CITY OF CHICAGO - DEPARTMENT OF WATER MANAGEMENT

2024 REGULATIONS FOR SEWER CONSTRUCTION AND STORMWATER MANAGEMENT

August 2024

City of Chicago
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CHAPTER I – GENERAL

1.0 AUTHORITY

These Regulations are promulgated by the City of Chicago DWM pursuant to authority granted by Sections 2-106-040, 11-16-300, and 11-18-110 of the Municipal Code.

1.1 ACRONYMS AND ABBREVIATIONS

The following acronyms and abbreviations are used in these Regulations. Except where the context requires otherwise, terms defined in Section 11-18-020 of the Chicago Stormwater Management Ordinance have the same meaning when used in these Regulations. See Appendix I.

ADA	Americans with Disabilities Act
ASTM	American Society of Testing Materials
BMP	Best Management Practice
CDOT	City of Chicago Department of Transportation
cfs	Cubic foot per second
CIP	Cast Iron Pipe
City	City of Chicago
DOB	Department of Buildings
DIP	Ductile Iron Pipe
DWF	Dry Weather Flow
DWM	Chicago Department of Water Management
ECP	Erosion Control Plan
EPA	U.S. Environmental Protection Agency
ESVCP	Extra Strength Vitrified Clay Pipe
ft^2	Square foot
ft/s	Feet per second
$ft^3/s/acre$	Cubic foot per second per acre
HWL	Highwater Level
ID	Inside Diameter of Sewer
IDOT	Illinois Department of Transportation
IEPA	Illinois Environmental Protection Agency
ISWS	Illinois State Water Survey
MS4	Municipal Separate Storm Sewer System
MWRDGC	Metropolitan Water Reclamation District of Greater Chicago
NRCS	National Resource Conservation Services
NPDES	National Pollutant Discharge Elimination System
O&M	Operation and Maintenance
OD	Outside Diameter of Sewer
Ordinance	Chicago Stormwater Management Ordinance, Chapter 11-18 of the Municipal Code
PVC	Polyvinylchloride

RCP	Reinforced Concrete Pipe
RCRA	Resource Conservation Recovery Act
TARP	Tunnel and Reservoir Plan

CHAPTER II - SEWER REQUIREMENTS AND STANDARDS

PART 1 APPLICABILITY

Chapter II of these Regulations provides general design requirements and standards for sewer construction within the City.

PART 2 DESIGN SUBMITTALS FOR DEVELOPMENTS ON PRIVATE PROPERTY

2.0 PLAN REQUIREMENTS FOR NON-REGULATED DEVELOPMENTS

Plans requiring the review and approval of the DOB must provide sufficient information to convey the intent of the design for construction. As a minimum, plans must include the following information.

a. A clear site location map showing the site, north direction, local streets, alleys, right-of-ways and easements.

b. A brief description of the proposed development including existing and proposed land use.

c. A detailed site plan showing the following information.

- Building structures and fences
- Roadways, parkway lots, driveways, sidewalks and other impervious surfaces
- Pervious area including but not limited to grass and dirt
- Adjacent roadways, ponds, channels or flood plains
- Surface flow and grading directions

d. Proposed sewers, sewer structures and cleanouts shall be shown on the plans. The details of such features shall include the following.

- Size, and approximate location of city sewer
- Connection location(s)
- Sewer sizes, lengths and minimum slopes

e. The location of all building downspouts shall be shown in the plans. Downspouts shall be splashed to landscaped areas, unless otherwise deemed not feasible.

2.1 ADDITIONAL REQUIREMENTS FOR REGULATED DEVELOPMENTS

In order to verify proper implementation of BMPs, a detailed grading and drainage plan accurate to within 0.01 feet must be submitted as part of the Plan for a Regulated Development. See Chapter

III, Section 2.0- Design Submittals. In addition to the required information set forth in Section 2.0 of this chapter, the following information described in Sections 2.1.1, 2.1.2, and 2.1.3 must be included as part of the stormwater management plan.

For regulated developments, plan elevations shall be based on the City Datum (CCD). For non-regulated developments, relative grades are allowed but shall have a datum correlation to the City Datum.

2.1.1 PLAN REQUIREMENTS

For Regulated Developments, the Plan submittal shall include but not be limited to the following. All plan sheets shall include a North arrow and a graphic scale with plan information presented accurately at a standard engineering scale.. All plan sheets shall include a title block indicating the project name and street address, name and address of the Professional Engineer or Licensed Architect, sheet title, sheet number, original drawing date, and revision dates.

C-1 COVER SHEET

- Indicate project title, project information, and street address of the site.
- Show location map of the project site with North arrow.
- Provide required City benchmarks with City reference number (see above for datum requirements).
- Include title blocks for Architect, Engineer, Owner and/or Developer with address, telephone numbers, and email address for each
- Provide sheet index.
- Provide Digger symbol and Handicapped signature block with notes required by CDOT including Duty to Indemnify statement.
- Provide legends for abbreviations and symbols.
- Provide signature and seal of the Professional Engineer or Licensed Architect.

C-2 TOPOGRAPHIC AND UTILITY SURVEY

- Indicate property lines and limits of proposed construction.
- Identify all streets, alleys, crosswalks, and sidewalks and indicate their width.
- In case if any street is closed or vacated, indicate on the plans.
- Identify type of curb & gutter, driveways, ADA ramps with existing elevations throughout shown in enough detail to evaluate compliance with CDOT ADA Standards unless sidewalk or ramp removal and replacement is proposed.
- Identify sewer structures with rim and invert elevations.
- Indicate pipe sizes, material, and direction of flow.
- Show existing buildings and structures.
- Show contour lines or detailed spot elevations to fully describe topography.
- Any existing sewer on site not owned by the project owner must show sewer ownership information.
- If there are any public sewers within the project property, easements must be shown with the details (easement length, width, year, document number, etc.)

C-3 DEMOLITION PLAN

- Topographic and utility survey provides the background of the plan.
- Show all demolition of pipes and sewer structures. If a pipe is abandoned in place, indicate method for plugging ends or filling with flowable fill.

- Identify items to be salvaged and what to do with them.
- Show all demolition of curb & gutter, pavement, sidewalk, etc.
- Indicate all items to be relocated.
- Indicate all other structures to be demolished.
- Show removal/abandon plan for unused sewer service from the site to City's sewer main

C-4 GEOMETRIC PLAN

- Provide dimensions for property lines, buildings, parking lots, pavement markings, handicapped parking stalls, and other on-site features.
- Provide dimensions for driveways, alleys, streets, curb radii, pavement markings, curb ramps, and other features in the public right-of-way.
- Show CDOT required 12-foot sight triangles at driveways.
- Do not show demolished items on this plan.
- Show a line delineating the limits of construction.

C-5 GRADING PLAN

- Show proposed grades and contour lines in bold and existing grades and contour lines to remain in half-tone.
- Existing grade information at property lines.
- Existing grade information should extend at least 10 feet beyond property lines or as required by site design.
- Show curb & gutter, sidewalk, finished floor, pavement, ground, and other elevations necessary to completely define the proposed grading.
- Delineate the limits of ponding for surface detention by indicating the High Water Level (HWL) location and elevation.
- Identify sewer structures with rim elevations.
- Show overflow (overland flood route) location and elevation, typically indicated with large arrows.
- Show direction of surface drainage where needed, typically indicated with small arrows.
- Show a line delineating the limits of construction.
- Identify permeable pavement, drainage swales, bioinfiltration systems, rain gardens, impervious area, landscape area, any other BMPs, etc.
- Provide separate large-scale plan view details of curb ramps, alley returns, and driveways with detailed grading to demonstrate compliance with the latest revision of the CDOT ADA Standards.

C-6 UTILITY PLAN

- Show existing sewer pipe and structures in half-tone. Do not show demolished items on this plan sheet. Show size of existing sewer mains.
- Show all proposed underground utilities in bold.
- Indicate sewer pipes with length, size, slope, material, and direction of flow.
- Indicate proposed sewer structures with sequential number, structure type, structure size, rim elevation, and invert elevation.
- Indicate location, type, and size of restrictors.
- Delineate footprint of detention vault, and show necessary elevations.
- Show proposed sewer connections with the invert of the proposed connection and the invert of the existing sewer main at the connection point.
- Indicate vertical separation of sewer and water lines with elevation at all utility crossings.
- Show existing sewer drain stubs to be reused or abandoned.
- Any existing sewer to remain on site but not owned by the project owner must show sewer ownership information.
- If there are any public sewers within the project property, easements must be shown with the details (easement length, width, year, document number, etc.)

C-7 EROSION AND SEDIMENT CONTROL PLAN

- Show temporary erosion and sediment control measures applicable to the project.
- Indicate proper maintenance schedule for each erosion and sediment control measure.
- Show applicable details such as silt fence, inlet protection, construction entrance, temporary sediment basin, sediment bags, erosion control blanket, ditch checks, etc.

C-8 OPERATIONS AND MAINTENANCE PLAN

- O & M Plan shall be prepared according to Chapter III, Part 6 of these Regulations and the *Stormwater Management Ordinance Manual*, Part 5 and Appendix C, latest revision.
- Include signed and notarized Owner's Certification Statement, Appendix II-A Sheet A.108.
- Label all stormwater BMPs. Indicate the type, size, and location of restrictors. Show sewer pipes with pipe size and material.
- Delineate High Water Level (HWL) of all areas of surface ponding with maximum depth of ponding.
- Indicate overflow location.
- Include maintenance guidelines from the *Stormwater Management Ordinance Manual*, Appendix C as plan notes. These are the minimum maintenance requirements.
- Include minimum design requirements from Chapter III, Section 6.2 of these Regulations as plan notes.

C-9 STORM AND SANITARY SEWER DETAILS

- Provide all applicable sewer details from these Regulations including but not limited to catch basins, manholes, and sewer connections.
- Indicate elevations and dimensions where required to complete the details, such as orifice diameter and invert on Appendix II-A Sheet A.27.
- Show site specific detail of the catch basin with the restrictor, or clearly indicate on the Utility Plan the upper and lower invert of the half-trap, the inverts of any incoming pipes, etc. See Drainage Structure Details for Private Development, Appendix II-A Sheet A.27.
- Provide a cross-section of each volume control BMP indicating depth, gradation, and composition of each layer as required to fully describe the BMP.

C-10 CIVIL (CDOT) DETAILS

- Provide the latest revision of all applicable CDOT details and all applicable CDOT ADA Standards.
- Provide separate large-scale plan view details of curb ramps, alley returns, and driveways with detailed grading to demonstrate compliance with the latest revision of the CDOT ADA Standards. These may be provided on a Civil Detail Sheet or as a separate detail on a Grading Plan.

2.1.2 STORMWATER CALCULATIONS AND OTHER DOCUMENTATION

One electronic file of each of the following items shall be provided with each submittal.

- Provide a scaledexhibit drawing of the sewer atlas maps showing watershed areas delineated for each sewer segment analyzed, unless standard maximum release rate is used.
- Provide rate control and volume control calculations using the latest revision of the Chicago Stormwater Spreadsheet Tool including only the pages that are applicable to the project. Rate control sections can only be used for sites smaller than 20 acres.
- Provide scaled exhibit drawings of pervious and impervious areas, off-site areas, impervious areas tributary to volume control BMPs, etc. as necessary to clarify calculations.
- Provide calculation of allowable release rate using Tab 0.0 of the spreadsheet tool unless another calculation method is required or unless the standard maximum release rate is used.
- Provide orifice sizing calculation using Tab 1.3 of the spreadsheet tool unless another calculation method is required. Provide calculation to demonstrate the rate control volume is provided in the detention facilities.
- Provide geotechnical report with soil borings and a written analysis of the groundwater elevation when volume control BMPs or underground detention vaults are proposed.
- Provide percolation test data using single ring or double ring infiltrometer method as described in the *Stormwater Management Ordinance Manual*, if an infiltration rate of 0.5 in/hr or greater is used in the calculations.
- Provide Appendix II-C Affidavit in Support of Soil Erosion and Sediment Control Measures, signed and submitted as a .pdf file, if the site does not discharge to Waters. (This item is only required for final submittal.)
- Provide Appendix II-B Affidavit in Support of Stormwater Infiltration or At-Grade Discharge of Downspouts on Residential Buildings, signed and submitted as a .pdf file, if the plan proposes infiltration or residential buildings that discharge downspouts to grade. (This item is only required for final submittal.)
- Provide storm sewer capacity calculations for large sites that provide the 100-year flood route through the sewer system.
- Provide roof plans and interior plumbing plans, as applicable to rooftop detention and interior vaults, respectively.
- Provide landscape and green roof plans, as applicable.

2.1.3 ELECTRONIC FILES

At the conclusion of the review process, the stormwater reviewer will contact the designer to inform him/her that the plans and calculations are acceptable. The designer must then submit the approved plans, calculations, and any required soil borings, affidavits, or other documentation required during the review process in electronic format for the DWM permanent archive. After this information is received, DOB can then issue the design approval.

The plans submitted in electronic form must be signed and sealed by the Professional Engineer or Licensed Architect. The plans and affidavits must include all required signatures.

The full engineering plan set must be submitted as a single multi-page *.PDF file. Other documentation shall be submitted in *.PDF format as well. The following file naming conventions shall be followed:

File Name:

"Street Address"-"Descriptive Suffix"

Where:

"Street Address" is the legal street address of the site using standard Postal Service abbreviations such as "N", "S", "E", "W", "St", "Ave", "Pl", "Ct", etc. Periods shall be omitted from the street address.

"Descriptive Suffix" is one of the following or similar suffixes:

- "vac" for street vacation documents
- "cov" for covenant documents
- "ease" for easement documents
- "plans" for the multi-page pdf file of the complete plan set
- "asbuilt" for multi-page as-built plans
- "specs" for specifications
- "geotec" for geotechnical reports, soil borings, etc.
- "o+m" for operations and maintenance plans
- "aff" for affidavits
- "calc" for stormwater calculations including spreadsheet tool, reports, maps, etc.

Example File Names:
1000 E Ohio St-calc
121 N LaSalle St-geotec
120 N Racine Ave-o+m

PART 3 REQUIREMENTS FOR DEVELOPMENTS ON PRIVATE PROPERTY

3.0 APPLICABILITY

The design requirements discussed in this section apply to all developments outside of the public right-of-way.

3.1 GRADING AND DRAINAGE REQUIREMENTS

General requirements for site grading are as follows:

- To the extent possible, no sheet flow or discharge of stormwater will be allowed to adjacent private property.
- Overflows must be directed to the street where sewers and sewer structures are available. Where this is not possible, an underground overflow to convey the 100-year peak discharge to the public sewer may be allowed.

- No more than 400 square feet of contiguous at grade impervious area must sheet flow directly to the public right-of-way.
- No more than 1,500 square feet or 5 foot wide strip of contiguous at grade pervious area must sheet flow directly to the public right-of-way.
- Runoff from a public alley or street must not be allowed to sheet flow into the site.
- Minimum longitudinal gutter slope shall be 0.4%.
- Minimum slope on impervious pavement shall be 1.0% (e.g. parking lot).
- Minimum slope in drainage swales and stormwater BMP's (e.g. permeable pavers) shall be 0.5%.

Outside areas not more than 5,000 square feet, including but not limited to gas stations, when not drained to a drainage structure, shall have any impervious area sloped toward an equivalent amount of pervious area or street gutter connected to a public sewer to prevent the discharge of water onto adjoining property.

3.1.1 DISCONNECTION OF DOWNSPOUTS

In accordance with the plumbing provisions of the Municipal Code, Article XI, Section 18-29-1101.2.3, the disconnection of roof downspouts is encouraged, when feasible. Downspout flow must be directed to the public right-of-way without causing a safety hazard or nuisance to adjacent properties or be collected by an on-site storm water management system, as required. On residential developments where downspout disconnection is proposed, the DWM's affidavit form in support of the disconnection must be signed and submitted with downspout locations shown on the plan. The affidavit form is provided in Appendix II-B.

