



**City of Hilliard, Ohio
Division of Engineering
General Notes Table of Contents**

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GENERAL NOTES

1. The Regulations and Construction Standards of the City of Hilliard, together with the current Construction and Material Specifications of the City of Columbus (COLS) and the Ohio Department of Transportation (ODOT), including all supplements thereto, shall govern all construction items that are a part of this plan unless otherwise noted.
2. The City Engineer or his authorized representative will make inspection of the work. The City Engineer will require at least 48 hours written notice before any work takes place. Failure to request the necessary inspection may result in the rejection of the work and the project.
3. It is the intention of the plans to provide and require a completed project ready for operation. Any work items omitted from the plans, which are clearly necessary for completion of the work, and its appurtenances shall be considered a part of such work, though not directly specified or called for in the plans. This includes, but is not limited to such incidental items as relocation of mailboxes, saw cutting, and removal and/or relocation of signs, sprinklers, or other miscellaneous items.
4. All items of work called for on the plans for which no specific method of payment is provided shall be performed by the Contractor with the cost to be included in the unit price bid for the various related items.
5. The Contractor or Developer shall deposit the total estimated cost for inspections, as determined by the City Engineer, with the City of Hilliard prior to the start of construction.
6. The Contractor shall provide the City of Hilliard, a Surety, acceptable to the City of Hilliard, equal to 100% of construction costs. The Surety shall guarantee the work for one year after acceptance by the City.
7. The City Engineer will not be responsible for means, methods, procedures, techniques, or sequences of construction that are not specified herein. The City Engineer will not be responsible for safety on the work site, or the failure by the contractor to perform work according to plans.
8. Approval of these plans is contingent upon all easements required for construction of the work being secured and submitted to the City of Hilliard for recording prior to commencement of work. No work, which requires an easement, will be allowed to proceed until this is done.
9. The Contractor shall perform all work in accordance with all applicable Federal, State and Local safety requirements including the Occupational Safety and Health Act of 1970. The Contractor shall exercise precaution always for the protection of persons (including employees) and property. It shall also be the sole responsibility of the Contractor to initiate, maintain and supervise all safety requirements, precaution and programs in connection with the work, including the requirements for confined spaces per 29 CFR 1910.146.
10. The Contractor/Developer shall be responsible to obtain all necessary permits.
11. The Contractor shall confine his activities to the project site, existing right-of-ways, temporary and permanent easements, and shall not enter upon other properties without written permission of the owner. If the proposed work requires entering easements upon other properties, the Contractor shall notify the owner(s) in writing no less than 72 hours in advance of the commencement of the

work, and copy the City on all correspondence. Failure to notify affected property owners may subject the Contractor to the penalties associated with the violation of Hilliard City Code, Section 541.05, Criminal Trespass.

12. The Contractor shall carefully preserve benchmarks, property corners, reference points, stakes and other survey reference monuments or markers. In cases of willful or careless destruction, the Contractor shall be responsible. Resetting the markers shall be performed by an Ohio Professional Surveyor as approved by the City Engineer at the Contractor's expense.
13. Property boundaries, including property lines and road right-of-way, are shown from the best information available and are not necessarily complete or correct.
14. The Contractor shall be responsible for having the finished work conform to the lines, grades, elevations and dimensions called for on the drawings and typical sections.
15. Any device shall not be operated at any time in such a manner that the noise created substantially exceeds the noise customarily and necessarily attendant to the reasonable and efficient performance of such equipment. Pursuant to Hilliard City Code, Section 509.08, construction activity is only permitted between the hours of 7:30 a.m. and 7:00 p.m. Any construction activity beyond these hours requires a written request to the Director of Public Service meeting the requirements of Hilliard City Code, Section 509.08(b).
16. Pavements shall be cut in neat, straight lines the full depth of the existing pavement, or as required by the City Engineer.
17. All soil subgrade shall be prepared and compacted in accordance with Item 204 to a depth of 12 inches below the subgrade surface. Subgrade shall be scarified and contain sufficient moisture to meet Item 203 compaction requirements.
18. The Contractor is not permitted to use any reclaimed materials in Item 304.
19. Non-rubber tired vehicles shall not be moved on or across public streets or highways without the written permission of the City Engineer.
20. Tracking or spilling mud, dirt, or debris upon streets, residential or commercial drives, sidewalks or bike paths is prohibited per Hilliard City Code, Section 905.12 and any such occurrence shall be cleaned up immediately by the Contractor. If the Contractor fails to remove said mud, dirt, debris, or spillage, the City of Hilliard reserves the right to remove these materials and clean affected areas, the cost of which shall be paid by the Contractor/Developer per Hilliard City Code, Section 905.13.
21. During construction the Contractor shall provide adequate drainage and proper soil erosion control measures for protection of all adjacent roads and lands, per COLS Item 207.
22. The Contractor shall restore all disturbed areas to equal or better than existed before construction. Drainage ditches or watercourses that are disturbed by construction shall be restored to the grades and cross-sections that existed before construction.

