

**CITY OF LONGMONT**  
**SECTION 100 – GENERAL REQUIREMENTS AND SCOPE**  
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## **GENERAL REQUIREMENTS AND SCOPE**

### **100.00 PURPOSE**

The purpose of the City of Longmont construction standards and specifications is to provide the minimum standards and specifications to be adhered to in the design and construction of Public Improvements and work in streets, right of ways, and easements of the City of Longmont, Colorado. These standards and specifications have been prepared in general conformance with the existing City of Longmont standards and specifications and current ordinances.

Whenever the provisions of these Standards are found to be inconsistent with any other regulations or codes, the Engineer shall determine the standard to apply. The provisions of these regulations are minimum requirements that do not preclude imposition of more restrictive standards by agreement or by law.

Projects shall comply with all laws, regulations, codes and ordinances applicable to the design and the furnishing and performance of the work. Except where otherwise expressly required by applicable laws, regulations, codes or ordinances, the City shall not be responsible for monitoring compliance with any law, regulation, code or ordinance.

Prior to the contractor beginning work, an approved set of plans and specifications must be on file with the City of Longmont. All contracts, bonds, insurance, permits and licenses must be fully executed by the Contractor before beginning work. Contractor shall have a copy of these standards and specifications on the site at all times during construction.

The Developer and Contractor shall provide all staking necessary for street and utilities. The Contractor shall be responsible for the preservation of all such staking.

During construction the Contractor shall keep inlets, junction boxes, manholes, control valves, and fire hydrants clear at all times. For all street construction which impacts utilities, the Contractor shall provide a City-approved means of temporary service during the approved construction time and properly reconnect such utility service immediately following construction.

In the event that a manhole frame, valve box or other fixture is covered up during construction it shall be raised to the proper alignment and grade within twenty-four hours unless otherwise approved by the City.

If the Contractor's excavating operations encounter remains of historical or archaeological significance, the operations shall be temporarily discontinued. The Contractor shall notify the Engineer, who will contact the proper authorities to determine the disposition of the remains and artifacts. The Contractor shall protect the site in such a manner as to preserve the artifacts encountered.

Unless waived by the City, all plans, specifications, and calculations submitted to the City for review must be prepared by or under the direct supervision of a Professional Engineer duly registered and licensed to practice engineering in the State of Colorado. The Professional Engineer shall sign and certify all plans, specifications, and calculations along with the Professional Engineer's registration number and seal.

City's review and approval will only be to determine if the plans, specifications and construction conform to the City's requirements. City's review and approval will not relieve the Design

Professional and Contractor from responsibility for any variation from the City requirements or adequate design standards. The City's review and approval shall not constitute any assumption of responsibility or liability for the design or construction.

It is the intent and purpose of the Standards and Specifications to obtain high quality construction throughout, with the completed work complying with the Standards and Specifications.

The Standards and Specifications are complementary, what is called for by one is as binding as if called for by all. It is the intent of the Standards and Specifications to require a functionally complete Project (or part thereof) to be constructed in accordance with these Standards and Specifications. Any work, materials or equipment that may reasonably be inferred as being required to produce the intended result will be provided whether or not specifically called for. When words which have a well-known technical or trade meaning are used to describe work, materials or equipment such words shall be interpreted in accordance with that meaning.

Reference to standard specifications, manuals or codes of any technical society, organization or association or to the laws or regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual, code or laws or regulations in effect at the time of City approval. However, no provision of any referenced standard specification, manual or code shall be effective to change the duties and responsibilities of the City or any of their consultants, agents or employees from those set forth in these Standards and Specifications. Work shall be done in compliance with the approved plans, and to the satisfaction of the City.

All materials and equipment shall be of a quality acceptable to the City.

If required by the Engineer, the Contractor shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable supplier except as otherwise provided in the Contract Documents; but no provision of any such instructions will be effective to assign to City, or any of City's representatives, any duty or authority to supervise or direct the furnishing or performance of the work.

In these Standards and Specifications any reference made in singular may be construed as plural.

## **101.00 ABBREVIATIONS AND DEFINITIONS**

### 101.01 ABBREVIATIONS

A.A.S.H.T.O. - American Association of State Highway and Transportation Officials

A.C.I. - American Concrete Institute

A.N.S.I. - American National Standards Institute

A.S.C.E. - American Society of Civil Engineers

A.S.M.E. - American Society of Mechanical Engineers

A.S.T.M. - American Society for Testing and Materials

A.P.W.A. - American Public Works Association

A.W.W.A. - American Water Works Association

B.M.P's - Best Management Practices

C.D.P.H.E. - Colorado Department of Public Health and Environment

C.D.P.S - Colorado Discharge Permit System

C.D.O.T. - Colorado Department of Transportation

C.O.E. - Corp of Engineers

D.R.C. - Development Review Committee

E.P.A. - Environmental Protection Agency

F.E.M.A - Federal Emergency Management Agency

I.S.O. - Insurance Services Office

I.P.C. - International Plumbing Code

MS4 - Municipal Separate Storm Sewer System

M.U.T.C.D. - Manual of Uniform Traffic Control Devices

N.E.C. – National Electric Code

N.E.S.C. – National Electric Safety Code

N.P.D.E.S. – National Pollutant Discharge Elimination System.

O.S.H.A. - Occupational Safety Health Administration

P.I.A. - Public Improvements Agreement

S.W.M.P.- Storm water Management Plan

U.B.C. - Uniform Building Codes

U.D.F.C.D – Urban Drainage and Flood Control District

U.F.C. - Uniform Fire Code

W. E.F. - Water Environment Federation



## 101.02 DEFINITIONS

**APPROVED MATERIALS LIST** - The latest revised list of materials approved for construction in the City of Longmont.

**APPROVED PLAN** - The latest revised construction plan approved by the Engineer.

**BEST MANAGEMENT PRACTICES (BMP's)** – Shall mean schedule of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States.

**CITY** - Shall mean the City of Longmont, Colorado.

**CITY CODE** - Shall mean the official adopted City of Longmont Municipal code.

**COLORADO DISCHARGE PERMIT SYSTEM (CDPS)** - Colorado's version of the federal National Pollutant Discharge Elimination System (NPDES). State of Colorado regulation (5 CCR 1003-61) which covers discharges from specific types of industries including construction sites, and storm sewer systems for certain municipalities as part of the Water Quality Control Division (Division) under the Colorado Department of Public Health and Environment (CDPHE).

**CERTIFIED EROSION CONTROL SUPERVISOR** - An individual who has received training and is certified by an organization acceptable to the [Director] to install, inspect and maintain erosion and sediment control practices.

**CLEAN WATER ACT** - The federal Water Pollution Control Act (33 U.S.C. § 1251 et seq.), and any subsequent amendments thereto.

**CLEARING** - Any activity that removes the vegetative surface cover.

**CONSTRUCTION ACTIVITY** - Such activities include but are not limited to clearing and grubbing, grading, excavating, and demolition.

**CONSTRUCTION SITE** - Any location where construction activity occurs.

**CONTRACTOR** - Shall mean a person, partnership or corporation duly licensed to work in the public right-of-way and insured to perform work in the City of Longmont, Colorado.

**CONTRACTOR'S REPRESENTATIVE** - Shall mean the owner, superintendent, foreman, or any person designated by the Contractor to be responsible for construction in the field.

**CONTRACT DOCUMENTS** - The Contract Documents include these Standard Specifications, City approved Drawings, the approved PIA, and City approved revisions.

**DESIGN ENGINEER** - Shall refer to the engineer, or engineering firm responsible for the design, plans and specifications, and the field surveys of a specific project.

**DESIGN PROFESSIONAL** - Shall refer to the person or firm responsible for the design, plans and specifications, and the field surveys of a specific project.

**DEVELOPER** - Shall mean the person or entity developing a project.

**DIRECTOR** - Shall mean City's Director responsible for the appropriate section of the work being done.

**DISTURBED AREA** - That area of the land's surface disturbed by any work or activity upon the property by means including but not limited to grading; excavating; stockpiling soil, fill, or other materials; clearing; vegetation removal; removal or deposit of any rock, soil, or other materials; or other activities which expose soil. Disturbed area does not include the tillage of land that is zoned for agricultural use.

**EARTHWORK** - The disturbance of soils on a site associated with clearing, grading, or excavation activities.

**ENGINEER** - Shall mean the City's engineer responsible for the appropriate section of the work being done.

**EROSION** - The detachment and movement of soil or rock fragments by water, wind, ice or gravity.

**EROSION CONTROL** - Measures that prevent erosion.

**EROSION AND SEDIMENT CONTROL PLAN** - A set of plans prepared by or under the direction of a licensed State of Colorado professional engineer that indicates the specific measures and sequencing to be used controlling sediment and erosion on a development site during construction activity.

**FIELD ENGINEER** - Shall mean the City's staff responsible for the electrical design and specifications.

**FINAL STABILIZATION** - When all soil disturbing activities at the site have been completed, and uniform vegetative cover has been established with a density of at least 70 percent of pre-disturbance levels, or equivalent permanent, physical erosion reduction methods have been employed. For purposes of this ordinance, establishment of a vegetative cover capable of providing erosion control equivalent to pre-existing conditions at the site is considered final stabilization.

**GRADING** - Excavation or fill of material, including the resulting conditions thereof

**INFILTRATION** - Refers to extraneous flow (excluding sewage) which enters a sewer system at pipe connections to manholes, or through joints in manholes or pipe, or because of breaks in pipe or joints, corrosion of pipe, poor construction, or ground movement.

**INFLOW** - Refers to the extraneous flow in sewer systems from sources other than infiltration, such as basement drains, roof drains, manhole covers, etc.

**INSPECTOR** - Shall mean an authorized representative of the Engineer at the site of the work.

**DEVELOPMENT PROCEDURES** - Shall mean Chapter 15.02 - Development Procedures of Title 15 - Land Development Code, latest or revised version.

**MUNICIPAL SEPARATE STORM SEWER (MS4)** - Publicly-owned facilities by which storm water is collected and/or conveyed, including but not limited to any roads with drainage systems, municipal streets, gutters, curbs, catch basins, inlets, piped storm drains, pumping facilities, retention and detention basins, natural and human-made or altered drainage ditches/channels, reservoirs, and other drainage structures.

**NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) STORM WATER DISCHARGE PERMIT** - a permit issued by EPA (or by a State under authority delegated pursuant to 33 USC § 1342(b) i.e. Colorado Discharge Permit System) that authorizes the discharge of pollutants to waters of the State, whether the permit is applicable on an individual, group, or general area-wide basis.

