

CHAPTER 2

CONSTRUCTION PLAN REQUIREMENTS AND DESIGN STANDARDS

2.0 GENERAL

- 2.0.1 All plans submitted for approval shall be on "D" size (36"x24") paper. If additional sheets are required, match lines shall be used. If entire project cannot fit on a single sheet, all plan sheets must include a location map indicating location of information on said sheet.
- 2.0.2 All plans shall be drawn to a scale, 1" = 40', horizontal and 1" = 4' or 1" = 5' vertical. Some exceptions may be allowed. The horizontal lines in the profile view shall reflect the vertical scale chosen i.e.: 1" = 4' or 1" = 5'.
- 2.0.3 All plans shall use National Geodetic Vertical Datum of 1929 (NGVD-29) datum in establishing benchmarks and elevations. Show bench marks on plans.
- 2.0.4 **Standard** title blocks (**See Figure No. 1 as an example**) are required on each plan page and shall include:
- A. "Drawn By"
 - B. "Designed By"
 - C. "Checked By"
 - D. "Date"
 - E. "Scale"
 - F. "Revised"
 - G. "Project Name"
 - H. "Location of Project"
 - I. "Type of Plan"
- 2.0.5 All plan sheets shall be stamped by the design engineer. The design engineer shall bear the responsibility for the coordination of submitting all development plans for review.
- 2.0.6 A cover sheet is required for the plan set. The cover sheet shall include a 1" = 200' scale drawing of the project area that shows the locations of the proposed utility improvements. All plan sheets shall be indexed on the cover sheet.
- 2.0.7 Each cover sheet shall show the locations, elevations and descriptions of all the project benchmarks as established by the project surveyor.

- 2.0.8 Each plan sheet shall show a north arrow and include a block for approval by City Engineer and date of approval.
- 2.0.9 Easements as required by the City of Franklin shall be shown on each appropriate plan sheet. Label easement purpose and dimensions. (All easements shall also require separate documents.)
- 2.0.10 All plans done without computer aided drafting shall have Kroy/Leroy type lettering. Some hand lettering will be allowed as long as it is of good quality and legible. Poorly hand lettered plans will be rejected.

The following pen sizes shall be used for the following items:

Pen Size	Plotter Point Size	Items
#0/.35mm	3 (fine)	Leaders Dimension Lines Property Lines Easement Lines Edge of Roadways Centerline of Roadways Flange Lines of Curbs Section Lines Existing Structures Existing Utility Lines Existing Laterals General Information Lettering (except street name)
#2/.50mm	4	Right-of-Way Line Proposed Centerline of Road Grade Line
#3/.80mm	.8	Street Names Proposed Sewer, Water, Storm Sewer and Laterals

The following lettering sizes shall be used for the following items:

Lettering Size	Item
1/4" Height	Street Names
1/8" Height	All lettering other than street names

- 2.0.11 Two (2) sets of all preliminary plans shall be submitted for initial review and **comments**. One (1) set shall be returned to the project engineer showing corrections. Plans requiring state approval, along with support documents, shall be processed through the City. All necessary reports (i.e. hydrology, drainage system, system plans and computations shall be

submitted with the plans to facilitate final construction plan approval).

- 2.0.12 Four (4) sets of approved construction plans which meet all the requirements shall be submitted at least three working days prior to a **project** preconstruction meeting. These construction plans shall include and be ordered as follows:
- A. Cover Sheet
 - B. Sanitary Sewer Plans
 - C. Water Main **Plans**
 - D. Storm Sewer **Plans** (and **Lateral** Collection System Plans, if required)
 - E. Paving Plans
 - F. Master Grading/Drainage Plans/**Storm Management Plans**
 - G. Erosion Control Plans
 - H. Detail Sheet
- 2.0.13 On plan-profile drawings, the plan and profile views shall be in vertical alignment. The profile is normally shown on **lower** portion and plan view on **upper** portion of plan-profile sheets.
- 2.0.14 Stationing shall be of 100' intervals from south to north and west to east and shall be shown on both plan and profile areas.
- 2.0.15 The master grading plan shall be the first plan submitted for approval. No utility plans will be approved prior to final approval of the master grading plan.
- 2.0.16 It shall be the responsibility of the Design Engineer to submit to each **reviewing agency or utility company** the number of plans required by that **agency/company** for review. These plan submittals shall allow sufficient time for review **and approval** prior to the project preconstruction meeting. A copy of the letter of transmittal to all **agencies** utilities shall be sent to the City Engineer.
- 2.0.17 The designer shall include a list of specific materials required for each utility item found in Chapters 3,4,5,6 and 10 as preparation of project plans and these specifications. This list shall be shown on each plan sheet of materials.
- 2.0.18 Existing survey monuments shall be shown on each plan within a designated construction area.
- 2.0.19 **Horizontal separation of utilities should allow for 10 feet measured center to center. As approved by the City Engineer a horizontal separation of 8 feet may be allowed. Vertical separation of a sewer crossing under**

