



DEPARTMENT OF WATER MANAGEMENT
CITY OF CHICAGO

Department of Water Management (DWM) Sewer Requirements for
Existing Facilities Protection
September 2016

GENERAL REQUIREMENTS

The utility company/government agency and its contractors are responsible for the adequate protection of the existing sewers, drain connections, sewer structures and bench monuments during construction of new utilities and/or adjustment to existing utilities and the use of heavy equipment within the limits of the project.

It is the responsibility of the utility company/government agency and its consultants/contractors to obtain the necessary background information from the sewer unit of the DWM in meeting requirements for design drawings/contract plans and for existing facilities protection during the construction stage.

Records from the sewer unit of the DWM include: existing sewers, drain connections, sewer structures, benchmark locations, ordinance grades, age of sewer and pipe material.

Copies of sewer records and benchmarks can be obtained by payment at the Sewer Unit of the DOB, located at City Hall, 121 N. LaSalle Street – Room 804, Chicago, Illinois 60602. Phone (312) 744-3351

PRIOR TO CONSTRUCTION

A permit is required from the sewer unit of the Department of Buildings (DOB) prior to the construction of, or repairs to, underground sewers, drain connections or sewer structures, including the adjustment of sewer structures and removal/replacement of frames and lids. The permit must be obtained by a drainlayer currently licensed from the sewer unit of the DOB.

The Sewer Unit of the DOB must be notified at least 48 hours in advance of construction, with the name and telephone number of the resident engineer who could be contacted for any sewer emergency.

**Sewer Requirements For
Existing Facilities Protection**
Page two

The contractor is responsible for the adequate protection of the existing sewers, drain connections, sewer structures, and bench monuments during construction operations and use of heavy equipment in the limits of the project.

The minutes of the pre-construction meeting must state that this "Requirements for Existing Facilities Protection" was provided to the resident engineer and the contractor for compliance.

DURING CONSTRUCTION

The contractor must locate and promptly and properly connect to the new sewers all live house drains, catch basin drains and other existing laterals, drains and sewers, of whatever nature, which are connected to the existing sewers being repaired or replaced.

Existing catch basin laterals to be reused must be rodded and flushed in the presence of the sewer unit of the DWM Inspector. A new connection to the main sewer is required if the existing catch basin lateral is not approved by the sewer inspector.

Manholes, catch basins and inlets must be protected from the entry of asphalt/debris into the sewer system during construction. The contractor must mark locations of all sewer structures on the sidewalk before starting pavement removal/replacement. Adjustment of frames and lids of sewer structures must be completed prior to street resurfacing.

POST CONSTRUCTION

Upon project completion of roadway resurfacing or reconstruction, resident engineers must contact the DWM Sewer Evaluation Section at 312-747-4680 to schedule a field meeting for project acceptance (i.e. address punch list items). Also, the contractor must provide the DWM Sewer Design Section, for review and acceptance all required DVDs of the sewer mains.

Hard copy of as-built plans of new or replaced sewers in the public right-of-way must be submitted to the DWM Sewer Records 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 of the DWM Stormwater Regulations. Plan and profile drawings of the sewers and sewer structures must also be submitted on a CD in .TIF 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.). As-built plans must be included as a punch list item to be completed prior to acceptance of the project.

**Sewer Requirements For
Existing Facilities Protection
Page three**

STREET RECONSTRUCTION PROJECTS

For street reconstruction and new sewer main installations, all non-concrete catch basins and gutter boxes are to be replaced, irrespective of their condition, with new DWM standard catch basins or inlets. The only exceptions are concrete or lined catch basins that are in good condition.

For fire station and bus terminal driveway/pad reconstruction, all non-concrete structures located within the right-of-way are to be replaced or lined, irrespective of their condition, in accordance with DWM standard structures and materials.

STREET RESURFACING/STREETSCAPE PROJECTS

For other street restoration projects, the utility company/government agency or its representing contractor must coordinate with the DWM Evaluation Section to arrange for the inspection of the existing catch basins. DWM inspectors will determine the need for catch basin repair, replacement or cleaning.

UTILITY INSTALLATIONS

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 and appurtenant sewer structures. Plans submitted for DWM-OUC review must show horizontal and vertical clearance dimensions from any adjacent City sewers in close proximity. The minimum desired horizontal clearance from all sewer structures is (4) feet. Clearance requirements from sewers are as follows. Also see "Sewer Televising Requirements".

Clearance from utilities other than water:

A minimum distance of the inner diameter of sewer (I.D.) plus four (4) feet must be maintained between the sewer and the utility center lines. If the utility's conduit is plastic/HDPE, and is 6 inches in diameter and smaller, clearance may be I.D. plus three (3) feet. If the outside diameter/width of utility conduit is more than the sewer O.D., a minimum of four (4) feet horizontal clearance must be obtained from the outside face to outside face. The minimum desired vertical clearance from crossing is (18) inches. If either horizontal or vertical requirements are not met, the sewer must be rehabilitated with an appropriate liner (MH to MH) or replaced with DIP, unless prior approval is allowed by the DWM to evaluate the sewer (via televising) before and after construction.