23. The Contractor shall conduct his operations so as to maintain at all times sewer, drain, and ditch flows through existing facilities to remain in place and through existing facilities to be replaced until new facilities are completed and put into service. The Contractor, to a condition satisfactory to the City Engineer, shall restore the flow of all sewers, drains, and other watercourses disturbed during the prosecution of the work.
24. Any modification of the work as shown on these drawings must have prior written approval by the Hilliard City Engineer.
25. The Contractor shall call toll free, the Ohio Utilities Protection Service (OUPS) at 1-800-362-2764 seventy-two (72) hours in advance of the anticipated start of construction, and shall notify all utility companies at least forth-eight (48) hours prior to work in the vicinity of their lines.

<u>Utility</u> Telephone	<u>Owner</u>	<u>Telephone</u>
	Ameritech 150 East Gay Street Columbus, OH 43215	(614) ___-____
Electric	American Electric Power 850 Tech Center Drive Gahanna, OH 43230-6605	(614) ___-____
Gas	Columbia Gas 920 West Goodale Blvd. Columbus, OH 43215	(614) ___-____
Cable Television	Time Warner Cable 1266 Dublin Road P.O. Box 2553 Columbus, OH 43216-2553	(614) ___-____

26. Existing utilities shown on the plan are from the best available records and field investigation and are not necessarily complete or correct. The Contractor is responsible for the investigation, location, support, protection and restoration of all existing utilities and appurtenances whether shown or not.
27. The Contractor shall expose and verify the location and elevation of any utilities within the limits of the proposed conduit path, prior to starting any excavation. In case of conflict, adjustments in location and elevation of the proposed utilities may be made if approved per General Note #24, or arrangements shall be made to move the existing utility to provide adequate clearance.
28. All water lines must be constructed with a minimum ten (10) feet horizontal and one & one-half (1.5) foot vertical separation from all sewer lines. All non-water line utilities must be constructed with a minimum three (3) feet horizontal and one (1) foot vertical separation.
29. Existing drain tiles encountered during construction SHALL be reconnected or connected to the storm sewer system by the Contractor, as approved by the City Engineer. The cost of said work to be included in the unit price bid for the various related items.

30. All trenches within pavement, berm, and shoulder limits shall be backfilled or securely plated during non-working hours.
31. Access to all adjoining properties shall be maintained at all times. Areas with multiple drives shall have at least half of the drives open at all times. Properties with a single access will require staged construction; short-term full closure of a single access will be permitted with the property owner and/or tenant's agreement. Such full closures shall be scheduled and coordinated with the property owner/tenant.
32. At all storm sewer and sanitary sewer crossings, the trench backfill shall consist of Compacted Granular Material, COLS Item 912, between the deeper and shallower pipe. For water line crossings, see water line general note #13.
33. Compacted Granular Material, COLS Item 912 shall consist of natural, broken or crushed stone, crushed gravel, or crushed slag. Synthetic or man-made materials are unacceptable.
34. Backfill for storm sewer and sanitary sewer trenches under pavement and within the right-of-way shall be Compacted Granular Material, COLS Item 912, to the pavement subgrade. Where storm sewer and sanitary sewer trenches cross the pavement, COLS Item 912 shall extend the full width of the right-of-way, and to within 6 inches of finished grade where not under pavement. For backfill for water line trenches under pavement and within the right-of-way, see water line general note #14.
35. Backfill for storm sewer and sanitary sewer trenches parallel to the pavement and within the right-of-way, with the top of the trench 3 feet or closer to the back of curb or edge of pavement or located under a pedestrian pathway, shall be Compacted Granular Material, COLS Item 912, to within 6 inches of finished grade. Backfill for all other storm sewer and sanitary sewer trenches within the right-of-way parallel to the pavement, shall be Compacted Backfill, COLS Item 911, except that compaction shall be to a minimum 95 percent maximum dry density. Prior to construction of the streets, the City Engineer may require soil tests on the backfill. Where test results indicate that the backfill does not meet compaction requirements, the backfill shall be removed, replaced, and re-tested until meeting those requirements. For backfill for water line trenches parallel to the pavement, see water line general note #15.
36. The Contractor shall install street lights at the locations shown on the plans, including all wiring and disconnects and provide a complete operating lighting system that complies with the City of Hilliard Specifications.
37. All areas for underground electric and street lighting electric, telephone, and cable TV installations shall be brought to finished grade, as shown on the grading plan, prior to their being installed. All fill required shall be compacted in accordance with COLS Item 203.12, Condition 1. This work shall be performed as part of this plan and the cost shall be included under Item 203.
38. All seeding shall be applied at the rate of 8 pounds (lb) per 1,000 square feet (SF) and shall use the following seed mixture:

- 40% Titian Tall Fescue
- 40% Tarheel Tall Fescue
- 10% Denim Kentucky Bluegrass
- 10% Renaissance Perennial Rye Grass

In addition to the seed mixture with application rate indicated above, the contractor shall include 2 pounds (lb) per 1,000 square feet (SF) of annual ryegrass to promote quick germination for erosion control.

39. Commercial-grade complete fertilizer of neutral character, consisting of fast, and slow release nitrogen, 50% derived from natural organic sources of urea-form, phosphorous, and potassium and with the following composition shall be applied:

Composition: 13% nitrogen, 26% phosphorous, and 12% potassium by weight.

Fertilizer should be applied at the rate of 6 pounds (lb.) per 1,000 square feet (SF).

40. All signs, landscaping, structures or other appurtenances disturbed or damaged during construction shall be replaced or repaired to the satisfaction of the City Engineer. The Contractor shall pay for the cost of this work.