3.1.2 BY-PASS FLOWS

Flows generated upstream of a Regulated Development may be by-passed through or around the BMPs provided that means of conveyance to the public right-of-way and the right-of-way itself can safely accommodate such flow for all storm events up to and including a 100-year magnitude.

If the by-flow is routed through a storm water detention system, such system must not overflow to the public right-of-way for storms of less than a 25-year magnitude based on the maximum release rate of the developed site. Additional on-site storage must be provided to prevent such 25-year overflows. However, if the upstream area approximates that of the Regulated Development, the maximum release rate to the public sewer system may be adjusted higher to prevent such 25-year overflow, but not more than the existing discharge rate to the sewer system.

3.1.3 SUNKEN DRIVEWAYS

Sunken driveways are driveways that slope down to a below-grade building level. Developers must assume full responsibility for the design and construction of a project and therefore must ensure that such design and construction will not create a flooding or safety hazard to the occupants of the subject property or to the public.

As part of the City's Rain Blocker Program (inlet control), the public right-of-way, outside of the Central Business District, is used to store rainwater. As such, any proposed driveway sloping down to a below-grade building level must prohibit the entrance of any storm water runoff emanating from the public right-of-way and/or adjacent properties.

Submittal requirements for sunken driveway review include a topographic survey signed and sealed by a professional engineer or professional land surveyor including the site and sufficient surrounding area to establish the overflow locations and elevations in the gutter line of the street. Overflow elevations in the right-of-way must be shown relative to the driveway/sidewalk elevation where water may enter the building. Design requirements for sunken driveways are as follows:

Overflow elevations in the right-of-way must be at least one (1) foot vertical clearance below the driveway/sidewalk elevation where water may enter the building, or a detailed hydrologic/hydraulic analysis of the potential area tributary to the driveway must demonstrate sufficient clearance as calculated from a 100-year high water level in the right-of-way. In addition, hydrologic/hydraulic calculations must demonstrate that sufficient clearance is provided from the surface of water flowing in the gutter line to the driveway/sidewalk elevation where water may enter the building. Means of alleviating flooding by way of mechanical pumping of runoff from the right-of-way or modifications to the City's Rain Blocker Program will not be allowed. Proposed driveway and adjacent sidewalk must also conform to current IDOT, CDOT, and ADA design standards.

3.2 SEWER PIPE REQUIREMENTS

3.2.1 SEWER PIPE MATERIAL

Sewers constructed in sizes 21 inches in diameter and smaller must be ESVCP, ASTM Designation C-700 with C-425 joints; DIP, class 52 or equivalent, with push on self-contained, pre-lubricated gaskets or mechanical joints; or CIP, with hot poured pure lead firmly packed with oakum or hemp. See Section 18-29-702.3 and 18-29-1102.4 of the Municipal Code of Chicago.

CIP or DIP must be used under building structures. If the sewer size is less than 24 inches in diameter and the cover is less than 3 feet, then CIP or DIP must be used. DIP encased in polyethylene wrap is the only type of iron pipe allowed for City sewers. Other means of corrosion protection for iron pipe may be considered for private sewers.

In conformance with Title 35 protection of water main requirements, the horizontal clearance between a waterline and sewer must be 10 feet edge to edge. If a sewer and waterline (i.e., main or water service) have less than 10 feet of horizontal clearance, then DIP must be used if the sewer is less than 18 inches below the waterline. Furthermore, if the sewer is above the waterline, DIP must be used and must cross the water line with at least 18-inches of edge to edge separation. CIP is not allowed in the right-of-way.

RCP must be used for sewers 24 inches in diameter and larger, unless prior approved by the DWM. ASTM Designation C-76, Class-III, Wall-B with O-ring type joints is the minimum requirement for this type of pipe. If self-lubricating gaskets are used, the physical properties of the gaskets must conform to ASTM C-361. RCP may not be used for pipe 21 inches in diameter and smaller, inside or outside the private property.

No plastic pipe may be used for any underground sewer or drain inside or outside the property, except as specifically allowed by the Municipal Code of Chicago. The Municipal Code of Chicago, Section 18-29-1102.5, Subsoil Drain Pipe, allows (1) PVC pipe - ASTM D2729 (type Sewer Pipe, PS25, PS50 and PS100); or (2) PVC perforated subsurface drain pipe, ASTM F 891 with an encasement of non-woven filter fabric filled with CA-7 (filter fabric shall have a clearance of 4 inches minimum from the outside of the perforated pipe), ASTM D 3034, SDR 35 (4 inch to 15 inch). No corrugated subsoil drain pipe is allowed.

The following alternative pipe materials shall be allowed only for non-conveyance stormwater Best Management Practice (BMP) applications: (1) High Density Polyethylene (HDPE) ASTM F 2306 and ASTM F 2648; (2) Polypropylene (PP) ASTM F 2418, ASTM F 2736, ASTM F 2764 and ASTM F 2787; (3) Aluminized Steel Type 2 ASTM A 929. HDPE flat drains are allowed when used as perforated underdrains in stormwater BMPs.

3.2.2 SEWER PIPE SIZES

Storm and combined sewers shall be designed to convey at least a 5-year storm event without surcharge. Since dedicated detention facilitates are typically designed for the 100-year event, storm sewers under surcharge must be capable of conveying design flows to such facilities. The following are criteria for minimum sizes:

- Minimum size of a combined house sewer shall not be less than 6 inches in diameter.
- Minimum size of sanitary or storm underground sewers shall not be less than 4 inches in diameter on private property and 6 inches in diameter in the public right-of-way.
- Perforated underdrains shall be a minimum of 4 inches in diameter and shall discharge to catch basins

3.2.3 SEWER PIPE SLOPES

The minimum slopes on combined and storm sewers must maintain a minimum full flow velocity of 3.0 ft/s, when feasible. The minimum slope on sanitary sewers must maintain a minimum flow velocity of 2.0 ft/s, when feasible. Whenever possible, the maximum full flow velocities within sewer lines must not exceed 10 ft/s. The following tables illustrate minimum slopes needed to achieve 3.0 ft/s.

For Vitrified Clay Pipe:

4" = 1.36 %	12" = 0.32 %
6" = 0.79 %	15" = 0.24 %
8" = 0.54 %	18" = 0.20 %
10" = 0.40 %	21" = 0.15 %

Reinforced Concrete Pipe*:

24" = 0.18 %	36" = 0.11 %	60" = 0.052 %
27" = 0.15 %	42" = 0.09 %	66" = 0.046 %
30" = 0.13 %	48" = 0.07 %	72" = 0.040 %

33" = 0.12 %	54" = 0.06 %	78" = 0.036 %

*The maximum slope on reinforced concrete pipe shall be 3.33 percent.

3.2.4 SEWER GROUND COVER

The minimum cover over a sewer pipe shall meet IDOT standards. However, a minimum of 3.0 feet of cover must be placed over ESVCP. Unprotected sewers conveying DWF must have at least 3.5 feet of cover to guard against freezing. Flat top structures must be specified where necessary and shall be approved by the DWM.

3.3 SEWER STRUCTURE REQUIREMENTS

Sewer structures consist of junction chambers, manholes, catch basins, inlets, area drains, and clean-outs. Structures, frames, and lids shall be of City standard design as shown in the Appendix II-A. IDOT structures and manhole risers may be used for oversized pipe as part of stormwater detention facilities. The re-use of existing sewer structures is subject to City approval. Photographic documentation of the condition of sewer structures to be re-used must be provided when requested by the City.

3.3.1 STRUCTURE SPACING

Pipes measuring 12 inches in diameter and greater must have a manhole or catch basin placed at each change in pipe size, material, elevation, or direction. For pipes measuring less than 12 inches in diameter, a clean-out may be used. The maximum length of a sewer between structures shall be:

- 4” diameter or less = 50 feet
- 6" to 8” diameter = 100 feet
- 10" diameter = 150 feet
- 12" to 54" diameter = 330 feet
- 60" diameter and larger = 660 feet

3.3.2 CATCH BASINS

Outside areas greater than 400 square feet and not more than 5000 square feet, when drained to sewers, must be connected to catch basins not less 3.0 feet in diameter with sumps not less than 3.0 feet below the bottom of the trap. Contact the DOB for standards.

Each outside area more than 5000 square feet must be provided with a catch basin not less than 4.0 feet in diameter. The catch basin must have a sump not less than 3’-4” deep below the bottom

of the trap. See the Appendix II-A Sheet A.22 for details of the DWM standard catch basin for public streets. See the Appendix II-A Sheet A.27 for catch basin details for private developments. Larger drainage areas may be permissible in cases where stormwater detention is required as approved by the DOB.

A catch-basin–to-catch-basin connection is allowed for stormwater drainage in a private development where sanitary flow and storm flow are separated onsite. The last structure before a connection to a combined sewer must have a half-trap. If this requirement cannot be met, all other upstream catch basins must have a half-trap.

A minimum 6-inch diameter outlet is required from catch basins, except for catch basins in the public right-of-way, which require an 8-inch diameter outlet.

3.3.3 INTERCEPTING GREASE BASINS

Establishments that prepare and process food must have grease basins. All waste from sinks, garbage grinders, dishwashers, discharge from kitchens and all process waste must be intercepted before reaching the public sewer system, in accordance with Section 18-29-1003.1 and 18-29-1003.3 of the Municipal Code of Chicago, except waste from industrial/commercial garbage grinders and dishwashers.

Such interception must be made by an intercepting grease basin or special catch basin of a design and construction approved by the DOB, and as shown in Appendix II-A Sheets A.100.1 through A.102.2, or an approved grease separator, where applicable.

The intercepting grease basin must be located outside of the building served, when feasible. Intercepting grease basins must be vented when constructed inside the building. Plans for the approved basins and information regarding approved types of grease separators are available from the DOB.

3.3.4 LINT BASINS

Lint basins are required when washing machines are used commercially or in multi-residential buildings with more than 15 commercial washing units in a dedicated area. See the Appendix II-A Sheet A.102.3 through A.103.

3.3.5 INLETS, AREA AND TRENCH DRAINS

Inlets are not permitted in the public way, unless specifically approved by the DWM due to utility conflicts. Area drains may be used to drain an outside area 400 square feet or smaller. Trench drains will be allowed in locations where a standard circular grate is impractical or does not have sufficient capacity to accept a design flow. An intercepting structure (with a 2-foot minimum sump) or catch basin must be installed downstream of the trench drain.

3.3.6 OIL/WATER SEPARATORS

Impervious areas tributary to Lake Michigan that are exposed to vehicular traffic must have an oil/water separator installed before connecting to a Lake Michigan outfall.

Such interception must be made by an intercepting oil/water separator basin or special catch basin of a design and construction approved by DOB.

3.4 CONNECTIONS TO CITY SEWERS

All private drain connections to the City sewer must be made in the street or parkway. No new connections to an alley sewer or public sewer within easements are permitted. Existing alley connections may be reused only if it is not feasible to tie to a main sewer line in the street. A minimum spacing of 15 feet between private drain connections to the City sewer shall be maintained, where possible. Private drain connections to City catch basins, manholes and manhole risers are prohibited. Connections to manhole bases due to utility conflicts can be considered with prior DWM approval.

Connections to existing ESVCP sewers shall be made with a vitrified clay wye junction or a properly sized saddle. No break-in connections will be allowed to existing clay, concrete sewers or lined brick sewers. Connections to existing concrete sewers must be cored. All connections to brick sewers which comprise one-half or more of the brick sewer's diameter require a reinforced concrete collared structural detail, approved by a Licensed Structural Engineer. City standard connections as shown in Appendix II-A Sheets A.1 through A.4 must be made.

3.4.1 SINGLE CONNECTIONS FOR SITES SMALLER THAN 0.5 ACRES

All sites less than 0.5 acres (including 25% of any critical tributary sidewall area) will be allowed only one combined connection (i.e., storm and sanitary) to the City's main sewer. A separate sanitary connection will be allowed only if site constraints prohibit a single combined connection. A separate sanitary connection to another main sewer may be considered if the DWF comprises a significant portion of the maximum release rate. See Section 3.4.5 of this chapter, Connection Sizing.

A new connection should be made to the same city sewer line as the existing connection. If the location of the existing connection is non-existent or unknown, then the connection should be made to the street where the majority of the site's frontage is situated. An exception is single lot sizes (i.e., 125' x 30') where the connection is made at the front (street side).

3.4.2 CONNECTIONS FOR SITES LARGER THAN 0.5 ACRES

For sites 0.5 acre and larger (including 25% of any critical tributary sidewall area), a separate sanitary connection may be considered if the DWF comprises a significant portion of the maximum release rate or if site constraints require it.

Typically a connection to the largest sewer line is made to maximize use of the sewer system's capacity. Connection to a larger sewer line must be made if all of the following conditions are met:

- The site is larger than 0.5 acres and has access to a larger sewer.
- The smaller sewer is not an auxiliary sewer (i.e., 4 feet in diameter and larger).
- The larger sewer has a capacity that is greater than or equal to the smaller sewer, or the larger sewer is located on the street where the majority of the site's frontage is situated.

If the connection to a smaller sewer must be made due to site constraints (i.e., utility, structural conflicts, etc.), then the maximum release rate from the site (in cfs/acre) to the smaller sewer must be reduced by 20 percent, or to a minimum of 0.15 cfs, whichever is greater.

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3.4.3 MULTIPLE CONNECTIONS

The number of connection(s) required is generally a function of the size of the site. The number of new connections to the city's main sewer shall be limited whenever possible to avoid the extra time and cost of construction within the street.

If a site is 1.75 acres or larger, two or more connections must be considered in splitting the total discharge rate in a manner that will best utilize the capacity of the sewer system. The percentage of the split in flow is typically based on a ratio of the capacities (in cfs/acre) of the main line sewers. However, in the case of a flow diversion (Chapter II, Section 3.6), the discharge from a development must not reduce an existing sewer segment's (manhole to manhole) capacity by more than a maximum permissible percentage. Note - special requirements for Regulated Developments using multiple connections are provided in Chapter III, Section 3.5.1.

3.4.4 RE-USE OF EXISTING CONNECTIONS

The possibility of reinstating an existing connection must be examined to avoid disruption of traffic in the street and structural disturbance to the city sewer. The possibility of reinstating an existing connection must also be verified for compliance with IEPA Title 35 requirements. All existing connections must be televised in the presence of a DWM inspector and approved in order to be reused. The recording must be in DVD format (or VHS format if approved in advance) and submitted to the DWM for review and approval prior to reuse. When proposing a new connection to an existing on-site private sewer system, the downstream system must be televised in the presence of a DWM inspector and approved in order to be used.

3.4.5 CONNECTION SIZING

The DOB must approve the size of each sewer connection. The size of the connection must be minimized to limit the hydraulic and structural impacts to the City's main sewer. The DWM's criteria for sizing connections outside of a building differ from those listed in the Building Provisions of the Municipal Code of Chicago, which pertain only to the interior of a building. See Appendix II-D for Connection Sizing. Nothing in Appendix II-D shall be understood to require downsizing of a sewer connection in the direction of flow.

The size of a combined connection must accommodate the anticipated 100-year flow and the peak DWF. Sanitary only connections must not be restrictive of the peak DWF without prior design

approval. Any connection should be at least two sizes smaller than the size of the main sewer in the street. If the anticipated discharge rate exceeds the full flow capacity of the maximum connection size allowed, then the connection must drain under pressure and additional onsite design measures must be considered to safeguard against flooding. A further reduction in the stormwater release rate in conjunction with greater onsite detention storage, or watertight downspouts must be considered; otherwise, the construction of a larger sewer in the street may be required.

