pollutant Discharge Elimination System (NPDES) Permit Coverage from the appropriate authorities. Provide a comprehensive plan for the development, implementation and maintenance of sediment and erosion control measures at the proposed construction site. The SWPPP shall:

- Define the characteristics of the site and the type of construction which is proposed.

- Describe the site plan for the facility to be constructed.

- Describe the practices that will be implemented to control erosion and the release of pollutants in storm water.

- Describe the final stabilization/termination design to minimize erosion and prevent storm water impacts after construction is complete.

- Identify the person(s) responsible for implementing and maintaining the SWPPP during construction.

- Description of storm water management controls and various Best Management Practices (BMPs) necessary to reduce erosion, sediment And pollutants in storm water discharge.

- BMP Design Criteria (soil type, vegetation and land cover conditions, contributory drainage area, sizing and effectiveness calculations, etc.)

9. **Utility Plan;** Potable water system, location and size(s) of existing water mains, hydrants, valve boxes, vaults, "B" boxes and services. Water main extensions, horizontal and vertical separation, utility crossing information, hydrant spacing (300'), valve locations, location and size of fire line, location and size of domestic service(s), separate valves for fire line and domestic service(s), delineate trench backfill areas. Location, size, rim and invert elevations of existing sanitary or combined sewers, manholes, services and stubs. Manhole maximum spacing (400'), locations of water main quality pipe identified. Location, slope, size and inverts of proposed sanitary service(s). Location of existing utility poles, electrical wires, pipelines communication lines, etc.

10. **Provide MWRD Sanitary Sewer Routing Map for improvement;** Where applicable, provide routing map of proposed improvement sanitary sewer relative to the existing MWRD sanitary alignment.

11. **Plan/Profile Sheets**

12. **Construction Detail Sheets;** Include all relevant IDOT Highway and IEPA Standards for the construction of project. In addition, provide project specific details as required, which may not be standardized or illustrated in the IDOT Highway and IEPA design standards.

Traffic Control

Traffic control shall be in accordance with the applicable sections of the Standard Specifications for Road and Bridge Construction, the applicable guidelines contained in the Illinois Manual of Uniform Traffic Control Devices for Streets and Highways.

To ensure a prompt response to incidents involving the integrity of work zone traffic control, the trade contractor shall provide a telephone number where a responsible individual can be contacted 24 hours-a-day.

When the Village Engineer is notified, or determines a traffic control deficiency exists, he/she will notify the trade contractor to correct the deficiency within a specified time. The specified time, which begins upon notification to the trade contractor, will be from ½ hour to 12 hours based upon the urgency of the situation and the nature of the deficiency. The Village Engineer shall be the sole judge.

If the trade contractor fails to correct a deficiency within the specified time, a daily monetary deduction will be imposed for each calendar day or fraction thereof the deficiency exists. The calendar day(s) will begin with notification to the trade contractor and end with the Engineer's acceptance of the correction. The daily monetary deduction will be either $1000.00 or 0.05 percent of the contract value, whichever is greater. For those deficiencies where corrective action was not an option this monetary deduction will be immediate. In addition, if the trade contractor fails to respond, the Village Engineer may correct the deficiency and the cost thereof will be deducted from monies due or which may become due the trade contractor. This corrective action will in no way relieve the trade contractor of his/her contractual requirements or responsibilities.

Illinois Manual of Uniform Traffic Control Devices

Work Zone Quality Standards

Materials Testing and Inspection

Certification: All valves, hydrants, gaskets, piping, brass goods, restraints, streetlights, conduit, underground wiring and catalog cuts proposed to be used shall be approved by the Village Engineer, in writing, prior to constructing. The contractor(s) shall submit certified copies of all reports of tests conducted by independent laboratories before installations of all underground utilities and appurtenances.

The trade contractor shall submit evidence of materials inspection to identify the manufacturer and certifications of the materials incorporated into project. See Project Procedures Guide link for details.

Project Procedures Guide

Sampling frequencies for materials testing and inspection shall adhere to the latest edition of the "Project Procedures Guide" of the Illinois Department of Transportation except as modified by the Village Engineer.