GENERAL NOTES FOR EROSION CONTROL

SITE DATA

Owner/Developer: Name, address and phone number
Project Manager Name
Plan Designer: Name, address and phone number
Project Manager Name
Development Type: Single family
Multi family
Commercial/Industrial
Site Acreage: Total number of acres
Disturbed Acreage: Number of acres disturbed
Site Vegetation: Existing ground cover of site
Adjacent Areas: How is the site bounded and by what
Receiving Waters: Where does the site drain?
Storm Water Management: What means is being used to control storm water runoff?
Storm Water Quality: What mean are being used to improve water quality?

A copy of the SWP3, the NPDES permit & the Ohio EPA NOI must be kept on site and clearly displayed at all times.

SEQUENCE OF CONSTRUCTION:

Listing of steps in which the erosion protection is to be placed, the site constructed and the erosion protection removed.

MAINTENANCE NOTES

The owner's representative will inspect all erosion and sedimentation control measures weekly and within 24 hours after each rainfall event to assure that the measures are functioning properly. The Owner/Contractor shall keep inspection reports, copies of which shall be provided to the City of Hilliard or Ohio EPA upon request.

The Owner/Developer must maintain a document signed by all contractors and subcontractors involved in the SWP3 implementation. The document must certify that the contractor(s) has read and understands the SWP3. The Owner/Developer is to provide the City of Hilliard with a copy of this document.

Construction Road/Construction Entrance:

Both temporary and permanent roads and parking areas may require periodic top dressing with new gravel. Seeded areas adjacent to the roads and parking areas should be checked periodically to ensure that a vigorous stand of vegetation is maintained. Roadside ditches and other drainage structures should be checked regularly to ensure that they do not become clogged with silt or other debris.

Filter Fabric Fence:

Filter fabric fences and filter barriers shall be inspected immediately after each rainfall and at least daily during prolonged rainfall. Any required repairs shall be made immediately.

Sediment that is collected will be distributed on the protected portion of the site and stabilized. All stockpiles of earth and topsoil will be protected with temporary seeding or other means to prevent erosion.

Should the fabric on a silt fence or filter barrier decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, the fabric shall be replaced promptly.

Sediment deposits should be removed after each storm event. They must be removed when deposits reach approximately one-half (1/2) the height of the barrier.

Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required shall be dressed to conform with the existing grade, prepared and seeded.

Inlet Protection:

All storm sewer inlets shall be protected by sediment traps (inlet protection), which will be maintained and modified as required as construction progresses.

The structure shall be inspected after each rainfall and repairs made as needed.

Sediment shall be removed and the trap restored to its original dimensions when the sediment has accumulated to one-half (1/2) the design of the trap. Removed sediment shall be deposited in a suitable area in such a manner that it will not erode.

Any sediment blocking drainage at inlets that creates standing water on roadways and/or driveways shall be removed immediately.

Inlet protection structures shall be removed and the area stabilized when the remaining drainage area has been properly stabilized.

GENERAL LAND CONSERVATION NOTES

All structural erosion and sediment control practices shall be placed prior to or as the first step in grading for all sites.

Permanent or temporary soil stabilization shall be applied according to the following Ohio EPA criteria:

- Permanent stabilization
 - o Areas that will be dormant for more than a year. Within 7 days of the most recent disturbance.
 - o Areas within 50 ft of a stream and at final grade. Within 2 days of reaching final grade.
 - o Any other areas at final grade. Within 2 days of reaching final grade.

- Temporary stabilization
 - o Areas within 50 ft of a stream and not at final grade. With 2 days of the most recent disturbance if the area will remain idle for more than 21 days.
 - o Any disturbed areas that will be dormant for more than 21 days but less than 1 year, and not within 50 ft of a stream. Within 7 days of the most recent disturbance within the area.
 - o Disturbed areas that will be idle over winter shall be stabilized prior to the onset of winter weather.

Permanent seeding shall be applied at the rate of 8 pounds (lb.) per 1,000 square feet (SF) and consist of the following seed mixture:

40% Titian Tall Fescue
40% Tarheel Tall Fescue
10% Denim Kentucky Bluegrass
10% Renaissance Perennial Rye Grass

Fertilizer for permanent seeding shall be a commercial-grade complete fertilizer of neutral character, consisting of fast, and slow release nitrogen, 50% derived from natural organic sources of urea-form, phosphorous, and potassium and shall meet the following composition:

13% nitrogen, 26% phosphorous, and 12% potassium by weight

Fertilizer shall be applied at the rate of 6 pounds (lb.) per 1,000 square feet (SF).

All storm sewer, sanitary sewer, water main and service trenches shall be seeded and mulched within 14 days after backfill if installation is through stabilized areas. No more than 250 feet of trench will be open at any one time.

Electrical power, telephone, cable television and gas supply trenches shall be compacted, seeded and mulched within 14 days after backfill if installation is through stabilized areas.

All temporary diversions, sediment basin embankments and earth stockpiles shall be seeded and mulched for temporary vegetative cover within 7 days after grading.

Any disturbed area not stabilized with seeding, sodding, paving or built upon by November 1st, or areas disturbed after that date, shall be mulched immediately with hydro mulch at the rate of one (1) ton per acre and over-seeded by April 15th.

