

SECTION 2 IMPROVEMENT PLANS

2.1 Engineering Plan Submittals

Complete plans and specifications for all proposed water distribution systems, sanitary sewer facilities, storm drainage facilities, streets, commercial development and subdivisions, including any necessary dedications and easements shall be submitted to the Public Works Department for review and approval prior to any construction. The Contractor shall not commence operations on site until the Director of Public Works has approved the plans, fees have been paid, and a pre-construction meeting has been held.

Water and sanitary sewer system design shall be approved by the Public Works Director prior to being submitted to the Department of Environmental Quality. Storm drainage, erosion control and street designs shall be submitted to and approved by the Public Works Director. All required approvals shall be obtained prior to beginning construction. Pre-construction meetings must be held with the design engineer, contractor, inspection and city personnel prior to the start of construction. Design calculations and testing results shall be submitted to the Public Works Director as required.

Plan and profile drawings are required for all proposed transportation-related improvements, storm drainage facilities, and sewer and water improvements. Plan sheets are required for street lighting, erosion control, signage, and landscaping. Improvement plans shall be prepared by a Professional engineer licensed within the state of Montana. The plans and specifications shall bear the seal of the Engineer that is responsible for the design.

The plans shall clearly show the beginning and end of work by station and coordinates. The plans shall show a north arrow, Township, Range, Section numbers, land owner name (s), edge of existing pavement, cut/fill slope limits, right-of-way limits, curve data, stationing, bearings, control points, survey monuments, street name signs, traffic signs, existing and new drainage features, existing creeks, details shown and referenced, fences, retaining walls, and connection details shown at beginning and end of project. On subdivision or improvement plans exceeding three sheets a Title sheet shall be included.

An overall storm drainage, water and sewer plan must be shown on a single sheet when the plan and profile sheets for each utility exceed three (3) sheets or all the plan sheets are not in a common North – South orientation. If there are privately owned roads or utilities included in the plans this must be noted on the title sheet.

Three sets of engineering plans must be submitted for review by City Staff. All three sets of engineering plans shall be submitted to the Assistant to the Public Works Director. One of these sets will be distributed by Public Works to the Fire Marshall and two sets will be distributed within the Public Works Department.

Upon final approval a vellum or master copy of the cover sheet must be provided to the City for signatures of the Public Works Director and Fire Marshal. All plan sets on the job site must be the final approved set with the required approval signatures.

For further specific minimum requirements see the Plan Checklist in Appendix D.

No changes or revisions to the approved plans shall be considered effective without the following:

1. The assigned City Inspector may verify and approve the change. The Inspector shall note the change on his/her field drawings, or
2. For significant changes as determined by the Director of Public Works, a copy and an electronic file of the revised sheet noting the revision shall be submitted to the Director of Public Works for approval. The revision shall be noted in a revision box. Revision approval is required prior to construction.

2.2 Horizontal and Vertical Control

Permanent benchmarks and datum shall be clearly shown on the plans and include location, description, and elevation. The Montana State Plane Coordinate System, Federal Information Processing Standard (FIPS) Zone 2500, North American Datum, 1983 (NAD 83), International Feet, shall be used for horizontal control, or referenced to this datum. The North American Vertical Datum 1988 (NAVD 88) shall be used for the vertical control. A control point file is required so that the project can be oriented in the City's GIS database. The control point file can be a unique layer in the CAD drawing or a shape, text, or tabular file.

An electronic copy of the GIS Control Points is shown in Appendix I. A digital copy of this information is available from the Public Works Department.

2.3 Design and Development Requirements.

Design Requirements. All water, sanitary sewer, storm sewer, and street systems necessary to provide service to and within a development shall be constructed at the Developer's expense. .

Development Requirements. All subdivisions and developments shall be in compliance with The Subdivision Regulations of the City of Whitefish, except as appended or amended herein.

Development projects that include several phases of the project with utilities being installed with each phase are required to provide a utility master plan for the entire project with the first phase submittal.