a water main shall achieve at least 18 inches between the top of the sewer and the bottom of the water main.

2.1 SANITARY SEWER PLANS (Sanitary Sewer & Water Main are normally shown on same plan sheet)

2.1.1 Each sanitary sewer plan and profile sheet shall show the following:

A. Plan View

1. Right-of-way and its width.
2. Edge of pavement or face and back of curb.
3. All easement limits and widths.
4. Proposed and existing water main, laterals and hydrants (dashed)
5. Proposed and existing sanitary sewer, manholes and laterals.
6. Dimensions showing offset from right-of-way to sanitary sewer and separation between the sanitary sewer and other utilities.
7. Distance between manholes and between each sanitary sewer lateral.
8. Length of each sanitary sewer lateral and length **(height)** of any lateral risers.
9. Size of proposed sanitary sewer.
10. Lot lines, lot and block numbers and frontages.
11. Name of each roadway and any intersecting roadways in which the sanitary sewer will be located.
12. An estimate of quantities to be used in the construction of the sanitary sewer.
13. A note warning that underground utilities should be staked out by "Diggers Hotline."
14. A north arrow.
15. The stamp and signature of the design engineer.
16. A title block conforming to Section 2.0.4
17. All culvert locations (proposed and existing))
18. Manholes shall be placed at intervals of 350' or less, unless otherwise approved by the City Engineer.
19. Numbered manholes
20. Material and size of any existing sewer.
21. Proposed or existing storm sewer and appurtenances (dashed).
22. All required standard notes, MMSD notes or other additional statements.
23. All improvements are stationed.
24. All obstructions/appurtenances located within the project limits including (but not limited to) trees, signs, utilities, fences, light poles, structures, etc.
25. Sanitary sewers shall be located at centerline of streets. Depth of sanitary sewers should be such that they can serve

basements by gravity. The Designer shall consider sanitary sewer depth where extra deep basements may be built or where increased building set backs will require longer laterals.

26. Designer shall show invert elevation of sanitary sewer lateral at the right-of-way line.
27. Backfill compaction requirements shall be given on the plans and/or project specifications.
28. **The City of Franklin as part of the Milwaukee Metropolitan Sewerage District must comply with District design regulations.**

The District is presently using flow allocation values that apply to the 2020 Facilities Plan. These values are to be used for flow allocation until the next facilities plan (2050) is approved.

The design engineer shall develop flow allocations for the proposed development and for the undeveloped lands abutting the sewer extension to the proposed development. The City Engineer at the time of design will provide necessary factors for the development of flow allocations.

29. Where concrete sidewalk is proposed, the sanitary sewer lateral shall **be backfilled in gravel backfill and below the walk and** extend 5 ft. into the property for those lots fronting the sidewalk.

B. Profile View

1. Existing and proposed surface profiles over the sanitary sewer.
2. The proposed sanitary sewer and manholes.
3. Manhole numbers, rim and invert elevations.
4. Slope and size of sanitary sewer between each manhole (to **four** decimal places).
5. Invert manholes shall show a minimum elevation difference of 0.10 ft. between **straight flow** incoming and outgoing pipes. **Through a bend > 15° shall have a minimum invert drop of 0.25ft.**
6. Mainline sewer shall be designed to a minimum slope of .0045 ft./ft. for 8" PVC. Larger pipes shall have an equivalent factor of safety for the required minimum slopes **(for a velocity of no less than 2.0 feet per second**

