



MEEKER SANITATION DISTRICT

DESIGN AND CONSTRUCTION STANDARDS AND SPECIFICATIONS

November 2013

TABLE OF CONTENTS

<u>SECTION</u>	<u>HEADING</u>	<u>PAGE(S)</u>
<u>INTRODUCTION</u>		
1.	GENERAL	i - iv
2.	SEWER EXTENSION AGREEMENT	1 - 6
<u>DESIGN STANDARDS AND SPECIFICATIONS</u>		
1.	DRAWING SUBMITTAL PROCEDURE	1 - 2
2.	DRAFTING STANDARDS	3
3.	DEVELOPMENT PLAN REQUIREMENTS	4 - 9
4.	DESIGN CRITERIA	10 - 13
<u>CONSTRUCTION STANDARDS AND SPECIFICATIONS</u>		
1.	EXCAVATION AND BACKFILL FOR BURIED PIPELINES	1 - 18
2.	SEWER PIPE SYSTEMS: MATERIALS AND INSTALLATION	1 - 22
3.	GRAVEL SURFACING AND SUB-BASE	1 - 3
4.	CONCRETE AND REINFORCEMENT: MATERIALS AND CONSTRUCTION REQUIREMENTS	1 - 9
5.	PREPARATION OF CONSTRUCTION AREAS	1 - 5
6.	SITE RESTORATION AND RECLAMATION	1 - 6
7.	GENERAL ELECTRICAL SPECIFICATIONS	1 - 7
8.	WATERPROOFING AND PROTECTIVE COATINGS	1 - 3
<u>STANDARD DETAILS</u>		
MEEKER SANITATION DISTRICT STANDARD DETAILS 2 - PLAN SHEETS		

INTRODUCTION

AND

SEWERLINE EXTENSION

MEEKER SANITATION DISTRICT
INTRODUCTION TO
DESIGN AND CONSTRUCTION
STANDARDS AND SPECIFICATIONS

1.0 GENERAL

These are the minimum RULES AND REGULATIONS to be adhered to in the design, construction and installation of sanitary sewer lines constructed in the Meeker Sanitation District (MSD). For the MSD's reference, all subdivision plats, planned building groups, or any other proposed construction submitted for approval shall include adequate drawings of the entire water, sanitary sewer and storm sewer utility systems even though the MSD is only responsible for the sanitary sewer. These RULES AND REGULATIONS will be updated periodically and it is the contractor/Developer/Consultants responsibility to have in their possession an updated copy. The MSD will not take any responsibility for upkeep on addresses or phone numbers of Contractor/Developer/Consultants. It is the responsibility of the Contractor/Developer/Consultants to make sure that all addresses and telephone numbers on file are current and up to date for future revisions.

2.0 MEEKER SANITATION DISTRICT EXTENSION AGREEMENT

Included on pages -ii- through -ix- of this document is a copy of the MSD Sewer line Extension Application and Agreement accompanied by a flow chart which outlines the necessary procedures to be followed in executing an Extension Agreement with the MSD. Extension agreements are available at the District's office located at 265 Eighth Street, Meeker, Colorado 81641.

**MEEKER SANITATION DISTRICT
SEWER LINE EXTENSION APPLICATION**

DATE: _____ EXTENSION NO.: _____
SUBDIVISION: _____

Please complete this application and submit to Meeker Sanitation District, 265 Eighth Street, Meeker, Colorado 81641, along with the requested documents.

_____ Name of Property Owner	_____ Name of Representative
_____ Mailing Address	_____ Mailing Address
_____ Telephone Number	_____ Telephone Number

Common location of property: _____
Description of proposed sanitary sewer extension: _____

Estimated total cost: _____

Commencement and completion dates of construction: _____

Number of taps to be served: _____

Submittals required: (1) a plat of the property to be served by the extension; (2) engineering design and specifications; and (3) processing fee deposit of \$500.00.

APPROVED BY DISTRICT: _____ Date _____

SIGNATURE OF APPLICANT: _____ Date _____

The following information shall be provided at the time of Probationary Acceptance of the Extension:

- Cost of Sewer Mains: _____
- Cost per Front Foot: _____
- Date Installation Completed: _____
- Date of Probationary Acceptance: _____
- Date of Final Acceptance: _____
- Number of Taps on Date of Acceptance: _____

The foregoing is accepted by the owner and the District.

OWNER:	MEEKER SANITATION DISTRICT:
By _____	By _____

LINE EXTENSION PROCEDURE

The property owner, or his representative, must submit a Sewer line Extension Application to the Board along with the required submittals and the processing deposit fee. The Application will be reviewed by the District Engineer and the Board for compliance. If the Application is approved by the Board, the Applicant must obtain bids from Contractors qualified to work within the District.

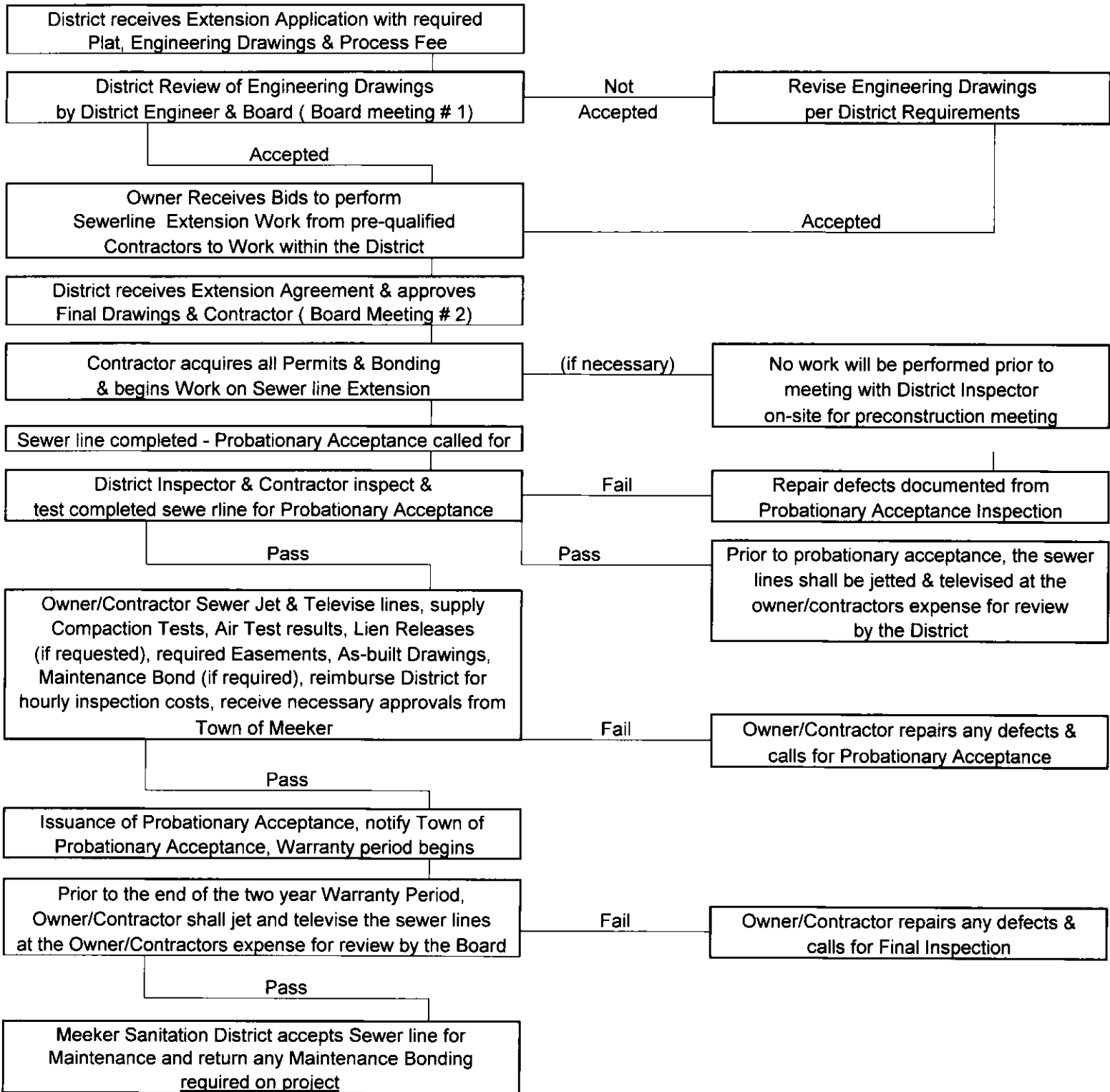
Engineering design drawings of the sewer system shall be reviewed by the District Engineer and the entity which has ownership of the street(s) or road(s); Town of Meeker, Colorado Department of Transportation and/or Rio Blanco County for compliance with sanitary sewer standards and specifications and responsible engineering practices. The Developer/Contractor (Owner) shall pay to the District an initial processing deposit fee of \$500. Furthermore, the Owner shall pay the District an engineering review fee of \$65.00 per hour for the actual hours incurred by the District Engineer, \$45.00 per hour for an Engineering Aide, and \$35.00 per hour for secretarial and administrative assistance from preliminary review through final review and approval of the design drawings, including any site inspections, meetings, correspondence, etc. The process deposit fee is strictly a deposit for total engineering review cost incurred. The Owner shall reimburse the District for hourly design review costs in excess of the process deposit fee. The District shall rebate costs to the Owner if actual engineering review costs through final approval are less than the process deposit fee.