3.5 DRY WEATHER FLOWS

With regard to Regulated Developments (See Chapter III), if the Development's average DWF exceeds 10 percent of its allowable release rate, the average DWF shall be considered stormwater for purposes of calculating the maximum release rate. In computing the required storage, the maximum stormwater release rate must be reduced to compensate for the un-detained DWF (above the 10 percent limit).

If the average DWF exceeds the maximum release rate from the site, then a minimum discharge rate 25 gpm may be used to determine the storage requirement- A 3-inch vortex (0.15 cfs), in lieu of a 25 gpm pump, may be used, if Chapter III, Section 3.1.1 –Lot-to-Lot Buildings applies to create more storage capacity. However, if the proposed total direct discharge into the City sewer system exceeds the existing 5-year discharge rate (considering existing connections), then DWM may require public sewer improvements, a custom vortex restrictor, or a pumped stormwater discharge rate to compensate.

3.6 FLOW DIVERSIONS

A flow diversion occurs when an existing connection to a main sewer line is relocated to another main sewer line that is not within the same drainage area of the original main line, or if a new source of water is introduced into the line such as with a vacant lot without sewers. If the existing connections to a site are unknown, it will be assumed that an existing connection was made to the street where the majority of the site's frontage is situated.

In general, flow diversions must be avoided whenever possible. However, in some cases, a flow diversion may be beneficial by increasing the capacity of a sewer line with poor capacity (less than

0.3 cfs/acre), while reducing it slightly in another with excess capacity (over 1.0 cfs/acre). If a flow diversion to a local sewer must be made due to site constraints, as in the case of a vacant lot, the following reductions in the stormwater release rate must be followed.

- If the existing capacity of the sewer segment where the flow diversion is being made is greater than 0.90 cfs/acre, then capacity of that sewer segment where the connection is made must not be reduced by more than 5 percent. Otherwise, the maximum rate of diverted flow must be reduced accordingly to meet the 5 percent limit, or to a minimum of 0.15 cfs, whichever is greater.
- If the existing capacity of the sewer segment where the flow diversion is being made is between 0.7 cfs/acre to 0.90 cfs/acre, then capacity of that sewer segment where the connection is made must not be reduced by more than 4 percent. Otherwise, the maximum rate of diverted flow must be reduced accordingly to meet the 4 percent limit, or to a minimum of 0.15 cfs, whichever is greater.
- If the existing capacity of the sewer segment to which the flow diversion is being made is less than 0.70 cfs/acre, then capacity of the sewer segment where the connection is made must not be reduced by more than 3 percent. Otherwise, the maximum rate of diverted flow must be reduced accordingly to meet the 3 percent limit, or to a minimum of 0.15 cfs, whichever is greater.

The above requirements for flow diversions are waived for sites less than an equivalent 0.5 acres or if the connection to a larger sewer is mandated, as discussed previously in Section 3.4.1 of this chapter. Both the large sewer connection and flow diversion penalties may apply.

PART 4 REQUIREMENTS FOR THE PUBLIC WAY

4.0 SEWER CONSTRUCTION

In areas where there are no existing City sewers to tie into or where property development will cause insufficient sewer capacity, the property or developer may be required to construct new sewer lines in the street at no cost to the City. The DWM, via the DOB, must review and approve all sewer work and appurtenant construction within the public right-of-way. Consult with the DWM for main sewer design and construction requirements including rate control requirements that may apply. Requirements for construction are also listed in the Standard Sewer Specifications of Book 3, available upon request from the DWM.

4.0.1 RIGHT OF WAY AS-BUILT PLANS

As-built plans of new or replaced sewers in the public right-of-way must be submitted to the DWM Sewer Design Section within 30 days after completion of the project. The as-built plans must be sealed by a Professional Engineer or Registered Land Surveyor and be submitted with the form in Appendix II-A Sheet A.109. Plan and profile drawings of the sewers and sewer structures must be submitted in *.PDF format. All electronic files must be submitted in a file folder with one file name reflecting the addresses of the project, with street name first: (e.g. Jackson St. 300-500 S.) A hard copy of the as-built plans must also be submitted.

The public sewers and sewer structures will be accepted by the Department of Water Management only after receiving, reviewing, and approving the following:

1. Construction as-built drawings to be submitted within 30 days after final pipe installation is completed. The as-built plans for public sewer improvements must be the complete final engineering plan set that was approved prior to construction with a notation on the index of sheets to indicate which plan sheets contain as-built information. The as-built plans must be sealed by the professional engineer or surveyor. As-built plans prepared by the contractor are not allowed. Construction as-built drawings must include the following:
    - Location and rim elevation of sewer structures
    - Sewer pipe material and size
    - Invert elevation of all sewer pipes and sewer structures in plan and profile
    - Size and invert at all connections, including drain connections and catchbasin outlets along the main line
    - Pipe slopes based on invert-to-invert elevations
    - Horizontal and vertical clearance dimensions from the installed sewer to other utilities
    - Special detail drawings will be required where installations were not as shown on original drawings due to field conditions or where required for clarity

2. Televising report of the installed sewer infrastructure to be owned by DWM-Sewer. Televising report must include details of findings during video inspection. Televising video must stamp for date, time, start and end points with distance.

3. Sewer construction report stating date, time and name of DWM-Sewer inspector present during sewer construction.

4.1 OTHER UTILITY CONSTRUCTION

4.1.1 CLEARANCE REQUIREMENTS

In the relocation or construction of private or public utilities, including pipe underdrains and/or subdrains, the utility must be located as far away as possible from the City sewer main and appurtenant sewer structures. A minimum horizontal distance of the inner diameter (ID) of the sewer plus 4.0 feet must be maintained between the centerlines of the sewer and the non-water utility, and outer diameter of the sewer (OD) plus 4.0 feet for any water utility. See Section 3.2.1 of this chapter for material requirements for sewers with less than 10 feet of horizontal clearance to a waterline. If the outside diameter/width of utility conduit is more than the sewer OD, a minimum of 4.0 feet horizontal clearance must be obtained from the outside face to outside face. Four feet horizontal clearance is also required from all sewer structures. A minimum of 18 inches vertical clearance from sewers and sewer structures is required for all utilities. Any deviation from the aforementioned clearance requirements must have prior approval from the DWM -Design Section.

4.1.2 EXISTING FACILITIES PROTECTION

For any utility construction in the public right-of-way, the requirements set forth in the latest version of DWM's "Existing Facility Protection" document, .must be followed.

CHAPTER III - REQUIREMENTS FOR STORMWATER MANAGEMENT

PART 1 GENERAL

1.0 APPLICABLITY

Chapter III of these Regulations provides standards and requirements applicable to Regulated Developments, as defined in the Chicago Stormwater Management Ordinance, Chapter 11-18 of the Municipal Code.

1.1 PROVISIONS FOR STORMWATER MANAGEMENT

Among its requirements, the Ordinance sets forth stormwater management provisions for rate control and volume control of stormwater applicable to all Regulated Developments. Also see DWM 's "Sewer Permit Requirements and Fees" booklet, latest edition.

PART 2 STORMWATER PLAN REVIEW

2.0 DESIGN SUBMITTALS

The DWM has designated DOB as its authorized agent to enforce compliance with the Storm water Management Ordinance and its associated Regulations. The initial Plan submittal must be signed by the Applicant and sealed by a Professional Engineer or Licensed Architect. The submittal must be made electronically through the DOB E-Plan system. Projects that require only stormwater review may be submitted via email to the DOB Stormwater Review Team. The submittal shall include the following in *.PDF format: plans, calculations, and invoice form with cashier's receipt to document that the stormwater review fee has been paid to a City cashier..

2.0.1 DESIGN REVIEWS

The Plan must show in detail that the Development will comply with the Ordinance and these Regulations. This showing includes but is not limited to: maximum release rate computations with drainage area maps, rate control and volume control calculations, grading and drainage plans, operation and maintenance plans, and erosion and sediment control plans, and BMP details as applicable. See Chapter II, Part 2 for detailed plan submittal requirements.

Any questions regarding the status of a review should be directed to the DOB stormwater reviewer. An Applicant may request a meeting with the DOB to discuss the project. The DOB will make reasonable efforts to accommodate requests for meetings. The Applicant must keep the DOB informed of project cancellation.

2.0.2 DESIGN VARIANCES

The Commissioner of DWM will consider variances in accordance with Section 11-18-080 of the Ordinance.

2.0.3 PLAN APPROVALS

When the stormwater reviewer determines that no further corrections to the plans and calculations are required, the stormwater reviewer will issue a checklist for final plan approval, which is valid for 90 days. In response to the checklist, the designer must submit an electronic version of the approved plans in *.PDF format as well as stormwater calculations and any required soil borings, appurtenant affidavits, etc. in *.PDF format before the DOB can issue the design approval to the Applicant. See Chapter II, Section 2.1.3 for more detailed instructions on electronic file format and file naming conventions. If the final checklist items are not received within 90 days, the Applicant must request a plan amendment to process the approval. If the final checklist items are not received within 365 days, the Plan must be resubmitted as a new Plan. Once issued, the design approval may have attached conditions that must be addressed in the final Plan before application for a sewer permit. Design approvals shall be valid for 365 days from the date of issuance. If a sewer permit is not obtained within this 365-day time-frame, the Plan must be resubmitted as a new Plan. The application/review fee will be waived if the Applicant can demonstrate that the delay was caused by the City or a State agency as part of another permit review process.

2.0.4 PLAN AMENDMENTS

Any modification that will affect the performance of any proposed BMP or otherwise affect the rate or volume of stormwater leaving the property shall be considered an amendment to the Plan and shall be reflected in the as-built drawings. Examples of Plan modifications that require an amendment include but are not limited to:

- Changes in grading that affect available storage volume or drainage patterns.
- Changes in size or location of connections to the city sewer.
- Structural changes to BMPs that impact storage volume.

- Changes in material or quantity of sewers and BMPs.
- Changes in the operation and maintenance of BMPs.

Examples of Plan modifications that do not require an amendment include:

- Vertical and horizontal alignment adjustments to sewer and sewer structures that will not affect hydraulic performance and that comply with design standards as listed herein.
- Changes in onsite sewer bends, fittings and connections.
- Notification of a change in Ownership of the Regulated Development.
- Utility conflict resolutions, as approved by a DWM field inspector.
- Changes in the Erosion Control Plan that do not increase erosion, if approved by a DOB field inspector.

The Applicant shall submit all amendments to DOB for approval prior to their construction or implementation at the Regulated Development. All amendments that occur within 365 days of Plan approval must be made by submitting the original documentation with the modifications described in text format, shown on the drawings and any revised calculations. Modifications to the structural portion of a Plan that occur more than 365 days after approval must be made by submitting the modification as if it were a new Plan.

2.0.5 AS-BUILT PLANS

The as-built plans must be the complete final engineering plan set that was approved prior to construction with a notation on the index of sheets to indicate which plan sheets contain as-built information. The as-built plans must be sealed by the engineer or architect of record who prepared the design plans. As-built plans prepared by the contractor are not allowed.

The as-built grading plan must contain actual topography (spot grades and/or contours) of the most important components of the grading design such as the finished floor elevation of buildings, overflow elevations and full topography in areas where surface ponding (detention basins, parking lots, rooftops) is proposed. As-built ponding volume calculations using the frustum of cone equation are required when surface ponding is proposed. As-built topography of the CDOT ADA or on-site ADA features of the site is not required for compliance with the Stormwater Ordinance.

The as-built utility plan must include actual rims and inverts of all sewer structures, as-built pipe slopes, and as-built pipe lengths by placing the as-built number next to the design number, and putting a line through the design number. If the as-built number matches the design number, the design number only needs to be circled. Restrictors, backflow preventers, piped overflow elevations, and measured dimensions must also be included in the plan to accurately locate sewer connections.

As-built plans must include BMP details, restrictor structure details and green roof areas in order to indicate that the project was constructed substantially in compliance with the approved stormwater management plan.

As-built plans must be submitted for review to the Stormwater Reviewer who originally approved the design plans within 30 days after completion of construction. As-built plans must be formatted as a single PDF file and may be transmitted by email attachment or email link. Electronic files must be submitted using the file naming conventions from Chapter II, Section 2.1.3 with the descriptive suffix "asbuilt".

2.0.6 SITE INSPECTIONS

City personnel (DWM and DOB) will have the right to inspect the portions of the Regulated Development subject to the Plan without prior notice during regular business hours. Inspections, both during and after construction, will be conducted on selected sites as determined by the City.

PART 3 – RATE CONTROL OF STORMWATER

3.0 APPLICABILITY

The flow rate control requirements discussed in this section apply to all Regulated Developments. All of the items discussed in Part 3 of this chapter must be included in each Plan and be submitted to the DOB for review and approval.

3.1 DESIGN REQUIREMENTS

All Regulated Developments must be designed to manage the 100-year storm event and to provide means to manage and direct overflows to the public right-of-way. The maximum allowable rates of discharge are discussed in Sections 3.3 and 3.4 of this chapter. The number, size, and locations

of sewer connections are also regulated. Applicants may need to provide detention as part of a Plan to accommodate the allowable size of a stormwater connection to the City sewer system.

A minimum of 0.1 feet of freeboard from the high-water level within any detention facility to the overflow to the right-of-way must be provided. An additional 0.1 feet (minimum) freeboard must be provided from the lowest overflow elevation leading to an adjacent property. No more than 400 square feet of impervious surface area can sheet flow to the public right-of-way without detention. This sheet flow requirement shall not apply to fueling stations.

3.1.1 LOT-TO-LOT BUILDINGS

With respect to Developments that are totally or almost totally (more than 85%) occupied by structures or buildings, including basements, the required storage shall be based on a minimum 10-year magnitude storm event for the building area. Building is defined as the greater of either the footprint of the foundation walls or footprint of the building at ground surface subject to Chapter III, Section 3.1.2- Buildings With Tributary Sidewalls or Significant DWF. For any remaining open space, the required storage shall be based on a 100-year magnitude. Means to safely accommodate all storm events up to a 100-year magnitude, via overflows to the right-of-way, must also be provided. Buildings with underground storage vaults must have plans (with backup calculations) sealed by a licensed architect or structural engineer to safeguard against structural failure of floor foundations and downspouts due to maximum hydrostatic pressures during sewer surcharges.

3.1.2 BUILDINGS WITH TRIBUTARY SIDEWALLS OR SIGNIFICANT DWF

If the sidewalls of a building are tributary to the connection, via side gutters or multi-level roofs, then 25 percent of the face of the critical sidewall must be considered as part of the drainage area, but not the release rate. Reference Section 3.4.5 of this chapter. This critical sidewall is the face of the building with the most surface tributary to the detention system. If a site is less than 15,000 square feet in area, standard stormwater detention requirements will apply if the drainage area with sidewalls and/or the average DWF component (without peaking factor) equals or exceeds 15,000 square feet. The conversion of average DWF to area is based on 1.0 cfs into one acre (43,560 square feet). If with the aforementioned considerations, the drainage area is less than 15,000 square feet, the size of the connection may dictate adequate stormwater management measures of detention be implemented.

3.1.3 OPEN SPACE DISCHARGING TO COMBINED SEWERS

Any at-grade impervious open space discharging to a combined sewer, where more than 7,500 square feet of substantially contiguous area will be created or reconstructed, will be subject to rate control requirements. In order to maximize the capacity of the sewer system in a manner that is economically reasonable, developments with more than 75 percent of substantially contiguous at-grade open space that is conducive to the ponding of surface waters shall not have a maximum release rate greater than 0.75 cfs per acre unless limited by the minimum practical rate of discharge, which is accomplished by a 3-inch vortex restrictor with a 0.15 cfs release rate. This requirement shall not apply to fueling stations and Developments that discharge to waterways.