- when flowing full).** Main line sewer slope shall not exceed .05ft./ft.
7. The proposed water main and its size and material.
 8. Culverts, inverts and sizes (proposed and existing).
 9. Limits of gravel, stone, spoil and/or slurry backfill.
 10. Distance between manholes.
 11. Material, elevations and size of any existing sewer to be connections.
 12. Sewer pipe strength and type of material shall be labeled. For depths greater than 15 feet, designer shall provide pipe class determination sheet(s).
 13. Stationing.
 14. Show sanitary lateral riser location and height.
 15. Sanitary sewer pipe should be drawn as two lines indicating arch and flow line of pipe.
 16. Sanitary sewers shall be designed to have a minimum depth of 11 ft. to the top of pipe and a desirable depth of 11.5 ft. to the top of pipe as measured from the proposed finished street centerline grade.

2.2 WATER MAIN PLANS (Water Main and Sanitary Sewer are normally shown on the same plan sheet.)

2.2.1 Each water main plan and profile sheet shall show the following:

A. Plan View

1. Right-of-way and its width
2. Edge of pavement or face and back of curb.
3. All easement limits and widths.
4. Proposed or existing sanitary sewer and laterals (dashed).
5. Proposed water main, laterals, and all appurtenances.
6. Dimensions showing offset from right-of-way to the water main and the sanitary sewer.
7. Labeled appurtenances (i.e.: hydrants, gate valves, bends). Hydrants and water main valves shall be numbered.
8. Length, size and material of each water lateral.
9. Size of water main.
10. Size of proposed sanitary sewer.
11. Lot lines, lot and block numbers and frontages.
12. Name of each roadway and any intersecting roadways in which the water main will be located.
13. An estimate of quantities to be used in the construction of the water main.

14. A note warning that underground utilities should be staked out by "Diggers Hotline."
15. A north arrow to be shown to the right or up.
16. The stamp and signature of the design engineer.
17. A title block conforming to Section 2.0.4.
18. All culvert locations.
19. All areas to be insulated over water main.
20. Material and size of any existing water main to be tied into.
21. Proposed or existing storm sewer (dashed).
22. All required standard notes or other additional statements.
23. Pump house and well location (if applicable).
24. Stationing.
25. All obstructions located within the project limits including, but not limited to): trees, signs, utilities, fences, light poles, structures, etc.
26. Hydrant to curb distance (normally 4 1/2 ft. from back of curb to centerline of hydrant).
27. Water main is located 10 feet to north or east of centerline of street.
28. Minimum depth of water main shall be six feet to inside arch of pipe.
29. Private fire protection laterals may be required for multi-family residential, commercial and industrial buildings.
30. Normal hydrant spacing is 400 feet for residential subdivisions.
31. Hydrants shall be placed at all high points and at stub ends of water main. Air vents may be used at some locations with approval of City Engineer.
32. Gate valves shall be shown at all intersections at the right-of-way line extended to control water flow at each intersection. Valves shall not be separated by a distance of greater than 800 feet. In order to control directional flow, three valves shall be installed at each tee and four valves installed at each cross.
33. Minimum water main size shall be 8-inch except the 6-inch may be used for short runs servicing no more than one hydrant.
34. All gate valves shall be resilient wedge type and installed using gate valve adapters.
35. Hydrant installations at ditch sections (rather than curb and gutter) shall include culverts and 3 inch thick asphalt access ramps (a minimum 6 foot wide). The asphalt pavement shall extend 2 feet past the backside of the hydrant or auxiliary valve, whichever is farther from roadway.
36. All hydrants shall include one 4 foot red "I" (or equal) with reflectorized hydrant decal at upper end.

37. All hydrants shall be located at property line intersections and meet the following location requirements:
At the end of cul-de-sacs.
As near to all high points of the system as possible.
At a 400' maximum interval for residential areas.
At a 300' maximum interval for commercial and industrial areas.
Near all roadway intersections.
38. All hydrant nozzle elevations shall be located 18" - 24" above finished grade at the hydrant location or top of curb. Break-away flange and break-away shaft coupling shall be just above finished grade.
39. Designer to indicate when hydrant grade to be set by the use of spool to be removed in the future to match future grade.
40. All dead end water mains with a water service on line must have a hydrant at the end unless written permission is granted by the City Engineer. In some areas protection by two to four secure posts may be required.
41. Water service laterals shall be specified as to size and material of construction.