It shall be the responsibility of the Developer to construct all streets and utilities from the existing facilities to the far property line of the development. All utilities shall be within a public right-of-way or recorded easement to permit future Developers free and unobstructed access.

A Latecomers Agreement may be approved by the City enabling the Developer to recover a pro-rated share of utility installation costs from late comers. The agreement shall apply only to service connections on the extended main. The agreement shall not apply to future extensions of the main. Section 1.20 of this document provides additional information on Latecomers Agreement.

It is the Developer's responsibility to obtain and provide the City with all easements and rights of way necessary to extend roadways and utilities to the development and provide for future extensions.

2.4 Site Development Review.

At Site Development Review Meetings, proposed projects are reviewed and general requirements of each department are identified. Meetings are currently held Thursdays at 1:30pm in the Planning Department. Site review applications must be submitted by the Friday before for the item to be placed on the following meeting's agenda. All proposed developments, excluding single family residences, must submit site plans and information as required on the Application for Site Development Review in Appendix A. Application forms are available from the Planning Department and on the City's website (www.whitefish.govoffice.com). The application and eight (8) copies of site plan should be submitted to the Public Works Department. If the plans do not meet the minimum checklist requirements as to content, they will not be routed to City Staff for review.

The applicant will be notified in advance of the Site Development Review committee meeting at which their project will be considered. The applicant and/or their representative are invited to attend the Site Review Committee meeting. The applicant will receive a copy of the Site Development Review Committee's minutes.

2.5 Construction Inspection, Testing, and Quality Control.

A Professional Engineer, or his/her designated representative, shall provide construction inspection and testing as required. Inspection and testing shall be in accordance with the current edition of the Montana Public Works Standard Specifications and the City of Whitefish Engineering Standards. The following quality control procedures will apply to all utility and roadway construction projects. The City reserves the right to conduct independent quality control testing at the City's expense during any phase of the construction. The Contractor shall bear the expense of all failed tests and the expense of bringing the material into conformance with the required specifications.

1. All water main valves and fittings, fire hydrants, sewer manholes, wet wells and

sewer/water main crossings shall be inspected and approved by the Professional Engineer or his/her designated representative, prior to backfilling.

2. A Professional Engineer or his/her designated representative, shall be present for all tests required in Section 02660, Section 02720, and Section 02730 of the Montana Public Works Standard Specifications. A written record of all tests results shall be submitted to the Public Works Department.
3. A Professional Engineer or his/her designated representative, shall provide the Public Works Department with photocopies of daily inspection reports, including Proctors and compaction test results for all projects or complete the weekly construction and inspection report form included in Appendix J.

Minimum Compaction Testing Procedures. The following minimum compaction testing procedures shall apply to all utility and roadway construction projects. Random longitudinal test locations are required. The Professional Engineer or his/her designated representative, may require additional tests. For projects containing less than 300 linear feet of improvements, a minimum of one compaction test for each improvement shall be required for the improvements listed below.

1. Utility Trenches and Underground Structures:
For trenches up to eight (8) feet in depth, density tests shall be taken at twelve (18-24) inches above the pipe at one-half the trench depth and at the surface. For trenches greater than eight (8) feet in depth, density tests shall be taken at twelve (18-24) inches above the pipe, at one-third and two-third the trench depth levels, and at the surface. The minimum density shall be 95% Standard Proctor, \pm 3% optimum moisture. Each test location shall be separated horizontally from a prior test location.

Horizontal Frequency:

1. Utility Mains – One set of tests per 300 feet.
 2. Service Lines – One set of tests per three (3) services per utility type.
 3. Open Pit – Minimum of one test (Open Pit – at each manhole, water valve, storm inlet, curb inlet, vault, etc.)
2. Street sub grade:
 - All sub-base: 95% Standard Proctor, \pm 3% optimum moisture. One random density test, every 300 linear feet of street.
 - All crushed gravel base: 95% Standard Proctor, \pm 3% optimum moisture. One random density test, every 300 linear feet of street.