At the completion of construction, all denuded areas shall be stabilized and temporary sedimentation & erosion controls shall be removed once the site has been stabilized.

GENERAL NOTES FOR MAINTENANCE OF TRAFFIC

In addition to the requirements of Item 614 Maintaining Traffic, the following shall apply:

1. All traffic control devices used for maintenance of traffic shall be furnished, erected, maintained, and removed by the Contractor in accordance with the "Ohio Manual of Uniform Traffic Control Devices for Construction and Maintenance Operations" (OMUTCD) (Current Edition) or the "Temporary Traffic Control Manual" (TTCM), copies of which are available from the Ohio Department of Transportation, Bureau of Traffic, 1980 West Broad Street, Columbus, Ohio, 43223 or online at www.dot.state.us/omutcd.
2. Traffic control for any work that restricts traffic shall be erected in advance and shall be reviewed by the office of the City Engineer at least 10 days prior to the start of work. The office of the City Engineer shall be notified at least 48 hours in advance of the road closure and implementation of the maintenance of traffic plan. All maintenance of traffic signs shall be covered or removed from view of traffic when they are not applicable, as determined by the engineer.
3. No lane closure shall be implemented during the hours of 7:00 a.m. to 9:00 a.m. or 3:30 p.m. to 6:00 p.m on school days. On non-school days, no lane closure shall be implemented during the hours of 7:00 am to 8:30 am or 4:00 pm to 6:00 pm. All other hours, the Contractor shall maintain traffic according to applicable guidelines established in the ODOT standard construction drawings and in the OMUTCD. In situations where one-lane, two-way operations must be maintained, the maintenance of traffic shall be in accordance with MT-97.10 and MT-97.11 of the ODOT standard construction drawings and Figure 6H-10 of the OMUTCD. Uniformed, off-duty City of Hilliard police officers shall replace the flagmen on these pages, and the officers shall be present whenever one-lane, two-way operation is in effect.
4. All traffic lanes shall be fully open to traffic at all times on _____.
5. One-way ___ lane traffic shall be maintained at all times on _____.
6. Two-way, one-lane traffic shall be maintained at all times, in accordance with Figure 6H-10 of the Ohio Manual of Uniform Traffic Control Devices on _____.
7. Two-way, two-lane (one lane in each direction) traffic shall be maintained at all times on _____ during the hours of 7:00 a.m. to 9:00 a.m. and 3:30 p.m. to 6:00 p.m.
8. _____ may be closed for a maximum of _____ hour(s)/day(s) between the hours of _____ A.M./P.M. and _____ A.M./P.M. in accordance with page 6H-20 of the Ohio Manual of Uniform Traffic Control Devices. The Contractor shall be responsible for any necessary signing.
9. A flashing arrow panel (48" x 96" – Type "C") shall be used for lane closures in accordance with the Ohio Manual of Uniform Traffic Control Devices.
10. Steady burning, Type "C" lights shall be required on all barricades, drums, and similar traffic control devices in use at night. Cones are not approved for use at night.

11. The roadway shall not be opened to traffic until permanent traffic controls are in place, or until temporary traffic controls, approved by the City Engineer, are installed. The Contractor assumes all liability for the premature removal of temporary traffic controls.
12. The Contractor shall maintain all permanent traffic controls not in conflict with the temporary traffic controls throughout this project. Permanent traffic controls may be temporarily relocated, as approved by the City Engineer. The Contractor shall assume liability for missing, damaged and improperly placed signs.
13. It is the policy of the Hilliard Police Department (HPD - 876-7321) to provide Special Duty Officers for all projects in the City of Hilliard, when required or requested. However, to comply with this policy and allow appropriate time for scheduling, they require a forty-eight (48) hour advance notification. If they are unable to fill the request, they will give the appropriate contractor twenty-four (24) hours notice, so they may make alternate arrangements. In the event of cancellation, they require at least two (2) hours notification, otherwise the contractor will be obligated to pay three (3) hours show-up time at the Special Duty rate. A police officer can be furnished at no charge for short durations of fifteen (15) minutes or less with a two (2) hour prior notice to the HPD and the Engineer.
14. If, in the opinion of the City Engineer or Police, the Contractor is not providing proper maintenance of traffic, the City Engineer will install the appropriate traffic control devices, and off duty police officers will be assigned to the Project, all at the Contractor's expense.