Directional borings 6 inches in diameter and smaller may cross under a sewer with a minimum of (2) two feet of vertical clearance. Open cut installations below a sewer are not allowed.

**Sewer Requirements For
Existing Facilities Protection
Page four**

Clearance from water:

IEPA separation requirements must be met. A minimum of ten (10) feet horizontal clearance (edge-to-edge) or eighteen (18) inches vertical clearance is required between sewer and water-mains. If the latter is met, a minimum horizontal clearance of the outer diameter of sewer (O.D.) plus (4) feet must be maintained. Sewer crossings below a water-main must have minimum vertical clearances of (6) inches. The existing sewer must be rehabilitated with a water-main quality liner or replaced with DIP for encroachments within the aforementioned limits for a distance of (10) feet from the edge of the water-main. When a sewer crosses above a water-main, no encroachments within (18) inches are allowed and the sewer must always be of water-main quality material for a distance of (10) feet from the edges of the water-main.

Utility Installation in the Parkway:

Private sewer drains (w/basements) typically have approximately 5 feet of cover. Due to potential vertical conflicts in the parkway, the contractor must televise all private drains after construction. A copy of the DVD must be presented to the DWM sewer inspector for project acceptance. Upon project completion, resident engineers must contact the DWM Sewer Evaluation Section at 312-747-4680 to schedule a field meeting for project acceptance.

PILE AND CAISSON INSTALLATIONS

All structural loads on piles/caissons within 35 feet of a sewer shall be distributed outside of a 45 degree envelope projected from the sewer's width at its invert. The first row of piles/caissons within the 45 degree envelope must be installed at a minimum of 3.5 feet below the sewer's invert. Any subsequent row(s) of piles/caissons must also be installed at a minimum of 3.5 feet below the 45 degree projected line.

Pile/caisson driving peak particle velocities (PPV) shall be limited to a desired maximum of 2-inches per second with a minimum clearance of 10 feet (and 20 feet for brick sewers) from a sewer's outer edge. The minimum edge-to-edge clearance from a sewer and a drilled caisson shall be four caisson diameters.

If the aforementioned clearance requirements are not met, backup calculations sealed by a SE (with PPV and settlement estimates) must be provided to the DWM for the record to ensure that no settlement or damage to the sewer will occur. The sewer must be televised before and after construction to verify its condition. In addition, a monitoring plan for ground and sewer settlement must be implemented during construction. Should any sewer settlement be observed, the contractor must cease operations and contact the DWM Evaluation Section immediately at phone number (312) 747-4680.

Sewer Requirements For Existing Facilities Protection

Page five

If the proposed clearance is less than 4 feet for either pile/caisson installations, the sewer must be rehabilitated with an appropriate liner (MH to MH) or replaced with DIP, unless prior approval is allowed by the DWM to evaluate the sewer (via televising) before and after construction.

SEWER TELEVISION REQUIREMENTS

For the following cases, the contractor is required to conduct a pre-construction videotaped inspection prior to the issuance of a sewer permit and a post-construction videotaped inspection prior to acceptance of the sewer. The videotape must be submitted to the sewer unit of the DWM for review and approval. Should pre-construction televising indicate conditional issues with the sewer, it shall be replaced or rehabilitated prior to construction as part of the project improvement.

- Street Construction/Reconstruction Projects
- Viaduct Clearance Improvements
- Driven Piles within 10' (20' for brick sewer)
- Augured Caissons within 4 caisson diameters
- Utility crossings with vertical clearance $18'' \leq x < 24''$ above sewer
- Utility installations in the parkway crossing private drain connections

The utility company/government agency or its representing contractor must maintain access to the existing sewer facilities including sewer structures at all times and coordinate the proposed improvements with the DWM Evaluation Section Engineer/Inspector to avoid any interruption of the sewer facilities maintenance or services. The sewer flow has to be maintained at all times.

DESIGN STANDARDS

The following requirements must be followed in the design of new sewers and sewer structures in the ROW:

Materials used for sewer construction must be either reinforced concrete (Type III or better), or vitrified clay pipe, or ductile iron pipe (wrapped in polyethylene wrap).

Catch basins located within intersections must be relocated about ten (10) feet from the property line for partial street restoration or twenty five (25) feet from the property line for full street restoration to prevent conflicts with pedestrian walkways and handicapped ramps. Relocations are not permitted if it results in increasing the number of existing catch basins.

Sewer Requirements For Existing Facilities Protection

Page six

Normally 3 pairs of catch basins are used for 600 - foot blocks and 1 to 2 pairs are used for 300 - foot blocks. Any increase in the number of existing catch basins on a block must be justified, via a grading plan.

Wherever hydraulically beneficial, any dead-end sewers in streets crossing a proposed sewer route will be extended with an overflow connection made to the new sewer subject to approval by the DWM Design Section.

In reconstructed viaduct areas or streets with:

Less than or equal to three (3) feet of cover, replace all sewers three (3) feet in diameter or smaller with class 52 ductile iron pipe.