The bid for construction must show the total construction amount. These bids must be submitted to the District for review. All Contractors must be prequalified with the District to work on any District facilities or sewerline extensions. The Owner may select the Contractor of its choice from those qualified.

The District reserves the right to consider the qualifications and experience of all Contractors and to reject the applicant's Contractor if it is determined that the Contractor is not qualified to perform the work. The District may request such evidence as it deems necessary to demonstrate the Contractor's qualification to perform the work.

An extension of sewer lines will be governed by a Sewer Line Extension Agreement to be negotiated and entered into between the District and the Owner. Upon selection of the Contractor the Owner shall submit a copy of the signed agreement to the District and the Owner shall enter into a contract with the District for the extension of the sewer line. Upon execution of the District's Extension Agreement by Owner and the District, and upon approval of the final design, the Owner may begin construction, all in accordance with the terms of the District's Extension Agreement, provided all other necessary approvals and permits have been obtained by the Owner. The Owner shall also notify the Town of Meeker, Colorado Department of Transportation and/or Rio Blanco County prior to commencement of construction.

**PROCEDURE TO BE FOLLOWED BY DEVELOPER/CONTRACTOR
FROM EXTENSION APPLICATION AGREEMENT TO
FINAL JOB ACCEPTANCE
MEEKER SANITATION DISTRICT**



**SEWER
EXTENSION
AGREEMENT**

MEEKER SANITATION DISTRICT

Public Sanitary Sewer System Extension Agreement

Date: _____ Extension No.: _____
Owner: _____ Subdivision: _____
Address: _____ Location: _____
Phone No.: _____ Contractor: _____
Representative: _____ Total Extension Contract Price: _____

In consideration of the mutual covenants herein contained and the authorization from the Meeker Sanitation District ("District") for the above-named Owner, its heirs, successors and assigns, to construct and install a sanitary sewer system line extension ("Extension") under and along the public rights-of-way and/or easements of the District, all pursuant to the provisions herein, the parties agree:

1. The Extension shall be connected to the existing District sewer system at the sewer main location designated by the District, at the sole expense of the Owner, and using such materials and construction methods as are approved by the District. All construction shall conform to the most current edition of the DESIGN AND CONSTRUCTION STANDARDS AND SPECIFICATIONS OF THE DISTRICT and regulations of the Town of Meeker, Colorado Department of Transportation and/or Rio Blanco County.

2. All construction shall be done in strict accordance with the provisions of the Extension Contract between Owner (Developer) and Contractor. Any material deviation or change orders from the Extension Contract must be approved in writing, in advance by the District.

3. If construction will result in a street cut and if required by Town of Meeker, Colorado Department of Transportation or Rio Blanco County regulations, the Owner shall obtain a street excavation permit and all street and excavation construction shall be done in accordance with the applicable regulations. The Owner or its Contractor shall produce evidence of proper bonding and licensing to comply with such regulations.

4. All easements required for the construction, installation and maintenance of the Extension shall be obtained by the Owner at its sole cost and expense, prior to the commencement of any construction of the Extension. The location and size of all easements shall be determined by the District. All such easements shall be deeded to the District and the Owner shall provide title insurance naming the District as the insured under the policy upon final acceptance of the sewer line.

5. For proposed developments that will be constructed in separate phases, or developments with individual filing numbers and construction time periods, a separate Sewer line Extension Application and Agreement shall be submitted to the District with the applicable application processing fee for each phase or filing of said developments. An overall development plan, or conceptual plan showing the proposed phasing shall be required prior to approval of the first phase or filing. A final as-built composite of all phases or filings will be required prior to initial acceptance of the final phase or filing.

6. Immediately upon completion of the Extension, the Owner shall file with the District an application for Initial Acceptance along with a certified statement of all costs and a preliminary red-lined set of as-built drawings. Final inspection and testing of the Extension for the issuance of the Probationary Acceptance will take place only after roadways are brought to sub-base grade, all utilities (water, gas, electric, etc.) are installed. All manholes and sewer lines will be clean and free of debris, and all of the District Engineer's comments addressed. The Owner or his representative will be responsible for notifying the District's Engineer and scheduling a time for final inspection and testing. Testing shall include:

- A. Pressure testing of the entire Extension including stubbed lines from manholes. Pressure testing will comply with District specifications for length of line, size and type of pipe being used.
- B. Sewer lines shall be jetted and televised at the owner/contractors expense prior to the Probationary Acceptance, and once again prior to the end of the two year warranty period.

If the Extension does not meet District specifications for a newly constructed system, the necessary repairs will be carried out by the Owner to ensure compliance with the District Specifications.

7. Prior to the issuance of the Probationary Acceptance, the Owner shall provide to the District a full set of final "As Built" drawings in a form acceptable to the District's Engineer. As a minimum, as-built drawings shall be submitted in a format acceptable to the District Engineer, and on reproducible mylar, as prepared, stamped and signed by a registered professional engineer. The Owner shall also provide to the District proof of full payment to the Contractor and full lien releases from the Contractor and all subcontractors and suppliers if requested by District. All payments shall be made in accordance with the provisions of CRS 24-91-101, et seq.