GENERAL NOTES FOR SANITARY SEWERS

1. Any modification of the work as shown on these drawings must have prior written approval by the Hilliard City engineer and the Administrator, Division of Sewerage and Drainage, City of Columbus.
2. Roof drains, foundation drains and other clean water connections to the sanitary sewer system are prohibited.
3. Temporary bulkheads shall be placed where indicated on the plans and shall remain in place until the City Engineer directs removal.
4. All A.B.S. composite wall sewer pipe wye fittings shall have a two-foot (minimum) service extension installed prior to the service being capped and backfill being placed over the mainline sewer.
5. Service risers, COLS Item 914, shall be installed where depths from the wyes to the existing or proposed ground elevation exceed 10 feet. The tops of risers shall be 9 feet +/- below the existing or proposed surface elevation. Whichever is higher.
6. The Contractor shall furnish and place as directed, approved wye poles made of 2"x2" lumber at all wye locations, ends of services, or at the end of each riser where risers are required. Wye poles shall be visible for each wye before acceptance by the City. The cost of these poles shall be included in the price bid for the various sewer items.
7. All PVC sewer lines shall be deflection tested after installation, in accordance with the requirements of Item 901 of the City of Columbus, Construction and Material Specifications, Current Edition, and any supplements thereto.
8. Upon completion of construction for each phase of sanitary sewer work, the Developer, through its Engineer, shall furnish the City Engineer a tabulation of structure numbers, the elevation of the top of casting as proposed on the plans, and the elevation of the top of casting, as built. The City Engineer will determine adjustments, if any, that are necessary and all necessary adjustments shall be done prior to submittal of "as built" drawings.
9. The original tracings, revised "as built", and two sets of prints shall be given to the City prior to any tap permits being issued, or acceptance by the City for the one year maintenance period. The information shown on the "as built" plans shall be from field measurements. Wye locations and the distance between manholes, for each section of sewer, shall be shown as measured from the nearest downstream manhole. Top of casting elevations for all manholes and any variance in the horizontal location of the sewer from that shown on the approved plans, shall be shown.
10. After sewers have been cleaned, passed all tests, and before acceptance, all main line sewers shall be video taped on CD or DVD with a notation of manhole numbers, an accurate distance between manholes and location of all wye branches from the nearest downstream manhole shall be shown on the tapes. Copies of the tapes shall be given to the City Engineer prior to acceptance of the sewers.

GENERAL NOTES FOR STORM SEWERS

1. Any modification of the work as shown on these drawings must have prior written approval by the Hilliard City Engineer.
2. The proposed sanitary sewers and services are to be constructed under plan P_____ prior to street improvements.
3. Before the Contractor starts any work on the project and again before final acceptance of any work, representatives of the City and the Contractor shall make an inspection of all existing sewers that are to remain in service and which may be affected by the work. The condition of the existing conduits and their appurtenances shall be determined from field observations. The City shall keep records of the inspection in writing.
4. All existing sewers inspected initially by the above mentioned parties shall be maintained and left in a condition reasonably comparable to that determined by the original inspection. The Contractor, to the satisfaction of the City Engineer, shall correct any change in the condition resulting from the Contractor's operations.
5. Payment for all operations described above shall be included in the contract price for the pertinent contract items.
6. All storm sewers constructed under this plan shall meet the requirements of COLS Item 901, with a minimum inside diameter of 12 inches.
7. All new conduits, catch basins and manholes constructed, as a part of the project shall be free of all foreign matter and in a cleaned condition before the City will accept the project.
8. All inlets, catch basins, and manholes shall be channelized.
9. Roadway underdrains shall be discharged into the nearest storm structure available along the line of flow unless shown otherwise on the plans.
10. The Contractor shall adjust all existing and proposed castings to match the surrounding finished grade. The cost of all casting adjustments shall be included in the various sewer items.
11. All drainage swales along rear lot lines, shown on the grading plan, shall be constructed to finished grade as part of this plan and the cost shall be included under COLS Item 203.
12. All storm water detention/retention areas shown on the grading plan shall be constructed to finished grade per COLS Item 203, hydro-seeded, and hydro-mulched per COLS Item 659, as part of this plan. The cost shall be included as a Lump Sum under Special, Detention/Retention Area Construction.
13. The Contractor shall provide two roof drain openings in the curb for each lot, located as directed by the Owner.

14. All catch basins are to be equipped with East Jordan #5110, Type M3 grates, or approved equal.
15. Upon completion of construction for each phase of storm sewer work, the Developer, through its Engineer, shall furnish the City Engineer a tabulation of structure numbers, the elevation of the top of casting as proposed on the plans, and the elevation of the top of casting, as built. Further, a tabulation of stationing and top of curb elevation, as built, at the ends of all streets, that are to be extended in the future, shall be submitted. The City Engineer will determine adjustments, if any, that are necessary and all necessary adjustments shall be done prior to submittal of “as built” drawings.
16. The original tracings, revised “as built”, and two sets of prints shall be given to the City prior to any tap permits being issued, or acceptance by the City for the one year maintenance period. The information shown on the “as built” plans shall be from field measurements. Water services and main line valves shall be located by street stationing. Top of casting elevations for all storm sewer structures and any variance in the horizontal location of the utilities from that shown on the approved plans, shall be shown.