Television Inspection. Prior to the City's acceptance of the sewer system, the Contractor must provide television inspection of the system. The City of Whitefish reserves the right to inspect all underground utility systems by the use of a television camera prior to final acceptance. Any deficiencies shall be corrected at the Contractor's expense. The

cost of any sewer line cleaning or additional television inspection performed by the City shall be paid for by the Contractor.

2.6 Subdivision Improvement Agreement.

The Whitefish Subdivision Regulations provide for a Subdivision Improvement Agreement (SIA), whereby a subdivision final plat may be issued prior to the completion of required infrastructure improvements.

In such cases Developers sign a Subdivision Improvement Agreement with the City. They shall list all remaining improvements, their costs, and provide a schedule for completion. The Developer also provides a letter of credit from a local financial institution equal to 125% of the total cost of improvements, to guarantee that all improvements are completed, and on time.

It will be the Developer's sole responsibility to remain aware of, and meet, the completion deadline in the Subdivision Improvement Agreement. The City will attempt to send one letter, 45 days before the improvement completion date, warning the developer of the need to complete all improvements or extend the letter of credit. Depending on the facts and circumstances, the City may not in all cases be willing to have the completion date extended. If the situation is not satisfactorily addressed by 14 days before the letter of credit expires, the City will make a written demand upon the financial institution providing the letter of credit, for release of funds to the City equal to 125% of any remaining improvements. The City will then have the improvements completed, using the Developer's funds.

2.7 Monumentation.

Prior to any excavation within existing street intersections, a thorough search shall be made for existing intersection monuments, including checking with the Public Works mapping department. A statement from a Registered Land Surveyor shall be submitted to the Public Works department noting the search and findings of such search. If monuments are found, they shall be perpetuated by standard survey methods, including referencing to at least three (3) accessories.

As a minimum, monumentation for new subdivisions shall be in accordance with the Administrative Rules for Montana, Uniform Standards for Survey Monumentation, ARM 24.183.1101 Uniform Standards for Monumentation.

Monuments shall be placed as shown in Standard Drawings SD-2a or SD-2b. The monument shall be capped with a brass or aluminum cap stamped with the name and license number of the responsible land surveyor. The cap shall be recessed at least 1/8" below the final asphalt surface. Monument boxes w/lids of the same type as city water valves (six inches inner diameter) may be used.

2.8 Construction Control.

- A. Work performed for the construction or improvement of City streets and utilities whether by or for a private Developer or by a City contractor, shall be done to the satisfaction of the City and in accordance with approved plans. It is emphasized that no work shall be started (including excavation) until such plans are approved and the required bonds posted. Any revision to such plans shall be approved by the Director of Public Works before being implemented. Failure to receive the City's approval prior to construction can result in removal or modification of construction at the expense of the Contractor or Developer to bring it into conformance with approved plans.
- B. The City reserves the right to reject any installation not inspected and approved by the Director of Public Works or his designate.
- C. Upon satisfactory completion of all required tests and acceptance of the main extension, the City will allow the extension to be connected to the City system.
- D. No water main extension shall be energized except for test purposes or sewer mains connected to the existing system until the new extension has been accepted by the Director of Public Works or his designate, all fees and charges have been paid and all recorded easements for utilities located outside of the Public right-of-way have been delivered to the City. The City may not operate the water or sewer system prior to receiving a certification letter from the design engineer stating that the system was completed in accordance with the approved plans and specifications.
- E. Within 90 days of completion of a main extension, the applicant shall provide the Public Works Department with record drawings that accurately indicates the main extension and appurtenances as actually installed in plan and profile.
- F. No main extension will be accepted until satisfactory record drawings are provided. The two (2) year guarantee/maintenance period shall not start until this provision has been met.
- G. Combustible materials shall neither be stored on-site nor used as building material until the water system and roadways are installed, tested and approved by the Public Works Department.

2.9 Record Drawings.

During the progress of work the Design Engineer/Contractor shall maintain one set of prints of the improvement plans showing all the "as-built" changes. This set shall be available on the job for spot inspection by the Public Works Department.