8. Upon completion of construction of the Extension, upon full payment to the Contractor, upon the execution of lien releases by the Contractor and all subcontractors and suppliers (if required), and upon acceptance of the Extension by the District, the District will issue its Notice of Probationary Acceptance and the new sewer lines shall become the property of the District. The date of the Notice of Probationary Acceptance shall designate the beginning of the two-year warranty on the Extension as specified in the District's Standards and Specifications relative to workmanship and material used or installed in the original construction. To guarantee maintenance of the Extension, the Owner or Contractor may be required by the District to post a Maintenance Bond. At the end of the two-year probationary period, the Owner shall apply for a Final Acceptance of the Extension and if the Extension

still meets all standards of the District and if there are no items of repair or maintenance yet to be performed by the Owner, then the District shall give Final Acceptance and shall assume full maintenance of the Extension, subject to the provisions of paragraph 14(g) of this Agreement. The District shall not assume ownership or responsibility for maintenance for any Private Line beyond the location of the tap into the District Lines, (sewer main). The property owners shall be responsible for maintenance of all service lines from the point of the tap to the point of service.

9. The District may issue a sewer tap upon the completion of the following conditions precedent:

- A. If the development is subject to an Improvements Agreement through the Town of Meeker or Rio Blanco County, and if the Extension is a part of such Improvements Agreement, then a sewer tap and building permit clearance may be issued after the Probationary Acceptance of Sewer lines upon the following conditions:
 - 1) A copy of the Improvements Agreement and the surety guarantee is provided to the District,
 - 2) Upon completion of the utility work and the paving of streets, the Owner will notify District's Engineer and will provide Final As-Built drawings. The District Engineer will proceed with the normal review process for the issuance of Probationary Acceptance by the District. The Owner warrants that the Owner will take whatever steps are necessary to make any repairs necessary to the Sewer lines to bring them into full conformance with District regulations and to allow for the issuance of the Probationary Acceptance by District.
 - 3) Until such time as District has issued its Probationary Acceptance of the Sewer lines, the Owner shall be prohibited from connecting the sewer service line(s) from the home(s) to the sewer line (District Line). If a physical connection is made so that the service line from the home(s) is connected to the District sewer line prior to Probationary Acceptance, then the Owner shall be assessed a double tap fee for each improper connection and such amount shall be paid before any further connections are permitted. If the Owner fails to pay the penalty, then no additional taps will be approved by the District until the penalty is paid in full. This includes any taps for lots subordinated to other parties (i.e., builders), in which case, Owner will be responsible for double tap fee assessment.
 - 4) The Owner acknowledges that by signing this agreement, that under these parameters the District has not accepted the Sewer lines within the subdivision when requests for taps are made prior to Probationary Acceptance, and that the Probationary Acceptance and Final Acceptance of the sewer lines shall be governed by the terms of this agreement.
 - 5) The Owner acknowledges that the District is granting these variances to allow for the construction of homes, and that no other waivers or variances from the District line extension policy will be granted unless authorized by the District Board of Directors.

This provision is acceptable only if the Improvements Agreement provides a bond or other security instrument guaranteeing the completion of construction of said improvements, and shall not be released until the District has issued its Probationary Acceptance. Monthly service charges will be charged on all taps upon water service being initiated by the Town of Meeker.

- B. If the development is not subject to an Improvements Agreement through the Town of Meeker, or Rio Blanco County, then the following must be completed prior to issuance of a tap: i) full payment of all construction amounts and Probationary Acceptance of the District Lines by the District and full compliance with the provisions of paragraph 14; ii) proper application for the issuance of a tap; iii) payment of appropriate tap fees for the property to be serviced by the tap; iv) full compliance with the District Rules and Regulations.

The construction of the tap shall be in full compliance with the Standards and Specifications of the District and the District shall oversee the construction and connection of all such taps.

10. The Owner assumes complete responsibility for payment of monthly service charges which will begin to accrue for each building site on the day water service is provided by the Town of Meeker. The District shall not be responsible for providing taps or for reimbursing Owner in the event of a sewer tap moratorium, or if taps cannot be issued for any other reason.

11. The Owner acknowledges that the Standards and Specifications of the District require the Contractor to warranty and guarantee his work and to maintain the Extension for a period of two (2) years from the date of Probationary Acceptance. Owner agrees to guarantee this warranty and the guarantee of the Contractor, and if the Contractor fails to honor this commitment, the District may look to the Owner to guarantee the performance of the Contractor. All such guarantees shall include the costs incurred by the District in maintaining the Extension and fulfilling the two year maintenance obligation, and in the enforcement of the guarantee or warranty, including legal fees, engineering fees, costs, and expert witness fees.

12. Any engineering or inspection expenses, which are not the obligation of the Contractor as set forth in the Plans and Specifications, shall be at the sole cost and expense of the Owner. In addition, Owner shall pay to the District an engineering fee for inspection and any engineering administration required to oversee the project on behalf of the District at the rate of \$45.00 an hour to pay for the cost of the Inspector, \$65.00 an hour to pay for the cost of the District's Engineer, and \$35 an hour to pay for any associated secretarial or administrative costs, plus expenses to review or inspect the construction of the Development.

13. The license issued by the District pursuant to this Agreement for the construction of the Extension shall lapse and expire unless the construction shall begin within six (6) months after the date of this Agreement and such construction is diligently pursued to completion.

14. In addition to the provisions herein contained, all construction performed under this Agreement is subject to the following general conditions:

- A. No construction can take place on the District's sewer lines without their representative's knowledge. All construction on new and old sewer lines cannot be covered without District inspection.
- B. Owner shall call for and request construction inspection at least 48 hours in advance of the commencement of actual construction and in advance of any requested subsequent inspections.
- C. Owner shall have a copy of applicable District Standards and Specifications and an APPROVED set of construction drawings on the job site at all times.
- D. Owner shall be responsible for establishing safety measures to protect workers and the public until construction is completed.
- E. All construction shall be completed as shown on APPROVED drawings and shall be completed in accordance with current District Standards and Specifications.
- F. Owner agrees to pay promptly any inspection charges, including overtime charges where such overtime results from the operations of the Owner or its Contractor.
- G. The Notice of Probationary Acceptance of the District Line shall not be issued until all required test reports applicable to the construction, including soils compaction tests, air test results, jetting and televising of the sewer line, and a full set of final "As Built" drawings, are submitted to and approved by the District.
- H. For a period of five (5) years after the date of Probationary Acceptance, the Owner shall pay all costs of adjusting any manholes to finished grade and alignment and shall indemnify and save harmless the District from such costs.
- I. For a period of two (2) years after the date of Probationary Acceptance, the Owner shall pay all costs of repairing streets, curbs, gutters and sidewalks which result from improper compaction of soils or from the construction of the Extension.
- J. During the two (2) year warranty period, the Owner shall have all sewer lines televised in accordance with District standards. The Owner shall provide the District a copy of the video tape and television inspection logs for their records. Any deficiencies documented or observed in the television inspection, shall be promptly repaired by the Owner to the satisfaction of the District.