B. Profile View

1. Existing and proposed surface profiles over the water main. Maintain a minimum of 6 ft. of cover, same through the ditch sections.
2. The proposed water main and appurtenances. Hydrants and water main valves shall be numbered.
3. Labels and elevations of appurtenances.
4. Distances between appurtenances.
5. Slope of water main and elevations at break points.
6. The proposed storm sewer, sanitary sewer and their sizes dashed.
7. Culverts and their inverts and sizes.
8. Limits of gravel, spoil and/or slurry backfill.
9. Material and size of any existing water main connections.
10. Stationing of any areas to be insulated.
11. Hydrant nozzle and hydrant tee elevations.
12. Material choices of new water main, if appropriate.
13. Stationing including station and offset of appurtenances.
14. Water main should be drawn as two lines indicating arch and flow line of pipe.
15. Where water mains cross storm sewers the designer shall achieve a 2 foot vertical separation. Where this is not possible auxiliary protection shall be provided.

16. All water main crossing or being crossed by storm shall be insulated by 4" of R-25 PINK board. All water mains with less than 4' of cover shall be insulated **to an approved design thickness.**

2.3 STORM SEWER PLANS (Storm sewer and paving are normally shown on the same plan sheet)

2.3.1 Each storm sewer plan and profile sheet shall show the following:

A. Plan View

1. Right-of-way and its width.
2. Edge of pavement or face and back of curb.
3. All easement limits and widths.
4. Proposed or existing sanitary sewer and laterals (dashed).
5. Proposed or existing water main and laterals (dashed).
6. Proposed storm sewer, inlets, and junction boxes.
7. Dimensions showing offset from right-of-way to the storm sewer.
8. Length and size of storm sewer between inlets and junction boxes.
9. An estimate of quantities to be used in the construction of the storm sewer.
10. Lot lines, lot and block numbers and frontages.
11. Name of each roadway and any intersecting roadways in which the storm sewer will be located.
12. A note warning that underground utilities should be staked out by "Diggers Hotline" and sewer and water main locations staked by the Franklin Sewer and Water Department.
13. A north arrow.
14. The stamp and signature of the design engineer.
15. A title block conforming to Section 2.0.4.
16. Material and size of any existing storm sewer to be tied into.
17. Details of outfall or ditch inlet protection requirements such as rip-rap as shown in Figure No. 27, erosion control fabrics, end sections or headwalls as needed.
18. High performance turf reinforcement shall be used where appropriate.
19. Location of sump pump collection system and construction elevations and details, if required.
20. Location of storm sewer collection system laterals.
21. All required standard notes or other additional statements.

22. Stationing along centerline of roadway.
23. All obstructions/appurtenances located within the project limits, including (but not limited to): trees, signs, utilities, fences, light poles, structures, etc.
24. Storm sewers are located 8 feet south or west of proposed street centerline.
25. Minimum depth for storm sewer shall be 4 feet to **outside** of pipe from finished grade. Exceptions may be granted by the City Engineer.
26. Inlet laterals shall be minimum 12-inch diameter with 3 feet of cover. Exceptions may be granted by the City Engineer.
27. Storm **conveyance** design parameters:
 Pipe flow - 10 year **storm**.
 Open Channel - 25 year **storm**.
 Critical Crossings - 100 year storm.
28. Manhole spacing - maximum **300** ft.; Inlet spacing - maximum **300** ft.
29. All storm sewer inlets located in the pavement shall be interim inlets. For detail see Figure No. 10.
30. Pre-manufactured storm sewer trash grates shall be installed on storm sewer inlets and outlets over 18 inches in diameter. Grate bars shall be installed vertically on the inlet pipe and horizontally on the outlet pipe.