**NON-STORMWATER DISCHARGE** - Any discharge to the storm drain system that is not composed entirely of storm water.

**POLLUTANT**- Anything which causes or contributes to pollution. Pollutants may include, but are not limited to: paints, varnishes, and solvents; oil and other automotive fluids; non-hazardous liquid and solid wastes and yard wastes; refuse, rubbish, garbage, litter, or other discarded or abandoned objects, ordinances, and accumulations, so that same may cause or contribute to pollution; floatables; pesticides, herbicides, and fertilizers; hazardous substances and wastes; sewage, fecal coliform and pathogens; dissolved and particulate metals; animal wastes; wastes and residues that result from constructing a building or structure; wastes and residues that result from mobile washing operations; and noxious or offensive matter of any kind.

**POLLUTION** - The presence in waters of the state of any substances, contaminants, or manmade or man-induced impairment of waters or alteration of the chemical, physical, biological, or radiological integrity of water in quantities or at levels which are or may be potentially harmful or injurious to human health or welfare, animal or plant life, or property or which unreasonably interfere with the enjoyment of life or property, including outdoor recreation unless authorized by applicable law.

**POST-CONSTRUCTION** - After the construction phase.

**PRIMARY GREENWAY** - Shall mean a public right-of-way consisting of linear strips of land adjacent to creeks, rivers, ponds, lakes, reservoirs, ditches or roadways used for storm water drainage, passive and scenic open space and park purposes, and self-propelled transportation modes. Greenways provide connections between community and residential areas as described and designated by the Longmont Area Comprehensive Plan.

**PROFESSIONAL ENGINEER** - A registered engineer licensed with the State of Colorado, with expertise and qualifications in the areas covering the scope of work.

**PUBLIC IMPROVEMENT** - Shall mean any facility that is within City right-of-way, on City property, or maintained by the City after final acceptance, including but not limited to streets, alleys, sidewalks, primary greenways, parks, water and sewer lines, electric facilities, storm drainage facilities, arterial right-of-way landscaping, and bikeways.

**RECEIVING WATER** - Any water of the State of Colorado. These include any and all surface waters that are contained in or flow in or through the State of Colorado. This definition includes all watercourses, even if they are usually dry, and irrigation ditches that receive municipal storm water. It also includes storm sewer systems owned by other entities.

**SANITARY SEWER** - Refers to a sewer that carries wastewater from residential, industrial and commercial facilities to the sewage treatment plant.

**SEDIMENT** - Soil (or mud) that has been disturbed or eroded and transported naturally by water, wind or gravity, or mechanically by any person.

**SEDIMENT CONTROL** – Measures that prevent eroded sediment from leaving the site. The land or water area where any facility or activity is physically located or conducted, including adjacent land used in connection with the facility or activity.

**SPILL** - An unintentional release of solid or liquid material, which may cause pollution of the MS4 or waters of the State.

**SERVICE CONNECTION** - Are the extensions from individual properties to the public electric, water or wastewater facilities.

**STANDARDS AND SPECIFICATIONS** - Shall refer to the City of Longmont Public Improvements Design Standards and Construction Specifications.

**STATE SPECIFICATIONS** - Shall refer to the latest edition of the State Department of Transportation, Division of Highways, State of Colorado - Standard Specifications for Road and Bridge Construction.

**STORMWATER** - Any surface flow, runoff, and drainage consisting entirely of water from any form of natural precipitation, and resulting from such precipitation.

**STORMWATER MANAGEMENT PLAN (SWMP)** - A document which describes the Best Management Practices and activities to be implemented by a person or business during the construction activities to identify sources of pollution or contamination at a site and the actions to eliminate or reduce pollutant discharges to storm water, storm water conveyance systems, and/or receiving waters

**TESTING AGENCY** - Any individual, partnership, or corporation qualified and licensed to perform the required sampling, analysis, testing, and report writing services.

**TRAFFIC ENGINEER** - Shall mean the Transportation Engineer with the Public Works & Water Utilities Department, City of Longmont, Colorado.

**TRAFFIC OPERATIONS** - shall mean the Transportation Sign Shop with the Public Works & Water Utilities Department, City of Longmont, Colorado.

**UTILITIES** - Shall mean all utilities on site prior to the time of any design; such as but not limited to water lines, sanitary sewer lines, drainage lines, electric lines, gas lines, telephone lines, and cable television lines.

**WASTEWATER** - means the water-carried and liquid wastes from dwellings, commercial buildings, institutions and industrial facilities discharged to the Public Owned Treatment Works, (POTW), and sewer system.

**WATERCOURSE** - A natural or artificial channel through which water can flow.

WATERS OF THE STATE OF COLORADO (WATERS OF THE STATE) - Any and all surface and subsurface waters that are contained in or flow in or through the state of Colorado. The definition includes all watercourses, even if they are usually dry

Wherever the words "as directed", "as required", "as permitted", or words of like meaning are used, it shall be understood that the direction, requirements or permission of the Engineer is intended. Similarly, the words "approved", "acceptable", and "satisfactory" shall refer to approval of the Engineer. References made to Standards and Specifications, methods of testing materials, codes, practices, and requirements are understood to be the latest revision of said references and shall govern unless a specific revision is stated.

## **102.00 MANUFACTURER'S CERTIFICATES AND RECOMMENDATIONS**

### **102.01 CERTIFICATES FROM MANUFACTURER**

When deemed necessary by the Engineer, the Developer shall submit a certificate to the Engineer, secured from manufacturer of all the material used as a permanent part of the project, certifying that their product as used on the project conforms to all City specifications. No material shall be used until the certificates are approved by the Engineer.

### **102.02 MANUFACTURER'S SPECIFICATIONS OR RECOMMENDATIONS**

All manufacturer's recommendations, instructions, or specifications regarding installation and use of products shall be considered a part of these Standards and Specifications and of equal force. Any conflict between the manufacturer's instructions and these Standards and Specifications shall be decided and settled by the Engineer and shall not be open for arbitration. All such manufacturer's instructions and submittals shall be presented to the Engineer for approval prior to scheduling a pre-construction meeting.

## **103.00 GENERAL QUALIFICATIONS**

The provisions of the Standards and Specifications apply to the construction, enlargement, removal, alteration, relocation, repair, trenching and restoration of any Public Improvement or common facilities regulated herein.

### **103.01 EXCEPTIONS**

1. Requests for exceptions shall be submitted in writing to the appropriate City Division or Department at time of plan submittal. The request shall state the variance requested, the justification and supporting data for the variance, and the requested change to the standards or specifications for the specific project. The City may require that exceptions be signed by a professional engineer registered to do work in the State of Colorado, and bear their seal.
2. Street Design Standards - Exceptions to the Street Design Standards outlined in Sections 200.00 through 207.00 and Section 300 shall be dealt with in accordance with Section 15.02.090.J of the Municipal Code.
3. Exceptions to the Construction Specifications for Street, Storm Drainage, Water Distribution, Wastewater Collection, Power & Communications, or Parks & Open Space, -

Exceptions to the construction specifications as outlined in this document shall be reviewed by the City Engineer, the Public Works and Water Utilities Director, Power & Communications Director, or Parks & Open Space Director, or their designee, and shall meet the following criteria for approval:

- a. Special circumstances or conditions exist which limit the ability of the design to meet the design standards outlined in the document. Financial difficulties, loss of prospective profits and previously approved exceptions in other developments shall not be considered as special circumstances; or
- b. The exception represents an alternative design that will meet the intent of the standards and requirements set forth in this document.
- c. In either case, if granted, the exception will not be detrimental to the public interest or other property, nor in conflict with the Longmont Area Comprehensive Plan, and will not endanger the public safety, health or welfare.

All exceptions for construction specifications must be reviewed and acted on prior to construction. The City shall respond promptly and in writing to such requests, but reserves a minimum of 5 working days for review and response. When additional review time is required, the City shall notify the submitter of the need for additional time within 2 working days of the submittal.

Approval of construction plans by the City, which contain design elements not in compliance with these standards and construction specifications, and for which a variance request has not been specifically requested and approved, does not imply approval of a variance from these design standards and construction specifications.

Written, approved exceptions will not be subsequently rejected during construction.

#### 103.02 AUTHORITY OF THE ENGINEER

The Engineer is authorized to enforce all provisions of these Standards and Specifications or may appoint a civil engineer, construction inspector, any other related technical employee, or any consulting firm engaged specifically to act on Engineer's behalf.

Whenever any work is being completed contrary to the provisions of the Standards and Specifications the Engineer has the authority to order said work to be stopped. Notice to such effect will be presented to the Contractor or Design Professional's representative in writing, and such person shall stop work until authorized by the Engineer to proceed.

Standards and Specifications revisions under review shall not be applied to any public improvement construction or public improvement construction plans that are active in the review process and that meet submittal requirements per City Standards prior to City Council approval, unless it is a revision that will immediately affect public safety or adversely impact City maintenance processes.

#### 103.03 TESTING

All tests required by these specifications shall be performed by a testing agency approved by the City and paid for by the Contractor or Developer. If the materials or methods used do not

comply to the Standards and Specifications, the Engineer may require that additional tests be performed to insure compliance with these specifications. Testing methods and location will be as specified herein or as required by the Engineer.

#### 103.04 LIABILITY

The City, the Engineer, or Engineer's authorized representatives charged with the enforcement of these Standards and Specifications, acting in good faith and without malice in the discharge of their duties, will not thereby be rendered personally liable for any damage that may accrue to persons or property as a result of any act or by reason of any act or omission in the discharge of their duties.

#### 103.05 NO WAIVER OF LEGAL RIGHTS

The City will not be precluded or stopped by any measurement, estimate, or certificate (made either before or after the completion and acceptance of the work) from showing the true amount and character of the work performed and the materials furnished by the Contractor, or from showing that any such measurement, estimate or certificate is untrue or is incorrectly made.