All concrete construction shall be cured and protected in accordance with the "Index Table of Curing and Protection of Concrete Construction" of Article 1020.13 of the Illinois Department of Transportation Standard Specifications.

General Construction Notes:

1. The contractor shall be responsible for providing liability insurance to protect the Village of Matteson, the developer, the Design Engineering Company and the Design Engineer from all suits and claims made against this project, its design or implementation. Each of the above shall be named in the certificate. The minimum insurance requirements as they refer to the indemnification and insurance requirements are as follows:

   A. Public liability bodily insurance of not less than one million dollars ($1,000,000.00) for injuries, including death, to any one person, and subject to the same limit for each person, in an amount of not less than two million ($2,000,000.00) on account of one accident.

   B. Public liability property damage insurance in an amount of not less than five hundred thousand dollars ($500,000.00).

   C. Automobile public liability bodily injury ($1,000,000.00/$2,000,000.00) and

property damage ($2,000,000.00) limits.

D. Contractual insurance of the same limits as required under paragraph (A.).

E. The contractor shall not be allowed to start construction until certificates of Insurance indemnifying the additional insured have been delivered and approved by the Village of Matteson.

2. A preconstruction meeting for the representatives of the Owner, Design Engineer, Village Engineer and Contractor shall be held prior to the commencement of construction. The Contractor shall prepare and submit a Progress Schedule, IDOT form BC 255, to be used by the Village Engineer and others as an aid in determining the progression of improvements and estimated completion. The preconstruction meeting shall be held at a time and location that is agreeable to all parties for the review of the Contractor's Progress Schedule, utility issues, shop drawings, material certification submittals, emergency contacts and to establish a uniform understanding of the contract work.

3. One set of Village of Matteson approved Civil plans must be available on construction sites at all times.

4. All existing pavement to be removed shall be saw cut to full depth along the removal limits.

5. All removed pavements shall be replaced within one week of their removal unless written permission has been granted by the Village Engineer.

6. Disturbed parkways shall be restored with (4") of vegetation sustaining topsoil prior to sodding. The areas to be sodded shall be finished according to Section 212 of the latest edition of the Standard Specifications for Road and Bridge Construction prepared by the Illinois Department of Transportation.

7. The trade contractor shall be responsible for dust control by means acceptable to the Village Engineer. The trade contractor is responsible for debris control and removal for materials deposited onto work sites resulting from construction work.

8. All trees and stumps to be removed shall be removed to a depth of not less than (12 ") below the elevation of the subgrade, the finished earth surface or the ground line.

9. Soil erosion control measures shall be implemented prior to any construction operations.

10. All construction sites shall have a stone ingress/egress road with a minimum (6") depth of an approved coarse aggregate.

11. All portland cement concrete pavements shall be vibrated with a surface pan type vibrator or internal vibrator approved by the Engineer according to 420.11 of the Standard Specifications for Road and Bridge Construction.

    Hand vibrators shall have a non-metallic head for areas containing epoxy coated reinforcement. The head shall be coated by the manufacturer. The hardness of the non-metallic head shall be less than the epoxy coated reinforcement, resulting in no damage to the epoxy coating. Slip-on covers will not be allowed.

12. Prior to the placement of bituminous surface course: all damaged binder course and concrete curb and/or gutter caused by wear, construction traffic or deterioration shall be repaired to the satisfaction of the Village Engineer.

13. All street pavements shall be constructed in accordance with the design criteria for the various classes as established in the "Bureau of Design and Environment Manual" and "Highway Standards" of the State of Illinois Department of Transportation, latest edition.

    Streets shall not be constructed on subgrades having an Illinois Bearing Ratio (I.B.R.) of less than 3.0. If the Soils Report indicates that the support value of the subgrade has a minimum I.B.R. value less than 3.5, or a silt content equal to or greater than ten percent (10%), then an approved non-woven pavement fabric shall be used, along with an open-graded granular base and under drain system connected to the storm sewer as approved by the Village Engineer.