15. The District reserves the right to construct any further sewer extensions and to make such connections to the sanitary sewer facilities owned by the District, including the District Lines (sewer mains) authorized by this Agreement, as the District may from time to time allow, order or approve. No payment shall be made to the Owner for any such extensions.

16. The Owner and Contractor agree to indemnify and hold the District harmless from all actions, claims, causes of action or damages to persons or property and which result from the acts of the Owner or Contractor during the period of the construction.

17. This agreement shall not be assignable without the express written consent of the District, and shall be binding upon the parties, their heirs, successors and assigns. This Agreement, the approved Plans, the District Standards and Specifications, and other documents incorporated therein, contain the full agreement of the parties. Any modification to this Agreement must be in writing and signed by all parties to be effective. This Agreement shall be enforced in accordance with Colorado law and the non-defaulting party may collect all costs, including attorney fees, if enforcement hereof is required.

DATED the year and day first above written.

OWNER:

MEEKER SANITATION DISTRICT:

The following information shall be provided at the time of Initial Acceptance of the Extension:

Date Installation Completed:

Date of Probationary Acceptance:

Expiration Date (2 years):

Date of Final Acceptance:

Number of Taps to be Served:

The foregoing is accepted by the Owner and the District.

OWNER:

MEEKER SANITATION DISTRICT:

By _____

By _____

**DESIGN
STANDARDS
AND
SPECIFICATIONS**

MEEKER SANITATION DISTRICT DESIGN STANDARDS AND SPECIFICATIONS

1.0 DRAWING SUBMITTAL PROCEDURE

Consulting engineers and developers seeking approval of engineering design and development plans are required to follow the procedures outlined below. Cooperation in these guidelines will assist in an efficient review of development plans.

1.1 All Subdivisions, Planned Building Groups, Planned Unit Developments, or any other proposed development (except the actual construction plan of the building) submitted for approval shall include adequate Plans and Specifications (if specifications are not already covered by MSD Specifications). As part of the Plans submittal, all other improvement Plans shall be included with the District's Plan set. These include the ENTIRE Water Distribution System, Sanitary Sewer, Storm Drainage System, Grading and Drainage Plans, and Roadway Design, before approval of any phase of development will be made by the Meeker Sanitation District. The reason for an entire set of Plans is for the District's reference, even though approval will be for the sanitary sewer only.

1.2 Submit one legible print (either blueline or blackline) of each sheet to the Meeker Sanitation District for review.

1.3 The time for review will be an average of twenty (20) working days per submittal. When a set of plans submitted for review contains more than five (5) sheets, the time for review may be extended beyond twenty (20) working days. The consultant or his local representative will be notified by phone when review comments are ready to be picked up.

1.4 The checkprints will be returned to the consultant or his local representative if requested, along with the District's reviews comments and necessary revisions noted. Again, the consultant or his local representative will be notified by telephone when the comments are ready to be picked up.

1.5 The consultant will make all the revisions requested on their original plans/report and resubmit according to the instructions of the Meeker Sanitation District. Seriously deficient plans will be marked incomplete and returned to the consultant for completion. The Meeker Sanitation District reserves the right to deny plan review until a sufficiently complete set of plans is submitted. This may require that the plan is reviewed several times prior to approval.

1.6 All previous checkprints and the Meeker Sanitation District review comments must accompany each resubmittal for further review and/or approval. If these are not included, the resubmittal will be returned to the consultant without further action until such time as they are included.

1.7 When indicated in the Meeker Sanitation District review comments, the consultant will submit mylar sepias of his original plans for approval. Once these are approved, they will remain on file in the District office. A minimum of five (5) complete sets of the approved construction plans will be provided to the District for approval signature. Two (2) sets will be retained by the District for their records. The remaining sets will be returned to the consulting engineer for distribution, who will be notified by the District when they are ready to be picked up. Additional sets can be signed upon request of the consulting engineer or developer.

1.8 The length of time for final plan approvals will be an average of ten (10) working days. This time may also be extended under the conditions outlined in Section 1.3 of these specifications.

1.9 The following policy regarding order of processing (priority) will be used for all submittals. Each category is first-come, first-serve within that category, no exceptions.

1. Mylars for approval
2. Return package, further review required
3. New package
4. Return piecemeal
5. New piecemeal

Package submittals are those which include development plans as defined in Section 1.1 of these specifications. Piecemeal submittals are those which are missing one or more of the items listed in Section 1.1 of these specifications. When plans are returned to the consultant for lack of adequate information, or in the event of replatting or major site plan revisions after the initial review, the resubmittal will be considered a new submittal rather than a return. A thorough technical review will not be completed by the District's Engineer until adequate information is provided.

1.10 Development plans are approved initially for one (1) year. After one (1) year, they automatically become void and must be updated before any further permits can be issued.

Whenever updates or revisions to previously approved development plans are necessary, the consultant will contact the District stating which (update or revision) is required, the plan(s) drawing number and sheet number(s). An outline of the complete revisions is to be stated also. The District has the right to review and require changes before updating said plans.

In the case of revisions, the District will make a copy of the mylar sepia(s), file it, and return the sepia(s) to the consultant, less all original approval signatures.

The consultant will then make his requested revisions and resubmit under the guideline found in Section 1.2 of these specifications. This submittal will be considered a return package and will be reviewed accordingly.

Requests for updates will be considered only if there are NO revisions to the original development plan(s). The District will review the original development plan(s) for compliance with CURRENT SPECIFICATIONS under normal review procedures (requests for updates will be considered a return package), and if found in compliance with current specifications, the development plan(s) will be updated and re-issued according to Section 1.7 (disregarding the first sentence) of these specifications. If corrections for compliance with current specifications are necessary, the development plan(s) will be returned to the consultant as outlined above.

1.11 Excessive telephone calls concerning the status of plans in the review process only serve to lengthen the time required to review plans. Plans are reviewed on a first- come, first-serve basis as outlined in Section 1.9 of these specifications. Current status can be obtained by calling the Office Manager at 970-878-5192. Please limit calls to those absolutely necessary.

2.0 DRAFTING STANDARDS

2.1 GENERAL

All development plans and detail sheets for sewer line extensions submitted to the District for approval shall conform to the following minimum criteria and drafting standards. The District also authorizes the District Engineer to require any other information or documentation that is deemed necessary by the District Engineer but not specifically addressed herein.

2.2 GENERAL DRAFTING STANDARDS

A. Design Plans. All District submittals for proposed sewer lines shall include separate standard plan and profile sheets for all sections of the sewer line extension. Dual plan and profile sheets will not be accepted nor will plans with separate profile sheets from the plan sheets. All sewer line plan and profile sheets will be exclusive to the specific sewer line extension; composite sewer line and street plan and profile sheets will not be accepted. Stationing is also to be exclusive to the sewer line.

Plans shall be 24" x 36". Final plans shall be mylar originals or mylar sepias of the original, clean, clear, and free from objectionable background.