#### 103.06 FEES AND PERMITS

1. The Contractor shall obtain all necessary permits for construction, unless otherwise directed by the City. All permits must be in accordance with City, County, State, and Federal requirements. City review and approval of all permits must be accomplished prior to the start of any construction. Examples of permits that might be required, and locations where initial contact is to be made, are as follows:

##### **Partial List of Permits**

##### **Initial Contact**

City's Use of Public Places Permit	City Clerk
City's Work in Right-of-Way Permit	Public Works & Water Utilities
City's Floodplain Use Permit	Public Works & Water Utilities City's
Grading Permit	Public Works & Water Utilities
State's Under drain (Water Well Permit App.) Permit	State Engineer's Office
State Utility Permit	Public Works & Water Utilities
State Access Permit	Public Works & Water Utilities
Railroad Use of Right of Way	Railroad Company
Railroad Work in Right of Way	Railroad Company
Construction Dewatering Permit	Colo. Department of Public Health
Corps of Engineer's Permits	Corps of Engineers
Air Quality	Boulder County
Work in Ditch Right-of Way	Individual Ditch Companies
Rare Species Occurrence Survey	U.S. Fish and Wildlife Service
Storm water Permit for Construction Activities	C.D.P.H.E
Storm water Permit for Construction Activities	Public Works & Water Utilities

This list is provided as an aid, and shall not be interpreted as a complete list of all permits required. It shall be the responsibility of the Developer and Contractor to determine the type of permits required by the specific development. The City shall make all available effort to assist the Developer and Contractor in determining, and obtaining permits required. A copy of all permits must be available for inspection on the job site at all times.

1. All required fees must be paid in advance, prior to commencement of any construction. Water and Wastewater fees and permits are obtained from the Building Inspection Division. Reference the Water section of these Standards and Specifications for further requirements for Water and Wastewater fees and permits.
2. All required costs must be paid in advance, prior to commencement of any construction. Power & Communications charges for the electric distribution facilities are found in Section 700.

## **104.00 CONSTRUCTION PLANS**

### **104.01 SUBMITTAL PROCEDURE**

Submittal procedures shall conform to the City Planning Division's "New Development Procedures", latest revised version, Municipal Code, the City of Longmont Storm Drainage Criteria Manual, these Standards and Specifications, and other project specific requirements in accordance with the appropriate City Divisions or Departments.

### **104.02 CONSTRUCTION PLAN GENERAL PROVISIONS**

All construction plans submitted to the City for review shall be on 24"x 36" sheets with legible lettering. All sheets shall be drawn to scale. Specifically, the plan sheets, profile sheets and detail sheets shall be drawn to scale. The only exceptions allowed will be for the City's standard details. However, they must be placed on the drawings without any modifications made to them. All sheets, except the cover sheet, shall be numbered and shall include a title block, which shall have the name of the owner or Developer; the subdivision or project name; the location and description of improvements; the name, address, and telephone number of the Design Professional; the date prepared, a revision block, and if necessary, a legend to designate existing and proposed utilities for clarity.

The cover sheet shall include, but is not limited to, the project name and location, a vicinity map, a sheet index, the name of the owner or Developer, name of the engineering firm responsible for the design and plans, general notes and an approval block, and any additional information deemed necessary by the Engineer.

The master utility plan shall include a general overview of the entire project including but not limited to such items as streets, alleys, proposed and existing utility lines and proposed and existing under drains on and adjacent to the site, existing and proposed easements and right-of-ways.

Drawings shall be submitted in both hard copy and electronic, computer-aided design and drafting (CADD) formats to allow information to be transferred to the City's geographic information system, see 107.01 ELECTRONIC FILE SUBMISSION for more details.

A checklist is provided in Appendix A to assist in the preparation of plans to be submitted to the City for review. A copy of the checklist shall be submitted with the plan set, as part of the review package. The checklist shall be considered the minimal information required for major developments and projects. For minor projects, the City may waive some of the requirements outlined in the checklist, but the plans shall include all necessary information required for the construction of the project. It shall be the responsibility of the City alone to determine when a



project shall be considered "A MINOR PROJECT". All construction plans shall include all the necessary information required for the construction of all public improvements.

#### 104.03 SURVEY REQUIREMENTS

Construction plans shall be designed in such a manner that conforms to the City's geographic coordinate system. Street center lines, property lines, and all other infrastructure shall utilize the City's base coordinate system for all aspects of the design. Upon submittal of the actual Preliminary Plat and/or Final Plat, the surveyor must include a location and a written description of coordinate values for monumentation on the plat. At least two (2) control points must be labeled on the plat using the state plane coordinate values.

The City's vertical datum shall be the NGVD 1988 (replaces NGVD 1929).

#### 105.00 PROJECT INFORMATION REPORTS

When necessary, the Engineer may request one or all of the following Project Information Reports. These reports should be submitted with the preliminary construction plans.

##### 105.01 PAVEMENT REPORT

A pavement report shall be submitted to the City, for review and approval, for all proposed pavement within City Rights-of-way or Easements. The pavement report shall comply with the requirements outlined in the Street section of these Specifications. A checklist is provided in Appendix A to assist in the preparation of the report to be submitted to the City for review. Unless otherwise approved by the Engineer, the report shall be dated within two (2) years of the plan submittal date.

##### 105.02 SOILS REPORT

A soils report shall be submitted to the City, for review and approval, prior to any construction related to the installation of public improvements. The soils report shall comply with the requirements outlined in the Street section of these Specifications. A checklist is provided in Appendix A to assist in the preparation of the report to be submitted to the City for review. Unless otherwise approved by the Engineer, the report shall be dated within two (2) years of the plan submittal date.

##### 105.03 STORM DRAINAGE REPORT

A storm drainage report shall be submitted to the City, for review and approval, prior to any construction on a project or development. The storm drainage report shall comply with the requirements outlined in the "Longmont Storm Drainage Criteria Manual". Unless otherwise approved by the Engineer, the report shall be dated within two (2) years of the plan submittal date.

##### 105.04 WATER AND WASTEWATER PROJECT INFORMATION REPORT

On commercial or industrial developments over five acres and residential developments over 50 acres, the Engineer may request a project information report to be submitted with the preliminary construction plans. Unless otherwise approved by the Engineer, the report shall be dated within two (2) years of the plan submittal date. It is to include the following information:

1. The initial and ultimate area, in acres, to be developed.
2. The estimated population densities and total population to be served.
3. The estimated quality and quantity of any industrial waste to be discharged into the sanitary sewer.
4. Design flow rates, average, maximum, and infiltration allowances for the sanitary sewer.
5. If alternate methods of providing utility services are possible, the report shall give an evaluation of the alternative method.
6. Estimated average daily water usage including landscaping.
7. Estimated amount of water to be used by industrial and commercial facilities.
8. Any other information that would affect the City's ability to service the new area, or any other information requested by the Engineer.

#### 105.05 POWER & COMMUNICATIONS PROJECT INFORMATION

Electrical requirements shall be provided with the initial submittal of construction documents to the City, for review by Power & Communications, including an Electric Service Request form and electric one-line diagram. The submittal will initiate the electric utility design by Power and Communications. See Section 700, "Power & Communications".

#### 105.06 STORM WATER MANAGEMENT PLAN/REPORT (S.W.M.P.)

A S.W.M.P. will be required for all construction activities of one (1) acre in size or greater. (see Section 113 and Appendix for check list of requirements)

### **106.00 INSPECTION**

#### 106.01 AUTHORITY OF THE INSPECTOR

1. The Inspector is authorized to check all work performed in connection with construction of the project.

The Inspector shall have the authority to reject defective materials, inferior materials, or workmanship in cases where it is judged to be unacceptable, substandard, defective or suspect in accordance with these Standards and Specifications and good engineering judgment. The Inspector has the authority to suspend work until any questions of issue can be resolved by the Engineer, and advise the Contractor in complying with the drawings and standards. If the Inspector or Engineer deems it necessary, the previously covered work will be exposed at the Contractor's expense. The Contractor shall immediately correct any defective materials or poor workmanship as determined by the Inspector. The Engineer and Inspector shall, at all times, have reasonable and safe access to the work whenever it is in preparation or progress and the Contractor will provide proper facilities for such access and inspection.

2. The Inspector shall in no case act as foreman or perform duties for the Contractor, nor provide line and grade stakes, nor take an active part in the management of the work done by the Contractor. The presence or absence of the Inspector shall not relieve the responsibility or obligation of the Contractor. The Inspector is present on the site to advise Contractors on these Standards and Specifications.
3. The Inspector has inspection authority of work performed in connection with street, storm sewer, sanitary sewer, and water construction, including, but not limited to, clearing and grubbing, erosion control and water quality, compaction of subgrade, placement of sub base, base and asphalt, forms, pavement and concrete work and materials to be used. The Inspector also has inspection authority of work performed in connection with arterial right of way landscaping, irrigation and concrete path in areas to be maintained by the adjacent owner.
4. The Inspector has inspection authority of work performed in connection with the existing Water/Wastewater system. The Inspector is to have access to the construction site at all times. Connections to the existing Water/Wastewater system shall be made only under the Inspector's observation.
5. The Inspector has inspection authority over any water or sanitary sewer service line installation from the main to a point two (2) feet away from any building. The Building Inspector has inspection authority over construction from that point to and including the building.
6. The Inspector has inspection authority of work performed in connection with the existing and proposed electrical system. The Inspector is to have access to the construction site at all times. Connections to the existing electrical system shall be made only under the Inspector's observation.
7. The Building Inspector has inspection authority over construction of the underground service connection including the building.
8. The Inspector has inspection authority over City maintained concrete trail layout and landscape and irrigation construction performed in areas maintained and/or owned by the City of Longmont.
9. The Inspector has inspection authority over N.P.D.E.S. Phase II permit compliance within the City of Longmont.

#### 106.02 INSPECTION REQUIREMENTS

1. No construction work will be started until the Contractor has received all appropriate permit(s). See "Fees and Permits".
2. The Inspector shall be notified at least twenty-four (24) hours in advance of any construction activity. Inspections are required as follows:
  - a. Clearing and grubbing.
  - b. During trenching operations.

- c. During pipe laying operations.
  - d. During electric subsurface ground sleeve operations.
  - e. During backfill and compaction operations.
  - f. During service connections to the existing system.
  - g. During testing of water, wastewater, and storm drain lines, and disinfecting of water lines.
  - h. During cleaning and/or jetting sanitary sewer lines.
  - i. During all phases of subgrade, subbase, base course, and pavement preparation and placement.
  - j. During all phases of subgrade, subbase, base course preparation and placement of concrete.
  - k. Inspection of all materials prior to installation.
  - l. Service line renewals.
  - m. During fine grade.
  - n. During concrete trail layout.
  - o. During irrigation mainline pressure testing.
  - p. During irrigation system operational testing.
  - q. During plant material layout.
  - r. Throughout all phases of construction to ensure compliance with the approved SWMP.
  - s. During major storm events.
  - t. Other times at the Engineer's or Inspector's discretion.
3. No pipes, joints, or service connections shall be covered until they have been inspected by the Engineer or Inspector.
4. The Contractor is to supply any inspection aids that are necessary for inspection such as a pump system for hydrostatic testing and a compression system for air testing of sanitary sewer lines.