GENERAL NOTES FOR STREET LIGHTING

1. The design and layout for street lights, underground wiring and other pertinent equipment to be used shall be in conformance with guidelines issued by the Illuminating Engineering Society of North America (IESNA), stamped by a registered professional engineer and approved by the City Engineer.
2. All electric work performed under these specifications shall be in accordance with the latest edition of the National Electric Code (NEC), which is published by the National Fire Protection Association and is a United States standard for the safe installation of electrical wiring and equipment, and all state or local codes that may apply, including but not limited to Columbus Item 1000 and ODOT Item 625.
3. Metering of electricity for street lighting is not required. Street lighting designs shall be coordinated with the electrical energy supplier by the design engineer; the type of lighting, including the use of all advanced lighting technologies, shall be clearly defined in order to estimate energy use. The number and format of record plans to be submitted shall be determined by the supplier of electric energy. All service enclosures along public streets shall be pad-mounted and screened; aboveground pole or post-mounted assemblies are not permitted.
4. Lighting conduit parallel to the street shall be located per Hilliard Standard Drawing SL-6. All other lighting conduit shall be located two (2) feet minimum off side and rear lot lines in a five (5) foot minimum easement. Minimum depth for conduit is two (2) feet. Electrical warning tape (red) shall be provided one (1) foot over top of street light cable and conduit.
5. The Contractor/Owner/Developer shall submit manufacturer's specification sheets to the City Engineer for approval prior to installation. Manufacturer's specification sheets are required for the following items:
 - Luminaire
 - Lamps
 - Pole
 - Photocell
 - Service Enclosure
 - Pull box
 - Conduit
 - Cable
 - Hand holes
 - Controls
6. For each new project where street light poles are installed in public right-of-way, additional poles(s), luminaire(s), and all incidental hardware, shall be provided to the City of Hilliard Service Department for maintenance purposes. The required number of spares is based on a ratio of 1 spare for each 10 new poles with a minimum of one complete assembly (pole, luminaire, and all incidental hardware) for all systems of four (4) or more poles. If fewer than 4 poles are installed, this requirement is waived. The following are the number of additional poles, luminaires, and incidental hardware that are required:

<u>Poles Installed</u>	<u>Additional Poles, Luminaires, & Hardware to be delivered to City</u>
0 – 3	0
4 – 10	1
11 - 20	2
21 - 30	3
31 - 40	4
more than 40	5

These additional “material only” items shall be clearly defined as a separate line item in the general summary or quantities. All spare equipment shall be delivered to the City of Hilliard Service Department prior to acceptance of the project. A signed itemized receipt showing the items and quantities delivered to the City shall be provided by the contractor to the inspector prior to acceptance and/or payment of materials.

7. The Contractor/Owner/Developer shall obtain all permits required by the Public Authority having jurisdiction, including a Hilliard right-of-way permit. All easements required for construction shall be secured and submitted to the City of Hilliard for recording prior to commencement of work; no work which requires an easement shall proceed until this is complete.
8. The City Engineer or his authorized representative shall perform inspection of the work. The City Engineer will require at least forty-eight (48) hours’ notice before any work takes place. No underground cable shall be backfilled until inspected. Failure to request the necessary inspection may result in the rejection of the work and the project.
9. The Contractor/Owner/Developer shall conduct Electrical Tests per COLS Item 1000.18 and ODOT item 625.19.
10. The Contractor/Owner/Developer shall provide one paper copy and one electronic (PDF) copy of the following items:
 - Final “as-built” drawings for the lighting system
 - An Operations & Maintenance (O&M) Manual (paper copy in a 3-ring binder) for all electrical items provided in the Project
11. Following installation of the lighting system, the Contractor/Owner/Developer shall request final inspection by the City of Hilliard Operations Division. Within one week, the final inspection will be conducted, and a final punch list will be issued. Upon completion of all punch list items, the City, or their representative, will officially accept the lighting system in writing. This date establishes the beginning of the warranty period.
12. The warranty period for all lighting systems, materials, and/or other electric components is one (1) year unless otherwise extended in the plans. Any poles, luminaires or other equipment that are damaged as part of construction activities are the sole responsibility of the Developer to repair and/or replace, independent of the status of the warranty period.

GENERAL NOTES FOR TRAFFIC CONTROL

1. All traffic control devices shall be furnished & erected by the Contractor in accordance with the "Ohio Manual of Uniform Traffic Control Devices" (OMUTCD) (Current Edition), copies of which are available from the Ohio Department of Transportation, Bureau of Traffic, 1980 West Broad Street, Columbus, Ohio, 43223 or online at www.dot.state.us/omutcd.
2. All street name signs, supports, and anchors shall be per Hilliard Standard Construction Drawing TC-1. All Type D and Type E sign installations shall include an Omni Anchor (manufactured by MD Solutions, Inc) or approved equal. Size of anchor shall be per manufacturer's recommendations based on sign loading and soil conditions.
3. All regulatory, warning, and guide signs, supports, and anchors shall be per Hilliard Standard Construction Drawing TC-2. All signs installed in concrete, brick or paved areas shall include a PVC box out for the post anchor.
4. Critical signs (i.e. stop signs, yield signs, speed limit signs, and any crosswalk signs/beacons) shall be field verified to ensure good visibility prior to acceptance. Any critical signs blocked by trees, other signs, light poles, or any other obstructions shall be adjusted, either horizontally, vertically, or longitudinally, by the Contractor at no additional cost, as directed by the Engineer.
5. Pavement marking shall be Item 644 Thermoplastic unless otherwise indicated in the plans. Line widths, sizes, or unique designs shall be designated in the plans.

