

# **2023 Missoula City Public Works Standards & Specifications Manual**

## **Summary of Changes**

### **Chapter 2**

- Added section 2.2.6 Asphalt Penalties to reflect requirements in Missoula Municipal Code 12.24.140

#### **Appendix 2-A—Standard Modifications**

- Global Change – Reviewed and adopted MPWSS 7th Edition
- Table of Contents
  - o SECTION 01580 Temporary Water Supply (deleted section) – not adopted
  - o SECTION 02113 Adjusting Existing Manholes, Lampholes, Inlets, Water Valve Boxes, Water Services, and Fire Hydrants to Grade (MPWSS, as amended) – amended section
  - o SECTION 02222 Low Permeability Trench Backfill Plugs (MPWSS, as amended) – new amended section
  - o SECTION 02230 Street Excavation, Backfill and Compaction (MPWSS, as amended) – new amended section
  - o SECTION 02236 Recycled Asphalt Pavement (added section) – new section
  - o SECTION 02581 Pavement Markings and Markers (Pre-Formed Plastic, Paints and Enamels) (MPWSS, as amended) – new amended section
  - o SECTION 02582 Reflective Thermoplastic Pavement Markings (deleted section) – not adopted
  - o SECTION 02585 Street Signs (added section) – new section
  - o SECTION 02590 Street Lighting (added section) – new section
  - o SECTION 02660 Water Distribution Systems (MPWSS, as amended) – amended section instead of replaced section referring to Chapter 4
  - o SECTION 02725 Drainage Culverts (MPWSS, as amended) – amended section
  - o SECTION 02740 Pipe Casing and Appurtenances (added section) – new section
  - o SECTION 02900 Boulevard Landscaping (replaced section)
  - o SECTION 03210 Reinforcing Steel (MPWSS, as amended)
  - o SECTION 09950 Flexible Coating and Lining System (added section)
  - o APPENDIX B Chlorine Disinfection Procedures (Deleted, Refer to Section 02660\_Water Distribution (MPWSS, as amended))

- SECTION 00810 SC- 5.04 CONTRACTOR'S LIABILITY INSURANCE
  - o Updated to EJCDC 2017
- SECTION 01400 CONTRACTOR QUALITY CONTROL AND OWNER QUALITY ASSURANCE
  - o Amended Part 1.4.I – excavating test holes into compacted backfill is not allowed
  - o Amended Part 3.1.H – updated testing frequency tables to refer to the applicable specification for test methods
    - Asphalt thickness testing – added longitudinal joint core from MPWSS 7th Edition
    - Earthworks – added method specification density testing (see applicable spec section for method)
    - Earthworks – removed subgrade compaction testing under pipes (see applicable spec section for method)
    - Water Distribution / Sanitary Sewer / Storm Sewer – added testing frequencies
- SECTION 01570 CONSTRUCTION TRAFFIC CONTROL (replaced section)
  - o Traffic control plans shall be submitted to City for review and approval
    - No work shall commence until the plan is approved
    - Conform to current MUTCD, local and state requirements
  - o Defined types of closures: Street, Alley, Sidewalk/Pedestrian, Parking, and Access
  - o Added the following notice types: none, 2-business day, 5-calendar day tow, and 14-calendar day
  - o Requires information for notices and proof of notice by contractor
    - Includes persons affected by closure, emergency services, transportation services, government agencies, and media
  - o Defined use of message boards and other information signs for traffic control
  - o Included information for traffic control near hospitals
  - o Added pedestrian accessibility requirements to traffic closures affecting pedestrian facilities
- SECTION 01600 WEEKLY CONSTRUCTION PHOTO DOCUMENTATION
  - o Removed language deducting 5% payment for failure to provide construction photos and kept language requiring the contractor to re-excavate in order to obtain the photos
- SECTION 02110 GEOTEXTILES
  - o Part 2.4 – Adopted MPWSS 7th edition recommended classes for fabric and amended to allow a geotechnical report recommendation for Class 2 or 3 fabrics for separation or stabilization fabrics
    - Drainage Fabric – minimum Propex Geotex 601 (old standard was 401)
    - Separation Fabric – minimum Propex Geotex 315ST (old standard was 200ST)