Regardless of when a deficiency is discovered, it is still the responsibility of the Contractor to meet the requirements of the City's Standards and the requirements of the Contract Documents.

5. If a project disturbs 1 acre or more, and holds a Storm water Permit for Construction activities from C.D.P.H.E and the City of Longmont the project will be inspected by the contractor every 14 days and after a major storm event to insure compliance with the approved Storm Water Management Plan.

## **107.00 GENERAL INFORMATION**

### **107.01 ELECTRONIC FILE SUBMISSION**

The Developer will be required to submit an electronic file of all construction plans submitted to the City of Longmont for development review to include but not limited to Plats, Site Plans, Master Utility Plans, and Public Improvement Plans. All drawings are to be spatially correct, to allow information to be transferred to the City's geographic information system.

The electronic drawing file(s) shall be in an industry drawing exchange format (.dxf), (.dwg) or (.dgn) submitted on compact disc (CD), or by other means acceptable to the Engineer. At a minimum, the file shall be an overview of the entire project.

Record drawings, as identified in Section 107.15, shall be submitted in a PDF format. If required on specific projects, the City may require records drawings to be submitted in a CADD format.

#### **COORDINATE REQUIREMENTS:**

The basis of bearing of the proposed development must be in the Colorado State Plane Coordinate System, based on the 1992 HARN adjustment of the 1982 North American Datum (HPGN NAD 83/92).

Units are defined in U.S. Survey foot.

Upon submittal of the actual Preliminary Plat and/or Final Plat, the surveyor must include a location and a written description of coordinate values for monumentation on the plat. At least two (2) control points must be labeled on the plat using the state plane coordinate values.

The primary and secondary control points and other GIS land points, which may be used as initial starting values are provided free through the Boulder County web page. However, the information being provided by Boulder County does include a disclaimer. Please note that these GIS Landpoints cannot be used for determining legal boundaries. Please note that the GIS land points cannot be used for determining legal boundaries. Boulder County accepts no liability for the accuracy of these data points.

The primary control point data can be found at:

<http://www.co.boulder.co.us/control/primary/primlocmap.html>.

The secondary control point data can be found at:

<http://www.co.boulder.co.us/control/secondary/seclocmap.html>.

Or by calling the Boulder County information line at: (303)441-1700

Or contact the City of Longmont Public Works and Water Utilities Department at (303)651-8304 for further assistance.

The City of Longmont is requiring the following information be included in the electronic submittal:

1. A written definition of each layer/level used in the electronic submittal.

APPROVED FINAL PLAT- Which shall include but not be limited to:

Horizontal Control (a minimum of two coordinate ties to be labeled on the Plat)  
Boundary Data (Metes and Bounds descriptions)  
R.O.W. information  
Curve Data  
Easement Data  
Street Names  
Block and Lot numbers  
Lot areas

2. MASTER UTILITY PLAN – which shall include but not limited to:

Water Lines and all appurtenances (with valves, bends, fire hydrants, blowoffs, including lines, sizes, types and lengths, etc.)

Sanitary Sewer Line and all appurtenances (with manholes, lines, sizes, types and lengths.)

Storm Sewer Lines and all appurtenances (with manholes, inlets, lines, sizes, types and lengths.) Power & Communications Trench Line (with equipment locations and lengths) and under drains, and other utilities (gas, phone cable TV, etc.) when required.

3. PUBLIC IMPROVEMENT PLANS which shall include but not be limited to:

Center lines and Flow lines of streets, concrete trails, and sidewalks with dimensions, and type.

4. LANDSCAPE & IRRIGATION PLANS which shall include but not limited to:

Landscape & Irrigation Systems and all appurtenances.

5. Electronic files shall contain the same information as the hard copy files, which are submitted for approval.

Electronic submittals shall contain one file per sheet.

Electronic submittal files shall include or be accompanied by a level (layer) legend. The level (layer) legend shall include but not be limited by the following information:

APPROVED FINAL PLAT:

Level (Layer)

Color

Line Type

Line Weight

Section Lines

Basis of Bearing

Subdivision Boundary

Street Names

Lot number

Block number

Lot lines

Easement lines

R.O.W. lines

R.O.W. width

R.O.W. Bearing and Distance labeling

Lot Bearing and Distance labeling

Easement Width and Type labeling

Lot area call outs

Existing features surrounding Subdivision

Subdivision boundary Metes and Bounds description

Subdivision boundary Bearing and Distance labeling

PUBLIC IMPROVEMENT / MASTER UTILITY PLANS:

Street Flow Lines

Street Centerline

Street Bearing and Distance labeling

Sidewalks

Water Main description (Size, Length and Type)

Water Service Lines (Size, Length and Type)

Water Valves

Fire Hydrants

Water Blow off

Water Line Reducer

Cathodic Test Station

Anode

Pressure Reducer Valve

ARV

Water Meter

Sanitary Sewer Manhole

Sanitary Sewer Main description (Size, Length and Type)

Storm Sewer Manhole

Storm Sewer Structures

Storm Sewer Main description (Size, Length and Type)

Storm Sewer Inlet

Power & Communications Trench Line

Power & Communications Equipment Location

Irrigation

Landscaping

107.02 PRE-CONSTRUCTION CONFERENCE

1. The Contractor shall be required to schedule a Pre-Construction Conference(s) to be held at least 48 hours prior to the start of any construction on any topic regulated herein. The Pre-Construction Conference may not be scheduled until after the PIA has been approved by the City Council, as well as final plans, securities, etc. The Contractor, Developer, Engineer, Design Professional, Inspector, and all other subcontractors shall be in attendance. At the time of the meeting, it shall be the Contractor's responsibility to assign one contact person to be responsible for coordinating all field changes and significant communications.
2. The Contractor shall be required to schedule a Pre-Paving Conference to be held at least 48 hours prior to paving. The Contractor, Developer, Soils Engineer, Design Professional, and Inspector shall be in attendance.
3. The Contractor shall be required to schedule a Landscape/Irrigation Pre-Construction Conference to be held at least forty eight (48) hours prior to the start of any construction for these trades. The Contractor, Developer, Engineer, Design Professional, Inspector, and all other subcontractors shall be in attendance. At the time of the meeting, it shall be the Contractor's responsibility to assign one contact person to be responsible for coordinating all field changes and significant communications.

#### 107.03 COMMENCEMENT OF CONSTRUCTION

Construction shall commence within one (1) year of the approved date shown on the plans, or plans must be resubmitted for review and approval. If construction is halted for more than one (1) year, plans must be resubmitted for review and approval. All improvements will be accurately surveyed and staked in accordance with the approved plans prior to their construction.

If construction does not commence within six (6) months of the approved date shown on the plans, Longmont Power & Communications reserves the right to modify the design or fees to reflect changes in standards or costs.

#### 107.04 NOTIFICATION OF CONSTRUCTION

1. The Contractor shall notify all utility companies and locate all existing utilities on and near the site prior to construction in accordance with all State and local requirements.
2. At the request of the Contractor, the Public Works and Water Utilities Department will attempt to locate private lines within the public right-of-way (i.e. sewer service lines, fire lines etc.) as a courtesy to the private line owner and contractor. The Contractor will be responsible for verifying the location of these private lines and shall release the City from any liability associated with these locates. The City reserves the right to charge a fee for water or sewer locates equal to the actual cost for performing the work.
3. Also, all affected parties must be notified by the Contractor prior to the commencement of work in order to insure that there will not be any unexpected interruptions of services during construction.

#### 107.05 SAFETY AND PROTECTION



Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the work. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

1. All employees on the work and other persons and organizations who may be affected thereby:
2. All the work and materials and equipment to be incorporated therein, and
3. Other public or private property at the site or adjacent thereto, including but not limited to, trees, shrubs, lawns, walks, pavements, roadways, structures, utilities and underground facilities not designated for removal, relocation or replacement in the course of construction. In the event that any property at the site or adjacent thereto is damaged during the work, the Contractor shall repair or replace the property. The replacement shall be of the same or greater quality than the original property. At a minimum, the replacement shall meet the requirements of the City Standards. The determination of whether or not the property was adequately replaced shall be solely at the City's discretion.
4. Public who may be affected by the project.

Contractor shall comply with all applicable Laws and Regulations of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss: and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify, in writing, owners of adjacent property, underground facilities and utility owners when progress of the work may affect them, and shall cooperate with them in the protection, removal, relocation and replacement of their property. All damage, injury or loss to any property caused, directly or indirectly, by Contractor, Subcontractor, Supplier or any other person or organization directly or indirectly employed by them shall be remedied by Contractor. Contractor's duties and responsibilities for the safety and protection of the work shall continue until such time as all the work is completed and accepted by the City of Longmont.

If a representative of the City of Longmont deems a situation unsafe, the Contractor shall take the necessary steps to correct the situation prior to proceeding with the work. In addition, if, in the opinion of the City, the health, welfare, or safety of the public is endangered the City may, at the expense of the Contractor, take immediate action to correct any hazardous or inappropriate conditions at any time during construction or until final acceptance. Nothing within the provision to protect City representatives shall be construed as relieving the Contractor from being responsible for initiating, maintaining, or supervising all safety precautions and programs in connection with the work.

#### 107.06 PROJECT RESPONSIBILITY

Where required all plans shall be signed and sealed by a Design Professional. The Design Professional shall be responsible for all plans and specifications. Approval by the Engineer shall in no way relieve the Design Professional of the responsibility for errors or omissions in design, plans, specifications or field surveys. Any errors shall be corrected by the Design Professional to the satisfaction of the Engineer at no cost or expense to the City. Where required, plans shall be signed and sealed by a Registered Professional Engineer licensed in the State of Colorado.

#### 107.07 PLANS ACCESSIBLE AT CONSTRUCTION SITE

The Contractor shall be required to have a set of plans approved by The City of Longmont on site at all times that construction is being completed. The contractor is also required to have an approved SWMP on site at all times. The plans shall include any approved revisions, and, where applicable, shall be signed and sealed by the Design Professional.