B. Date of Plans. The original date of the Plans and any subsequent revisions are to be shown on the Plans.

C. Existing Utilities. The type, size, and location of all existing utilities shall be shown on the Plans and sewer line profile with dashed lines. Existing utility appurtenances are to be shown with open line designations (i.e., open circle for existing manholes). Field verified elevations and locations are required on all development Plans for existing underground utilities which will potentially conflict with the sewer line design or construction. It will be the responsibility of the Contractor to verify the existence and location of all existing underground utilities along the alignment of the sewer line extension prior to commencing any new construction.

D. Proposed Improvements. Proposed sewer line improvements shall be clearly shown and labeled on each sheet of the development Plans and include, as a minimum, a utility composite and separate plan and profile sheets. All new sewer mains and service lines shall be shown with solid lines and manholes with solid circles. Directional flow arrows shall also be provided on Plan views for all segments of sewer lines.

E. Detail Sheets. The District's standard sanitary sewer detail sheet shall be included with all development submittals.

F. Lettering. Letter size shall not be less than one-tenth (0.10) of an inch. (No. 100 Leroy template).

G. Shading. AutoCAD hatch patterns or stick-on type patterns are acceptable for shading. **PENCILED OR COLORED SHADING** will not be accepted.

3.0 DEVELOPMENT PLAN REQUIREMENTS

3.1 GENERAL

All development plans shall be prepared by, or under the direction of, a Professional Engineer, registered in the State of Colorado, and shall be reviewed for the minimum requirements set forth herein, the Meeker Sanitation District Design Criteria, and when applicable, the Town of Meeker's standards and specifications. The Engineer should be aware that whenever unusual or serious problems are anticipated in conjunction with a proposed development, additional information and analysis beyond the minimum requirements of these specifications and criteria will be required.

The Meeker Sanitation District is not responsible for the accuracy and adequacy of the design or dimensions and elevations on the Plans (which shall be confirmed and correlated at the job site). The Meeker Sanitation District, through the approval of the development plan, assumes no responsibility, other than as stated above, for the completeness and/or accuracy of the development plan.

3.2 VICINITY MAP

Minimum scale is 1"=2000' showing the location and name of all arterial roadways within one mile of the proposed development and all other roadways in the vicinity of the proposed development. The project area shall be indicated by shading or circling. This map is required on the cover sheet.

3.3 ALL DEVELOPMENT PLANS AND DETAIL SHEETS

All development plans and detail sheets shall conform to the following criteria and show the following information. Additional specific requirements are discussed later in these specifications.

- A. Title Block. A title block is required on every sheet and cover sheet submitted for review and approval. The subdivision name and filing number; Planned Building Group or Planned Unit Development name (if applicable); the type of improvement; name, address, including zip code, and telephone number of the consultant; and sheet number (consecutive, beginning with the cover sheet) shall all be included in the title block.
- B. Approval Block. A signature block is required on every sheet pertaining to the sanitary sewer and cover sheet of the development plans submitted for review and approval. Sanitary sewer plans require the signature of the District Engineer.

The approval block shall be located in the lower right hand corner of the sheet, just above the title block only. THE APPROVAL BLOCK SHALL INCLUDE ONLY THOSE SIGNATURES NEEDED ON EACH SHEET AND SHALL BE CONFIGURED AS SHOWN BELOW.

Examples of approval blocks:

MEEKER SANITATION DISTRICT Approved for Construction for 1 Year from this Date	PHASE or FILING (if applicable)
<hr style="width: 80%; margin: 0 auto;"/>	
District Engineer	Date

MEEKER SANITATION DISTRICT Probationary Acceptance	PHASE or FILING (if applicable)
<hr style="width: 80%; margin: 0 auto;"/>	
District Engineer	Date

In the event the development is constructed in phases or filings, a signature block should be provided for each phase of construction and should be labeled appropriately.

- C. Required Notes. These notes shall appear on a General Note sheet. If a General Note sheet has not been used, they shall be put on every sheet of the submittal relating to the sanitary sewer extension or improvements.
1. The Meeker Sanitation District plan review is only for general conformance with the Meeker Sanitation District Design Criteria. The District is not responsible for the accuracy and adequacy of the design, of dimensions, and elevations which shall be confirmed and correlated at the job site. The Meeker Sanitation District, through the approval of this document, assumes no responsibility other than as stated above for the completeness and/or accuracy of this document.
 2. All sewer line construction shall conform to the Meeker Sanitation District=s Standards and Specifications.
 3. All materials and workmanship shall be subject to inspection by the District. The District reserves the right to accept or reject any materials and workmanship that does not conform to its Standards and Specifications.

4. The Contractor shall have one (1) signed set of the Plans (approved by the Meeker Sanitation District), and one (1) copy of the appropriate Meeker Sanitation District STANDARDS AND SPECIFICATIONS at the job site at all times. The Contractor shall also have a copy of any permits necessary to complete the Work.
5. The Contractor shall notify the District at least 48 hours prior to commencement of construction.
6. All sanitary sewer pipe shall be PVC SDR-35 unless otherwise specified. All pipe joints shall be 13 foot joints unless otherwise approved by the District Engineer.
7. All sewer mains shall be laid to grade utilizing a pipe laser.
8. All service line connections to the new main shall be accomplished with full body wyes or tees. Tapping saddles will not be allowed.
9. All trenches shall be compacted to 95% as determined by AASHTO T-99. Contractor shall be required to perform all necessary compaction tests through a certified soils lab to a level required by the Town of Meeker's Standards and Specifications. A copy of the compaction test results shall be provided to the District during the course of the project.
10. A minimum 10-foot separation shall be maintained at all times between waterlines and sewer line (except at specified crossings).
11. All sanitary sewer services to be 4" PVC SDR 35 unless otherwise specified.
12. Sewer service stub-outs shall extend 14 feet beyond the property line and shall be glue-capped and marked with a 2x4 post painted green.
13. Manholes shall be constructed as shown on the Meeker Sanitation District Standard Sanitary Sewer Detail sheet.
14. No service lines shall be connected directly into manholes.
15. For sewer lines requiring flat top lids for shallow manholes, lid slabs should not be installed until all street sub-base preparation has been completed. This will help facilitate testing of the proposed sewer mains. Manholes should be temporarily covered with plywood or other material to prevent debris from entering the manhole during sub-grade and sub-base preparation.
16. For dead-end manholes the invert channel shall be a minimum 3/4 of the length through the manhole base to facilitate testing and access for the District's maintenance equipment.
17. Manhole cone and flat top sections shall be positioned such that the manhole ring and cover are offset 20 degrees to 30 degrees from the upstream main sewer line into the manhole. Manhole steps shall be installed in vertical alignment with the ring and cover.
18. Steel paving rings are not allowed for grade adjustment unless otherwise approved by the District.

19. The Contractor is responsible for all required sewer line testing, including televising the sewer line and air test results, to be completed in the presence of the District Engineer or their representative. Final testing is to be accomplished after roadways are brought to sub-base grade, all utilities (water, gas, electric, etc.) are installed. This includes waterlines, gas lines, electric lines, etc. Testing will be performed after all compaction of street subgrade and prior to street paving. These tests will be the basis for issuing Probationary Acceptance of the sewer line extension.