- SECTION 02113 ADJUSTING EXISTING MANHOLES, LAMPHOLES, INLETS, WATER VALVE BOXES, WATER SERVICES, AND FIRE HYDRANTS TO GRADE
  - o MPWSS 7th Edition Part 3.1.E changed backfill compaction from 95% to 97%
  - o City mod Part 2.1.B and Part 3.1.A – composite tapered grade ring requirement
  - o City mod Part 3.1.B – step spacing requirement
- SECTION 02221 TRENCH EXCAVATION & BACKFILL FOR PIPELINES & APPURTENANT STRUCTURES
  - o City mod Part 1.4.5 – Method Specification for deep trench field density testing
  - o MPWSS 7th Edition Part 2.1.A.1 – changed pipe bedding up to springline of the pipe to 6" over the pipe
  - o MPWSS 7th Edition Part 2.1.A.2/3 – expanded material specifications for Type 1 bedding, City modification to remain with additional allowance of 10% passing #200 sieve and changing fractured face from 50% to 35%.
  - o MPWSS 7th Edition Part 2.1 – removed Select Type 1 Bedding
  - o MPWSS 7th Edition Part 2.1.B – added max PI of 6 and LL of 25% to Type 2 bedding
  - o City mod Part 2.2 – removed backfill material specifications and adopted MPWSS 7th edition
  - o City mod Part 2.4 – updated language for detectable warning tape
  - o City mod Part 2.5 – updated language for tracer wire to require solder at connections
  - o MPWSS 7th Edition Part 3.3.B.2.b – new section requires additional measures if trench is excavated wider than minimum
  - o City mod Part 3.3.A.15 – updated to require trench protection overnight or when work is no longer being performed in or near the trench.
  - o MPWSS 7th Edition Part 3.4 – expanded dewatering section
  - o City mod Part 3.6 – updated language for pipe bedding compaction requirements
  - o City mod Part 3.6.G – added tracer wire installation from MCPWSS Chapter 4
  - o MPWSS 7th Edition Part 3.9
    - changed maximum distance between backfilling and end of new pipe from 200 ft to 100 ft in existing streets and from 500 ft to 200 ft in all other areas
    - changed maximum allowable open trench from 300 ft to 200 ft in existing streets and from 700 ft to 400 ft in all other areas
  - o City mod Part 3.9.G – requirements for protecting trenches
  - o MPWSS 7th Edition Part 3.10 – new section for drainage crossings, modified by City requirement to use trench plugs
- SECTION 02222 LOW PERMEABILITY TRENCH BACKFILL PLUGS
  - o City mod Part 2.3 – added an option 3 for flowable fill
- SECTION 02230 STREET EXCAVATION, BACKFILL AND COMPACTION
  - o MPWSS 7th Edition Part 3.1 – further defines construction limits
- SECTION 02234 SUB BASE COURSE
  - o City mod Part 2.1– allowing use of RAP

- SECTION 02235 CRUSHED BASE COURSE
  - o City mod Part 2.2– allowing use of RAP
  - o MPWSS 7th Edition Part 2.2 – changed fractured face from 35% to 50%
- SECTION 02236 RECYCLED ASPHALT PAVEMENT
  - o New City specification to allow 100% RAP as base/sub-base
- SECTION 02502 ASPHALT PRIME AND/OR TACK COAT
  - o MPWSS 7th Edition Part 2 – removed use of SS-1h and CRS-1 for tack coat/chip seal
  - o MPWSS 7th Edition Part 3.2 – changed prime coat application rate from 0.2-0.5 gal/sy to 0.2 gal/sy
- SECTION 02504 ASPHALT SEAL COAT
  - o MPWSS 7th Edition Part 2 .2 – specifies ½” aggregate for chip seal on gravel and 3/8” aggregate for chip seal on pavement
  - o MPWSS 7th Edition Part 3.3.B – adds weather limitations for chip seal operations
  - o MPWSS 7th Edition Part 3.3.D – changed application rates
- SECTION 02510 ASPHALT CONCRETE PAVEMENT
  - o MPWSS 7th Edition Part 2.2.I – plant mix aggregates
    - Changed fractured face from 50% to 75% by weight and from one face to two faces. Updated fracture plane.
    - Updated aggregate table
  - o MPWSS 7th Edition Part 2.3 – asphalt binder
    - Removed PG58-22, added PG70-28
    - Added minimum asphalt binder content
    - Updated asphalt binder table
  - o MPWSS 7th Edition Part 2.3 – composition of mixes
    - Modified air void testing requirement from 1.0% tolerance to 0.5% tolerance
    - HMA stability changed from 1200 to 1500
    - Added designed criteria for Type B-modified asphalt
    - Added SuperPave criteria
    - Updated required voids table
  - o MPWSS 7th Edition Part 3.14 - patching
    - Skin patches not used as repairs
    - Tack coat required for existing asphalt edges when placing new
  - o MPWSS 7th Edition Part 3.16 – spreading and finishing
    - New requirement for minimum lift thickness
    - Changed maximum lift thickness from 2 1/2” to 3” for surface courses and from 5” to 6” for base courses
  - o MPWSS 7th Edition Part 3.28– density and surface requirements
    - Expanded language on density requirements for single vs two-lift applications
    - Added density requirement for longitudinal joints
  - o City mod Part 3.10 – added clarifying language for cold weather paving