#### 107.08 TRAFFIC CONTROL

Contact the Public Works and Water Utilities Department for all items concerning signage and traffic control devices, including removal of signage and traffic control devices. Construction warning signs and sign placement shall conform to the Manual on Uniform Traffic Control Devices (M.U.T.C.D.). As directed by the City Transportation Engineer, the Contractor shall submit for review and approval, a detailed traffic control plan as well as a schedule a minimum of 72 hours prior to the commencement of any work. The Contractor shall furnish and maintain the approved construction traffic control plan throughout all phases of construction.

Traffic control devices and utility control devices shall be maintained in a safe operating condition at all times. The Contractor shall submit for review and approval a detailed Traffic Detour and Control Plan as well as a schedule prior to the commencement of any work.

All traffic signals and street lights shall be kept in continuous operation unless otherwise approved. Any interruption in either shall require a minimum of a seventy two (72) hour advance notice. The Contractor shall not remove or revise any existing traffic control devices.

Use of streets by Trucks and Commercial Vehicles

1. The Contractor shall comply with the City of Longmont Municipal Codes with regard to truck routes and overweight vehicles.
2. It is unlawful for any truck or other commercial vehicle having a total empty weight in excess of seven thousand pounds to be driven on any public street within the City of Longmont, other than those specifically designated by official signs to constitute a truck route.
3. It shall be an affirmative defense to the above provision that the driver of any excluded vehicle traveling over such prohibited streets was doing so for the immediate purpose of delivering or picking up materials or merchandise, for providing services, or for reaching the final destination which occurs on these streets, provided such excluded vehicles enter such streets at the truck route intersection nearest the destination of the vehicle and proceed thereon no farther than the nearest truck route intersection thereafter.

#### 107.09 RESPONSIBILITY FOR DAMAGE

Should any public utility or private property be damaged during construction operations, the Contractor shall immediately notify the City and the owner of such utility or private property, and unless authorized by the owner of the utility or private property, the Contractor shall not attempt to make repairs. The Contractor will be liable for all damages and shall indemnify and hold the City harmless from any liability or expense for injuries, damages, or repairs to such facilities. Prior to work on any private property, the Contractor shall obtain written approval from the Owner of the private property. In addition to the repair costs, the Contractor shall be responsible for any administrative costs incurred by the City. The City may choose, at its sole

discretion, to perform or contract for the repair work. If the City contracts for the repair work, the Contractor shall be responsible for reimbursing the City for the contract costs, and administration of the work.

#### 107.10 UTILITY LINE SEPARATION AND CROSSINGS

HORIZONTAL SEPARATION - Unless otherwise approved by the City, the following minimum separation/clearance requirements shall apply for all public and private improvements installed in the public right-of-way or easements:

1. A minimum of ten (10) feet separation from the edge of all existing or proposed storm sewer lines. This may be increased due to the depth of a storm sewer line.
2. A minimum of five (5) feet separation from the edge of all existing or proposed water lines. This may be increased due to the depth of a water line.
3. A minimum of ten (10) feet of separation from the edge of all existing or proposed sanitary sewer lines. This may be increased due to the depth of a sanitary sewer line.
4. Clearance from existing electric utility underground lines and vaults must be three (3) feet when the exact location has been determined by pot holing the infrastructure. Maintain a minimum of twelve (12) inches vertical separation for perpendicular crossings of electric utility facilities, with eighteen (18) inches recommended. Maintain a minimum of three (3) feet of clearance on either side of proposed underground electric utility facilities
5. Maintain a minimum of three (3) feet clearance between above ground infrastructure and the sides and back of any electric utility above ground facilities and a minimum of ten (10) feet in front of doors or openings.
6. Maintain ten (10) feet of clearance from overhead electric lines and ten (10) feet from poles and anchors. If this is not feasible, or conditions warrant additional protection or pole stabilization, the contractor must contact Longmont Power & Communications.
7. A minimum of five (5) feet radial clearance between any above ground infrastructure and a fire hydrant. No above ground installation shall block the view or accessibility of any fire hydrant.
8. Open trenches must not be within a 1:1 slope area of pavement, curbs, gutter, or sidewalks. Any pavement, curbs, gutters, or sidewalks that are undermined by excavation shall be removed and replaced.
9. All water lines, sanitary sewer mains, and storm sewer mains and laterals shall have a minimum of fifteen (15) feet of separation from any existing or proposed structures.

VERTICAL SEPARATION AND CROSSINGS - In the event that a water and sewer line must cross the following requirements apply:

1. Water and sewer crossings shall have an eighteen (18) inch vertical separation, minimum, from outside wall to outside wall with the water line above the sewer line.

2. Where sewer lines cross water lines and the sewer is above the water line or less than eighteen (18) inches clear distance vertically below the water line, then the water line will be DIP or PVC pipe twenty (20) feet long and centered on the sewer line. In addition, if the sewer is sanitary and is made of concrete or vitrified clay pipe, it shall be replaced with a twenty (20) foot length of C-900 PVC pipe centered on the water main. Watertight transition couplings shall be used to join the PVC pipe to the existing sewer pipe. The transition couplings shall be solid sleeve and have an interior and exterior fusion bonded epoxy coating, stainless hardware and be externally wrapped with 10 mil thick polyethylene. Other requirements may be imposed by the Engineer on a case by case basis.
3. In all cases, bedding material or other structural protection shall be provided to preclude settling and/or failure of the higher pipe.
4. Separation of sanitary sewer and storm sewer lines will be reviewed on a case by case basis. A minimum of twelve (12) inches of vertical separation must be maintained for lateral crossings of electric utility facilities, with eighteen (18) inches recommended.

#### 107.11 RELOCATION OF EXISTING UTILITIES

In the event that during construction it is determined that any underground utility conduit, including, but not limited to, sanitary sewer mains, water mains, electric and communication lines, traffic signal loops, gas mains, drainage and ditch structures and any above ground utility facilities are required to be relocated or removed, the Contractor shall notify the utility owner and the City immediately, but not less than 48 hours of Contractor's approach to such utility, so that arrangements with the City and owners of the affected utility can be completed without delay of work.

#### 107.12 CHANGES FROM APPROVED PLANS

Should circumstances warrant changes from the approved plans or specifications, the proposed revision must be submitted by the Design Professional and approved by the Engineer, and approved copies given to the Contractor, Inspector, Developer, and Design Professional. No work shall proceed on that portion of the project being revised until said revisions are submitted, approved and distributed. The City shall respond promptly and in writing to such requests, but reserves a minimum of two working days for review and response to change requests. When additional review time is required, the City shall notify the submitter of the need for additional time within one working day of the submittal. Minor changes from the plans or specifications may be made only with permission from the Project Engineer or designee. This procedure shall be followed for all changes whether requested by the City, the Design Professional, the Contractor, or the Developer.

#### 107.13 NOTIFICATION OF DESIGN ERRORS

Should any omissions or design errors be discovered after final approval of the plans, the person or agency discovering the omission or error shall notify the Engineer, the Developer and the Design Professional. The Contractor, if unaware, shall be notified by the Developer, and following such notification, no work shall be allowed in the affected area until revisions are made by the Design Professional and approved by the City.

#### 107.14 SWEEPING/CLEANING OF ROADS AND ROW DURING CONSTRUCTION

The Contractor shall be responsible for the removal and proper disposal of all construction debris, dirt, and mud from all the public streets, private property or driveways, and parking lots within or adjacent to the project area, whether caused directly by the Contractor's construction operation, or that of subcontractors or material suppliers, or indirectly due to the work site conditions in general. Failure, by the Contractor, to correct any of the above within 48 hours of written notice, by the City, shall cause the City to issue a STOP WORK ORDER (Red Tag) and/or do the work and make a claim against the Contractor or the Developer for any costs incurred by the City. In addition, the Contractor may be fined up to \$300.00, if convicted of violating City Code Sections 10.24.020 and 10.24.050.

The Contractor shall be responsible for any damage caused due to maintenance or cleaning operations, or the lack thereof.

#### 107.15 RECORD DRAWINGS

Prior to Construction Acceptance, it shall be the responsibility of the Developer to provide the Engineer with one set of Record Drawings plans indicating any revisions (at the same scale as the original construction plan set) upon the completion of the project. Format of Record Drawing plans shall be 24" x 36" reproducible sheets in a format compatible with the City's requirements. Revisions shall be clouded, numbered, or lined out on the Record Drawings. Erasures are not allowable.

Information to be included on the Record Drawings plans shall be as follows:

1. All approved plan revisions that have occurred since the original City approval of the plans.
2. Streets:
  - a. Elevation check at a maximum of one hundred fifty (150) foot intervals in each flow line along the street, at the PCR of each radii, at the center of each cross pan, and at each grade break.
  - b. Elevation at the flow line at each side of storm inlets.
  - c. Elevations at all points shown on the cul-de-sac plans.
3. Sanitary and Storm Sewer:
  - a. Elevation of all in and out inverts at manholes, inlets, and outlets. Any changes, from the approved plans, in materials or pipe sizes shall be shown.
  - b. Distance between manholes, and between manholes and inlets or outlets.
  - c. All sanitary sewer service connection location information is to be supplied by the Contractor to the Developer for inclusion on the Record Drawings plans.
  - d. Rim elevations on all manholes and drainage inlet structures.

- e. Elevation check every one hundred (100) feet in the flow line of all drainage channels.
  - f. Final detention pond volume from cross sections and the final release rate per drainage criteria (P.E. certification only).
4. Water Mains:
- a. Horizontal verification of water valves, tee's, cross's, and fire hydrants, if changed from the approved plans.
  - b. Location and type of restraints installed shall be supplied by the Contractor to the Developer for inclusion on the Record Drawing plans.
  - c. The location of all service connections along the main shall be supplied by the Contractor to the Developer for inclusion on the Record Drawing plans .
5. Public Landscaping Improvements - See Section 600 "Landscape and Irrigation".
6. Power & Communications:
- a. Location of trench alignment when installed by the Developer.
  - b. Location of electrical equipment.
  - c. See Section 700, "Power & Communications"

Certification Statement - The Record Drawings shall contain one of the following certification statements:

These drawings are a Record Drawing of the final street, water, sanitary sewer, grading, storm sewer, and electric construction of the improvements shown on these plans as per the City of Longmont Public Improvement Design Standards and Construction Specifications.