B. Profile View

1. Existing and proposed surface profiles over the storm sewer.
2. The proposed storm sewer, inlets and manholes.
3. Distances, slope and size of storm sewer between manholes.
4. Rim and invert elevations at manholes and inlets.
5. Material and size of any existing storm sewer connection.
6. Sanitary sewer (dashed).
7. Water main (dashed).
8. Material of new and existing storm sewer, if appropriate.
9. Stationing.
10. Draw pipe as two lines indicating arch and flow line of pipe.
11. Grades shall be indicated in feet per foot to nearest 0.0001 ft/ft.
12. Sewer pipe strength, class and material shall be labeled.

2.3.2 Storm Sewer Inlets

- A. Storm sewer inlets shall be designed in accordance with Figure No. 16.

- B. Side and rear lot inlets shall be placed so that no surface water will be conveyed by a swale for a distance greater than 350 feet.
- C. Channelized storm runoff in excess of 0.5 cfs shall discharge into an inlet before crossing a sidewalk or **overtopping a curb**.
- D. Inlets shall be a minimum of 4 feet deep unless authorized by the City Engineer.
- E. Standard inlets shall be of monolithic construction and have manufactured or cored openings for storm pipe connections.
- F. Inlet height adjustments shall be made with monolithic 2 inch risers set on a full bed of mortar. Adjustments shall be done by masons from the utility contractor. No brick adjustments will be allowed. Design shall allow for no more than 6 1/2 inches of adjustment.
- G. Inlets shall include steps, positioned to allow for easy access to the structure. Steps shall conform to the "Wisconsin Standard Specifications for Sewer and Water Construction".
- H. Four inch diameter solid wall perforated P.V.C. drain with fabric sock and end cap to be installed 3 inches above outlet pipe and extended one foot outside inlet wall. **(See Figure No. 16)**
- I. Inlet shall be back-filled with half inch washed stone.
- J. Louvered inlet grates shall be used for street grades exceeding 4%.
- K. A detail of "Manhole" inlets will be required for pipe junctions of three or more 12 inch pipes or pipes with a diameter greater than 18 inches.
- L. Inlet grates in pavements shall be compatible for bicycle safety.
- M. All storm sewer inlets over 6 feet in depth as measured from the top of the grate to the lowest sewer invert shall be constructed as precast 42 inch minimum diameter manholes.
- N. Field inlets shall be constructed using a standard precast structure. The deck shall be a minimum of 4" thick reinforced concrete with a 26 inch

diameter opening. The frame and grate shall be Neenah R-2561 or equal. All variations will be granted by approval of the City Engineer.

- O. All field inlets rims shall typically be set 6 inches below the proposed finished ground grade at that point.
- P. In areas where curb and gutter is extended to meet a rural pavement section inlet shall be constructed at the cross culvert at mid point on each curb radius.
- Q. Storm sewer inlets located in curb and gutter streets shall not be constructed with more than 0.2 foot misalignment. Inlets **determined to be** misaligned by greater than 0.2 foot shall be removed and reconstructed **prior to binder paving** to proper alignment.

2.4 PAVING PLANS (Paving and Storm Sewer are normally shown on same plan sheet)

2.4.1 Each paving plan and profile sheet shall show the following:

A. Plan View

- 1. Right-of-way and its width.
- 2. Edge of pavement or face and back of curb.
- 3. Stationing along the centerline of the roadway.
- 4. Width of pavement.
- 5. Lot lines, numbers and frontages.
- 6. Name of each roadway and any adjoining roadways.
- 7. All culvert locations and their sizes and invert elevations.
- 8. The limits of any areas which need special stabilization techniques, if known. (i.e. stabilization fabric, undercutting, etc.)
- 9. Radii of all intersections (face of curb).
- 10. An estimate of quantities to be used in the construction of the roadway.
- 11. A north arrow.
- 12. The stamp of the roadway designer.
- 13. A title block conforming to Section 2.0.4.
- 14. Location of 6" under drain outlet locations (if required).
- 15. Specific details of all existing roadways being connected to. Pavement, shoulders, ditches, curb alignment and grades shall be shown as needed to adequately make the transition.
- 16. All driveways within 100' of the proposed development.