D. Scale. The scales listed are minimum. Larger scales may be required where necessary to clearly show details.

1. All plan and profile sheets:

Horizontal: 1"=50'

Vertical: 1"=5'

2. Overall utility plans; site plans; etc. shall use minimum scale of 1"=50' (1"=30' minimum for overall utility plans for multifamily and commercial developments).

E. North Arrow. North shall point towards the top or right hand margin of the sheet only.

F. Date of Plan. The original date of the plan and any subsequent revision.

G. Seal and Signature. The seal and signature of the Professional Engineer, registered in the State of Colorado, under whose supervision the plans were prepared. Locate the seal and signature next to the Meeker Sanitation District Approval Block.

H. Bench Mark. Description on EACH SHEET that pertains to the sanitary sewer, including elevation based on Town of Meeker datum, and number and description of Town bench mark tied to. Call Town of Meeker at 874-5344 for Town bench mark information.

I. Underground Utilities. The type, size, location of all underground utilities shall be shown. Field verified elevations and locations are required on the development Plans for all existing underground utilities. It will be the responsibility of the Contractor to verify the existence and location of all existing underground utilities prior to commencing any new construction.

J. Private Improvements. Improvements such as private sewer lines, shall be clearly shown and labeled as private on each sheet of the development Plans. The note below shall appear on each sheet of the development Plans where private improvements occur:

Meeker Sanitation District shall not be liable for the maintenance of

(Name of specific private improvement.)

The District's policy is not to accept private sewer lines, however, if a request is made for the District to assume maintenance of any private improvement within a subdivision (i.e. private lift station and force main that is maintained by a Homeowner's Association), the District Board may consider this request only if the following conditions are met; it shall be the responsibility of the person(s) making the request to prove that the private improvement was in fact constructed in accordance with applicable Meeker Sanitation District Design and Construction Standards and Specifications in effect at the time of original construction of the private improvement. The District will review these requests under normal review procedures as outlined in Section 1.00 of these specifications. Private improvements that were not constructed in accordance with applicable design and construction standards and specifications will not be accepted for maintenance by the Meeker Sanitation District. This provision does not include, or in any way intend to apply, to private sewer service lines from the District's sewer main to individual homes or residences. Sewer service lines are the sole responsibility of the property owner.

3.4 OVERALL UTILITY PLAN

An overall plan of the development, including areas outside of the development, shall be submitted. The overall plan will show the following information:

- A. Location and elevation of Town or USGS bench mark.
- B. Property lines and easement lines.
- C. Lot and block numbers.
- D. Streets and street names.
- E. Existing sanitary sewer facilities including size and material.
- F. Existing water lines including size and material.
- G. Existing storm sewer facilities including size and material.
- H. Proposed construction including manholes, valve boxes, fire hydrants, water meters, mains and service lines, inlets and appurtenance etc., plainly labeled.
- I. Proposed sewer line including manholes and appurtenances which will be plainly labeled, and stationed. Stationing is to be exclusive to sewer line.
- J. Proposed outfall points for wastewater from the development.
- K. Proposed outlots (easements) for sewer mains within and outside the development.

3.5 CONSTRUCTION PLANS AND DETAILS

Construction plans and details shall show the following:

- A. Plan View.
 - Property lines, lot and block numbers, and ownership or subdivision information

- Street names and outlots (easements) with width dimensions
- Existing and proposed utilities and structures shall be shown for the District's reference in streets or utility easements where sewer lines are located, including:

Water lines	Electric
Sanitary sewer lines	Telephone
Storm sewer lines	Cable T.V.
Gas	Irrigation

B. Plan and Profile.

- Scale: Vertical 1"=5'
Horizontal 1"=50'
- Vertical and Horizontal grids to scale
- Final grade (solid)
- Existing grade (dashed)
- Existing and proposed utility lines where crossed
- Benchmark Elevations (Town of Meeker Datum)
- Pipes, showing:
Size, length, type and structural class of pipe, including SDR designation
- Grades with elevations
- Special structures or details as required

4.0 DESIGN CRITERIA

4.1 GENERAL

All plans will be checked for conformance with the minimum design criteria set forth in these standards and specifications prior to approval for construction.

4.2 SANITARY SEWER SYSTEM DESIGN CRITERIA

Table 4-1 shows the recommended sewer loading rates for a variety of types of developments. These rates for the design of sanitary sewers will be used as a general guide for designers in addition to the ASCE Manual on Engineering Practice No. 37 DESIGN AND CONSTRUCTION OF SANITARY AND STORM SEWERS.

Where possible, counts of actual number of units will be made for all residential zoning. The peak flow will be based on Curve "A" for the ratio of peak to average daily sewage flow as determined and shown on page 33 of the ASCE Manual on Engineering Practice No.37, DESIGN AND CONSTRUCTION OF SANITARY AND STORM SEWERS.

The equation for Curve "A" is:

$$\frac{5}{p^{0.167}} \quad \text{where } p = \text{population in thousands}$$

A maximum peaking factor of 4 and a minimum of 1.7 will be used for this equation.

The overall utility plan should include the estimated peak quantity of wastewater generated. The proposed outfall points for wastewater from the development should also be included in the design. All sanitary sewer systems shall be designed in accordance with the criteria established by the Colorado Department of Health with the following exceptions.

1. There will be no horizontal or vertical curves on sanitary sewers.
2. All sanitary sewer mains shall end with a manhole.
3. The flow velocity shall not exceed ten (10) feet per second flowing full.
4. Allowable minimum slope for a new sewer line extension will be as shown below.

<u>Sewer Size</u>	<u>Minimum Slope in Feet</u>
	<u>Per 100 Feet</u>
8 inch (203 mm)	0.40
10 inch (254 mm)	0.28
12 inch (305 mm)	0.22
14 inch (356 mm)	0.17
15 inch (381 mm)	0.15
16 inch (406 mm)	0.14
18 inch (457 mm)	0.12
21 inch (533 mm)	0.10
24 inch (610 mm)	0.08

RECOMMENDED SEWER LOADING RATES
FOR DIFFERENT TYPES OF DEVELOPMENTS
TABLE 4-1

Type of Development	Household Size	Avg. Daily Flow/Cap (gpcd)	Avg. Daily Flow/Acre (gpd)	Equivalent Pop/Acre
Single Family Attached	2.1	80		
Single Family Detached	3.2	80		
Multi-Family	1.7	80		
Mobile Homes	2.3	80		
Office Bldgs. (1-3 story)			500	6.25
Dept. Stores			500	6.25
Office Bldgs. (3-8 story)			1,500	18.75
Neighborhood Shopping Center			2,000	25.0
Restaurants & Fast Food			7,500	93.75
Professional Centers			4,500	56.25
Car Washes & Service Stations w/Car Washes			15,000	187.5
Auto Dealers, Service Station & Trade Business			4,000	50.0
Motels-Hotels			5,000	62.5
Industrial Warehouse			100	1.25
Industrial Factory			600	7.5

These minimum slopes shall apply only when a scouring velocity of 2 fps can be achieved a minimum of twice daily during peak hour flows for the proposed units to be served. Design of sewer extensions utilizing larger than 8-inch diameter pipe, for the sole purpose of constructing the sewer line with a minimum slope less than 0.4%, without meeting the minimum scour velocity criteria, will not be allowed.

