

STAGE 5 – UTILITY INSPECTION and TESTING SUMMARY

[Chapter 3 Link](#)

[Chapter 4 Link](#)

[Chapter 5 Link](#)

Stage 5 occurs prior to final paving or surface restoration and when all subsurface infrastructure is complete. The checklist identifies the specific tests for each infrastructure system. At a **minimum**, the submitted Stage 5 packet must include the **completed signed checklist** (herein) and:

- Draft As-Built Plans
- Passing test results
- Survey points
- Daily inspection logs
- Ditchcards for each service
- Preconstruction Meeting Notes
- Photographs
- DEQ letter of completion
- Draft Private Stormwater Facility Maintenance Covenant and Access Easement
- Draft Stormwater Operation & Maintenance Manual
- Necessary easements

Once the Stage 5 packet has been received and reviewed by City, the City shall schedule an inspection/walk through with Engineer of Record and others as appropriate. All identified outstanding punch list items identified during this stage shall be completed to City satisfaction prior to progressing to Stage 6.

It is the responsibility of the Developer's Engineer of Record to submit the required documentation, inspection, passing test results, survey points, and **draft as-built plans** that sufficiently document the constructed infrastructure. Incorporate differential level loop elevations into draft as-built plans. Review of the required documentation, test results, inspection, survey points, and draft as-built plans are to ensure quality control procedures apply to all utility ~~and surface~~ construction projects. Failures during this phase could result in extended timeframe and costs.

Testing must be completed as per the Missoula Public Works specifications. The required sanitary sewer and stormwater main test sheet (as applicable) is provided in the checklist for submitting specified test results.

SUBSTANTIAL COMPLETION

If portions of the public infrastructure are deemed substantially complete, by the assigned City Engineer, then the existing Improvements Agreement and security shall be amended. An email request to amend the existing security and Improvements Agreement shall be submitted to the Engineering Coordinator with an amended Estimate of Probable Cost (EPC) of outstanding improvements (not complete and/or not substantially complete) before the expiration of the existing Improvements Agreement or security.

- Substantially complete is defined as installed, passing tests, and backfilled (if required). A maximum 90% of the total item cost can be deducted from the original EPC. A retainage of 10% will be held until the infrastructure is accepted by the City.

CONDITIONAL ACCEPTANCE

The City acknowledges that only in exceptional conditions (weather) a conditional (partial) acceptance is needed.



The conditional acceptance will be discussed with City staff at time of scheduled walk through.

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If a conditional (partial) acceptance is granted, the warranty period for the infrastructure that is deemed conditionally accepted will commence, but may be extended, when all Stage 6 requirements for **all infrastructure** (water, sewer, stormwater, surface, and other) has been satisfied. Additionally, the following must be denoted:

- Inspection and testing (**must include manhole and pipe testing**, Bacti and water pressure testing) of all subsurface utility work must be performed and submitted to City (includes minimum requirements identified above);
- Extension of services will not occur at the time mains are being constructed by the public infrastructure contractor. The public infrastructure contractor will pull main and may pull service stub permits and construct those pieces of infrastructure. The extensions/connections (from the stub to the structure) will not occur until the City has conditionally accepted the mains (Stage 6). The extensions/connections will be completed by the structure excavation contractor (not public infrastructure contractor) and the extensions/connections will require a connection permit.

Acceptance/Denial of Stage 5

The Developer's Representative/Engineer of Record will receive an email confirmation that the Stage 5 packet has been reviewed and acceptable to progress to Stage 6. If, at this time, it has been determined that a *Conditional Acceptance* may be granted, **the Stage 6 packet will still need to be submitted.**

Denial of Stage 5 will be submitted to Developer's Representative/Engineer of Record via email with outstanding items that need completion.

Proceed to Stage 6, Final Inspection and Acceptance

STAGE 5 – UTILITY INSPECTION and TESTING CHECKLIST

This checklist is a guide to meet *Missoula City Public Works Standards and Specifications Manual*, specific regulations (Titles 12 & 17, Articles 3, 5, and 9), and other minimum requirements that will enable City Staff to adequately review and approve submitted documents required for this stage. *(This checklist is not all inclusive, so other information may also be required.)*

Project Name: _____

City Project # (**MUST** be provided): _____

Developer's Representative Name/Contact Info: _____

Developer's/Owner Name/email/Contact Info: _____

Date Submitted and version (year) of Manual: _____

Plans Submitted ("x" as applicable): ~~Surface~~ Sewer Water Storm

Other (specify) _____

[Standard Drawings](#) may be revised at the discretion of City Engineering, usually during the latter part of a calendar year.