GENERAL NOTES FOR WATER LINES

1. City of Columbus water division personnel are to operate all water valves.
2. Any modification of the work as shown on these drawings must have prior written approval by the Hilliard City Engineer and the Administrator, Division of Water, City of Columbus.
3. All water line materials and installations shall be in accordance with the current rules and regulations of the City of Columbus, Division of Water.
4. No person shall begin construction or installation of a public water main until plans have been approved by the State of Ohio Environmental Protection Agency (OEPA).
5. Approval of these plans is contingent upon the City of Hilliard securing an easement that will hold the City of Columbus harmless for damages resulting from maintenance work and/or water damages that could be associated with this water line. Prior to approval of the plan by the Administrator, Division of Water, all easements required for water main construction shall be secured and recorded.
6. All water meters associated with this project shall be installed inside of the proposed structure unless a meter pit is approved by the Administrator of the Division of Water. All meter pits must be approved prior to the issuing of any service permits and must conform to Standard Drawing L-7103 for 5/8 inch through 1 inch meters or L-6317 A, B, C, D, & E for 1-1/2 inch or larger meters.
7. Water lines shall be laid with a minimum of 4 feet 0 inches from the finished surface grade to the top of the water line.
8. All bends, joints deflections and fittings shall be backed with concrete per City of Columbus standards.
9. All water lines shall maintain at least ten (10) feet horizontal and one & one-half (1.5) feet vertical separation from all sanitary or storm sewer lines.
10. All ductile iron water mains shall be wrapped with tube style 8 mil linear low density polyethylene (LLDPE) film in accordance with Standard Drawings L-1003 and L-1004.
11. In case of conflict in grade between water lines and sewers, the water line shall be lowered during construction. Water lines shall be deflected around structures without the use of special fittings, where possible, without exceeding the manufacture's allowable deflection.
12. If the top of the operating nut of a valve is more than 36 inches below finished grade, an extension stem shall be furnished to bring the top of the operating nut to within 24 inches of finished grade.
13. At all points of crossing of water lines and sewers, the trench backfill shall be Compacted Granular Material per COLS Item 801.11, between the deeper and shallower pipe.

14. Backfill for water line trenches under pavement and within the right-of-way shall be Compacted Granular Material, COLS Item 801.11, to the pavement subgrade. Where water line trenches cross the pavement, COLS Item 801.11 shall extend the full width of the right-of-way, and to within 6 inches of finished grade where not under pavement.
15. Backfill for water line trenches parallel to the pavement and within the right-of-way, with the top of the trench 3 feet or closer to the back of curb or edge of pavement or located under a pedestrian pathway, shall be Compacted Granular Material, COLS Item 801.11, to within 6 inches of finished grade. Backfill for all other water line trenches within the right-of-way parallel to the pavement, shall be Compacted Backfill, COLS Item 801.12. Prior to construction of the streets, the City Engineer may require soil tests on the backfill. Where test results indicate that the backfill does not meet compaction requirements, the backfill shall be removed, replaced, and re-tested until meeting those requirements.
16. Water service boxes shall be located between the curb and proposed or existing sidewalk, 1 foot from the edge of the proposed or existing sidewalk. When no sidewalk is present or proposed, water service boxes shall be located 2' inside the right-of-way or easement line. Refer to COLS Standard Drawing L-9901.
17. Fire hydrants shall be installed per COLS Item 809, and shall meet City of Hilliard and Norwich Township Fire Department Hydrant Specifications included in this plan.
18. All water lines shall be cleaned and flushed in accordance with COLS Item 801.13 prior to hydrostatic testing. Any water main 12 inches and larger must also be properly pigged prior to hydrostatic testing.
19. The Contractor shall test all water lines in accordance with COLS Item 801.14, with the following exception: 150 psi pressure shall be maintained for at least 2 hours, regardless of the amount of leakage. Testing shall be done under the supervision of the City Engineer or his authorized representative at the Contractor's expense.
20. All water lines shall be disinfected in accordance with COLS Item 801.15. Special attention is directed to applicable sections of A.W.W.A. C-651, particularly for flushing (Section 5) and for chlorinating valves and for fire hydrants (Section 7). Cost of work is to be included in price bid for Item 801.
21. When water lines are ready for disinfecting, the Developer's Engineer shall submit four (4) sets of "As Built" plans (full size sheets), an Excel file of the as-built water line coordinates shown on the plan, two (2) sets of the completed Water Service Reports for each water service constructed, and a letter stating that the water lines have been pressure tested and need to be disinfected, to the Hilliard City Engineer. The City of Hilliard will, in turn, submit a written request for chlorination, three (3) sets of "as-built" plans (full size sheets only), the as-built survey coordinates, the Water Service Reports, and the results of the pressure test to the City of Columbus, Division of Water. The Contractor shall be solely responsible for all costs associated with the disinfecting of all water lines constructed under this plan.
22. Survey coordinates shall be obtained for the completed water main construction and shall include all valves, tees, crosses, bends, deflections, plugs, reducers, tapping sleeves, blow offs, chlorination taps, fire hydrants, air releases, curb stops, casing pipe termini, and other fittings.

Additional survey coordinates are required on the water main every 500 feet where no fitting or other water main structure is being installed within that length of the improvement. "Survey Coordinates" include all material, equipment, and labor necessary to obtain horizontal and vertical (northing, easting, and elevation) survey coordinates for the water main improvements.