Name	P.E. Number	Date

Based on the survey prepared by \_\_\_\_\_, these drawings are a Record Drawing of the final street, water, sanitary sewer, grading, storm sewer, and electric construction of the improvements shown on these plans as per the City of Longmont Public Improvement Design Standards and Construction Specifications.

Name	P.E.Number	Date

Name	L.S. Number	Date

**107.16 CONSTRUCTION ACCEPTANCE**

In order to obtain Construction Acceptance for all utilities, all utility lines and services must be installed, backfilled, compacted, and have passed required testing, and all valves, fire hydrants, and manholes shall be brought to grade. In order to obtain Construction Acceptance for streets, all concrete and paving, with the exception of the upper lift of asphalt must be completed. In

order to receive Construction Acceptance for landscaping, all concrete trails, irrigation, and landscaping must be installed and have passed all inspections.

Public improvement construction shall be completed in strict compliance with the approved plans. Upon improvement installation, the Developer shall notify the appropriate City Divisions and Departments, and the City shall perform an inspection to determine the acceptability of the Public Improvement. If deficiencies are observed, the Engineer shall issue a letter outlining the repairs needed.

The Developer shall repair all deficiencies noted during the inspection for Construction Acceptance. Developer shall submit a repair schedule, for review and approval by the Engineer, within 30 days of receipt of the letter outlining needed repairs. If Developer does not meet the schedule, the City may use the Developer's financial security and complete the repairs. If the Developer's proposed repair schedule extends beyond the current life of the financial security, that security shall be extended to cover the repair period.

Once the public improvements are found acceptable, a letter of Construction Acceptance shall be issued by the City. The Developer then begins the one year warranty period and shall warrant all work free of defects in workmanship or materials for a period of one year from the date of Construction Acceptance. The Developer shall be responsible for maintenance during the one year warranty period and shall be responsible for correcting any deficiencies that occur prior to Final Acceptance.

#### **107.17 FINAL ACCEPTANCE**

At the end of the warranty period, the City shall inspect the public improvements to determine compliance with these specifications or approved plans, specifications and materials. Any construction not meeting these standards shall be brought into compliance by the Developer. When all City standards have been met, final acceptance shall be granted.

If final acceptance is not granted, all future maintenance and repair shall remain the responsibility of the Developer. If identified deficiencies are not corrected and finally accepted within 120 days after the one year warranty period, the City may cause the required corrections to be made at the expense of the Developer. In addition, the City may suspend building permits or certificates of occupancy until the corrections are made and the work is completed in a satisfactory manner.

#### **108.00 APPROVED MATERIALS LIST**

##### **108.01 GENERAL**

The City shall maintain a list of approved materials for use in the construction of public improvements as outlined in this document.

On an annual basis, during the months of December through February only, concerned parties may submit a request in writing for a material to be included in the current list of approved materials.

The submittal shall include all of the manufacturer's specifications concerning the design, installation intended use, and any other information that is requested by the Engineer or designee.

If the submittal is determined to be appropriate by the Engineer or designee, the evaluation of the materials shall be made by a committee called by the Engineer or designee. The committee shall be composed of a minimum of three representatives from the City. The Engineer or designee will act as chairperson and the remaining committee members will represent the City divisions affected by the proposed product or material.

If an accepted product fails to perform as anticipated or if there is a change related to the availability of repair or replacement parts, the product may be excluded from the approved materials list.

Materials or products not included in the approved materials list shall not be used in construction unless an exception is granted in accordance with Section 103.01 of this document.

#### 108.02 EVALUATION

The review committee members will give careful consideration to the products or methods based upon their collective experience and opinions. They will assure themselves that proper criteria exists or will develop criteria by which the product or methods can be evaluated. They will seek out other knowledgeable persons both within and outside the City departments and attempt to determine by this means whether the product is acceptable or unacceptable.

If necessary, the committee chairperson will contact the concerned party for additional data, for product samples, and to arrange for testing.

#### 108.03 TESTING

A testing program for the product may be undertaken at the discretion of the Engineer and with the concurrence of the concerned party. The review committee will arrange actual field testing procedures. The concerned party shall furnish samples to be tested, any special test equipment not already available to the review committee, any necessary appurtenant materials, pipe, gauges, charts, recording equipment, and, when necessary, a location to conduct the tests. In some instances, testing may consist of trial installations in the field. Determination of the nature of the testing shall rest with the City, and the City reserves the right to require full reimbursement for test and evaluation expense.

Testing shall be undertaken with the objective of clearly determining the acceptability of the product. For some products where durability is in question, the test period may last for several years. The City's goal will be to make an adequate determination within a minimum time frame. The Engineer may require a bond from the concerned party to cover any estimated testing expenses.

Following completion of tests, the committee will meet with the concerned party to discuss results and any further testing or consideration. The committee will then discuss the product and reach a decision.

#### 108.04 NOTIFICATION

The Engineer will notify the concerned party in writing of Engineer's decision to either accept the product and include it or reject the product as unacceptable. Notification shall be made within



thirty (30) working days of the completion of any testing. If the product is to be included that inclusion will be made within six (6) months of notification.

#### **108.05 APPEAL**

If the product is rejected and if the concerned party has good reason to feel that their product did not receive an adequate or fair test, they may appeal within thirty (30) days in writing to the appropriate departmental Director. The concerned party shall fully document their case and ask for reconsideration based on new facts, testing, late results, or some such factual basis. If the Director finds reason for further consideration, the Director will arrange for a meeting with the concerned party, the Engineer and any other City employee who might contribute to consider further testing or evaluation. A subsequent final decision will be made in writing under the signature of the Director. If the Director does not find sufficient cause to further investigate the matter, the Director shall so advise the concerned party in writing, and that decision shall be final.

#### **108.06 LIMITATIONS ON REAPPLICATION**

If, after a product is rejected, significant changes are incorporated into its manufacture that would render it acceptable, the concerned party may reapply to the Engineer for reconsideration. In the absence of changed conditions, the product or method will not be reconsidered for inclusion for a period of three (3) years after having been rejected.

### **109.00 FINAL CLEANUP**

#### **109.01 MATERIAL STORAGE AND HANDLING**

All materials will be stored in a manner so as to preserve their quality and suitability for the work. All pipe, fittings, valves, hydrants, and accessories shall be loaded and unloaded by lifting with hoists, skidding, or by hand so as to avoid shock or damage. Under no circumstances shall material be dropped. Pipe handled on skidways will not be skidded or rolled against pipe already unloaded. Cast iron, ductile iron, and steel pipe will be handled so that the coating or lining will not be damaged. If any part of the coating or lining is damaged the repair shall be made to the satisfaction of the Engineer, by the Contractor or Developer at no expense to the City. Any material judged by the Inspector to be damaged beyond repair or that is not in conformance with the Standards and Specifications will be rejected.

#### **109.02 PROTECTION FROM POLLUTION**

The Contractor and Developer are responsible to take necessary precautions to be in conformance with all applicable Federal, State, and Local environmental and pollution control guidelines.

#### **109.03 LANDSCAPE PROTECTION**

The Contractor shall avoid disturbing existing landscaping and plant material not specified for removal. Unless otherwise stipulated in the approved plans, or addressed by other City regulations, areas of landscaping disturbed by construction shall be returned to original or better condition by the Contractor. All materials and workmanship for replacement shall be approved by the City, and shall comply with the City's appropriate landscape requirements.

#### 109.04 FINAL CLEANUP

All surplus materials furnished by the Contractor and all tools and temporary structures shall be removed from the site by the Contractor. All debris and rubbish caused by the Contractor's operations shall be removed by the Contractor, and the areas occupied during operations shall be restored to their original condition, unless otherwise directed by the Engineer. All surplus materials furnished by the City of Longmont and delivered to the site by the Contractor shall be removed by the Contractor and delivered to a site designated by the City. All surplus supplies furnished and delivered by the City shall be removed by the City.

The burning of material is not permitted within the jurisdictional area of the City. The disposal of material is the responsibility of the Contractor and shall be done in a manner that is approved by the City. The Contractor shall not dispose of material or debris within the project limits. The Contractor is responsible for obtaining a site for the disposal of clearing and grubbing materials, debris, rubbish and trash, excavated rock, excess excavated materials, and materials not suitable for backfilling. Removed concrete material may be used to construct embankments only if approved by the Engineer. All pavement, sidewalks, structures, curbs, gutters, etc. not designated to remain shall be disposed of as debris. If materials are disposed of on private property, written permission shall be obtained from the property owner and a copy shall be given to the Engineer.

#### 110.00 INTERRUPTION OF WATER, WASTEWATER, AND STORM SEWER

The Contractor shall obtain approval from the Engineer (48) forty-eight hours in advance of any construction which will result in the interruption of service to an existing City customer. This will allow the following to be completed by the Engineer's designee.

1. All affected customers shall be notified twenty-four (24) hours in advance in writing. The notices shall be delivered, by the City, to each customer. An attempt shall be made to deliver the notice personally to the customer, otherwise the notice shall be left at the customer's door.
2. The City fire department shall be notified at least twenty-four (24) hours in advance of any water shut off. A description of the boundaries of the affected area and the location of all fire hydrants in the area shall be provided to the fire department.
3. In commercial areas any disruption of service shall be undertaken only after said disruption has been coordinated with the City and the private property owner. Coordination shall be required for both the service change over and any connections made to the existing system.
4. A normal outage shall be a maximum of (4) four hours. If the outage will be greater than (4) hours, then work shall be done in a manner so as to minimize the inconvenience to the customer, and shall be subject to the approval of the Engineer. The Engineer shall notify the Contractor of the timing of the connection.

If in the process of installing a connection there exists an industry or building that cannot be out of water or sanitary sewer, the Contractor shall be required to provide an appropriate means, approved by the City, of providing water and sanitary sewer to the affected customer during the installation of the connection.

## **111.00 TRENCH EXCAVATION**

### **111.01 UTILITY LOCATES**

Prior to Construction Acceptance of Public Improvements the developer shall provide utility locates for public and private underground infrastructure including but not limited to sewer, water, storm drainage, and irrigation. Additionally, all empty conduits used as sleeves for irrigation and dry utilities must be located and clearly identified. Following Construction Acceptance, the Developer or their successors or assigns will be responsible for location of private underground utilities including, but not limited to, underdrains and irrigation facilities. The City will not be responsible for repairs to underground utility infrastructure that was not properly located and marked by using standard utility locating materials, paint, stakes, locating flags, per the typical locating procedure. All locate marks must be in accordance with UNCC requirements to be considered properly located.