- Changed paving dates to November 1 – April 15 to match MDT
    - Removed redundant information from MDT specifications
    - Deleted testing requirements that are covered by SECTION 01400
  - o City mod Part 3.29 – added clarifying information for core sampling
- SECTION 02528 CONCRETE CURB AND GUTTER
  - o MPWSS 7th Edition Part 2.5 – added curing and coating requirements based on time of year
  - o MPWSS 7th Edition Part 3.2 – foundation preparation
    - changed minimum base course thickness from 3” to 6”
    - added compaction to 95%
    - changed base course extents from back of curb to 9” beyond curb
  - o MPWSS 7th Edition Part 3.5 – placing concrete
    - Added slip-form machine placement
  - o MPWSS 7th Edition Part 3.9 – requires backfill within 3 days of curing
  - o City mod Part 1.3 – removed ACI flatwork requirement since it is covered in Part 3.5.A
  - o City mod Part 2.4 – removed ¾” requirement under curb and adopted MPWSS Part 3.2.C that requires a minimum 6” of base material (per SECTION 02235) or minimum 3” if placed on the street base course.
  - o City mod Part 2.5 – deleted the City mod for curing and adopted MPWSS
  - o City mod Part 3.1 – deleted the City mod for cold weather plan
  - o City mod Part 3.2 – deleted the City mod for foundation thickness and adopted MPWSS
  - o City mod Part 3.8 – added clarification for expansion joint locations
  - o City mod Part 3.9 – added clarification for curb backfill
  - o City mod Part 3.11 – adopted MPWSS and added replacement for defective curb/gutter
  - o City mod Part 3.12 – added requirement for curb cuts only allowed on residential driveways
- SECTION 02529 CONCRETE SIDEWALKS, DRIVEWAYS, APPROACHES, CURB TURN FILLETS, VALLEY GUTTERS, AND MISCELLANEOUS NEW CONCRETE CONSTRUCTION
  - o MPWSS 7th Edition Part 3.6 – updated language related to finishing
  - o MPWSS 7th Edition Part 3.8 – changed isolation joints from 300 feet to every 100 feet in continuous runs
  - o MPWSS 7th Edition Part 3.8 – requires backfill within 4 days of concrete placement
  - o City mod Part 1.3 – removed ACI flatwork requirement since it is covered in Part 3.5.A
  - o City mod Part 2.4 – removed ¾” requirement under sidewalk and adopted MPWSS 1”
  - o City mod Part 2.5 – deleted the City mod for curing and adopted MPWSS
  - o City mod Part 3.1 – adopted MPWSS cold weather requirements and added ACI 306R-16 compliance
  - o City mod Part 3.6 – added requirement to stamp concrete where sleeved

- o City mod Part 3.8 – added clarification for joints
- o City mod Part 3.9 – added clarification for backfill/landscaping timing
- o City mod Part 3.10 – removed city mod and adopted MPWSS for tolerances
- SECTION 02581 PAVEMENT MARKINGS AND MARKERS (PRE-FORMED PLASTIC, PAINTS AND ENAMELS)
  - o City mod Part 2.1 – added language for green paint used for bicycle path crossings
  - o City mod Part 2.3 – added epoxy pavement marking requirements
  - o City mod Part 3.2 – clarified interim pavement markings
  - o City mod Part 3.2 – added epoxy pavement marking requirements
- SECTION 02585 STREET SIGNS – new city spec for street signs
- SECTION 02590 STREET LIGHTING – new city spec for streetlights
- SECTION 02660 WATER DISTRIBUTION – new section incorporating MPWSS 7th Edition and MCPWSS Chapter 4
- SECTION 02720 STORM DRAIN SYSTEMS
  - o City mod Part 2.1 and Part 2.2 – specified materials for stormwater pipes
  - o City mod Part 3.2 - manholes
    - modified bench slopes
    - added grade ring offset limits
    - added photo requirement
  - o City mod Part 3.5 - tests
    - clarified when TV inspection is required
    - stormwater pipe is not acceptable if TV reveals gravel, sediment, or other debris
- SECTION 02724 INSULATION
  - o City mod Part 3.1 – clarified insulation thickness requirements
- SECTION 02725 DRAINAGE CULVERTS
  - o MPWSS 7th Edition Part 3.1 – expanded on pipe installation (excavation, bedding, backfill)
  - o City mod Part 2.1 – requires culverts to have flared end sections or headwalls
- SECTION 02730 SANITARY SEWER COLLECTION SYSTEMS
  - o MPWSS 7th Edition Part 2.2 – adopted DIP specifications
  - o MPWSS 7th Edition Part 2.4 – added gravity service couplings
  - o MPWSS 7th Edition Part 3.1 – added minimum pipe slope table
  - o MPWSS 7th Edition Part 3.4
    - changed water test allowable infiltration/exfiltration from 200 gpd/mile to 100 gpd/mile
    - added when water testing is allowed
    - updated air test limits
    - added hydrostatic and leakage testing for force mains
  - o City mod Part 2.2 – added requirement to coat exposed DIP inside lift stations
  - o City mod Part 2.5 – added lift station wet well and lid specifications
  - o City mod Part 3.1 – removed pipe slope and adopted MPWSS
  - o City mod Part 3.2 – clarified grade ring requirements