Prior to the acceptance of the improvements, the Design Engineer shall submit the

original plans to the Department labeled "RECORD DRAWINGS" showing all changes made during construction and shall be signed by the engineer of record and the contractor. In addition, a digital copy of the plans, survey control, and control point file shall be submitted.

Corrections shall be made to the original plan set. Original data that is superseded shall be crossed/hatched out. New data shall be border clouded and identified with the respective revision number within a triangle. Do not eradicate original figures, nor make corrections over them. All lettering must be clear and legible. Extensive changes, which cannot be made clearly on the original plan, should be made on a new sheet (supplemental sheet). The new sheet shall be signed by the Design Engineer and included with the "RECORD DRAWINGS". Any supplemental sheet shall be of the same quality as the original plans. The sheets that these replace must remain in the plan set but shall be crossed out with a note in the revisions block which identifies that this sheet is superseded by the replacement sheet number.

Upon project completion and **before final acceptance, a Professional Engineer shall submit record drawings (as described above) and certify in writing to the City that the construction of the public utilities and streets meets the requirements of the approved construction documents.**

2.10 Two-Year Maintenance Bond.

As a condition precedent of receiving final acceptance of infrastructure improvements, the Property Owner, Developer, or Contractor shall provide the City with a Maintenance Bond of ten per cent (10%) of the total value of the public infrastructure constructed within the subdivision, development, or phased development. The Contractor shall guarantee all materials and equipment furnished, and construction work performed for maintenance and repair work on existing public infrastructure for a period of two (2) years from the date of written acceptance of the work by the City.

The Maintenance Bond shall remain in full force for a two-year period after acceptance of the entire City infrastructure by the City for maintenance. The City expressly reserves the right to draft the Maintenance Bond for repairs not completed by the Property Owner, Developer, or Contractor within thirty (30) calendar days of being advised that repairs are required.

The Project Engineer or his/her designated representative, shall conduct a two-year inspection, to be attended by a representative from the Public Works Department. The inspection shall take place not less than ninety (90) days prior to the expiration date of the Maintenance Bond. The Maintenance Bond will be released when all deficiencies have been corrected to the satisfaction of the Director of Public Works. The Director of Public Works, the Project Engineer, or his/her designated representative, shall notify the Principal as listed in the Maintenance Bond.

2.11 Infrastructure Acceptance Policy.

Interim use of the underground utilities will be considered only after all required information is presented. The City will accept the new utilities for interim use and maintenance after the completion of the preliminary punch list items that affect the use and adequacy of the utility. A letter of acceptance for interim use will then be issued from the Director of Public Works and sent to the Developer and the Planning and Building Department for their files. The Developer/Owner will be responsible for the complete installation of all required infrastructure, even though the interim use of the utilities is allowed before final acceptance. Financial guarantee will be required for the punch list items that have not been accepted by the City prior to filing the final plat, annexation, or issuance of the building permit when the property is already within the City limits.

The purpose of this policy is to define the procedures and parameters by which the City of Whitefish will accept Developer/Owner-installed publicly owned and maintained infrastructure:

Interim Use. If a Developer/Owner wishes to begin construction of structures in an approved subdivision or any other property that has required infrastructure improvements, the public works department will require the following items be completed prior to the interim or final use of the new facilities:

1. The water and sewer utilities will be completely installed, inspected, tested, and accessible to City personnel.
2. A comprehensive walk-through with City staff, the Engineer and the Developer.
3. The Engineer of Record will certify in writing to the City that the utilities have been installed in accordance with the plans and specifications.
4. Copies of the required tests are supplied to the engineering division as well as the affected utility. The tests include the log or tape of the TV sewer inspection, bacteriological tests, pressure tests, hydrant flow tests, and other testing as required.
5. Engineer's certification will include a preliminary punch list of items that remain to be completed upon the installation of the finished grade or pavement.
6. Immediate repair or replacement of failures due to problems with materials and/or workmanship.
7. A schedule for the completion of the balance of the improvements.
8. A copy of the daily construction progress and inspection reports, including construction progress photographs.
9. Roads must be suitable for emergency vehicles.