3.1.4 DIRECT DISCHARGING INTO WATERS

A Development that has access to an adjacent waterway must discharge its stormwater to that waterway. For Developments that discharge stormwater directly to Waters, the maximum release rate shall be 1.0 cfs/acre for at-grade open space. There is no release rate requirement for roof areas (without vehicular parking or waste storage) of any onsite buildings, provided the roof areas bypass the Development's stormwater detention system. Any at-grade impervious open space discharging to a waterway, where more than 7,500 square feet of substantially contiguous area will be created or reconstructed, will be subject to rate and volume control requirements. Any development over 5 acres with existing discharge to a waterway shall not exceed such discharge rates, to the extent possible, for all storm events up to a 10-year, including any new roof areas. All overflow pathways from the stormwater management system must be directed towards the waterway.

The 1.0 cfs/acre release rate to Waters does not apply to Developments that discharge to Lake Michigan, Lake Calumet, or the Calumet River North of the O'Brien Lock and Dam at 134th Street. There are no rate control requirements for discharge to these Waters.

3.1.5 BUILDING REHABILITATIONS

With respect to a project that consists of a building rehabilitation, the peak discharge to the City's sewer systems must be delayed or decreased if any new roof areas (proposed over additional stories) and/or additional DWFs (converted to equivalent area) exceed 15,000 square feet. This may be accomplished by disconnecting existing downspouts, installing controlled roof drains or green roof systems.

3.2 RATE CONTROL BMPS

The BMPs below, if properly installed, utilized and maintained, shall be acceptable for use in meeting the Ordinance's rate control requirement. Other BMPs may be acceptable, but only upon demonstration that the BMP will control flow rate as required and upon prior approval by the Commissioner. The following tables present minimum design requirements for the BMPs that can be used to meet the requirements for rate control. Those BMPs with asterisk may also be used for groundwater infiltration purposes.

Rate BMP	**Minimum Design Requirements**
Restrictors	The maximum discharge released is equal to or less than the maximum permissible release rate for the site.
	DWM standard 3-inch vortex restrictors utilize 8-inch diameter outlet pipes to achieve a release rate of 0.15 cfs,. Standard 3-inch vortex restrictors shall be obtained from DWM. See the Appendix II-A Sheet A.27.
	If a release rate less than 0.125 cfs or greater than 0.20 cfs is required, a custom vortex restrictor must be specified unless a plate restrictor can be used. Custom vortex restrictors shall be obtained from approved manufacturers. The plans must clearly indicate the manufacturer, model number and opening size for custom vortex restrictors. Custom vortex restrictors shall be designed to utilize 8-inch diameter outlet pipes, and the minimum interior opening size shall be 2.5 inches. See Appendix II-F for approved manufacturers.
	Steel plate restrictors shall be specified when the minimum orifice size of 2.5 inches can be met. See Appendix II-A Sheet A.27.
	Vortex restrictors and plate restrictors shall be submerged in a catch basin to prevent clogging by providing a half-trap on the outlet pipe and a 2-foot minimum sump.
	Storage facilities upstream of restrictor with half trap must be clear of standing water.
	The restrictor must be easily accessible for DWM inspection and for owner inspection and maintenance.
	For sites that combine sanitary sewage and stormwater downstream from a restrictor, see the Stormwater Manual, Section 2.4.1 for recommended design guidelines.

Detention Basins	If the outlet from a dry bottom basin is less than 2 feet above of the crown of the combined outlet sewer, a check valve must be installed to prevent combined sewerage from backing up into the basin.
	Dry bottom basins must be capable of draining within 72 hours of a storm event.
	Maintenance access to the facility must be provided.

	The bottom of the storage area in a detention basin must be above the seasonally high groundwater table.
	For wet detention basins, a safety ledge at least 4 feet in width must be constructed at a depth of 1 to 2 feet below the normal water surface.
	Wet detention basins without vegetation shall be at least 3 feet deep. The side slopes shall be no steeper than 3H:1V without erosion protection. The sides of the pond that extend below the safety and aquatic benches to the bottom of the pond must have a slope that will remain stable, and be no steeper than 2H:1V. For dry bottom detention basins, side slopes shall be 4H:1V or flatter.
	A sediment forebay shall be incorporated into all wet bottom detention basins.
	After excavation and grading of a stormwater wetland basin, at least 6 inches of topsoil must be applied to the basin bottom and sideslopes. Reference Stormwater Manual.
	At sites where infiltration is too rapid to sustain permanent soil saturation, analysis of the proposed plantings or intended wetland functions must be undertaken. If needed, an impermeable liner (geotextile fabric) shall be designed to maintain adequate hydrology. Where the potential for groundwater contamination is high, such as runoff from sites with a high potential pollutant load, the use of a liner is required.
	Basins incorporating wetlands shall include a buffer to separate the wetland from surrounding land where feasible.

Detention Vaults	Detention vaults under buildings designed only for a 10-year storm capacity, shall be provided with means to safely accommodate 100-year overflows.
	Detention vaults under buildings must be water tight and must be made of concrete—cast-in-place vault, pre-cast vault, or RCP.
	Buildings with underground storage must have plans (with backup calculations) sealed by a licensed architect or structural engineer to safeguard against structural failure of floor foundations and downspouts due to maximum hydrostatic pressures during sewer surcharges.
	Proper ventilation of underground vaults for buildings must be provided in accordance with Building Code Articles 9 and 11, as applicable, to equalize interior downspout pressures and to prevent siphoning effects through the piping and sewer systems.
	Vaults must be designed to be water-tight unless used for groundwater infiltration purposes or unless the bottom of the vault is at least 7 feet above the groundwater table.
	For vaults using infiltration, the underlying soil must have at least a 0.5 in/hr infiltration rate; and the bottom of the vault must be at least 3.5 feet above the groundwater table when connected to a combined

	sewer. Means to control sediment and/or debris from entering the vault must be provided. Pretreatment measures are required for all infiltration vaults.
	If the outlet from a vault is lower than the crown of the combined outlet sewer, a check valve must be installed to prevent combined sewerage from backing up into the vault.

Oversized Pipes	Locking manhole covers shall be provided for pipe diameters 4 feet and larger in areas where children may be present.
	If the outlet from an oversized pipe is lower than the crown of the combined outlet sewer, a check valve must be installed to prevent combined sewerage from backing up into the oversized pipe.
	Structures for oversize pipe must be properly sized.

Parking Lot Detention	Maximum allowable ponding in a parking lot shall be 12 inches. If more than 10 inches of ponding, the O&M Plan must indicate such.
	Adequate visible warning must be provided for any depressed islands during flood stage.

Rooftop Detention	Provide a grading plan of the roof to verify available storage.
	Provide details and hydraulic characteristic of any controlled roof drains in the Plan.
	Minimum orifice size for restricted roof drains is 0.75 inches.
	Provide scuppers or overflows to accommodate 100-year storm events.
	Include approval and seal from a Registered Structural Engineer or Licensed Architect.
	In addition to other applicable code requirements, Sections 18-29-1105, 1106, and 1110 of the Municipal Code must be complied with.

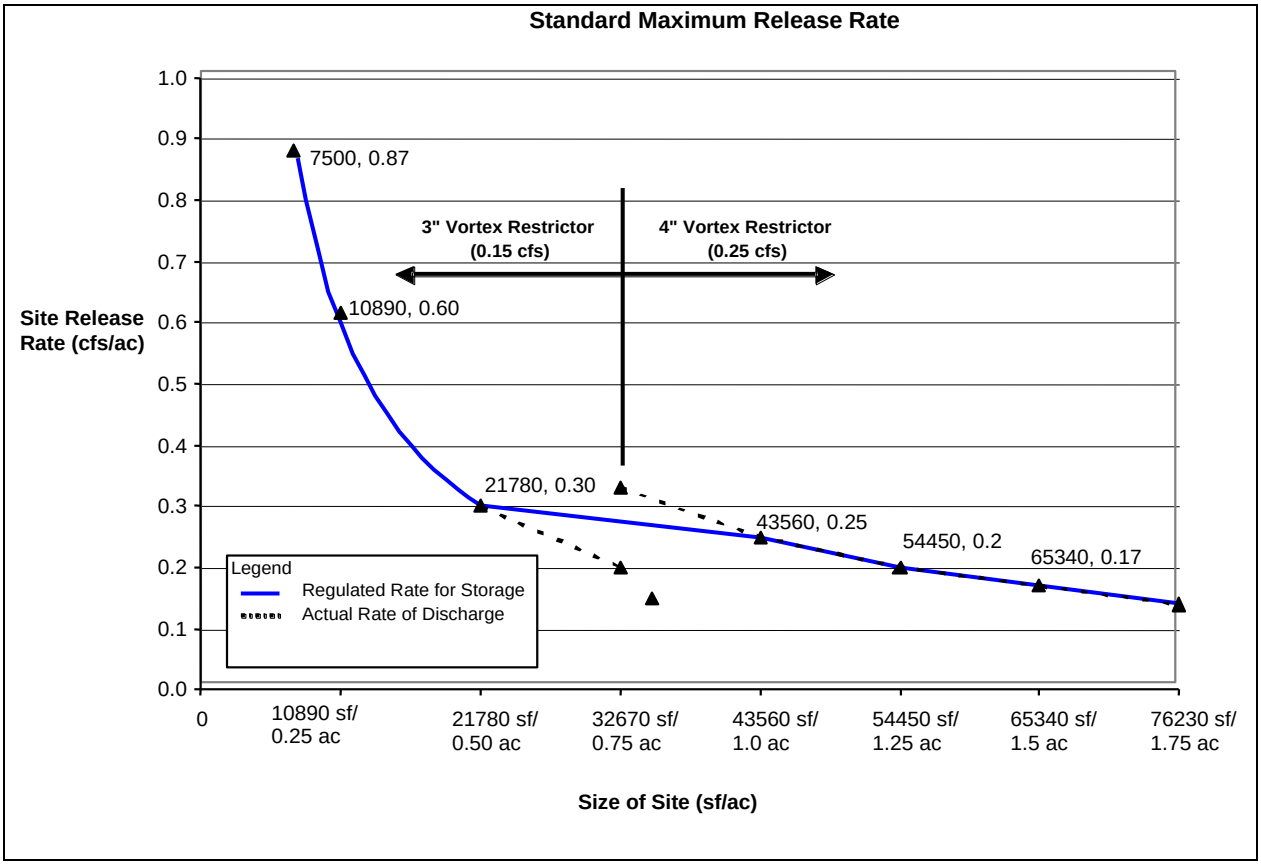
3.3 STANDARD MAXIMUM RELEASE RATE

All Regulated Developments must control the 100-year storm event. Regulated Developments of 7,500 square feet to 1.75 acres in size have the option to accept a standard maximum release rate for the site, as shown below in the Maximum Release Rate Control Chart, or to calculate their own maximum release rate, using the procedures in Section 3.4 of this chapter. The standard maximum release rate is as follows.

- For sites between 7,500 square feet and 21,780 square feet (one-half acre), the maximum allowable release rate is 0.15 cfs, the maximum release rate from a standard 3-inch vortex restrictor. The required storage is based on 0.15 cfs, subject to Chapter II, Section 3.5- Dry Weather Flows.

- For sites between 21,780 square feet (one-half acre) and 43,560 square feet (one acre), the maximum regulated release rate is a linear interpolation between 0.15 cfs (equivalent to use of a standard 3-inch vortex restrictor on a one-half-acre site) and 0.25 cfs (equivalent to use of a custom 4-inch vortex restrictor with 0.25 cfs release rate on a one-acre site), respectively. The required storage is based on the linear interpolation of the two release rates, subject to Chapter II, Section 3.5- Dry Weather Flows.
- For sites between 43,560 square feet up to 76,230 square feet, the maximum allowable release rate is 0.25 cfs, the maximum release rate from a custom 4-inch vortex restrictor. The required storage is based on 0.25 cfs, subject to Chapter II, Section 3.5- Dry Weather Flows
- For sites larger than 76,230 square feet (1.75 acres), Applicants must compute their own maximum release rate using the procedures in Section 3.4 of this chapter.

The above requirements are illustrated in the following chart.



3.4 COMPUTED MAXIMUM RELEASE RATE

In lieu of utilizing the Standard Maximum Release Rate, the Applicant may submit documentation in support of a computed maximum release rate. The 5-year capacity of a sewer line (in cfs/acre) shall be based on the ratio of its full flow segment capacity (in cfs) to its corresponding tributary area (in acres). The computed maximum release rate shall be the lesser of the "Outlet Sewer

Capacity" at the downstream end of the system and the critical "Local Sewer Capacity" as defined by sewer sizes 3.5 feet in diameter or smaller. The following subsections describe the computation to be followed in determining the computed maximum release rate for the Regulated Development.

3.4.1 OUTLET SEWER CAPACITY

The city's combined sewer system conveys flow to MWRDGC interceptor sewers. Outlet sewers are found near the outfall to a waterway or near an MWRDGC, TARP structure. Outlet capacities consider the interconnected network of the sewer system. For the purpose of determining maximum release rates, the capacity of each auxiliary sewer shall be assumed to be the associated outlet sewer capacity. Outlet sewer capacities (in cfs/acre) of the sewer system shall be obtained from a map and table in Appendix III-A of this chapter.

3.4.2 DRAINAGE AREA COMPUTATIONS

The corresponding drainage area (in acres) to a sewer main segment shall be determined from the Sewer Atlas Maps and Drain Atlas Maps. A Sewer Atlas Map(s) delineating the assumed drainage boundary must be submitted with the release rate calculations.

The upstream limits of a sewer line shall be identified by summit manholes or back flow connections to other sewer lines. Drainage area boundaries shall be assumed along right-of-way and property lines. If there are no property lines shown on the Drain Atlas to delineate the drainage boundary, the largest possible drainage area must be assumed. Otherwise, a drainage plan, generated by field reconnaissance or other documentation, must be presented for justification of existing conditions. If there are main sewers on either side of a standard city block, then the main sewer in question shall be assumed to drain each half block (up to the alley) immediately adjacent to it. If there is no main sewer on the other side of the half block, then the main sewer shall be assumed to drain the entire block.

The drainage area to a Development's connection point must be included within the drainage area of the main sewer line. Vacant areas that are currently undrained, must be included in the delineation. A reasonable estimate of vacant area that may be tributary to the main sewer line (upon future development) must be considered in the drainage area delineation.

An adjustment for land use to the computed drainage area of the main sewer line must be made. Adjustment factors to the drainage areas shall be based on a percentage of each land use type. Land use may be determined from aerial photographs. It shall be assumed that a typical residential drainage area, 1.0 acre in size, will yield a 5-year discharge rate of 1.0 cfs. Therefore, if the land use within the drainage area is primarily residential, no adjustment factor to the computed drainage area is required. If the land use within the drainage area is primarily commercial, as in the Central Business District, an adjustment factor of 1.3 must be multiplied to the drainage area. If the land use within the drainage area is primarily industrial, an adjustment factor of 1.5 must be multiplied to the drainage area.

3.4.3 LOCAL SEWER CAPACITY

The local capacity of a sewer line (in cfs/acre) shall be obtained by the ratio of the sewer segments capacity (Q) divided by the respective drainage area adjusted for land use (in acres). In computing the capacity of the local sewer, the proposed drainage area from the site (in acres) must be included (if applicable) in the drainage area (in acres) of the local sewer.

3.4.4 CRITICAL LOCAL SEWER CAPACITY

The critical local sewer capacity (or lowest cfs/acre) shall be the sewer segment with the lowest cfs/acre within a sewer line. Typically, the critical local sewer capacity can be found at the downstream end of a sewer line, but each upstream sewer segment to the point of connection shall be examined to determine the critical section.