- o City mod Part 3.4
  - removed hydrostatic and leakage testing for force mains and adopted MPWSS
  - added when vacuum and water tests are allowed for manholes
- SECTION 02900 BOULEVARD LANDSCAPING – new section that incorporates Missoula Municipal Code, MPWSS 7th Edition, and Missoula Parks and Rec requirements.
- SECTION 03210 REINFORCING STEEL
  - o City mod Part 2.1 – allowing use of fiberglass rebar
- SECTION 03310 STRUCTURAL CONCRETE
  - o Added clarifying information for hot weather placement from ACI 305R-10
- SECTION 09950 ELASTOMER CONCRETE COATINGS – new section for coating manholes adjacent to force main discharge locations

### Chapter 3

- Developments with rights-of-way improvements need to go through the Stage process if they construct:
  - o Public utility main extensions,
  - o Street improvements establishing alignment and grade
  - o Sidewalks
  - o New fire hydrants
- Grades and slopes for all submittals shall be the absolute percent slope with the grade arrow pointing downhill.
- All submittals shall be electronic through cloud servers (no longer accepting USB drives).
- Symbols must follow US National CAD Standards.
- Boulevard trees are required in Stage 3, but no longer in Stage 2.
- A letter from the city will no longer be issued at the completion of Stage 3.
- Stage 5 is specific to utility inspection and testing.

### Chapter 4

- Global Change – Removed construction references. These are now part of the City of Missoula Standard Modifications to the Montana Public Works Standard Specifications 7<sup>th</sup> Edition, Section 02660.
- Section 4.2.2.A.7 - Added language about when a hydrant needs to have a plan and profile included in the design plans.
- Section 4.2.3.B - Updated Maximum Day Demands and Peak Hourly Demands to reflect a more realistic demand scenario for individual water system pressure zones rather than a global multiplier that was included in previous versions of the model.
- Section 4.2.14.A - Added provision that water service lines that are being repaired shall be shut down at the corporation stop and the water main will only be shut down or throttled down in exceptional circumstances as determined by Missoula Water.

- Section 4.2.14.A - Added a provision that Missoula Water be informed immediately if a lead gooseneck or service line is found.

## Chapter 5

- Section 5.2.7.D – Added clarification that commercial connections shall have water meters installed on them.
- Section 5.3.4.A.1.C – Clarified where manhole lids should be placed
- Section 5.3.4.J – New section addressing high level alarms in manholes.

## Chapter 6

6.2.3.B.1 - Infiltration facilities shall not be used where fines exceed 12%

6.2.3.B.7 - Pretreatment facilities are required for infiltration facilities installed on newly constructed arterial and collector streets.

6.2.3.B.8 - Address potential contaminated soils where infiltration facilities are installed.

## Chapter 7

7.1.1 – Removed *Missoula Parks and Recreation Design Manual* as a reference as the applicable standards from that manual have been added herein (Chapter 7 and Appendix 2-A)

7.2.3 – A California Bearing Ration (CBR) test must be submitted for all proposed streets

7.3.12.G – Sidewalks and accessible routes should be kept at-grade, when crossing driveways and alleys

7.4.9.J. (Table 7-6) – Added no parking distance of 10 from alley approaches

7.4.10.C.2 – Added pedestrian and bicycle way lighting to the illumination requirements

7.4.10.D.2 – Added collector streets to the list of locations where lighting shall be considered

7.4.10.E – Moved requirements for lighting materials into City of Missoula Standard Modifications Section 02529

7.4.11 – Moved information related to curb and gutter into City of Missoula Standard Modifications Section 02528

7.4.11.J – Updated requirements for asphalt paving patch-back

7.4.12.D – Specified sidewalks thickness through approaches to correspond to standard drawings

7.4.12.H – Updated requirements for curb ramps, landings, detectable warning panels

7.4.13.B.2 – Specified approach thickness to correspond to standard drawings



7.4.14 – Adding a new Standard Drawing 749 for shared-use paths

## **Chapter 8**

8.2.2.B.19 – Added a requirement to include phased Erosion Control Site Plans for projects with site disturbance greater than or equal to 1 acre.