Final Acceptance. Final acceptance of the public utilities will occur upon completion and acceptance of all required infrastructure development. Final

acceptance will be contemplated upon the completion of the following items:

1. A comprehensive walk-through with City staff, the Engineer and the Developer.
2. Completion of the final punch-list items.
3. Inspection and repair of the previously accepted facilities found to be out of compliance with the interim acceptance conditions. The City reserves the right to require re-inspection and repair of the conditionally accepted utilities if damage from final construction is suspected.
4. Final certification from the Engineer that the entire development has been completed in accordance with the approved plans and specifications.
5. Submission of final record drawings in an electronic format suitable for City archival.
6. Submission of the complete set of daily construction progress and inspection reports and photographs.
7. Copies of the required tests are supplied to the engineering division as well as the affected utility. The tests include the log or tape of the TV sewer main inspection, bacteriological tests, pressure tests, hydrant flow tests, compaction tests, and other testing as required.

Final acceptance of a completed utility system component can be granted prior to completion of the infrastructure development as a whole, if the City of Whitefish is provided with a Subdivision Improvement Agreement and letter of credit from a local financial institution showing that the remaining infrastructure components will be completed within a specific time frame and that the completed infrastructure operates independently of the guaranteed portion.

2.12 Cold Weather Construction Requirements.

As detailed by the adopted City of Whitefish Resolution No. 06-05 the following requirements shall apply to cold weather construction of new water mains, sewer mains, storm sewer mains, roads, appurtenances, and earthwork in the existing or proposed public right of way and shall be in effect when the air temperature is lower than 32 degrees or when frozen soils conditions exist. The Owner must sign a copy of the Cold Weather Construction Agreement in order for the project to proceed. A copy of the Cold Weather Construction Agreement is included within Appendix E.

Inspection Requirements

1. Full time inspection is required under the supervision of a Montana licensed civil engineer.
2. The Field Inspector shall document on-site activities using the DAILY INSPECTION LOG FOR COLD WEATHER CONSTRUCTION included in Appendix E. An inspection log shall be completed for each day of active construction, signed by both the Field Inspector and the Project Engineer, and

submitted to the Public Works Director with all pertinent attachments no later than 9 a.m. the following business day.

3. The Project Engineer shall provide the Public Works Department with current proctor test results for all backfill material prior to use of that material.
4. The Field Inspector shall perform or oversee soil compaction testing for all backfill material to verify optimal moisture content and compliance with approved specifications. Compaction tests shall be taken at intervals of not more than 100 feet and at various depths, with 50% of the tests in the lower half of the trench or road section.

Warranty Requirements

Prior to connecting any new mains to existing City facilities, the Owner shall enter into a two year warranty agreement with the City for all water mains, sewer mains, storm sewer mains, roads, appurtenances, or earthwork constructed in the public right of way or proposed right of way during cold weather conditions. The warranty shall be enforced with a letter of credit issued by a local bank in the City's name. The letter of credit shall provide an amount equal to 50% of the City approved engineer's estimate for the cost of improvements.

Construction Requirements

1. A competent Project Supervisor, employed by the General Contractor, shall be on the job site continuously during periods of active construction.
2. Frozen soil, aggregate, or other material shall not be placed in backfill areas and all frozen soil, aggregate, snow, ice, or other material shall be removed before proper material is placed in fill area.
3. The length of open trenches shall be limited to not more than 50 feet during active construction.
4. Each trench shall be backfilled to match the surrounding grade when construction activity in that trench ceases for any period greater than one (1) hour.
5. Soil compaction shall be in accordance with the optimal moisture results of pertinent Proctor testing and shall conform to the approved plans and specifications.
6. Pipe installers shall abide by the manufacturers' cold weather guidelines, as well as the Uni-Bell Handbook of PVC Pipe, or an equivalent standard regarding the handling and installation of pipe, gaskets, fittings, etc.

The Public Works Department reserves judgment and authority to schedule or limit work near existing City utilities at their discretion.

A lack of compliance with these requirements may be cause for the Public Works Department to issue a stop work order or require work to be redone as a condition of final acceptance.