5. Minimum drop through manhole from inlet to outlet shall be as shown below.
 - a. 0.20 feet on straight through runs
 - b. 0.20 feet on bends
 - c. pipe laid through manhole will be at a slope of upstream or downstream pipe slope
6. A maximum inside drop of 0.40 feet is allowed from any inlet pipe to the outlet pipe, but only if conflicts exist. If greater drop is needed, an external drop configuration will be required. Minimum external drop is 15".
7. Minimum depth of cover required for new sewer line mains will be 96 inches (8 feet). Where grade does not allow, the minimum depth requirement may be waived. If the minimum depth of cover is less than 3 feet from finished grade, the District will require that the trench be backfilled with flowable fill. (see technical specifications).
8. Clay cut off walls shall be placed around the sewer pipe upstream of each manhole to inhibit groundwater flow through the sewer line bedding material.

4.3 SEWER SERVICE TAPS AND SERVICE LINES

Sanitary sewer service lines shall be 4 inch SDR 35 PVC pipe unless otherwise specified, and shall be installed in accordance to the current adopted edition of the International Plumbing Code. Minimum grade for sewer service lines shall be ¼ inch per foot (2.08%) unless otherwise approved by the building department inspector. All taps on new sewer lines shall be accomplished with full body wye or tee fittings.

Each single family residence and all duplex units, and each business or commercial building shall purchase a separate tap and each such single family residence, duplex and business or commercial building shall have and maintain its own separate service line to the point of the tap into the District sewer main. No single tap shall be used to service more than one business except as noted below.

For a multiple-unit building that is defined as any single building containing more than two single family units and specifically includes three-plexes, apartment houses, townhomes and condominiums, and all office and commercial buildings with more than one tenant or user whether owned singly or as condominium units, each separate multiple-unit building shall be serviced by a separate service line which shall connect to a single tap into the District sewer main. The size of the service line and the size of the tap shall be approved by the District based on the number of units serviced by the tap in accordance with the current adopted addition of the International Plumbing Code.

Direct service line taps will not be allowed on sewer mains larger than 18 inches in diameter or directly into manholes

4.4 ALIGNMENT, DEPTH AND EASEMENTS

When waterlines cross Sewer lines, whenever possible the waterline shall be laid above the Sewer line with an eighteen (18) inch minimum vertical separation. In the case when 18 inch separation cannot be maintained, or the waterline is below the sewer line, the Sewer line shall be encased in concrete for a distance of 10 lineal feet either side of the intersection for a total encasement distance of 20 lineal feet. The standard encasement detail is included on the District's Standard Detail Sheet.

Sanitary sewers will extend to the end of street stubs or through the property being served if there is any possibility of a future extension of the main.

A "utility easement/outlot" will be required for any sanitary sewer which is not on Public Right-of-Way and which will be considered "PUBLIC". For areas where the sanitary sewer crosses a lot(s) within a proposed development, an "outlot" shall be created for the sanitary sewer. A width of twenty (20) feet will be required when one sanitary sewer is proposed. Thirty (30) feet will be required when two utilities (i.e., water, sanitary sewer) will run in parallel in the same outlot/easement. A wider outlot/easement may be required at the discretion of the District Engineer for large sanitary sewers. At no time will the sanitary sewer be less than ten (10) feet from the edge of the outlot easement, or less than ten (10) feet from a parallel utility line. In no case shall any trees, walls, large rocks, fences, etc. be within an outlot/easement unless prior approval has been obtained from the District Engineer, and a revocable license has been obtained. It is the responsibility of the consulting engineer to coordinate the site development to avoid this problem.

Sanitary sewer manholes shall be placed at the street center line or center of lane. In no instance will manholes encroach on curb and gutter section, crosspans, etc. Alignment of sewerlines at manhole connections shall have a deflection angle of no less than 90° between the inlet pipe(s) and outlet pipe (acute angles between inlet and outlet pipes are not allowed).

4.5 MANHOLE SPACING

The maximum distance between manholes shall be as follows:

<u>SANITARY PIPE SIZE</u>	<u>MAXIMUM DISTANCE</u>
8" to 15"	400'
18" to 30"	500'
larger than 30"	600'

4.6 BARREL SIZE

The alignment of pipes into the manhole will determine the barrel size for the size of pipe used. The internal diameter of the manhole barrel shall be as follows:

<u>SANITARY PIPE SIZE</u>	<u>BARREL SIZE</u>
12" or less	48"
15" to 27"	60"
30" to 48"	72"

Manholes larger than seventy-two (72) inches will be allowed with special written permission of the Engineer.

**CONSTRUCTION
STANDARDS
AND
SPECIFICATIONS**

MEEKER SANITATION DISTRICT STANDARD SPECIFICATIONS

SECTION 1 EXCAVATION AND BACKFILL FOR BURIED PIPELINES (SUBSECTION A1-GENERAL)

1.1. GENERAL INFORMATION

1.1.1 Scope of Work. The Work to be performed under this Specification shall include all labor, materials, equipment, and services as are necessary for the excavating and backfilling of all pipeline trenches. Any modifications or additions to this Specification are set forth in the Project Specifications and/or in the Plans and Drawings.

The Work shall include the excavation and backfill of whatever substances are encountered to the depths shown on the Plans, or stated herein, or modified in the Field by the Engineer.

1.1.2 Related Standard Specifications. Corresponding Standard Specifications of the Town of Meeker, and/or the Colorado Department of Transportation, and/or Rio Blanco County shall apply except where modified herein. All Contractors and engineers shall contact the owner of the street, road, highway or easement for their design specifications as to the Surface Preparation, Trench Excavation, Final Backfill, Maintenance of Backfill and Streets, Restoration, asphalt replacement, and replacement of curb and gutter.

1.1.3 Related Project Specifications. Specific Project Specifications will apply if provided on individual projects.

1.1.4 Excavation Classification. All excavation will be unclassified and no allowance will be made for classification of excavated material unless otherwise specified for such items as "Rock Excavation," or "Removal of Unstable Materials."

1.1.5 Method of Excavation. All excavations shall be made by open cut unless otherwise specified or shown. The use of trench-digging machinery will be permitted except where its operations will cause damage to such trees, buildings or existing structures above or below the ground. At such locations hand methods shall be employed to avoid such damage. Permission may be granted to tunnel under driveways, crosswalks, curbing, walkways, and utility installations, but such tunnels shall not exceed 6 feet in length.

1.1.6 Length of Open Trench. The Contractor shall excavate in advance of the pipelaying operation only a sufficient length of trench to assure steady progress in the installation of pipe. In public and private rights-of-way, the amount of open trench permitted shall be in accordance with these specifications or the instructions of the Engineer and permit requirements.

1.1.7 Subsurface Exploration. Except as may be shown on the Drawings or set forth in the Project Specifications, no subsurface exploration has been made along the pipeline alignment.

1.1.8 Excavation for Appurtenances. Excavation outside the limits of the trench shall be made as required for the satisfactory installation of manholes, boxes and other appurtenant structures.

1.1.9 Performance of Work. All trenching operations shall conform to applicable codes regarding safety, protection of property and utilities, and related items.