3.4.5 MAXIMUM RELEASE RATE

The critical local sewer capacity shall be compared with the outlet sewer capacity of the system. The maximum release rate for the site shall be based on the lesser of the two values. This release rate may have to be adjusted pending applicable site conditions specified in Sections 3.1.2, 3.4.1, 3.5 and 3.6 of Chapter II, and Sections 3.1.3 and 4.1.4 of this chapter. The maximum release rate typically applies to all storm events up to a 100-year magnitude subject to Section 3.1 of this chapter. Unless otherwise approved by DWM, the proposed discharge rate from a site must be less than or equal to the existing discharge rate, considering the size of the existing sewer connection(s).. The maximum discharge rate (cfs) from the Regulated Development shall be based on the maximum release rate (cfs/ac) times the disturbed land area (ac). An example of the maximum release rate computations is presented in the Chicago Stormwater Manual.

3.5 COMPLIANCE WITH APPLICABLE SEWER REQUIREMENTS AND STANDARDS

In making release rate calculations, Applicants must refer to Chapter II, Sewer Requirements and Standards to determine the following: where to make a connection to the city sewer system; the number of connections; and the size of the connections impacting the maximum release rate from the site. The Applicant must also take into account any other applicable special requirements for flow diversions, multiple connections, and dry weather flows.

3.5.1 REQUIREMENTS FOR MULTIPLE CONNECTIONS

Except for developments that are less than 0.5 acres or which adopt a 0.15 cfsstandard 3-inch vortex restrictor(s) for the site, an alternative analysis is required when using multiple connections. See Section 3.3 of this chapter- Standard Maximum Release Rate. The analysis must demonstrate that the selected alternative will maximize use of the sewer system, thereby optimizing the hydraulic benefit to the surrounding neighborhood. At least two alternatives must be examined. The alternative analysis must examine connection points to different sewer lines or different split percentages in flows.

The alternative analysis must include a tabulation comparing the existing and proposed 5-year capacities (in cfs/acre) of the sewer segment where each connection is made. See Section 3.4.3 of this chapter- Local Sewer Capacity. The existing/proposed drainage patterns from the site along with an estimation of the existing/proposed DWF component must be considered in the tabulation. In computing the existing capacity of a sewer segment (in cfs/acre), existing runoff conditions from the site shall be based on the area (in acres) tributary to the connection point. The proposed drainage area from the site (in acres) can be assumed as the total discharge rate (in cfs), from the Development converted on a one to one basis to acres. Any existing/proposed DWF must be considered (without peaking factor) as part of the total discharge from the Development.

If previous means of rate control have not been provided or are inadequate, then the proposed release rate from a development must always be less than the existing discharge rate. For developments that do not meet the aforementioned criteria or that consist of an area 5 acres and larger, may require, as an alternative, upgrading the sewer system in the street. See Chapter II, Part 4.0 for main sewer improvements in the public right-of-way.

3.6 RESTRICTOR CALCULATIONS

Restrictors must be sized in accordance with the maximum release rate and upstream tributary area. When using the standard release rate, the City's standard 3-inch or a custom vortex restrictors must be used. When other control structures are used, the discharge shall be calculated using the orifice equation with the correct discharge coefficient (Cd) as follows:

- Cd= 0.61 for sharp-edged plate bolted to a catch basin
- Cd = 0.82 for pipes less than 2 feet long grouted into sewer

The hydraulic head on a restrictor must be computed from the high water elevation to the upper invert of the half-trap with restrictor. The standard 3-inch vortex restrictor can be specified for release rates between 0.125 cfs and 0.20 cfs. For release rates outside of this range, a custom vortex restrictor must be specified. For custom vortex restrictors, the manufacturer's rating curve must be included in the stormwater calculations.

3.7 REQUIRED STORAGE

The amount of required 100-year storage must be based on the Modified Rational Method. The City of Chicago's rainfall intensities are provided in Appendix III-B and (effective February 1, 2025) are based on Bulletin 75 regional rainfall data. If the size of the Regulated Development is over 20 acres or if dynamic flood routing computations become necessary, such as multiple flow control restrictors at different elevations, then a computational hydrograph method must be used utilizing Bulletin 75 regional rainfall data from the ISWS including a critical duration analysis for 30 minute, 1 hour, 2 hour, 3 hour, 6 hour, 12 hour, 18 hour, and 24 hour storm durations. The C-values or curve numbers (CN) to be used in the analyses shall be based on the following:

		CC-values	CN[1]
• Asphalt Roof, Pavement	=	0.95	98
• Gravel	=	0.70	89-91
• Sandy Soil, flat 0% to 2%	=	0.18	61[2]
• Sandy Soil, ave 2% to 7%	=	0.27	65[2]
• Sandy Soil, steep >7%	=	0.36	70[2]
• Heavy Soil, flat 0% to 2%	=	0.30	74-80
• Heavy Soil, ave 2% to 7%	=	0.42	78-83

- Heavy Soil, steep >7% = 0.47 80-85
- Woodlands, flat 2% = 0.39 70-77
- Dry bottom basins to HWL = 0.75 91-92
- Wet bottom basins to HWL = 1.00 100
- Native Vegetation w/prepared soils = 0.10 39
- Green Roof (Reference USGBC, LEED Reference Guide, current version)

Notes:

1. Where an upper and lower limit is shown for CN, the lower limit assumes hydrologic soil group C and the upper limit assumes hydrologic soil group D. See SCS TR-55 for more information. Soil borings will be required to substantiate use of group C soils.
2. Assumes hydrologic soil group B. Soil borings will be required to substantiate this soil group.

3.7.1 RESIDENTIAL LAND USES—RIGHT-OF-WAY STORAGE

A Regulated Development for residential purposes shall be designed to accommodate the 100-year storm event by providing a corresponding amount of flood storage. Flows exceeding the required onsite storage may be allowed to overflow to the right-of-way, if proper site and roadway grades permit. Right-of-way storage may be utilized as long as onsite storage is provided for a minimum of the 5-year storm event. There must be a sufficient amount of available onsite storage and right-of-way flood storage to meet the 100-year storage requirement. Right-of-way flood storage shall be permitted under the following conditions:

- Right-of-way flood storage (i.e., ponding) is limited to half of the street (from centerline to sidewalk) along the frontage of the property.
- Street grades along the centerline and gutter must allow for such ponding.
- Right-of-way flood storage must meet freeboard requirements to adjacent property.

Right-of-way flood storage is not permitted in alleys, arterial streets or in areas tributary to street viaducts. It is also not permitted in lot-to-lot developments, mixed-use residential developments or when building downspouts along the frontage are splashed directly to the right-of-way without detention.

3.7.2 COMMERCIAL/ INDUSTRIAL/ PUBLIC DEVELOPMENTS

Subject to Sections 3.1.1, 3.1.5 and 3.1.6 of this chapter, the amount of required onsite storage shall be based on a 100-year storm event. Use of the right-of-way for storage shall not be permitted, unless approved by a Plan variance.

3.8 AVAILABLE STORAGE

3.8.1 CALCULATION OF STORAGE

Volume of available storage for detention ponds and parking lots must be calculated using the frustum of cone equation: Volume = (H/3)*(A1+A2+SQRT(A1*A2)), where H=depth and A= areas between the depth. If the topography precludes the use of the frustum of cone equation, as in the case of calculating street storage (if any), then the average end area method with minimum cross sections of every 25 feet shall be used.

3.8.2 DETENTION CREDIT FOR STORMWATER CAPTURE FACILITIES

Special storage facilities designed to capture and reuse stormwater shall be entitled to receive credit toward detention storage for up to 10 percent of the total required detention storage. The stormwater capture facility may be separate or partitioned from the main detention facility and must be designed to be dewatered within 14 days of filling. A gated or valve connection must be provided between the stormwater capture facility and the main detention facility that can be opened to create a freely draining condition when there is no need for the captured stormwater to be reused (such as winter months for irrigation systems). If the stormwater capture facility is hydraulically connected to a combined sewer, a check valve must be installed to prevent sewage back-up if the connection is within 2 feet of the crown of the combined sewer.

PART 4 VOLUME CONTROL OF STORMWATER

4.0 APPLICABILITY

The volume control requirements discussed in this section apply to all Regulated Development. Additional requirements apply to Regulated Developments that discharge to Waters as defined in the Ordinance or to a municipal separate storm sewer system.

4.1 DESIGN REQUIREMENTS

4.1.1 GROUNDWATER INFILTRATION BMPS

For use of standard infiltration BMPs for groundwater recharge, subsoil infiltration rates must be 0.5 inches per hour or greater. If subsoil infiltration rates are less than 0.5 inches per hour, a prepared soil and underdrain system shall be used to facilitate implementation of volume control

BMPs. When infiltration is claimed as a benefit for computing required rate control storage, the underlying soil must have a permeability of 0.5 in/hr or greater. The seasonally high groundwater table must be at least 2.0 feet below the bottom of all proposed groundwater infiltration BMPs. If connected to a combined sewer system, the seasonally high groundwater table must be at least 3.5 feet below the bottom of the BMP and outlet pipe.

Infiltration structures with open bottoms or perforated piping require special care during maintenance. Such infiltration systems may become damaged by standard vactor truck maintenance procedures. Special lids as indicated in Chapter II, Appendix II-A shall be used to identify these infiltration systems. Groundwater infiltration BMPs must be located at least 10 feet down gradient of existing building structures and foundations; otherwise, the affidavit in Appendix IIB must be submitted.

4.1.2 INFILTRATION EXCEPTION

The City will not approve the use of groundwater infiltration BMPs in circumstances where their use would violate any requirement of federal or State law, or any other provision of the Municipal Code, or any regulation issued under federal or State law or the Code, or where their use would breach any agreement that prohibits their use. Examples of circumstances where use of groundwater infiltration BMPs will not be approved include the following: (a) in portions of Developments requiring Spill Prevention, Control and Countermeasure Plans pursuant to 40 CFR 112 for safe handling of oil and oil products; (b) in portions of Developments permitted pursuant to RCRA Part B (35 Ill. Admin. Code Part 724) related to Hazardous Waste Management; (c) in portions of facilities subject to the permit requirements of Chapter 11-4, articles XIX and XX of the Municipal Code regarding Recycling Facilities and Urban Farm Accessory Composting Permits; or (d) in portions of Developments subject to a court or agency order that prohibits the use of groundwater infiltration BMPs.

4.1.3 DRAINAGE AREAS AND VOLUME CONTROL

If a portion of a Development lacks adequate volume control measures, the Applicant must construct a correspondingly oversized volume control BMP in another area of the Development to compensate. The maximum credit that may be claimed for an oversized BMP shall not exceed the amount of runoff generated from one-inch of rainfall over the tributary area to the oversized BMP.

4.1.4 OVERSIZED STORMWATER DETENTION

Subject to approval, the Applicant may show that retention of water captured by a groundwater infiltration BMP is impractical due to insufficient depth to groundwater, or the presence of environmental conditions described in Section 4.1.2 of this chapter. In addition, for Developments that have more than 85 percent of the site covered by structures and where green roofs are impractical, oversized detention may also be utilized. For these Developments, oversized stormwater detention may be utilized to fulfill the volume reduction requirements over impervious areas. This volume shall be provided in addition to any storage volume required for rate control. If additional volume is provided, the release rate shall be reduced to fully utilize the additional volume for a given design storm (up to a 100-year storm event). If this reduced release rate is less than 0.15 cfs, then a custom vortex restrictor (down to a minimum diameter of 2.5 inches) must be used.

4.1.5 VOLUME CONTROL STORAGE

The available storage for volume control shall be in addition to the storage required for rate control if the available storage for volume control is reflected in the runoff coefficient, or C-value, as initial rainfall abstractions. In this case, the C-value as listed in Section 3.7 of this chapter is utilized for the BMP. Alternatively, the following equation may be used to determine a C-value; C = 1- [(BMP storage volume)/(rainfall volume)] provided that the BMP storage volume is accessible to the generated runoff. Reference the Stormwater Manual for further clarification.

The available storage for volume control may be included with the detention storage for rate control if a C-value of 1.0 is utilized for the BMP. In this case, the storage volume provided by the BMP may be used towards the detention storage. Furthermore, if the existing subsoils below the aggregate are permeable (greater than 0.5 in/hour), then the percolation rate within such subsoils may be used in addition to the maximum release rate in determining a Development's detention storage requirement. Percolation rates must be verified in accordance with Section 4.3 of this chapter.

4.1.6 DIRECT DISCHARGE TO WATERS

For sites that discharge stormwater directly to Waters, there are no volume control requirements for roof areas of any onsite buildings, provided that the roof runoff does not come into contact with any at-grade impervious surfaces and by-passes all volume and rate control BMPs. Runoff

from all at-grade impervious surfaces shall be routed through a volume control BMP prior to its discharge into Waters or MS4. The receiving BMP shall be sized to capture the amount of volume control storage (0.5-inches over the impervious areas) required. If groundwater infiltration is impractical for reasons described in Section 4.1.2 of this chapter, the captured volume shall be released at a maximum rate of 0.04 cfs per acre. If the computed volume control release rate is less than 0.15 cfs, then a 3-inch vortex restrictor shall be used. A two-staged outlet structure shall be utilized to fulfill the 100-year stormwater detention requirements beyond those of the volume control requirement.

4.2 VOLUME CONTROL BMPS

The BMPs below, if properly installed, utilized and maintained, are acceptable for use in meeting the Ordinance's volume control requirement. A volume control BMP that infiltrates to subsoils must be designed such that adjacent building basements and foundations are not adversely impacted. If sufficient clearance to existing building cannot be met, the affidavit in support of stormwater infiltration in Appendix II-B must be provided. Infiltration BMPs under buildings are prohibited. Other BMPs may be acceptable, but only upon demonstration that the BMP provides the required volume control benefits. The following table presents minimum design requirements for BMPs that can be used to meet the requirements for volume control. Those BMPs with asterisk may also be used for groundwater infiltration purposes.

Volume Control BMP	**Minimum Design Requirements**
Bioinfiltration Systems	The design of a bioinfiltration facility shall allow no more than 12 inches of depressional ponding in the vegetated area.
	The growing medium soil must be a mix of 40% sand, 30% topsoil and 30% compost. The soil must be at least 2 feet deep and must be 4 inches deeper than the largest planted rootball.
	The underlying soil shall have a permeability of 0.5 in/hr or greater. If the underlying soils do not meet the permeability requirement, underdrains must be installed.
	Bioinfiltration systems must be designed to drain within 5 days of a storm event.
	Soil borings or other data must verify that the depth to groundwater table is greater than 2 feet from the bottom of the BMP (lowest excavated elevation), or 3.5 feet below the outlet pipe when connected to a combined sewer system.

Volume Control BMP	Minimum Design Requirements
	The water flowing to a bioinfiltration facility requires pretreatment for sediments. Where such pretreatment is not provided by an upstream BMP facility, it must be included in the bioinfiltration facility design.
	The bioinfiltration facility shall be located at least 10 feet down gradient from buildings, otherwise submit affidavit in Appendix IIB.
	Maintenance access to the facility must be provided.
	Measures to avoid clogging and compaction of the bioinfiltration facility are required during construction.
	If the bioinfiltration system includes storage in the void spaces of an aggregate layer, the aggregate layer must be completely surrounded by filter fabric and must be comprised of crushed angular stone free of fines. For IDOT gradations CA-1 and CA-7, the maximum aggregate porosity of 0.38 may be used.
	If the lowest underdrain invert under a bioinfiltration system is less than 1 foot above the crown of the combined outlet sewer, a check valve must be installed to prevent combined sewage from backing up into the bioinfiltration system.