Draft as-built plan sheets are to be submitted in Stage 5 and shall include and sufficiently document the constructed infrastructure.

STAGE NUMBER	STAGE PROCESS
1	Project Development/Initiation
2	Conceptual Design Review
3	Preliminary Construction Plan Review
4	Release for Construction (RFC) Plan
5	<u>Utility</u> Inspection and Testing
6	Final Inspection and Acceptance
7	Warranty Inspection

REQUIRED SUBMITTAL DOCUMENTATION

Do not leave boxes blank; ALL BOXES MUST BE EITHER CHECKED (X or v) or N/A

STAGE 5 – UTILITY INSPECTION and TESTING

All documents shall be submitted as a single bookmarked pdf, using the formatting and file naming conventions described below. Any submittals that have not been properly organized nor submitted will be returned for resubmittal.

- _____ Completed Stage 5 Checklist signed by Preparer/Developer’s Representative (this document)
- _____ Draft As-Built (Final as-builts will be required at Stage 6 and shall reflect any punch-list generated changes)
- _____ Engineer/Inspector’s daily logs and construction reports
- _____ Service Ditchcards
- _____ Preconstruction Meeting Notes
- _____ Necessary recorded easements
- _____ Information from suppliers for materials used, recommended installation practices and operation manuals

REQUIRED SANITARY SEWER AND STORMWATER TESTING and DOCUMENTATION

- _____ ~~Stub drawings for each service~~ Service Ditchcard record drawing, each an individual .dwg & .pdf file, including address, size, permit number, date etc. as per City template, ~~for each sewer service-~~
- _____ ~~Service stub out record draft drawing, each in individual .dwg file—legal, permit number, date, etc.—~~
- _____ Testing Results
 - _____ Sanitary Sewer Test Sheet ([Use this form](#)):
 - _____ -TV Video Results
 - _____ Air Testing Results of Piping
 - _____ Sanitary Manhole Vacuum/Hydro Testing Results
 - _____ Light/Lamping Test Results
 - _____ Mandrel/Deflection Test Results
 - _____ Compaction
- _____ Invert Elevations
 - _____ Manhole inlet and outlet pipe invert (or crown) elevations
 - _____ Catch basin inlet and outlet pipe invert (or crown) elevations
- _____ Pertinent construction photos of all manhole, service and tank connections, couplings, service tees, taps, thrust-blocks with whiteboard w/date, station and fitting description
- _____ Engineer’s letter to DEQ certification the improvements
- _____ Draft Private Stormwater Facility Maintenance Covenant and Access Easement
- _____ Draft Stormwater Operation & Maintenance Manual

REQUIRED WATER TESTING and DOCUMENTATION

- _____ ~~Service Ditchcard record drawing, each an individual .dwg & .pdf file, including address, size, permit number, date etc. as per City template, for each water service Ditchcard for each service, including address, measurements, tap size, etc., as per template~~
- _____ Testing results – Compaction, Bacti, Pressure
- _____ Pertinent construction photos of all connections, valves, bends, hydrants, etc., before and after polywrap, after thrustblock with whiteboard w/date, station and fitting description
- _____ Service Representative Sample Log (for all main replacement projects)
- _____ DEQ Certification Letter

REQUIRED ~~SURFACE TESTING and SURVEY~~ DOCUMENTATION

- _____ ~~In place density tests~~
- _____ ~~Compaction testing of utility trenches and/or roadway elements installed within public ROW and public easements~~
- _____ ~~All test results for materials used and/or placed during construction (concrete testing, bedding, asphalt testing, gradations, proctors, etc.)~~
- _____ ~~Photographs of applicable infrastructure, all manhole inlets and outlets, thrust blocks, tank connections, etc.~~
- _____ Survey Points
 - _____ ~~Manhole rim elevation and horizontal coordinates~~
 - _____ ~~Valve box horizontal coordinates~~
 - _____ ~~Curb box horizontal coordinates~~
 - _____ ~~Fire hydrant horizontal coordinates~~
 - _____ ~~Dry well rim elevation and horizontal coordinates~~
 - _____ ~~Catch basin rim elevation and horizontal coordinates~~