1.1.10 Underground Obstructions and Utilities. The Contractor shall participate all underground utility lines and pipelines and man-made obstructions such as waterlines, gas lines, sewer lines, telephone lines, culverts and similar items. No extra payment will be allowed for the removal, replacement, repair or possible increased cost caused by such underground obstructions. Any such lines or obstructions indicated on the Drawings show only the approximate location and must be verified in the field by the Contractor.

1.2 SURFACE PREPARATION

All Contractors and engineers shall contact the owner of the street, road, highway or easement for their design specifications as to the Surface Preparation.

1.2.1 Within Easements, Cultivated or Agricultural Areas. All vegetation, such as brush, sod, heavy growth or grass or weed, decayed vegetative matter, rubbish and other unsuitable material within the area or excavation and trench backfill storage shall be stripped and disposed of in accordance with the requirements of Section 5 and the Meeker Sanitation District and the Town of Meeker.

Topsoil shall be removed from the area to be excavated and stockpiled, or the Contractor may elect to import topsoil to replace that lost during excavation. Topsoil shall be removed to a depth of 8 inches or the full depth of the topsoil, whichever is less.

1.2.2 Within Unpaved Roadway Areas. The Contractor shall strip the cover material from graveled roadways or other developed, but unpaved traffic surfaces to the full depth of the existing surfacing. The surfacing shall be stockpiled to the extent that it is acceptable and usable for restoration purposes.

1.2.3 Within Paved Areas. The removal of pavement, sidewalks, driveways, or curb and gutter shall be performed in a neat and workmanlike manner. The width of the asphalt cut shall exceed the width of the trench at the subgrade by 12 inches on each side of the trench.

Concrete pavement, sidewalks, driveways or curb and gutters shall be cut with a power saw to a depth of 2 inches prior to breaking. The concrete shall be cut vertically in straight lines and avoiding acute angles.

Bituminous pavement, sidewalks, driveways or curb and gutter shall be cut with a power saw, pavement breaker or other approved method of scoring the mat prior to breaking or excavation. The bituminous mat shall be cut vertically, in straight lines and avoiding acute angles. The final cut prior to paving will be by saw cut only if stated in the Project Specifications. The final pavement cut shall follow a line parallel to the roadway adjacent to the trench wall.

All excavated paving and concrete shall be stockpiled separately and disposed of by the Contractor off site of the work at his own expense and shall not be used as trench backfill material.

In the event pavement beyond the original pavement cut is undermined or damaged during construction, additional pavement shall be removed after trench backfilling. The additional pavement shall consist of a cut parallel to the pipe center line with transitions to the original cut on each side. The Owner shall not be responsible for the condition of the existing pavement, and any paving that is damaged by the Contractor outside the allowable limits (as stated in the Project Specifications) shall be replaced at the Contractor's expense.

Crossings under sidewalks, curbs and gutters or other utility lines may be made by tunneling only if approved by the Engineer.

1.2.4 Surface Widths. See Subsection 1.3.2 for policy regarding allowable width at trench surface.

1.3 TRENCH EXCAVATION

All Contractors and engineers shall contact the owner of the street, road, highway or easement for their design specifications as to the Trench Excavation.

1.3.1 Trench Alignment and Depth. Horizontal alignment shall conform to the alignment shown on the Plans and to the staking approved by the Engineer. Trench center line shall not deviate more than 3 inches from a straight line between staked points. Trench depth is given on the Plans.

1.3.2 Trench Width. The trench shall be of sufficient width to allow the proper laying and backfilling of the pipe. Since trench width at the top of the pipe directly affects soil load imposed upon the pipe, width at this location is restricted.

- A. Width at Top of Pipe: The following table gives the normal minimum and normal maximum trench widths at and below the top of the pipe for various pipe sizes:

Pipe Diameter, Inches	2	3	4	6	8	10	12	15	18	21	24
Maximum Width of Trench, Inches	20	21	22	24	26	28	30	33	36	39	42
Minimum Width of Trench, Inches	14	15	16	18	20	22	24	27	30	33	36

In areas where a maximum trench width is more restrictive, it will be so indicated on the Plans or in the Project Specifications. If the Contractor exceeds the maximum trench width at or below the top of the pipe, he shall be required, at no additional expense to the Owner and subject to the approval of the Engineer, provide a bedding or an encasement which will properly support the pipe being installed, regardless of any provision herein to the contrary.

- B. Width At Top of Trench: Unless otherwise required by the Plans or the Project Specifications, the width at the top of the trench may be as wide as needed, at the Contractor's discretion, to assure trench stability and enhance pipe installation in accordance with 29 CFR Part 126, OSHA-Excavations; Final Rule. However, when sloping or benching is undertaken, any excavation, surface restoration, or special backfill material required will be measured and paid for on the basis of trench width set forth in the Project Specifications or Plans. No backfill, surface restoration or excavation outside of these specified trench widths will be measured for payment; sloping and benching, and extra surface restoration costs shall be at the Contractor's option and expense, unless otherwise indicated on the Plans or Project Specifications.
- C. Trench With Multiple Pipes: Trench widths where more than one pipe is to be placed in the same trench shall be as indicated on the Plans or as directed by the Engineer.

1.3.3 Trench Wall Stability. All excavation shall be in accordance with Design Standards of the Town of Meeker, and/or Colorado Department of Transportation, and/or Rio Blanco County, and 29 CFR Part 126, OSHA-Excavations, Final Rule.

Any damage to pipes or structures occurring through settlements, heaving, water or earth pressures, slides, caving, or other causes, due to lack of, or failure of shoring, or due to any other negligence on the part of the Contractor, shall be repaired by the Contractor at his own expense.

During excavation, material suitable for backfilling shall be piled in an orderly manner. A clear area shall be maintained a sufficient distance away from the edges of trenches, minimum 2'-0", to avoid overloading the sides of the trench, and thus reduce potential for slides or caving of the trench walls.

1.3.3.1 Sloping or Benching. If the Contractor elects to slope or bench the trench walls, sloping or benching shall terminate at a depth not less than one foot above the top of the pipe barrel, and from that point down the trench wall shall be vertical.

1.3.3.2 Sheet piling and Shoring. Where conditions so warrant, and except where banks are cut back on a stable slope, excavation for structures and trenches shall be properly and substantially sheeted, braced, and shored, as necessary, to prevent caving or sliding. Sheet piling, bracing and shoring shall be designed and built to withstand all loads that might cause earth movement, and shall be rigid, maintaining shape and position under all circumstances. If the Engineer is of the opinion that at any point the trench walls are not properly supported, he may order the placement of additional supports by and at the expense of the Contractor. Compliance with such an order shall not relieve or release the Contractor from his responsibility for the safety of the work.

Shoring shall be removed as work progresses, unless otherwise approved in writing by the Engineer. Payment for wood shoring left in place if approved by the Engineer, will be made based on an allowance for the cost of the lumber only and in accordance with provisions covering changes in the Work.

Where trench sheet piling is left in place, such sheet piling shall not be braced against the pipe, but shall be supported in a manner which will preclude concentrated loads or horizontal thrusts on the pipe. Cross braces installed above the pipe to support sheet piling may be removed as the backfill progresses.