17. All required standard notes or other additional statements.
18. All roadside ditch locations, flow line elevations at 100' intervals and slope of the ditch.
19. All obstructions/appurtenances located within the project limits including (but not limited to): trees, signs, utilities, fences, light poles, structures, etc.
20. All curb and gutter and sidewalk plans are to reflect **WISDOT ADA** ramp requirements.
21. Type III barricades (min. 18' wide, red and white reflective sheeting) to be shown centered at the end of pavements to be continued in future phasing.
22. Elevations are to be shown at the following locations:
 - a. At points no greater than 25' along intersection radii curb line. The elevation shall be to the back of the curb.
 - b. At the centerline on centerline of all intersections.
 - c. At the centerline on **flange line grade** extended of all intersections. **Gutter line grade on gutter line grade!**
 - d. At points no greater than 25' along cul-de-sacs and eye-brows. The elevation shall be to the back of the curb section.

B. Profile View

1. Existing and proposed roadway profiles along centerline of roadway, cul-de-sacs and "eyebrows".
2. Stationing and final centerline grades at all fifty and hundred foot stations and at all grade breaks.
3. Stationing and final centerline grades at all PC's, PT's, PVI's and POC's at PVI's for vertical and horizontal curves.
4. All culverts with their sizes and inverts shown.
5. Slope of the roadway between each grade break.
6. Show limits of areas which need special stabilization needs or techniques. Fill areas in pavements will extend one foot outside of the pavement and also a 45° pavement influence. This area shall be compacted to at least 95 percent modified proctor. This shall also include concrete or asphalt walks. Geo-technical engineering reports will be required and submitted to the City Engineer.

7. All grades shall be specified in plus or minus percent to nearest 0.01%.

C. General

1. A separate detail sheet shall be required for the roadway plans. This detail sheet shall show a typical roadway cross-section, a typical cul-de-sac cross-section, an "eye-brow" cross-section, an underdrain detail and any sump pump drainage system details.
2. Specific cross-section(s) and details along with specifications must be shown if not supplied elsewhere in plan set.
3. When incorporating concrete or asphalt pavement design, separate intersection detail sheets with appropriate grades shall be provided.
4. All pavement islands shall be drained by the use of a field storm inlet or through the use of storm inlets in curb and gutter abutting.

2.5 GRADING AND DRAINAGE PLANS

2.5.1 The Master Grading/Drainage Plan shall show the following:

- A. Subdivision boundary lines and all lot lines.
- B. All adjoining and inclusive roadways and their names.
- C. **Existing** contour lines at 2' intervals. These contour lines shall extend at least 100' into all adjacent parcels, except when the adjacent topography is critical to the proposed development, then contour lines shall extend 200' into adjacent parcels. The contours shall be adequate enough to assess the potential impact of the proposed development on existing homes or businesses and associated drainage. Existing contour lines at 2' intervals shall be dashed and proposed contour lines at 1' intervals shall be solid.
- D. All existing culvert locations, invert elevations and sizes within 200' of the proposed development.
- E. All existing and proposed culvert locations, invert elevations, sizes and materials within 200' of the proposed development.
- F. Any existing storm sewer locations, invert elevations, sizes and materials within 200' of the proposed development.
- G. All existing or proposed storm sewer locations invert elevations, sizes and materials within the proposed development.

- H. Location of topsoil stockpile.
- I. A separate plan sheet showing erosion and sedimentation control measures and details.
- J. Typical building pad locations for each lot which incorporate setbacks and offsets and show finished yard grade elevations to the nearest tenth of a foot for each lot. A typical house pad shall be shown as 60 feet by 50 feet.
- K. Lots having significant grade differential may require split building pad grade. Each grade shall be shown at appropriate location.
- L. A north arrow.
- M. The stamp of the plan's designer.
- N. A title block conforming to Section 2.0.4.
- O. Proposed spot elevations at all property corners and at side yards between house pads (0.5' below lower house grade).
- P. Show all high points and low points. Signify with an elevation.
- Q. All notes required to properly sequence the construction activities (i.e. erosion and grading which must be done ahead of other operations on site to manage storm water runoff).
- R. Specific details on all retention/detention basins, ponds, overflows, etc. Separate sheets or notes may be required.
- S. All obstructions within the project limits including (but not limited to): trees, landscaping, fences, structures, light poles, etc.
- T. Plans should be prepared for entire site or subdivision to insure compatibility between areas being developed.
- U. All buildable areas within required zoning setback limits and exceeding 3.5 ft. fill from the proposed final grade shall be shaded to indicate structural fill. All fill in these areas shall be compacted from a certifiable grade down to the existing subgrade. Removal of topsoil will be required. These areas will require compaction test reports prepared by a certified soils engineer. Reports shall be submitted to the City Engineer.