Drainage Swales	Velocities must be 1 ft/sec or less during the 2-year storm event.
	Longitudinal slope must be between 0.5 and 2.5%
	Utilize 3H:1V side slopes or flatter. Use slope protection when side slopes are steeper than 3H:1V.
	Surface volume control storage must be provided behind check dams.
	The growing medium soil must be a mix of 40% sand, 30% topsoil and 30% compost. The growing medium soil must be at least 2 feet deep.
	If the drainage swale includes storage in the void spaces of an aggregate layer, the aggregate layer must be completely surrounded by filter fabric and must be comprised of crushed angular stone free of fines. For IDOT gradations CA-1 and CA-7, the maximum aggregate porosity of 0.38 may be used.
	Soil borings or other data must verify that the depth to groundwater table is greater than 2 feet from the bottom of the BMP (lowest excavated elevation), or 3.5 feet below the outlet pipe when connected to a combined sewer system.
	The underlying soil shall have a permeability of 0.5 in/hr or greater. If the underlying soils do not meet the permeability requirement, underdrains may be installed.

Green Roofs	A structural engineer or architect's seal must be included on the Plans to approve of load-bearing capacities of the proposed roofs.
	The maximum permissible slope for extensive green roof systems shall be 25 percent.
	The maximum permissible slope for intensive green roof systems shall be 10 percent.

Natural Landscaping	Areas of natural landscaping shall be planted with deep-rooted vegetation.
	The soil must consist of sandy loam, loamy sand, or a loam with clay content less than 25% and sand content greater than 50%, or a prepared growing medium soil with a mix of 40% sand, 30% topsoil and 30% compost.

Permeable Paving [1]	Subsoils must have at least a 0.5 in/hr infiltration rate or greater. Otherwise, an underdrain system must be used if soil infiltration rates do not meet this requirement.
	The bottom of the aggregate shall be at least 2 feet above the groundwater table or bedrock; if discharging to a combined sewer, the outlet pipe must be at least 3.5 feet above the water table.
	Compaction of the soils underlying the permeable pavement system must be avoided during construction.
	Permeable pavement or infiltration systems must be situated at least 10 feet down gradient from buildings that are not waterproofed against basement seepage, otherwise submit affidavit in Appendix II-B.
	Minimum and maximum slopes on permeable paving shall be 0.5 percent and 5 percent, respectively.
	All aggregate material shall be crushed angular stone and free of fines. For IDOT gradations CA-1 and CA-7, the maximum aggregate porosity of 0.38 may be used. Aggregate material shall be surrounded by filter fabric on the bottom and sides but not the top.

[1] NOTE: If a permeable paving BMP is used, a civil engineer must certify by letter that the subsoil is suitable for permeable pavement usage.

	When using an underdrain system, the water level within the underlying stone base may not rise to within 8 inches of the permeable pavement surface for a 10 year storm event.
	The underlying stone base must be designed to drain within 48 hours of a storm event.
	When using an underdrain system, any impermeable subsoil material must be graded with a minimum 1 percent slope to such system, and the top 3 inches of impermeable soil must be mixed with at least 3 inches of sand.
	For pervious concrete, signage must be placed on the property that states, "This surface is pervious concrete pavement. No sealcoat or overlay material is to be used on this pavement. Call XXX-XXXX before treating this pavement with any material." Insert the number of the property management company or owner.
	When an area of conventional impervious pavement drains toward permeable pavement, a maximum ratio of 3:1 impervious to permeable is allowed.
	If the lowest underdrain invert under permeable pavement is less than 1 foot above of the crown of the combined outlet sewer, a check valve must be installed to prevent combined sewage from backing up into the permeable pavement.

Rooftop Runoff BMPs (Planter Boxes, Rain Barrels and Cisterns)	If a rain barrel or above ground cistern will hold more than a 6-inch depth of water below the drain, it must be securely covered to prevent small children from gaining access to the standing water and to prevent mosquitoes from breeding.
	Above ground cisterns with a capacity of more than 55 gallons must be designed with proper structural foundations.
	Rain barrels and cisterns must include inlet screens to minimize the number of foreign objects entering the vessels.
	Excess water entering the rain barrel or cistern must be designed to overflow to a treatment train or stormwater conveyance system.
	The system must have a convenient and functional means of water withdrawal.
	The system, if applicable to stormwater detention, will receive credit for up to 10 percent of the required site storage and must be drained within 14 days of a storm event.

Stormwater Trees	New trees or existing trees must be on the development site within 20 feet of an on-site impervious surface to count as a volume control BMP. They must also be at least 2 inches in diameter at 4.5 feet above ground level.

Vegetated Filter Strips	The entire filter strip area shall be more than 2 feet above the groundwater table.
	Filter strips must have longitudinal slopes of 1 to 5 percent (2 percent optimum) in the direction of flow.
	The longest flow path of the contributing drainage areas must not exceed 75 feet.
	A level spreader is required whenever the tributary area is not uniformly sloped toward the filter strip.
	When filter strips are used to accept roof runoff for the purposes of volume control, a level spreader must be utilized. The hydraulic loading rate may not exceed 75 feet of roof per one foot of filter strip width.
	The soil must consist of sandy loam, loamy sand, or a loam with clay content less than 25% and sand content greater than 50%, or a prepared growing medium soil with a mix of 40% sand, 30% topsoil and 30% compost. The approved soil type must be at least 18 inches deep.
	The slope up gradient of a level spreader must be less than 1 percent for at least 20 ft while the slope down gradient must be less than 6 percent.
	The length and depth of the level spreader must be at least 6 inches.
	Level spreader must be absolutely level along its width.

4.3 GEOTECHNICAL INVESTIGATIONS

Appropriate hydraulic calculations must be submitted to substantiate proper function of the BMP. The Chicago Stormwater Manual depicts a map showing general areas of the City where sand and clay predominates.

If a site utilizes a subsurface infiltration BMP or detention storage BMP that is not water-tight, and is connected to a combined sewer system, via underdrain or piped connection, then soil boring information must be submitted. As part of any soil boring submission, at least one soil boring must be obtained for every 15,000 square feet of the BMP footprint, and at least 2 soil borings are required if used to determine groundwater elevation.

If the in-situ soil is found to be uniform with sand, or coarser material, for least 2.0 feet below the proposed bottom of the BMP, then a maximum infiltration rate of 1.4 inches per hour may be assumed. Otherwise, percolation tests in the field must be performed to justify a higher infiltration rate. If percolation testing is necessary, at a minimum, one percolation test must be provided for

each separate BMP area. If a BMP area is larger than 15,000 square feet, additional percolation tests will be required for every 15,000 square feet of BMP area. If the BMP is in silty-clay or silty-sand without a piped connection to an outlet sewer, percolation testing is required. Testing must follow the appropriate standards from the American Society for Testing and Materials (ASTM) International or as set forth in the Chicago Stormwater Manual. When the percolation testing has been done, the maximum design infiltration rate shall be 3.6 inches per hour.

PART 5 EROSION AND SEDIMENT CONTROL

5.0 APPLICABILITY

All Regulated Developments that discharge stormwater to any location offsite, including but not limited to a waterway, water body, storm sewer or combined sewer, must install and maintained soil erosion and sediment control measures during construction to reduce or prevent the discharge of sediment and other pollutants in stormwater runoff from the Regulated Development.

5.1 EROSION AND SEDIMENT CONTROL BMPS

All erosion and sediment control BMPs shall be implemented in accordance with the standards and specifications set forth in the "Illinois Urban Manual" published by IEPA and the NRCS. It is available at http://www.il.nrcs.usda.gov/technical/engineer/urban/contents.html.

5.2 SUBMITTAL REQUIREMENTS

The City requires the following submittals for compliance with these Regulations.

5.2.1 DEVELOPMENTS DISCHARGING TO COMBINED SEWERS

Applicants with Regulated Developments discharging to combined sewers must submit the DWM's affidavit (and checklist) to the DOB, stating that they will comply with all appurtenant sediment and erosion control measures during construction. A copy of the affidavit must be kept on site during construction and made available upon request to City personnel. See Appendix II-C.

5.2.2 DEVELOPMENTS DISCHARGING TO WATERS

Any Development discharging to a local waterway or storm sewer, regardless of size, must develop and submit to the DOB, a detailed Erosion Control Plan (ECP) that includes the following.

- Temporary erosion and sediment control measures applicable to each phase of construction activity
- Permanent stabilization measures including landscape seeding and sodding plans
- Means of accommodating 2-year stormwater flows onsite and by-passed during construction
- A maintenance schedule for each erosion control measure. During construction, each erosion control measure shall be inspected weekly or after more than 0.5-inch of rainfall.
- Means to protect infiltration BMPs during construction

A copy of the ECP must be kept onsite during construction and made available for review upon the request of a City field inspector.

Discharges to waterways shall only comprise of stormwater or groundwater. Clean process waters may be discharged pending prior approval by MWRDGC. See DWM booklet "Permit Requirements and Fees", latest edition, for submittal of permits from other regulatory agencies. Signage identifying the discharge as storm only, indicating the address of the discharger, must be posted and be visible along the waterway at the outfall pipe. See Appendix II-A Sheet A.107.

Applicants with Regulated Developments over one acre must comply with all IEPA NPDES requirements for construction activity discharging to Waters. A copy of any SWPPP or Notice of Intent prepared pursuant to the NPDES program must be kept on site during construction and made available upon request to City personnel.

PART 6 OPERATION AND MAINTENANCE REQUIREMENTS

6.0 APPLICABILITY

The Owner of any Regulated Development must submit an Operation and Maintenance (O&M) Plan, adhering to the requirements herein, to be implemented both during and after construction activity. A copy of the O&M Plan must be available for review upon the request of a City field inspector. The Owner is responsible for performing long-term maintenance of BMPs and in informing future owners of such responsibility. The BMPs discussed in Parts 3, 4 and 5 require

O&M activities in order to prevent their short-term failure and to ensure their long-term performance. For stormwater BMPs not included herein, proper O&M procedures must be included.

6.1 SUBMITTAL REQUIREMENTS

All new O&M Plans shall be submitted to the DOB for review and approval. All O&M Plans must include the following information:

- Contact information including address, phone number, and email address for Owner and entity (or entities) charged with maintenance responsibility both during and after construction activity.
- Site map showing the locations of all BMPs that will be constructed at the development. The map must, at minimum, include the following information: (1) discharge points and outfall locations; (2) drainage patterns; (3) stormwater runoff flow direction; (4) expected maximum depths and limits of surface ponding; (5) structural controls used to control stormwater flows; and (6) locations of all selected BMPs on site.
- A summary statement that explains how rate control and volume control requirements are met for the project.
- Operations and maintenance practices – the specific activities required for the operations and maintenance of the BMPs. See Section 6.2 of this chapter.
- Implementation schedule – a schedule for conducting the O&M activities.
- Employee training – Procedures that will be used to train new employees regarding the O&M plan requirements.

Proposed modifications to the O&M Plan must be submitted to DOB for review and approval. The existing and proposed O&M Plans and a copy of the original DOB approval form are required for the modification and must be submitted simultaneously with the proposed amendments.

6.2 OPERATIONS AND MAINTENANCE PRACTICES

In addition to implementing the specific requirements of the O&M plan, the owner or responsible party shall also conduct the following practices:

O&M Plan	Minimum Design Requirements
	O&M Plan must be signed by the owner and notarized using the Operation and Maintenance Plan Owner's Certification Statement, Appendix II-A, Sheet A.108. A copy of the O&M plan must be provided to each new owner before the consummation of a sale, and the O&M Plan must be signed by the new owner, notarized, and submitted to the City to be kept on record.
	O&M Plan procedures and practices must be reviewed and assessed annually.
	Access routes including roadways and sidewalks shall be inspected annually and maintained as needed
	Drainage structures and flow restrictors must be inspected and cleaned semi-annually.
	Volume control BMPs shall be inspected semi-annually and after significant rainfall events exceeding 1.5 inches
	The Owner shall keep an updated log book documenting the performance of the required O&M activities for perpetuity. Log books must be produced upon the request of a City inspector.
	Vegetation shall be maintained on a regular basis.
	Pest control measures shall be implemented to address insects and rodents.
	Signage and fencing shall be installed and maintained where necessary to protect property and the public.
	Underground vaults must include design measures to facilitate cleaning and maintenance. Confined space safety procedures must be followed.

CHAPTER IV – PROHIBITION OF ILLICIT CONNECTIONS

PART 1 GENERAL

1.0 APPLICABILITY

Pursuant to the City's NPDES permit for storm water discharges, the construction, use, maintenance, or continued existence of illicit connections to any storm sewer system is prohibited. This prohibition expressly includes, without limitation, illicit connections made in the past, without regard to whether the connection was permissible under law or practices applicable or prevailing at the time of connection.

PART 2 DEFINITIONS

2.0 ILLICIT CONNECTION

An illicit connection is any drain or conveyance, whether on the surface or subsurface, that allows an illegal discharge to enter a storm sewer system. Illicit connections include, but are not limited to, any conveyances that allow any non-storm-water discharge, including sewage, process wastewater, or wash water, to enter a storm sewer system or any connections to a storm sewer system from indoor drains and sinks, without regard to whether said drain or connection had been previously allowed, permitted, or approved by a government agency. Illicit connections include, without limitation, any drain or conveyance connected from a commercial or industrial land use to a storm sewer system that has not been documented in plans, maps, or equivalent records and approved by the City.

2.1 ILLEGAL DISCHARGE

Unless otherwise approved by a NPDES permit, an illegal discharge is any direct or indirect non-storm-water discharge to a storm sewer system that is not water line flushing, fire hydrant flushing, landscape irrigation water, rising ground water, ground water infiltration, pumped ground water, discharge from a potable water source, foundation drains, air conditioning condensate, irrigation

water, (except for wastewater irrigation), springs, water from crawl space pumps, footing drains, storm sewer cleaning water, water from individual residential car washing, routine external building washdown that does not use detergents, flows from riparian habitats and wetlands, dechlorinated pH neutral swimming pool discharges, residual street wash water, discharges or flows from fire fighting activities, dechlorinated water reservoir discharges, and pavement washwaters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed). Any discharge other than those permitted under these regulations is deemed to be a discharge of waste.

PART 3 REQUIREMENTS

3.0 REQUIREMENT TO ELIMINATE OR SECURE APPROVAL FOR ILLICIT CONNECTIONS

The DWM may require, by written notice, that a person responsible for an illicit connection to a storm sewer system comply with the requirements of this Article to eliminate or secure approval for the connection by a specified date, without regard to whether the connection or discharges to it had been established or approved prior to the effective date of these Regulations. If, subsequent to eliminating a connection found to be in violation of these Regulations, the responsible person can demonstrate to DWM that an illegal discharge will no longer occur, said person may request City approval to reconnect. The reconnection or reinstallation of the connection shall be at the responsible person's expense.

3.1 REQUIREMENT TO ELIMINATE ILLEGAL DISCHARGES

The DWM may require, by written notice, that a person who is responsible for an illegal discharge, immediately, or by a specified date, discontinue the discharge and, as necessary, take measures to eliminate the source of the discharge to prevent the occurrence of future illegal discharges.

APPENDIX I Stormwater Ordinance

MUNICIPAL CODE OF CHICAGO

CHAPTER 11-18
STORMWATER MANAGEMENT

11-18-010 Title and purpose.

This chapter shall be known and may be cited as the "Chicago Stormwater Management Ordinance". It is hereby declared to be the policy of the City to promote programs that minimize the negative stormwater impacts of new development and redevelopment.

(Added Coun. J. 12-13-06, p. 95586, § 1)

11-18-020 Definitions.