    The Village Engineer or his designee shall require subgrade and sub base compaction testing for roadway improvements. The Village Engineer may approve lime stabilization, when soils are compatible, as determined by a geotechnical engineer. The lime shall be mixed to a minimum depth of sixteen inches (16") and meet the Illinois Department of Transportation's Bureau of Materials and Physical Research guidelines for lime stabilized soil mixtures.

    Sub base material shall not be placed prior to approval of the subgrade by the Village Engineer. Test rolling may be allowed to verify the stability and uniformity of the subgrade in private developments. The subgrade and base course shall be test rolled by the Owner. The Village Engineer shall be notified a minimum of forty-eight (48) hours prior to the scheduled proof roll. Test rolling shall be performed as follows:

    Use a test roller conforming to the following:

    A. A loaded eighteen (18) wheel tractor-trailer truck shall be used and loaded

to a net weight of no less than twenty two (22) tons. An approved scale weight ticket shall be provided.

B. The tire pressure shall be no less than 90 percent of the manufacturer's recommended maximum inflation.

C. Operate equipment at a rate not to exceed 3-5 miles per hour or a comfortable walking pace for the inspector.

D. Proof rolling shall be performed in a manner that all areas are loaded with a minimum of one pass.

E. Rutting up to (¾") is acceptable. Any unstable or deflected subgrade and base courses shall be removed and replaced to the satisfaction of the Village Engineer.

14. Where retaining walls are necessary, a typical detail shall be provided on the civil plans indicating the type, size dimensions and under drain outlet location(s). Additionally, the detail shall specify the design criteria. All retaining walls greater than three feet (3') in height shall be designed and sealed by a registered Illinois Structural Engineer. Additionally, retaining walls greater than three feet (3') in height shall be constructed at a minimum 1:1 slope grading. The ends of the retaining walls shall not exceed a 4:1 transition grading.
15. The existing pavement grades shall be field verified prior to construction. proposed grades shall be adjusted to conform to existing elevation and drainage patterns.

16. The Contractor shall be responsible for providing safe and healthful working conditions throughout the construction the proposed improvements. The minimum safety standards set forth in Public Law 91-596 administered by the Federal Department of Labor Occupational Safety and Health Administration and as further defined in part 1926 of title 29 code of the Federal regulations entitled "Safety and Health Regulations for Construction".

17. The sub divider shall submit three copies of "as built" plans including Global Positioning System (GPS) geometry coordinates to determine the precise location (longitude, latitude and altitude) for all underground utilities and structures. The coordinates shall be integrated with the Village of Matteson's Geographic Information System (GIS), via the Orland Hills reference station (IL KA10 Station), prior to the Village Engineer writing his/her letter recommending acceptance.

Underground Utilities

All storm and sanitary sewers are to be constructed using a laser instrument to maintain line and grade.

SANITARY

1. Metropolitan Water Reclamation District of Greater Chicago Engineering Forms (Detention Schedules, Request for Inspection) may be obtained from the following link.

   MWRDGC Engineering Forms

2. All sanitary sewers including service lines shall be subjected to an air test and applicable deflection tests by the contractor. The Village of Matteson requires an exfiltration test followed by televising. Allowable exfiltration shall not exceed 50 gallons per inch diameter of pipe per mile per day. The contractor shall coordinate all testing so that it can be witnessed by the Village Engineer, Village Public Works Department and the Sanitary District as required.

3. The contractor shall televise all sanitary sewers constructed, by closed circuit television to determine acceptance. Where the tested sewers are found to be unacceptable, the corrections shall be made by the contractor and the televising shall be repeated at the expense of the contractor until satisfactory results are achieved.

   Prior to televising, the contractor shall flush and clean all sewers with water. If the sewers are found not to be clean during televising, the contractor will be required to repeat flushing and cleaning of the sewers, followed by televising at the contractor's expense. Any deflections found to exceed (2") in depth shall be repaired or replaced. All testing shall be incidental to the cost of sanitary sewer.