- V. Restoration of roadside ditches with a flow line gradient between 1% and 3% requires topsoil and seed restoration; between 3% and 5% requires sod/staked or stabilized by matting; greater than 5% are required to be piped.
- W. Proposed storm sewer inlets shall be shown on each grading plan.
- X. The master grading plan shall be designed with an earth balance that will accommodate the average amount of dirt taken from basement excavation. The intent is to allow the builder's grading contractor to spread the basement excavated material within the boundaries of the lot rather than haul excavated material off site. Bulk grading for development shall meet the following criteria: Lot lines and proposed swales are to be graded to 0.0 feet to 0.20 feet low. Proposed building pads are to be shown on the master grading plan as 60 feet in width and 80 feet in depth starting 20 feet from the front lot line. The area within the building pad is to be kept 1.5 feet lower than the proposed building grade(s). The remaining area to the front of the lot is to be sloped toward the curb or front swale. Reasonable deviations from these criteria must be approved by the City Engineer. Associated calculations shall be submitted with the interim grading plan for review.

2.5.2

Interim Grading Plan Design

- A. In addition to the Master Grading Plan, an Interim Grading Plan will be required of the owner's design engineer. The Interim Grading Plan is intended to allow for the placement on this lot of material excavated material when spread out over the lot/development will meet the required criteria for certification of the Master Grading Plan.
- B. The Interim Grading Plan shall meet the same requirements of 2.5.1 (A. through W.)

2.6 EROSION CONTROL PLANS FOR LAND DISTURBING ACTIVITIES.

2.6.1 The erosion control plan shall show the following:

- A. Site boundaries and adjacent lands.

- B. Site plan showing existing and proposed contours of the site and land within 100 feet of the exterior boundary lines on adjacent properties. **Existing** site contours **may** be two-(2-)feet **intervals**.
- C. Vegetative cover and soil type.
- D. Limits of 100 year floodplain and watercourses affected by the proposed development.
- E. Location and dimensions of stormwater drainage systems and natural drainage patterns on and immediately adjacent to the site.
- F. Locations and dimensions of existing; utilities, structures, roads, highways, paving lot lines and outlots.
- G. The erosion control plan shall outline a schedule for phased erosion control. **Developer** shall assign responsibility for installation/construction, maintenance and removal/demolition of each item of erosion control. The **Developer or designee** shall also tell which method of erosion control is to be installed at a specific location before each phase of construction.

The Developer shall be responsible for removal of installed silt fence and/or hay bales after the disturbed area is covered by 95% established vegetation.

- H. Proposed conditions of the site shall include:
 - 1. Locations and dimensions of all proposed land disturbing activities, including finished topography.
 - 2. Location and dimensions of all temporary soil and dirt stockpiles.
 - 3. Location and dimensions of all construction site control measures necessary to meet the requirements of the City of Franklin erosion control ordinance.
 - 4. Location, dimensions and description of all channels, pipes, storm inlets, structures, basins or reservoirs or other conveyances proposed to carry runoff to the nearest adequate outlet, including applicable design assumptions and computations. The application, design discharge rate in cubic feet per second for each structure, pipe, channel or conveyance. Design flow velocity for all channels and outlets shall be indicated.