23. All survey coordinates shall be referenced to the applicable County Engineer's Monuments, and shall be based on the North American Datum of 1983 (NAD 83) with the (NSRS2007) adjustment, with further reference made to the Ohio State Plane South Coordinate System, South Zone, with elevations based upon North American Vertical Datum of 1988 (NAVD 88). All coordinates (Northing, Easting, Elevation) shall be referenced to the nearest hundredth (N xxxxxxx.xx, E xxxxxxx.xx, Elevation xxx.xx). All survey coordinates shall be accurate to within 1.0 foot or less horizontal and one-tenth foot (0.10) or less vertical.
24. The survey coordinates shall be documented to the Hilliard City Engineer in digital spreadsheet format and shall include the applicable item, station, northing, easting, and elevation. Survey coordinates shall be submitted to the Hilliard City Engineer on a bi-weekly basis. Survey coordinates shall also be required to be submitted to the Division of Water as part of the request for chlorination submitted by the Hilliard City Engineer.
25. No service connection permits shall be issued or connections made to any service taps until water lines have been disinfected by the City of Columbus, Division of Water. When a 3-inch or larger tap is to occur on a 20-inch or larger water main, the Contractor shall notify the Division of Water Operations Control Center at (614) 645-7168 twenty four (24) hours in advance of performing the tap.
26. A tap permit for each water service must be obtained from the City of Hilliard and the City of Columbus, Division of Water prior to making any taps into the water line.
27. The proposed water line shall be located a minimum distance of twenty (20) feet away from any structure, overhang, or footer.
28. On dead end lines in cul-de-sacs, the final two 3/4 inch service taps shall be installed within two (2) feet of the end of the main.
29. All taps made in 2-inch pipe are to be made with Ford Service Saddle, Model S70-203 or approved equal.
30. Magnetic locator tape shall be placed in the trench (6 inches +/-) above all PVC water lines.
31. The Contractor shall imprint a "W", three inches high, in the curb at each water service location.
32. The City of Columbus, Division of Water will be responsible for the repair and maintenance of the water line within the easement area. Backfilling of any excavation caused by the maintenance, repair, or replacement of said water line shall be such that the surface is restored to its former elevation as near as is reasonably possible.
33. The Contractor shall give written notice to all affected property owners at least one (1) working day but not more than three (3) working days prior to any temporary interruption of

water service. Interruption of water service shall be held to a minimum and shall be approved by the City Engineer.

FIRE HYDRANT SPECIFICATIONS

1. Fire hydrants shall be post type, made of cast iron, and shall conform in all respects to the “American Water Works Association Standard for Dry-Barrel Fire Hydrants”, ANSI/AWWA C502-85, except where modified herein.
2. Main valve shall be compression type opening against the pressure and closing with the pressure. Main valve seat shall be made of bronze and shall be designed to allow easy replacement in the field. The design shall eliminate the contact of dissimilar metals in areas of the hydrant that are subject to the continuous presence of moisture.
3. All internal working parts shall be removable from the top of the hydrant, with simple tools, and without disturbing the ground line joint or the upper section of the hydrant barrel.
4. Breakable traffic features shall be provided, and shall include a breakable safety flange on the ground line joint, and a breakable coupling on the main valve stem at the ground line joint. The design shall assure that on heavy impact, the upper and lower sections of the hydrant will break apart cleanly without damage to any other hydrant parts. The ground line joint shall be designed to allow the nozzle section of the hydrant to be rotated 360 degrees.
5. Nozzles shall be bronze and replaceable, designed for easy removal from the hydrant barrel, in the field, with simple tools.
6. Main valve opening shall be 4-1/2 inches in diameter for use in residential areas and 5-1/4 inches in diameter for use in commercial areas & multi-family developments as defined by the Ohio Building Code.
7. Two (2) hose nozzles, 2-1/2 inches inside diameter with National Standard threads.
8. One (1) pumper nozzle, 4-1/2 inches inside diameter with National Standard threads.
9. All fire hydrants installed in the City of Hilliard shall be fitted with a 5” Storz connection with National Standard thread in accordance with Norwich Township Fire Department standards.
10. Main valve shall open counterclockwise (Left).
11. Operating nut shall be pentagon shaped, measuring 1-1/2 inches from point to opposite flat.
12. Bury shall be five (5) feet unless otherwise specified.
13. Draining devices shall be eliminated or the drain holes plugged.
14. The shoe shall have a six (6) inch diameter inlet and a mechanical joint connection with accessories.
15. For publicly maintained hydrants (located in public street right-of-way or an abutting easement), the color of the barrel and caps shall be Navy Blue, Rust-Oleum #7723830 or approved equal, and the color of the bonnet shall be white.

16. For privately maintained hydrants (located on private property), the color of the barrel and caps shall be red, and the color of the bonnet shall be white.
17. The Contractor/Developer shall submit detailed drawings and specifications for the hydrant to the Service Director for approval, prior to installation.
18. Where four (4) or more fire hydrants are to be installed on the project, or any phase of the project, the Contractor, Developer, or Owner shall furnish and deliver to the City of Hilliard, at no cost to the City, one (1) complete fire hydrant. When more than ten (10) fire hydrants are installed, two (2) complete fire hydrants shall be furnished and delivered to the City of Hilliard, at no cost to the City. Each fire hydrant supplied to the City shall be complete with accessories, including operating wrench, special wrenches and tools, and lubricants necessary for the operation, maintenance and repair of fire hydrants.
19. Fire hydrants approved for use in the City of Hilliard are the American Darling "Mark 73" or "B-84-B", the Clow "Medallion", and the Mueller "Centurion".