4. Leakage testing shall be performed on all sanitary manholes in accordance with ASTM C1244-02, the standard test method by negative pressure vacuum test. Vacuum testing of each manhole for sewers (36") and less shall be carried out after final surface restoration has been completed. All lift holes shall be plugged with an approved non-shrink grout. No grout will be placed in the horizontal joints before testing. All pipes entering into the manhole shall be plugged, taking care to securely brace the plugs from being drawn into the manhole. The test head shall be placed at the inside of the frame and the seal inflated in accordance with the manufacturer's recommendation.

   A vacuum of (10") of mercury shall be drawn and the vacuum pump shut off. With the valves closed, the elapsed time shall be measured for the vacuum to

drop to (9”). The manhole shall pass if the time exceeds 60 seconds for a (48”) diameter manhole, 75 seconds for a (60”) manhole and 90 seconds for a (72”) manhole. Where the manhole fails the initial test, necessary repairs shall be made with a non-shrink grout while the vacuum is being drawn. Retesting shall continue until acceptance.

STORM

1. All field tile encountered during site improvement construction shall be connected to the proposed storm sewer or extended to outlet into a proposed drainage way. If this cannot be achieved the field tile shall be repaired with a new pipe of similar diameter and material to the original line and returned to operational condition. Additionally, an “AS-BUILT” record of the location of all field tiles for on-site drain pipe encountered shall be made by the contractor and submitted to the engineer upon completion of the project.

2. The contractor shall televise all storm sewers constructed, by closed circuit television to determine acceptance. Where the tested sewers are found to be unacceptable, the corrections shall by made by the contractor and the televising shall be repeated at the expense of the contractor until satisfactory results are achieved.

   For PVC storm sewers with diameters (24”) or smaller, a mandrel drag shall be used for deflection testing. For PVC storm sewers with diameters over (24”), deflection measurements other than by a mandrel drag shall be used.

   Prior to televising, the contractor shall flush and clean all sewers with water. If the sewers are found not to be clean during televising, the contractor will be required to repeat flushing and cleaning of the sewers, followed by televising at the contractor’s expense. Any pipe found to have a deflection greater than that defined in ASTM D 3034 methodology shall be removed, replaced and retested. All testing shall be considered to be incidental to the cost of storm sewer.

WATER

1. All testing shall be witnessed by the Village Engineer or his designee. Engineering and Regulatory Services 708.283.4948, must be notified forty-eight (48) hours in advance for all inspections; hydrostatic testing, leakage testing, chlorination and water main taps.

2. All temporary and permanent water main shutdowns shall be performed by the Village of Matteson's personnel. A minimum of twenty-four (24) hours notice shall be given to the Public Works Department prior to the scheduled shutdown 708.748.1411.

3. Manholes and "B" boxes incorporated into PCC driveways shall be boxed uniformly with expansion material.

4. All water main valves shall only be operated by the Village of Matteson Department of Public Works with a minimum 48 – hour notification during business days.

5. Fire hydrants, subject to the approval of the Village, shall be equipped with a six-inch auxiliary valve and valve box. All fire hydrants shall be equipped with one 4" steamer connection and one five-inch (5") Harrington Integral Storz fitting port outlet and no hose nozzles.

6. Hydrant caps shall be painted the following colors based on pressure after acceptance by the Village of Matteson.

PRESSURE (psi)	TNEMEC PAINT COLOR	TNEMEC #
0-500	CANDY APPLE RED/SAFETY	06SF
500-1000	TANGERINE ORANGE/SAFETY	04SF
1000-1500	SPEARMINT GREEN/SAFETY	09SF
1500>	TRUE BLUE/SAFETY	11SF
DEAD END MAIN	SILVER BARREL	
HYDRANT COLOR	LEMON YELLOW/SAFETY	

7. All ductile iron water mains shall be wrapped in polyethylene film in accordance with ANSI A21.4 or AWWA C105.

8. All fire hydrants shall be bagged immediately after installation. Bags may be removed after the approved completion of hydrostatic testing and chlorination.

9. The Contractor shall install 4" X 4" X 6' post adjacent to the terminus of the sanitary service, water main service, sanitary manholes, storm manholes, catch basins, inlets and water vaults. The top 2' of said post shall be painted as follows: SANITARY – GREEN, WATER MAIN – BLUE.