5. Areas to be sodded or seeded and mulched or otherwise stabilized with vegetation, describing type of final vegetative cover. Type and quality of mulch and method of anchoring shall be indicated as well as seeding mixtures, rates, lime and fertilizer application rate for temporary or permanent seeding.
6. Schedule of anticipated starting and completion sequence of each land disturbing and land developing activity including the installation of construction site control measures needed to meet the requirements of the City of Franklin proposed erosion control ordinance.
7. Provisions for maintenance of the construction site control measures during construction. These must be maintained until 95% vegetative cover is established.
8. Schedule for removal of erosion control measures/devices.
9. Area having slope greater than 4:1 or major swales (such as rear yard collector swale) shall be covered with erosion control matting/blanket or vegetation ground cover.
10. Note that immediately following final grading and certification approval, all disturbed site shall be seeded in accordance with Chapter 8 - 8.1 (E) (F).
11. Storm discharge pipe must include an end section. Provide detail for erosion control at discharge.
Curb and gutter outfalls and storm sewer outfalls up to 18 inches and adjacent earth bands, side slopes and channels shall be covered by designed erosion control blankets. This design shall consider a flow velocity of 20 FPS. The blanket shall be Bon Terra SFB or equal. Storm sewer discharge pipes exceeding 18-inch diameter shall be designed and sized for riprap to be installed on permanent fabric.
12. In areas of floodways, wetlands and conservation, orange construction fence shall be installed immediately down slope from the silt fence or at the easement line, line of delineation or the set back line. The fence shall be installed to prevent intrusion into the protected area.

- I. Field modifications for erosion control measures such as **erosion control matt** silt fence, **construction fence** hay bales, check dams, matting, seed, etc., may need to be made. It is the City's intent to approve the best erosion control management possible. Materials and placement of materials may be eliminated by approval of the City Engineer. In some cases additional materials

at alternate locations may be required. This will also be approved by the City Engineer.

J. Requirements of Wisconsin Administrative Code NR 216 III

1. Developer or the engineering representative shall make the necessary submittals to Wisconsin DNR relative to the code. Copies sent to the City Engineer.

2. CONSTRUCTION SITE STORM WATER DISCHARGE PERMIT

To be submitted to Wisconsin DNR prior to the start of development construction. Copy of Notice sent to City Engineer.

3. PERMITTEE'S RESPONSIBILITY FOR SITE MONITORING

Inspecting engineer shall do weekly inspections of erosion and sedimentation controls or within 24 hours of a 0.5-inch or greater precipitation event. Deficiencies that are noted on the report shall be corrected within seven (7) calendar days of the report date. The engineer shall submit to the City Engineer a monthly report of these inspections. The inspections shall commence at the beginning of soil disturbing activities and stop when the disturbed site is 95% covered by vegetation and all erosion and sedimentation controls have been removed.

4. NOTICE OF TERMINATION

This notice shall be submitted to the Wisconsin DNR after the disturbed site has been 95% covered with established vegetation and the satisfactory removal and/or elimination of erosion and sedimentation control devices and structures have been completed. The final approval shall be given by the City Engineer.

K. The erosion control plans shall include construction sequence schedule.

2.7 A STORMWATER MANAGEMENT PLAN SHALL BE SUBMITTED

A storm water management plan shall be submitted to the City for review. Upon acceptance this shall be submitted to MMSD for approval.

The report and plans shall integrate MMSD, DNR and City Engineering Department Standards and all standards as found in the Unified Development Ordinance 15.8.0600.

2.8 MISCELLANEOUS PLAN REQUIREMENTS

2.8.1 A separate detail sheet shall include the following:

- 1.) Street X-sections Detail.
- 2.) Interim Storm Sewer Inlet Detail.
- 3.) Handicap Sidewalk Ramp Detail.
- 4.) **Erosion Control** Details.
- 5.) Include Details for any Non-Standard Structures.

2.8.2 A minimum of three working days shall be required for approval of any revisions or changes to previously approved plans. The approval shall be in writing from the City Engineer. No construction related to these proposed revisions or changes shall proceed prior to the approval of such revisions.

2.8.3 Preliminary proposed and existing grading plans (with plan view of preliminary sanitary sewer) shall be reviewed prior to all other preliminary construction plans being submitted. Enough detail on detention/retention objectives should be shown.

2.8.4 Sanitary sewers, storm sewers and water mains located outside of the street right-of-way shall be shown in a permanent easement. The minimum width for single utility is 20 feet. For each additional adjacent utility add 10 feet to the width.

Each easement must clearly show the limits and width and type of utility contained within the easement.

Drainage easements must be granted for swales that carry drainage from outside a development through the development or to a storm water receptor within the development.

In all cases separate easement documents must be prepared to City of Franklin standards for each easement shown on construction plans, subdivision plats, developments plats and Certified Survey Maps.