### **111.02 MINIMUM TRENCH WIDTH**

The minimum trench width is eighteen (18) inches, unless approved otherwise by the City. Approval of trench widths less than eighteen (18) inches shall be based on the demonstration of the Contractor that suitable mechanical means of backfill compaction is available and compaction is being obtained, or an approved non-shrinkable flow fill material will be used for trench backfill.

As a general rule the edge of the trench shall not be allowed closer than twelve (12) inches to concrete structures (i.e. curb and gutter, sidewalks, driveways, inlets, etc.) The actual distance shall be dependent upon the characteristics of the soil, the type of equipment that is used for trenching, and the methods used for excavation and backfill. If, in the opinion of the Engineer, concrete structures are endangered by undermining of the structure, or settlement the Engineer may require that the structure be replaced, or special construction methods may be required, or the distance of the trench from the structure will be increased.

See Section 700 Trench Specification.

### **111.03 REMOVAL OF BITUMINOUS SURFACES**

The Contractor shall remove and properly dispose of pavement and road surfaces as a part of trench excavation. Cut for trench width, then re-cut one foot beyond trench excavation at time of patching. If the limits of the asphalt removal are within 3.0 feet of the edge of pavement, the pavement shall be removed and replaced completely to its edge. Refer to detail 100-04. The width of pavement removed along the trench for the installation of pipe shall not exceed the width of the trench specified by more than one (1) foot on each side of the trench without approval of the Engineer.

The Contractor shall use full-depth cutting or milling to insure the removal of pavement in a straight line. The face of the remaining pavement shall remain approximately vertical. If the edge is damaged during construction it shall be re-cut prior to final bituminous paving. See provisions for trench backfill.

#### 111.04 REMOVAL OF CONCRETE PAVEMENT, SIDEWALKS, AND CURB/GUTTER

The Contractor shall remove and properly dispose of pavement, sidewalks, and curb and gutter as a part of trench excavation.

The Contractor shall use methods such as full-depth saw cutting to insure the removal of pavement in a straight line. The minimum area removed on road surfaces shall be one half (1/2) panel section but no less than twelve (12) feet x ten (10) feet with the twelve (12) foot dimension in the longitudinal direction. Remainder portions of a panel can not be less than twelve (12) feet x ten (10) feet.

On sidewalks and curb and gutter the minimum removal section shall be five (5) feet in length, as long as the remaining section is a minimum of five (5) feet long. If the remaining section is less than five (5) feet long the entire panel shall be removed and replaced.

In order to allow for forming and patch-back, when removing curb and gutter or curbside abutting asphalt pavement, the Contractor shall remove the adjacent asphalt pavement and base course eighteen (18) inches wide and six (6) inches deep if any of the following conditions exist:

1. The length of the removal is greater than thirty (30) feet.
2. The asphalt at the edge of the existing concrete gutter lip is higher or lower than the lip of the concrete by one half (1/2) inch or more.
3. The edge of the existing asphalt pavement varies more than three eighths (3/8) inch horizontally or vertically.
4. The existing asphalt is cracked or distressed.
5. Upon removal of the concrete, the asphalt is chipped, deformed, undermined, or raised more than three eighths (3/8) inch vertically or horizontally.

If all of the above criteria are met, and a curbside or curb and gutter section is removed and replaced without the removal of the adjacent asphalt, it must meet the following criteria or it shall be removed and replaced along with the adjacent asphalt pavement:

1. No voids exist between the concrete and asphalt.
2. The fall in the lip of the gutter section must meet the required cross-section within +/- 1/4 inch.
3. All other requirements of the construction have been met in accordance with these specifications.

#### 111.05 CARE OF SURFACE MATERIAL FOR REUSE

All surface materials that in the opinion of the Engineer are suitable for reuse in the restoring of the surface shall be stockpiled separate from the general excavation materials. Surface materials as used herein are intended to include items such as gravel surfacing, landscape materials, topsoil, etc. It is not intended to include bituminous or concrete surfacing.

#### 111.06 PILING OF EXCAVATED MATERIAL

Unless otherwise approved by the Engineer, and an approved Traffic Control Plan, all excavated material shall not be piled in a manner that endangers the work and shall not obstruct sidewalks, roadways, or driveways. It shall not be piled in a manner that obstructs the sight distance at driveways or intersections. This shall be determined in accordance with the sight distance criteria set forth in Section 205. Hydrants under pressure, meter pit covers, valve boxes, electrical apparatus, manholes, inlets and other utility controls shall be left unobstructed and accessible during construction, unless otherwise approved by the Engineer. If an emergency access is needed to any utility which is blocked, whether approved or not, the Contractor shall be responsible for removing the obstruction. Gutters shall be kept clear or other satisfactory provisions made for street drainage, and natural water course shall not be obstructed.

#### 111.07 TRENCHING BY HAND OR MACHINE

Hand methods for excavation shall be employed in locations shown on the drawings or in locations where extreme care is required. In other locations the Contractor may use trench-digging machinery or employ hand methods.

#### 111.08 SPECIAL TRENCHES OR INSTALLATIONS

Special trenches or installations such as railroad, highway or irrigation ditches, and utility crossings shall conform to the specifications and instructions of the authority whose facility, right-of-way, easement, or utility is involved. The Contractor or Developer shall confer with the representatives of the agency concerned to arrange the details for construction. The Contractor shall be responsible for all costs for repairing all damage incurred to property during construction. All work shall be completed to the satisfaction of the agency involved as well as the Engineer.

#### 111.09 EXCAVATION

The trench shall be excavated to the depth required so as to provide proper bedding and support for the pipe. Any part of the bottom of the trench excavated below the specified grade shall be corrected with approved material as directed by the Engineer. The subgrade shall be stable.

#### 111.10 TRENCH STABILIZATION

Where the trench subgrade is found to be soft, wet, unstable or to include ashes, cinders, refuse, vegetable or other organic materials, or large pieces or fragments of inorganic materials that in the judgment of the Engineer should be removed, the Contractor shall excavate and remove such unsuitable material to the width and depth determined by the Engineer. Over excavated areas shall be backfilled with foundation material as specified under Trench Backfill below.

#### 111.11 ROCK EXCAVATION

Large rock, boulders, and large stones shall be removed to provide six (6) inches of clearance to each side and below all pipe accessories. Excavations below subgrade in rock or boulders

shall be refilled to subgrade with compacted material approved by the Engineer. Blasting will not be allowed without approval of Engineer.

#### 111.12 DEWATERING OF TRENCHES

Pipe trenches shall be kept free from water in an adequate and acceptable manner during excavation, fine grading, pipe laying and joining, and pipe bedding operations. Where the trench bottom is mucky or otherwise unstable because of the presence of ground water, and in all cases where the static ground water elevation is above the bottom of any trench or bell hole excavation, the ground water shall be lowered by means of well points and pumps or by other means acceptable to the Engineer, to the extent necessary to keep the trench free from water and the trench bottom stable at all times during construction. Surface water shall be diverted, and otherwise prevented from entering trenches, to the greatest extent practical without damage to the adjacent property from dikes, ditches, or impounded water. Contractor shall clean storm drains as part of site clean up at completion of projects. It is the responsibility of the Developer and Contractor to obtain and be in compliance with all provisions of the Colorado Department of Public Health and Environment, Water Quality Control Division, Construction Dewatering Permit.

#### 111.13 BORING

The requirements for boring and jacking of a line will be determined on a case by case basis to enable coordination with the owners and agencies involved. Boring of utilities whether service lines or main utility lines shall be done in such a manner as to ensure that there is no settlement of the soil or surface improvements. Contractor is responsible for all settlement and damage that occurs due to boring or jacking operations. Tunneling resulting in voids under surface improvements shall not be permitted.

### 112.00 TRENCH BACKFILL

#### 112.01 FOUNDATION MATERIAL

Foundation material shall be one and one-half (1½) inch washed rock. A layer of geotextile fabric shall be placed between the stabilization material and the bedding material. See the City of Longmont approved material list for types of fabric that may be used. Under severe conditions, where the bottom of the trench is found to consist of material that is unstable to such a degree that, in the opinion of the Engineer, it cannot be removed and replaced with one and one half (1½) inch rock and support the pipe properly, the Contractor shall construct a foundation for the pipe, consisting of piling, timbers or other methods as approved by the Engineer.

#### 112.02 BEDDING MATERIAL

The bedding material shall be crushed rock conforming to the Colorado Department of Transportation "Standard Specifications for Road and Bridge Construction", gradation #8 or variations as approved by the Engineer (see table below).

<p style="text-align: center;"><b>TABLE 703-1</b> <b>Concrete Aggregate Gradation Table</b> <b>Percentages Passing Designated Sieves and</b> <b>Nominal Size Designation</b></p>
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<b>Coarse Aggregates (From AASHTO M 43)</b>	
<b>Sieve Size</b>	<b>3/8" to #8</b>
2 1/2"	----
2"	----
1 1/2"	----
1"	----
3/4"	----
1/2"	100
3/8"	85-100
#4	10-30
#8	0-10
#16	0-5
#50	----
#100	----

### 112.03 INSTALLATION OF BEDDING MATERIAL

After completion of the trench excavation and proper preparation of the foundation, bedding material shall be placed on the trench bottom for support under the pipe. Bell holes shall be dug deep enough to provide a minimum of two (2) inches of clearance between the bell and bedding material. All pipe shall be installed in such a manner as to insure full support of the pipe barrel over its entire length. After the pipe is adjusted for line and grade, and the joint is made, the bedding material shall be carefully placed and tamped under the haunches of the pipe and in the previously dug bell holes.

Tamping is herein defined as the act of placing approved bedding material under the haunches of the pipe, paying particular attention to voids, bell hole, and sling holes. The purpose of tamping is to ensure uniform support of the pipe.

Bedding will not be required on service lines less than four (4) inches in diameter; however, if soil conditions warrant, then bedding will be required. A layer of geotextile material shall be installed around the bedding whenever the native material consists of material which will, in the opinion of the Engineer, result in the migration of the bedding material into voids in the existing trench bottom.

Should excessive ground water be encountered and no provisions have been made for ground water drainage, clay or flow fill dams may be required per detail 100.06. These dams shall be two (2) feet thick, the full depth of the bedding material and foundation material, the full width of the bedding material and located approximately every four hundred (400) feet along the trench as a minimum. Soil dams shall also be placed twenty to fifty (20-50) feet on each side of open drainage and irrigation ways. These requirements will be reviewed on a case by case basis.