DIGITAL DATA REQUIREMENTS

File Formats Include:

- One (1) bookmarked Adobe Acrobat®*.PDF format CD containing ALL RFC Plans

AND One (1) copy of:

- Autodesk® AutoCAD™ *.DWG format
- Or ESRI® ArcMap™-compatible format file

File Formats Included:

- _____ ~~Adobe Acrobat®*.PDF containing ALL RFC Plans drawings, bookmarked.~~
- _____ ~~Autodesk® AutoCAD™ *.DWG format~~
- _____ ~~ESRI® ArcMap™-compatible format file~~
- _____ Other: _____

File Names:

File names should contain the prefix associated with the utility type followed by the suffix containing the city file number. **Utility Prefix + Project Number = Filename**

1. Lot/Parcel Layout/Easements and Streets: *“surface-city file number”*
2. Sanitary Sewer: *“ss-2020-036”*
3. Water Utilities: *“w-2020-036”*
4. Storm Drainage or Stormwater: *“sw-2020-036”* or *“sd-2020-036”*
- 4-5. Ditchcards need separate .pdf file named as the permit: *2023-MSS-<type>-#####.pdf*
- 5-6. Combined Overview: *“combined-2020-036”*

Deliverables

All digital files shall be compressed together in .zip or .rar format using the city project file number followed by the stage number (ex. 2020-036_Stage3), and individual files using the above naming convention.

Coordinate System

AutoCAD® and ArcMap™ files shall be georeferenced and projected. Horizontal (X/Y):

- NAD 1983 (2011) State Plane Montana FIPS 2500 (Intl Feet)
 - Digital files are not required to be projected vertically. However, inverts and other vertical information conveyed must be reported using NAVD88 (ft.).
- Submission must use and note the geoid model used. Valid models for our areas include:
 - GEOID18
 - GEOID12A
 - GEOID12B
- Un-projected files or files with incorrectly applied projections will be rejected.
- Note: The City **only** requires that digital data be submitted in state plane grid. ~~It is unnecessary to submit at ground.~~

All submissions must be referenced to the National Spatial Reference System (NSRS) and comply with Montana Code Annotated, Title 70, Chapter 22, Part 2

Accuracy Requirements:

Please note that Stage 5 accuracy requirements are the same as those in Stage 6 and ~~will bear~~ as follows:

- Submission must be horizontally accurate to **1/10th of a foot**. ~~Submission must be vertically accurate to 1/10th of a foot.~~ These items include all utilities and property corners within the project area or effected in the project. As-built drawings, including pipe slopes, should be updated to reflect survey data.
- All submissions must be referenced to the National Spatial Reference System (NSRS) and comply with Montana Code Annotated, Title 70, Chapter 22, Part 2. For local control points tied to the NSRS contact the Missoula County Surveyors Office.
- ~~If derived from GNSS measurements, the submission must use and note the geoid model used. Valid models for our areas include:-~~
 - ~~GEOID18~~
 - ~~GEOID12A~~
 - ~~GEOID12B~~

1) Lot / Parcel Layout / Easements and Streets

- Lot / Parcel Lines
- Lot Numbers
- Street Centerlines (New & Existing)
- Street Names (New & Existing)
- Sidewalks
- Curbs

- All easements related to the project, new and existing. Book and page number required.

2) Sanitary Sewer Utilities

- Sanitary Sewer Utilities (New and existing)
- Lot lines;
- Lot numbers;
- Street names on new and existing streets;
- All utility easements related to the project, new and existing. Book and page number required.

3) Water Utilities

- Water Utilities (New and existing)
- Lot lines;
- Lot numbers;
- Street names on new and existing streets;
- All utility easements related to the project, new and existing. Book and page number required.

4) Stormwater Utilities

- Stormwater Utilities (New and existing)
- Lot lines;
- Lot numbers;
- Street names on new and existing streets;
- All utility easements related to the project, new and existing. Book and page number required.

5) Project Overview

- Sanitary Sewer
- Water Utilities
- Stormwater Utilities
- Lot / Parcel Lines
- Lot Numbers
- Street Centerlines (New & Existing)
- Street Names (New & Existing)
- Sidewalks
- Curbs
- All easements related to the project, new and existing. Book and page number required.

PREPARERS CERTIFICATION:

I have reviewed all information included in this checklist and the submitted requirements. To the best of my knowledge, all information is true, complete, and accurate.

Signature

Date

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