For the purposes of this chapter, unless the context requires otherwise, the following terms, regardless of whether or not they are capitalized, shall have the definitions set forth below:

Applicant. A person applying for a Stormwater Management Plan approval or an amendment thereto or variance therefrom. An Applicant must be the Owner or Developer of the Regulated Development specified in the Plan.

Average Dry-Weather Flow. Non-stormwater flow that consists of either (a) sanitary flow as quantified in 35 Ill. Admin. Code, Subtitle C, Chapter II, Part 370, Appendix B ("Table Number 2 – Commonly Used Quantities of Sewage Flows From Miscellaneous Type Facilities"), as amended, or (b) industrial process water flow as quantified by determining the cubic feet per second released during the average of seven consecutive 24-hour periods.

Best Management Practice (BMP). A measure approved by the commissioner and used to control the adverse stormwater-related effects of development.

Building commissioner. The commissioner of buildings or his designee.

Commissioner. The commissioner of water management or his designee.

Developer. Any person who manages, organizes, oversees, plans or supervises the creation of a Regulated Development.

Drainage Area. Any location from which or through which stormwater moves to a drainage system.

Existing Conditions. The condition of a site in the ten years prior to the date of a Plan submission, as shown on historical aerial photographs or other verifiable documentation. If a site has been demolished and/or cleared within such ten-year period, its conditions prior to such demolition and/or clearing may be used as a basis for existing conditions.

Impervious Surface. A surface which substantially precludes the infiltration of water, such as concrete, asphalt, tile or compacted gravel.

Infiltration. The passage, movement or percolation of water into and through soil surfaces, including soil surfaces on roofs and in landscaped areas.

Maintenance Activity. In-kind replacement, restoration, or repair of existing infrastructure, pavement, or facilities including, but not limited to, roadways, parking lots and overhead utilities, provided they will perform the same function for which they were originally designed and constructed.

Owner. The owner, manager, agent or other person in charge, possession or control of a Regulated Development or any part thereof.

Plan. The Stormwater Management Plan required by this chapter.

Regulated Development or *Development.* Any construction activity, excavation or grading, commencing on or after January 1, 2008, that:

(a) disturbs a land area or substantially contiguous land areas of 15,000 or more square feet in the aggregate. Land areas separated by public right-of- way at the conclusion of development shall not be deemed "substantially contiguous" to each other for purposes of this definition. For purposes of calculating square footage pursuant to this paragraph (a), "land area" shall include twenty-five percent of the square footage of the sidewalls of a building that directly connects to the sewer system via side gutters, and shall also include any average dry-weather flow based on a conversion rate of 1.0 cfs (cubic feet per second) into one acre (43,560 square feet), or

(b) creates an at-grade impervious surface of 7,500 or more substantially contiguous square feet, or

(c) results in any discharges of stormwater into any waters or separate sewer system.

For purposes of this definition, square footage shall be calculated based upon the project as a whole, regardless of whether construction proceeds in phases. A Regulated Development shall not include projects located entirely within the public right-of-way at the conclusion of development. With respect to a project located both on the public right-of-way and on private property at the conclusion of development, that portion of the project located on the public right-of-way will not be included in calculating the square footage thresholds of subparagraphs (a) and (b) of this definition. If a project includes Residential Development, the Residential Development will not be included in calculating the square footage thresholds of subparagraphs (a) and (b) of this definition.

Residential Development. A Regulated Development, or portion thereof, which upon completion will result in the subdivision of land into detached single-family or two-family dwellings.

Runoff. The water derived from precipitation falling onto a Regulated Development which is in excess of the infiltration capacity of the soils of that Development, which flows over the surface of the ground or is collected in any watercourse.

Stormwater. Water derived from any form of precipitation.

Stormwater Drainage System. Any and all natural and artificial means used in combination to conduct stormwater to, through, or from a Drainage Area to the point of infiltration or final outlet from a Regulated Development. A Stormwater Drainage System includes, but is not limited to, any of the following: conduits and appurtenance features, canals, channels, ditches, streams, culverts, streets, storm sewers, detention basins, swales, vegetated areas and pumping stations.

Stormwater Management Plan. A detailed formulation of a program of action which describes a proposed or existing Stormwater Drainage System and environmental features applicable to a Regulated Development. The Plan shall include programs for grading and drainage, operations and maintenance, and soil, sediment and erosion control. These programs shall consist of written documentation, scaled maps and drawings with supporting engineering calculations.

Watercourse. Any channel, natural or artificial, lined or unlined, through which water flows or may flow.

Waters. All watercourses and all lakes, ponds, wetlands and other bodies of water, whether natural or artificial, that are located wholly or partly within or adjoining the territorial boundaries of the City.

(Added Coun. J. 12-13-06, p. 95586, § 1; Amend Coun. J. 11-8-12, p. 38872, § 208; Amend Coun. J. 12-14-22, p. 58278, Art. VII, § 6)

11-18-030 Stormwater management plan – Required.

(1) Except as provided in subsection (2), every Regulated Development shall at all times have in place a Plan approved by the City.

(2) After a draft Plan has been submitted to the City and before the Plan has been approved, the Owner or Developer may perform any work at the site that does not require a building permit, in accordance with Section 14A-4-402, provided that the Owner and Developer will be responsible for the full cost, if any, associated with correcting work that does not comply with the Plan that is subsequently approved.

(3) In addition to such other requirements as the Commissioner and Building Commissioner may jointly set forth by regulation, the Plan shall include the following:

(a) Provisions for Stormwater Management:

(1) *Rate Control.* Stormwater Drainage Systems shall manage the peak rate of discharge from the Regulated Development, incorporating the maximum permissible release rate. Provided, however, that Developments that create an at-grade impervious surface of less than 7,500 substantially contiguous square feet and that directly discharge to waters shall not be subject to the rate control requirements of this subparagraph (a)(1).

(2) *Volume Control.* Stormwater drainage systems shall reduce the volume of runoff from a Regulated Development by one of the following measures:

(A) capture one-half inch of runoff from all impervious surfaces in accordance with volume control BMPs; or

(B) for Developments that do not directly discharge to waters or to a municipal separate storm sewer system, achieve a fifteen percent reduction in impervious surfaces from existing conditions.

(b) Provisions for sediment and erosion control.

(c) Provisions for operations and maintenance.

(Added Coun. J. 12-13-06, p. 95586, § 1; Amend Coun. J. 1-24-24, p. 8634, Art. II, § 1)

11-18-040 Stormwater management plan – Exceptions.

(a) A Plan shall not be required for Residential Development.

(b) A Plan shall not be required for Maintenance Activity.

(c) The volume control requirements of a Plan shall not apply to the following:

(1) Developments that do not directly discharge to waters or to a municipal separate storm sewer system and that will upon completion of development have less than fifteen percent impervious surfaces.

(2) Developments consisting of surfaces at an airport that are intended for aircraft operation.

(3) Developments taking place at any facility that is operating under a permit issued pursuant to the National Pollution Discharge Elimination System, 40 C.F.R. Part 122, as amended, for industrial or municipal discharges.

(Added Coun. J. 12-13-06, p. 95586, § 1; Amend Coun. J. 12-14-22, p. 58278, Art. VII, § 7)

11-18-050 Stormwater management plan – Submission, approval and compliance.

(a) The submission of the Plan required by this chapter shall be made by the Applicant to the building commissioner in such form(s) and format(s) as the commissioner may require. As part of the Plan submission, the Applicant shall provide such information regarding the site and its proposed uses as the application may require. The Plan submission shall be submitted as part of the sewer permit review process required by Chapter 11-16 of the Code. The building commissioner shall be the custodian of all such submissions.

(b) The Plan shall be valid only upon approval by the building commissioner.

(c) Before a Plan may be approved, the Applicant must certify to the building commissioner that the Applicant has met or will meet, in addition to the requirements of this chapter, all other city, county, state, and federal requirements related to floodplains, wetlands and water quality.

(d) Following Plan approval and completion of construction, the Owner shall provide to the building commissioner, in such time frame as established by regulation, as-built drawings of the Development in such form(s) and format(s) as the commissioner of water management may require. Consistent with applicable law, the building commissioner shall treat such as-built drawings as confidential trade secrets, and shall provide the Owner with a copy of any appeal,

received by the building commissioner, of the building commissioner's notice of denial provided to a third party seeking inspection and copies of such drawings.

(Added Coun. J. 12-13-06, p. 95586, § 1; Amend Coun. J. 11-8-12, p. 38872, § 209)

11-18-060 Stormwater management plan – Amendment.

A Regulated Development shall be developed, operated and maintained in compliance with its approved Plan until such time as the City approves an amendment or other modification of the Plan for that Regulated Development. The submission of a request for amendment shall be made to the building commissioner in such form(s) and format(s) as the commissioner of water management may require. The building commissioner shall review any request for amendment and shall notify the Applicant of the result of such review. An amendment may only be granted if the building commissioner determines that the amendment will not have a detrimental effect on the Plan.

(Added Coun. J. 12-13-06, p. 95586, § 1; Amend Coun. J. 11-8-12, p. 38872, § 210)

11-18-070 Change of ownership.

(a) Upon a change of ownership of a Regulated Development, each new Owner of the Regulated Development or any part thereof shall comply with the Plan approved for that Regulated Development until such time as the building commissioner approves an amendment or other modification of the Plan for that Development.

(b) A change of ownership of a Regulated Development shall not be considered to be an amendment. However, the Owner of a Regulated Development for which a Plan is required or has been approved shall notify each new Owner of the applicability of the Plan to the Regulated Development, and provide each new Owner with a copy of the Plan, before consummation of the sale of the Development. A violation of this subsection (b) shall be punishable by a fine of $500.00.

(Added Coun. J. 12-13-06, p. 95586, § 1; Amend Coun. J. 11-8-12, p. 38872, § 211)

11-18-080 Stormwater management plan – Fees.

A non-refundable fee for review of a Plan submission or variance request shall be remitted to the building commissioner as part of the Plan submission or variance request. The fee for review of a Plan submission, or variance request based upon Section 11-18-090(b)(2), (3) or (4), shall be as follows:

(a) For Regulated Developments affecting less than 50,000 square feet – $1,000.00.

(b) For Regulated Developments affecting 50,000 or more square feet – $3,000.00.

The fee for review of a variance request based upon Section 11-18-090(b)(1) shall be 50% greater than the amounts specified in (a) and (b) above.

(c) For amendments to a Plan, the fee shall be $500.00 per submission.

(Added Coun. J. 12-13-06, p. 95586, § 1; Amend Coun. J. 11-8-12, p. 38872, § 212; Amend Coun. J. 12-14-22, p. 58278, Art. VII, § 8)

11-18-090 Variance.

(a) Upon written petition of the Applicant demonstrating that exceptional circumstances exist, the commissioner may grant a variance, in whole or in part, from the requirements of Section 11-18-030. To the extent that the Applicant can comply with Section 11-18-030, the Applicant must do so.

(b) Exceptional circumstances justifying the application of this section shall exist only where the Applicant can clearly demonstrate, to the satisfaction of the commissioner, that one of the following four circumstances exists:

(1) The Applicant cannot comply with Section 11-18-030 because of the site's exceptional physical conditions or circumstances. To demonstrate that such conditions or circumstances exist, the Applicant must provide supporting documentation. At a minimum, the Applicant must show that the site is designed to minimize the peak rate of discharge and volume of stormwater from the Development. Such showing must include a BMP feasibility evaluation for each building, parking area, landscaped area and each other significant footprint at the site. The evaluation must include all necessary technical computations and analyses (examples include engineering, architectural and horticultural analyses) to assess fully the applicability of pertinent BMPs and the extent to which they can be applied to comply with Section 11-18-030.

(2) The Applicant cannot comply with Section 11-18-030 without causing a public nuisance.

(3) The Applicant cannot comply with Section 11-18-030 without violating the Building Code or the Fire Code, as those terms are defined in Section 1-4-090 of the code, or a state or federal law.

(4) The Regulated Development is a registered landmark and compliance with Section 11-18-030 would violate the Regulated Development's landmark status.

(c) Applications for a variance shall be in a form prescribed by the commissioner. All applications for a variance shall bear the notarized signature and certification of a professional architect, engineer or geologist licensed in the State of Illinois.

(d) In applying for a variance, an Applicant may propose, and the commissioner may consider, alternative measures to accomplish the stormwater management goals of this chapter.

(Added Coun. J. 12-13-06, p. 95586, § 1)

11-18-100 Site inspections.

To enable the commissioner, or his designee, to monitor compliance with this chapter, the Owner shall permit access during reasonable hours to those areas of a Regulated Development affected by the Plan.

(Added Coun. J. 12-13-06, p. 95586, § 1; Amend Coun. J. 11-16-11, p. 13798, Art. II, § 6)

11-18-110 Regulations.

The commissioner is authorized to promulgate regulations to effectuate the purposes of this chapter. Any regulations so promulgated shall be considered as an integral part of the Chicago Stormwater Management Ordinance and shall be enforceable, and their violation subject to the same penalties, as set forth in this chapter.

(Added Coun. J. 12-13-06, p. 95586, § 1)

11-18-120 Chapter requirements not exclusive.

The requirements of this chapter shall be in addition to, and shall not relieve any person from compliance with, all other applicable provisions of the code.

(Added Coun. J. 12-13-06, p. 95586, § 1)

11-18-130 Enforcement and penalties.

(a) Except as otherwise specifically provided in this chapter, the commissioner, and his respective designee, are authorized to enforce this chapter and any regulations promulgated hereunder, including the issuance of citations for violations.

(b) Owners, developers and any other persons who violate any provision of this chapter shall be jointly and severally liable for each such violation.

(c) The failure to obtain a plan approval if required by this chapter shall subject the violator to a civil penalty of $5,000.00 to $10,000.00. Except as otherwise specifically provided, other violations of this chapter shall be punishable by a civil penalty of $100.00 to $1,000.00 for each such violation. In addition to any penalties imposed for violations of this chapter, violations of any Plan requirement or condition shall be punishable by a penalty of not less than $100.00 and not more than $1,000.00 for each such violation. Each day a violation continues shall be considered to be a separate violation. In addition to the civil penalties specified herein, the City may recover as an additional civil penalty its attorneys' fees and three times the amount of all costs and expenses incurred by the City in abating or remediating a violation of this chapter.

In addition to any other remedies, penalties or means of enforcement provided in this chapter, if the commissioner, on due investigation, makes a determination of noncompliance, he may request the corporation counsel to make application on behalf of the City to the Circuit Court of Cook County for such other order as the Court may deem necessary or appropriate to secure compliance. The corporation counsel may then institute proceedings on behalf of the City, as provided by law.

(Added Coun. J. 12-13-06, p. 95586, § 1; Amend Coun. J. 11-16-11, p. 13798, Art. II, § 6)

11-18-140 Cease and desist orders.

(a) The commissioner may issue a cease and desist order to stop any person from proceeding with any activity regulated under this chapter when the commissioner has reason to believe that

such activity is in violation of this chapter, or that the activity endangers human or animal health, endangers the environment, or has the potential to cause or worsen flooding or wasteful use of water. The commissioner may enforce a cease and desist order pursuant to this section or pursuant to section 11-18-130(d).

(b) Prior to imposing the penalty specified by this section, the commissioner(s) issuing the cease and desist order shall serve the respondent with a copy of the order, stating the nature and location of the violation, the date by which the respondent must cease and desist the illicit activity, the amount of the applicable penalty for noncompliance, the respondent's right to request an administrative hearing to contest the merits of the order, and the time and manner in which a hearing may be requested. Service of the cease and desist order shall be in the manner set forth in Section 2-14-074 of this code.