Less than or equal to five (5) feet of cover, replace all sewers five (5) feet in diameter or smaller with class 52 ductile iron pipe or RCP, Class V, and

More than five (5) feet of cover, videotape all sewers larger than five (5) feet in diameter for lining or other rehabilitation.

Note: Refer to sewer unit of the DWM "Detail Specifications for Sewer Construction, Book 3" for complete requirements on sewer construction in the public way by private contractors.

FLOW RESTRICTORS

The DWM's Rain Blocker Program must be maintained with any roadway improvement. The design of any roadway improvement must consider limiting the number of catch basins to the extent practical. The number of existing structures should not be increased.

- Flow restrictors must be installed in all catch basins outside of the Central Business District. Restrictors shall not be installed in catch basins in close proximity to viaduct areas, bus stops, or emergency entrances. The DWM must approve the non-installation or removal of any restrictor. Requirements for restrictor installation are as follows:

Sewer Requirements For Existing Facilities Protection

Page seven

- Arterial Streets/Bus Routes: 3-inch orifice restrictor
- Residential Streets: 3-inch vortex restrictor
- Alleys: 3-inch orifice restrictor in the last CB.
- Closed lids are required on all manholes except at intersections where a perforated lid shall be used.

Flow restrictors are available for pick-up at the DWM's Central District, located at 3901 S. Ashland Avenue, by calling (312) 747-8736, between 7:00 am-3:00 pm, 48 hours in advance.

FRAMES AND LIDS

City manholes have solid lids except at street intersections where perforated lids are used. Perforated catch basins/manholes grates with ½-inch wide slots are the current citywide standard. However, in viaduct areas, the "old" standard grates with the larger 1-1/2" wide slots must be used.

The contractor is required to replace any broken frames and lids of sewer structures with standard frames and lids of the DWM. In adjustment or reconstruction of sewer structures, any non-standard frames and lids must be replaced with standard frames and lids. In adjustment or reconstruction of inlets, any non-standard inlets (gutter boxes) must be replaced with DWM standard inlets.

The frames and lids of sewer structures to be abandoned, removed, or filled must be salvaged and delivered to Water Management located at 3901 S. Ashland Avenue. Delivery must take place between 10:00 am and 2:00 pm Monday through Friday. Call (312) 747-1777 to arrange for delivery.

BENCHMARK PROTECTION

In order to protect City's Bench Monuments (standard and sub-standard), all bench monument locations within the limits of the project must be listed on the plan sheets. If not found or damage to the bench monuments is made or encountered, please contact DWM Evaluation Section at 312-747-4680. Design plans must be submitted to and approved by the DWM for the replacement or relocation of any standard or sub-standard (i.e., secondary) benchmark.

ORDINANCE GRADE MAINTENANCE

When replacing curb and gutter, ordinance grades must be shown on the plan. To the extent possible, the proposed top-of-curb grades must be within 0.2 feet of the approved ordinance grade.

**Sewer Requirements For
Existing Facilities Protection**
Page eight

LANDSCAPING REQUIREMENTS

The DWM discourages tree plantings that are located within the outer diameter of the sewer plus 4 feet (OD+4), but if necessary, may allow tree plantings with a maximum mature height of 15 feet and a maximum mature root depth of 2.5 feet. Potential plantings that meet this requirement include the following:

- Ornamental shrubs or bushes meeting the mature height and mature root depth discussed above.
- Flowers or other non-wood herbaceous plants.
- Above ground, removable planting containers that can be moved by construction equipment in the event that sewer main repair is required.

Existing trees planted above sewer mains that do not meet these requirements do not need to be removed. However, if such existing trees are removed; all trees installed in their place must meet these requirements. The recommended minimum clearance between the outside of the sewer/structure and the center of a tree is fifteen (15) to twenty (20) feet depending on the size of the sewer.

ABANDONMENT OF SEWER FACILITIES

Existing sewers to be abandoned must be removed or filled with grout and so noted on the plans. Sewers 24" in diameter and larger must be filled with grout (smaller sewers are closed with a plug, while 24" diameter and larger are closed with a bulkhead.) Within the Central Business District, all abandoned sewers must be injected with flowable fill. Flowable fill must be used instead of grout, in other locations whenever possible.

When a sewer structure is abandoned, all pipe openings must be plugged, structures filled with trench back-fill, lids and frames removed and surface restored as per the sewer unit of the DWM standards and specifications.

DAMAGE TO SEWER FACILITIES

No permanent structures are permitted over the existing sewers and sewer structures located within the public right-of-way or easement without prior approval of the DWM Design Section.

**Sewer Requirements For
Existing Facilities Protection**
Page nine

In case of any damage to the City's sewer system, private and public drain connections, and/or bench monuments, the contractor must contact the sewer unit of the DWM Evaluation Section immediately at (312) 747-4680. The contractor must, at his/her cost, replace the affected sewers, drain connections, sewer structures and/or bench monuments as necessary. The sewer flows must be maintained at all times.

In locations where the main sewer is not being replaced and the existing drainage facilities are disturbed or damaged during construction by the contractor, it will be the contractor's responsibility to restore and replace the damaged facilities at his/her expense to the satisfaction of the DWM.