(c) (1) Within 10 days of service of the cease and desist order, the respondent may submit to the commissioner(s) a written request for a hearing to be conducted by the City's department of administrative hearings. Upon receipt of a timely request for a hearing, either or both of the commissioners shall institute an enforcement action with the department of administrative hearings. Notice of the administrative hearing shall be given to the respondent in the manner set forth in Section 2-14-074 of this code.

(2) In the event the respondent fails to comply with a cease and desist order or fails to request a hearing within the 10-day period provided in subsection (c)(1) of this section, the commissioner(s) issuing the order may institute an action to enforce the order with the department of administrative hearings. Notice of the administrative hearing shall be given to the respondent in the manner set forth in Section 2-14-074 of this code.

(d) Upon the initiation of an enforcement action pursuant to subsection (c) of this section, the department of administrative hearings shall appoint an administrative law officer who shall conduct the hearing within 30 days of receiving; the request. Chapter 2-14 of the code shall apply to any hearing conducted pursuant to this section. The cease and desist order shall remain in effect until the department of administrative hearings has taken final action on the matter. In addition to imposing fines and penalties consistent with this section, the administrative hearing officer shall have the authority to affirm, vacate or modify the cease and desist order.

(e) The penalty specified by this section shall be imposed either upon expiration of the time period in which the respondent may seek review by the department of administrative hearings, or upon the administrative law officer's finding adverse to the respondent, as applicable.

(f) Violations of an order issued under this section shall be punishable by a penalty of $10,000.00. Each day that the violation continues beyond the specified cessation date shall be deemed a separate offense.

(Added Coun. J. 12-13-06, p. 95586, § 1; Amend Coun. J. 11-16-11, p. 13798, Art. II, § 6)

APPENDIX II-A Standard Details (For latest details, visit City Website)

A.1	Vitrified Clay Pipe (VCP) Drain Connections
A.2	Ductile Iron Pipe Drain Connections
A.3	Drain Connections (Left Blank)
A.4	Side Sewer Connections 12” Dia. & Larger Varied Sewer Types
A.5	Concrete Collar Details Between Dissimilar Pipe Materials
A.6	Type “A” Precast Manhole for Sewers 21” Dia. and Smaller
A.7	Type “A” Manhole Precast Risers and Rings 24” and Larger
A.8	Reinforcement for Type “A” Precast Bases and Rings 24” to 36”
A.9	Type “A” Base Tee Manhole Bases 42” and Larger
A.10	Type “B” Manhole
A.11	Reinforcement for Type “B” Manhole Bases
A.12	Type “B” Manhole Configurations
A.13	Modified Type “B” Manhole
A.14	Type “C” Single Drop Manhole
A.15	Type “C” Single Drop Manhole
A.16	Bases for Type “C” Single Drop Manhole
A.17	Type “C” Double Drop Manhole
A.18	Bases for Type “C” Double Drop Manhole
A.19	Precast Tumbling Basin Details
A.20	Flat Top Slab Details
A.21	Catch Basin/Manhole Lids and Frames
A.22	Drainage Structure Details
A.23	Storm Only/Infiltration System Details
A.24	Ladder Rungs
A.25	Abandoned Sewer Structure Details
A.26	Miscellaneous Details
A.27	Drainage Structure Details for Private Development

APPENDIX II-B

City of Chicago - DWM

Bureau of Engineering Services - Sewer Design Section

Design /Construction Affidavit in Support of the Stormwater Infiltration or at Grade Discharge of Downspouts on Residential Buildings

Project Name: _____

Property Address(es)(Property):_____
_____
_____
_____

The Developer/Owner, Designer and Architect (hereafter the Affiants) have authority to sign this Affidavit and have personal facts of the matters contained herein. The Affiants acknowledge that the plans dated _____and approved by the DWM (Plans) form the basis for this Affidavit. The Affiants further acknowledge that in lieu of traditional stormwater management detention/retention and traditional connected and functional downspouts, and to allow for the drainage from each Property, alternative safe and functional flood control measures, in accordance with the Municipal Code, will be installed, connected and operational to the Property as identified above. Further, the Affiants assume full responsibility for the design and construction of the project, and hereby certify that such infiltration and discharge will not create a flooding or safety hazard to the occupants of the subject property or to those adjacent properties as listed above. The alternative safe and functional flood control measures in the above address(es) are feasible for the following reasons:

- Adequate methods to eliminate or control soil erosion have been incorporated into the design and construction.

- Adequate design measures, and/or subsoil investigations have been conducted to ensure that any migration or rising of the groundwater table will not adversely impact existing/proposed buildings.

- Adequate flood proofing of existing and /or proposed basement walls and foundations will be performed to ensure that seepage will not occur.

- Sump pumps to accommodate any surface infiltration will be sized and installed, as needed.

- Positive drainage to the public right-of-way will be provided with at least 0.1 feet of freeboard between an overland flow route to the public right-of-way and low grade to adjacent properties.

If for any reason, within 18 months of building occupancy (as approved by the City of Chicago), the site is found to cause a flooding or safety hazard to the occupants of the subject property or those of the adjacent properties as listed above, the Developer/Owner will be responsible for the performance of the necessary remedial and corrective measures (Responsibilities). The Developer will fully disclose and warrantee these Responsibilities. Further, the terms and facts of this Affidavit will be incorporated into an executed and recorded easement agreement.

Design /Construction Affidavit in Support of the Stormwater Infiltration or at Grade Discharge of Downspouts on Residential Buildings
Page two

Any breach of the conditions contained in this Affidavit, as determined solely by the City of Chicago, that are not cured by the Developer/Owner within 30 (thirty) days of official notice, the City of Chicago may utilize any and all legal and equitable remedies available to the City."

Signed by Designer
Name/Company:
Address:
Phone Number:
Signature:_____, Date_____

Professional Engineer or Licensed Architect's Seal:

_____

Signed by General Contractor
Name/Company:
Address:
Phone Number:
Signature:_____, Date_____

Contractor License Number:

_____

Signed by Developer/Owner
Name/Company:
Address:
Phone Number:
Signature:_____, Date_____

APPENDIX II-C

City of Chicago - DWM

Bureau of Engineering Services - Sewer Design Section

Design /Construction Affidavit in Support of Soil Erosion and Sediment Control Measures during Construction

Project Name: _____

Property Address(es)(Property):_____
_____
_____
_____

The Developer/Owner and General Contractor (hereafter the Affiants) have authority to sign this Affidavit and have personal facts of the matters contained herein. The Affiants acknowledge that the plans, dated _____, and approved by the DWM/DOB (Plans) form the basis for this Affidavit. The Affiants further acknowledge that Regulated Developments, under the City's Stormwater Ordinance, that discharge to a combined sewer system, must provide functional and effective construction soil erosion and sediment control (SESC) at the Property as identified above. Further, the Affiants assume full responsibility for the design, construction and maintenance of SESC measures to prevent the discharge of sediment, dust, and other pollutants in stormwater runoff from the Property.

Construction SESC measures will be installed at the above address(es) prior to land disturbing activities and be maintained in functional order until the property has been "permanently stabilized" (i.e. when all land disturbing activities have been completed, all construction SESC measures have been removed, and an uniform perennial vegetative cover with a density of 70 percent for unpaved areas and areas not covered by permanent structures has been established or equivalent permanent stabilization measures have been completed).

Any breach of the conditions contained in this Affidavit, as determined solely by the City of Chicago, that are not cured by the Developer/Owner within 7 (seven) days of official notice, the City of Chicago may utilize any and all legal and equitable remedies available to the City."

As the General Contractor of the subject Property, I certify adherence to this Affidavit and to the following:

Design /Construction Affidavit in Support of Soil Erosion and Sediment Control Measures during Construction
Page two

The SESC measures will be designed, constructed and maintained in accordance with standards and specifications set forth in the most recent version of the Illinois Urban Manual published by the Illinois Environmental Protection Agency (IEPA) and the Natural Resources Conservation Service (NRCS). As a minimum, all temporary SESC measures such as vegetative cover, silt fences, inlet protection, check dams, etc., shall be designed to accommodate anticipated 1-year storm flows.

Any applicable Storm Water Pollution Prevention Plan (SWPPP) will be followed along with the minimum SESC measures specified herein. The SWPPP will be kept onsite during construction for inspection.

Temporary soil stabilization will be applied to topsoil stockpiles and disturbed areas where construction activity will not occur for a period of more than 21 calendar days.

Permanent soil stabilization shall be done within 14 calendar days after completion of final grading of the soil.

Inspection of SESC measures will be completed at least once every 7 calendar days and within 24 hours of a storm 0.5 inches or greater. SESC measures will be maintained to perform their intended function until the site is permanently stabilized.

All temporary roadways, access drives and parking areas will be stabilized and be of sufficient width and length to prevent sediment from being tracked onto public or private roadways. Any sediment reaching a public or private road shall be removed by street cleaning (not by water flushing) as necessary, or before the end of each workday.

Tires and wheel wells of vehicles and construction equipment shall be free of dirt and/or sediment before leaving a construction area to prevent tracking onto a public or private paved road, or sidewalk.

Trucks loaded with waste material that may be carried off by wind or rain shall be covered prior to leaving the construction site.

All onsite drainage structures within the construction area and down slope within the public right-of-way shall be protected with sediment control measures.

The discharge of sediment into the sewer system, as part of site dewatering, must be controlled and minimized to prevent clogging of the City's sewer system.

The use, storage and disposal of chemicals, cement and other compounds and building materials used on the construction site shall be managed during the construction period, to prevent their entrance into the City's sewer system.

All temporary SESC measures will be removed within 30 days after final site stabilization is achieved or after temporary measures are no longer needed.

Unless adequate sediment and erosion control measures are implemented for all onsite infiltration BMP systems, the installation of such systems will be scheduled after all of the major construction activity is completed.

Design /Construction Affidavit in Support of Soil Erosion and Sediment Control Measures during Construction
Page three

Signed by General Contractor
Name/Company:
Address:
Phone Number:
Signature:_____, Date_____

Contractor License Number:

_____

As the Developer/Owner of the subject Property, I certify adherence to this Affidavit.

Signed by Developer/Owner
Name/Company:
Address:
Phone Number:
Signature:_____, Date_____

APPENDIX II-D CONNECTION SIZING

I. Sanitary Connections Sanitary sewer connection sizes are based on the following table:

*Max. Connection Diameter (in)	Peak DWF (cfs)	Main Sewer Diameter (in)
6	up to 0.35	10
8	0.35 to 0.62	12
10	0.62 to 0.97	15
12	0.97 to 1.55	18 or larger

The DWF (with peaking factor) should be based on the number of fixture units (FTU), reference the *Municipal Building Code, Table 18.29-1108.1.* The conversion from the number of fixture units to drainage area (sf) to peak DWF (cfs) is as follows:

Drainage area = [(FTU – 150) * 7.2] + 4850 sf
Peak DWF = Drainage Area / 43,560 sf/acre * 1.0 cfs/acre

The maximum connection size will be the lesser size indicated by the 2nd or 3rd columns.

II. Storm Connections Storm connections should be one standard pipe size larger than the restrictor size (as determined by the site's maximum release rate), but should not limit the flow. The connection size may be used as a restrictor if it is hydraulically proven, under the maximum design head pressure, that the actual discharge rate will not exceed the maximum allowable discharge rate from the site. Note that all vortex restrictors require an 8-inch diameter receiving pipe or connection. If the connection is used to by-pass upstream flows, then the maximum connection size should be based on the criteria for combined sewers.

III. Combined Connections Combined sewer connection sizes are based on the restricted stormwater discharge from the site plus the peak DWF. The connection size, based on the maximum 100-year flow, assumes that about 3.5 feet of surcharge can occur within the connection. The following table should be used as a guide for sizing the connection.

*Max. Connection Diameter (in)	Max. 100-yr Flow (cfs)	Main Sewer Diameter (in)
6	up to 1.8	10
8	1.8 to 3.2	12
10	3.2 to 5.0	15
12	5.0 to 7.2	18 or larger

The maximum connection size will be the lesser size indicated by the 2nd or 3rd columns.
*Also see Chapter II, Section 3.4- Connection to City Sewer

APPENDIX II-E

Existing Facilities Protection

See the latest version published on the DWM website.

APPENDIX II-F

Approved Vendor List for Custom Vortex Restrictors

City of Chicago Approved Vendor List for Custom Vortex Restrictors

	Vendor	Website Address	Contact Name	Contact Email	Phone Number	Model Type
1	Contech Engineered Solutions	conteches.com	A.J. Margetis Bob Schwartz	amargetis@conteches.com; bschwartz@conteches.com	(773) 661-9794 (847) 778-9168	Fluidic-Amp with Sleeve
2	Hydro International	hydro-int.com	Phillip Taylor	ptaylor@hydro-int.com	(608) 205-4441	Reg-U-Flo S-Type with Push-fit mount and Reg-U-Flo VM-Type

Notes:

1 Vendor, size, and model number vortex restrictor must be labeled on the Utility Plan and Operation & Maintenance Plan
2 Vendor detail of vortex restrictor must be added to a detail sheet in civil plan set
3 Provide rating curve of restrictor with calculations
4 Any vendor of vortex restrictors is welcome to submit specs for review. Upon approval of product, vendor will be added to approved list for the following year

APPENDIX III-A Outlet Capacity Maps

See the latest version published on the DWM website.

APPENDIX III-B CITY OF CHICAGO RAINFALL INTENSITIES

City of Chicago
Department of Water Management

Name of Project: _____
Address: _____
A/E of Record: _____

(FOR COMPUTATIONS AND REFERENCE)

City of Chicago Intensity-Duration-Frequency (IDF) Curve

(Based Bulletin 75 Rainfall Data)

		Storm Event in Years									
		5-Year 20% Annual Chance		10-Year 10% Annual Chance		25-Year 4% Annual Chance		50-Year 2% Annual Chance		100-Year 1% Annual Chance	
	Storm Duration (min)	Rainfall (in)	Average Intensity (in/hr)	Rainfall (in)	Average Intensity (in/hr)	Rainfall (in)	Average Intensity (in/hr)	Rainfall (in)	Average Intensity (in/hr)	Rainfall (in)	Average Intensity (in/hr)
5 minute	5	0.52	6.240	0.62	7.440	0.77	9.240	0.90	10.800	1.03	12.360
10 minute	10	0.90	5.400	1.08	6.480	1.35	8.100	1.58	9.480	1.80	10.800
15 minute	15	1.16	4.640	1.39	5.560	1.74	6.960	2.03	8.120	2.32	9.280
30 minute	30	1.59	3.180	1.91	3.820	2.39	4.780	2.78	5.560	3.17	6.340
1 hour	60	2.02	2.020	2.42	2.420	3.03	3.030	3.53	3.530	4.03	4.030
2 hours	120	2.49	1.245	2.99	1.495	3.74	1.870	4.35	2.175	4.97	2.485
3 hours	180	2.75	0.917	3.30	1.100	4.13	1.377	4.80	1.600	5.49	1.830
6 hours	360	3.23	0.538	3.86	0.643	4.84	0.807	5.63	0.938	6.43	1.072
12 hours	720	3.74	0.312	4.48	0.373	5.61	0.468	6.53	0.544	7.46	0.622
18 hours	1080	4.04	0.224	4.84	0.269	6.06	0.337	7.05	0.392	8.06	0.448
24 hours	1440	4.30	0.179	5.15	0.215	6.45	0.269	7.50	0.313	8.57	0.357
48 hours	2880	4.71	0.098	5.62	0.117	6.99	0.146	8.13	0.169	9.28	0.193
72 hours	4320	5.08	0.071	6.05	0.084	7.49	0.104	8.64	0.120	9.85	0.137
5 days	7200	5.63	0.047	6.68	0.056	8.16	0.068	9.39	0.078	10.66	0.089
10 days	14400	7.09	0.030	8.25	0.034	9.90	0.041	11.26	0.047	12.65	0.053