### 112.04 TRENCH BACKFILL

Trench backfill consists of that backfill above the bedding zone and below the base course.

Unless approved by the Engineer, or unless specified for hydrostatic test purposes, all trenches and excavation shall be backfilled within the same day after the pipe is laid therein, but not before the pipe has been inspected by the Engineer or Inspector. The length of open trench shall be approved by the Engineer on a case by case basis. Unless otherwise approved by the

Engineer, cleanup must be performed within 600 linear feet of pipe installation. NO TRENCH SHALL BE LEFT OPEN OVERNIGHT WITHOUT PROPER PROTECTION AND APPROVAL OF THE ENGINEER. These requirements apply for all mains and service lines. Backfilling of trenches shall comply with these specifications, and with applicable design and soils reports.

#### 112.05 BACKFILL MATERIAL

All backfill material shall be free from debris, cinders, ashes, refuse, vegetable or organic material, boulders, rocks or stones, frozen material, broken bituminous or concrete materials, or other material that in the opinion of the Engineer is unsuitable. Material containing stones up to six (6) inches in their greatest dimension may be used, unless otherwise specified.

Use of rocks, stones or boulders within the allowable size limits is subject to their not interfering with proper compaction.

Masses of moist, stiff clay and washed rock shall not be used as backfill material.

##### 1. Use of excavated material as backfill

When the type of backfill material is not indicated on the drawings or specified, the Contractor may backfill with the excavated material, provided that such material consists of loam, clay, sand, gravel, or other materials that, in the opinion of the Engineer, are suitable for backfilling. If excavated material is indicated on the drawings or specified for backfill, and there is a deficiency due to a rejection of part thereof, the Contractor shall furnish the required amount of sand, gravel, or other approved material.

##### 2. Use of imported material as backfill

If imported backfill is not required on the drawings, and in the opinion of the Engineer should be used in any part of the work, the Contractor shall furnish and backfill with approved material as directed by the Engineer. All material shall be free from frozen matter, stumps, roots, brush, other organic matter, cinders or other corrosive material, debris, broken asphalt and concrete, and any other material that is not suitable in the opinion of the Engineer. Trench backfill material shall be free from any rocks or stones which are larger than six (6) inches, in any dimension. Rocks or stones which are larger than three (3) inches, in any dimension, shall not be placed within one foot of pavement subgrade, or within one foot of the finished surface of unpaved areas. Rocks or stones larger than two (2) inches in diameter may not be used for trench backfill of irrigation lines.

##### 3. Non-shrinkable trench backfill (such as Flowfill, Flashfill, or other approved material).

Non-shrinkable trench backfill shall meet the following requirements:

Minimum (twenty) 28 day strength: 60 psi

Maximum (twenty) 28 day strength: 100 psi

Non-shrinkable trench backfill shall be adequately vibrated to ensure consolidation.



## 112.06 BACKFILLING IN FREEZING WEATHER

Backfilling shall not be done in freezing weather except by permission of the Engineer, and it shall not be made with frozen material. No fill shall be made where the material already in the trench is frozen.

## 112.07 COMPACTION REQUIREMENTS AND TESTING

It is the responsibility of the Contractor to provide the proper means and equipment for obtaining compaction within the specified ranges. If the Engineer feels that the means or equipment is not adequate to obtain the desired results the Engineer may require specific measures to insure the desired results. One such measure may be the use of flow fill non-shrink trench backfill.

The Contractor shall retain a private, approved testing agency regularly involved in soils testing to perform required proctor and compaction tests at the Contractor's expense. Two copies of all Proctor curves and test results showing exact location of sample collection and test sites must be furnished to the Engineer for approval. Only actual test information will be submitted, estimated values will not be accepted. The Engineer shall be informed before any tests are performed and may designate areas to have checked for compaction. The results of the tests must be given to the Engineer before any compaction will be accepted.

1. Standard Proctor Tests (A.S.T.M. D698): The Contractor shall provide Standard Proctor results for compaction testing. A sufficient number of Proctor tests shall be taken so as to, in the opinion of the Engineer, adequately represent all types of soil encountered along the trench. Said tests are intended only to aid the verification of the quality of the work. Acceptable test results shall not relieve the Contractor from correction or repairing of any substandard work before or during the warranty period.
2. Field Density Tests: The Contractor shall provide field compaction tests conforming to A.S.T.M. D2922 and D3017 every one (1) foot of trench depth for every two hundred (200) lineal feet of pipe installation unless otherwise specified by the Engineer. The Contractor shall provide one field compaction test per every one hundred (100) lineal feet of curbwalk and shall demonstrate that the subgrade will pass a wheel test. The Contractor shall provide two field compaction tests for each water and sewer service line. For the sewer service, the tests shall be at varying depths as required by the Inspector and located ten (10) feet from the end of the service line. For the water service, the test shall be taken when the fill is at a level of two (2) feet below the final grade; one test shall be located five (5) feet from the water main and one test shall be located two feet from the curb stop (between the curb stop and the sidewalk. The Contractor may be required to dig up portions of the trench to afford access for compaction tests below the top surface of the backfill material.

Unless otherwise required on the plans, or by the Engineer to prevent settlement or damage to existing or proposed public or private improvements, trench backfill compaction shall be to the following minimum densities indicated below:

### COMPACTION ZONES

All compaction within the right-of-way shall be 95%.

All driveway areas, water and sewer service lines shall be compacted at 95%.

No ponding or jetting of trenches, or use of a hydro-hammer or any impact type compaction is allowed. Compaction shall be done by mechanical methods.

All material shall be compacted within plus or minus 2% of the optimum moisture content. The Contractor shall be responsible for providing a stable non-pumping subgrade. If, in the opinion of the Engineer, any portion of the subgrade is suspected of not being stable, the Engineer may require that the subgrade be proof-rolled. Proof-rolling shall be performed with equipment and in a manner acceptable to the Engineer. The Contractor shall provide any equipment required for proof-rolling. Areas found to be weak and those areas which failed shall be corrected and brought into compliance with these specifications by the Contractor.

#### 112.08 CONSTRUCTION WATER

All water needed for approved construction use must be obtained from either a private supply or an approved tank loading facility. In no case shall construction water be obtained from a fire hydrant, unless approved by the Engineer. If the use of water from a fire hydrant is approved, the Contractor shall obtain from the City of Longmont, all required permits, materials, and equipment needed to monitor and control water use prior to accessing a fire hydrant, and shall be limited to only using the designated fire hydrant.

#### 112.09 COMPACTION TEST FAILURE

If the required compaction is not obtained, it shall be the responsibility of the Contractor to recompact the material. In cases where there is a failure to achieve the required compaction, the Engineer may require that the backfill be removed and replaced with City approved backfill material.

A hydrostatic retest shall be required on water lines after recompaction if the hydrostatic testing had been performed prior to recompaction.

A retest of utility lines shall be required after recompaction if the testing had been performed prior to recompaction.

### **113.00 STORMWATER QUALITY REQUIREMENTS**

#### 113.01 GENERAL

These standards are written to establish methods for controlling the introduction of pollutants into the municipal separate storm sewer system as required by the National Pollutant Discharge Elimination System (NPDES) permit process.

The intent of this section is to present minimum requirements for the implementation and use of Best Management Practices (BMP's) for stormwater quality control within the City of Longmont. The following pages refer to the information and design guidelines presented in the Urban Storm Drainage Criteria Manual (USDCM), Volume 3, "Best Management Practices" and CDOT erosion control manual.

Introduction - The City is an operator of a phase II regulated small Municipal Separate Storm Sewer System (MS4) and is required by the State of Colorado to obtain a permit to discharge stormwater. In order to comply with the permit, the City reviews and approves a Storm water Management Plan (SWMP) for sites disturbing land of one (1) acre or more (see Appendix).

All construction activity shall be responsible for the preservation and protection of the stormwater collection systems and other natural and developed drainage ways, which may be affected by the construction.

#### 113.02 DEVELOPMENT PROCESS

Any construction activity that disturbs one or more acres of land and any construction activity that disturbs less than one acre but is part of a larger common plan of development as determined by the City, must obtain a Public Works Development Permit from the City and a Storm water Discharge Permit Associated with Construction Activity from the Colorado Department of Public Health and Environment (CDPHE). The Colorado Department of Public Health and Environment, Water Quality Control Division, can be reached at 303-692-3500 (<http://www.cdphe.state.co.us/wq/PermitsUnit/wqcdpmt.html> ).

Prior to any construction activity, applicants must have an approved SWMP which is a condition of issuance of the Public Works Development Permit from the City, and a Storm water Permit Associated with Construction Activities application from the Colorado Department of Public Health and Environment (CDPHE).

#### 113.03 STORMWATER MANAGEMENT PLAN - DESIGN CRITERIA

The City shall evaluate the adequacy and appropriateness of the proposed BMP's based on their fulfillment of the previously stated guidelines and compliance with the Best Management Practices (BMP's) included in the Urban Storm Drainage Criteria Manual (USDCM), Volume 3, and CDOT erosion control manual:

1. The contents of the Storm water Management Plan shall be in accordance with the requirements of the Colorado Department of Public Health and Environment. (see appendix)
2. The design shall minimize the overall land disturbance, and maintain stormwater quality in a condition similar to historic levels.
3. Design construction phasing, to minimize soil disturbance and avoid erosion. Effective phasing should be used to minimize soil exposure between overlot grading and final grading or installation of improvements.
4. Manage stormwater flows to minimize erosion and sediment movement. This objective would include diverting concentrated flows from disturbed slopes, minimizing the length and steepness of disturbed slopes, keeping runoff velocities low, and preparing or reinforcing drainage ways and outlets to receive runoff flows.
5. Do not allow increased sediment movement off of the site. All sediment disturbed on site should be contained and either re-deposited in a more stable location, or removed from the site to the Maximum Extent Practicable.

#### 113.04 CONSTRUCTION ACTIVITIES REQUIREMENTS

The Contractor shall satisfy all environmental quality standards imposed by law and take reasonable steps to minimize the environmental impact of the work. In compliance with applicable City, state and federal law:

1. The Contractor shall not pollute the water of any pond, lake, stream, ditch, or other watercourse, as prohibited by Section 14.26 of the Longmont Municipal Code.
2. The Contractor will implement BMP'S in accordance with Section 14.26 of the Longmont Municipal Code.
3. The Contractor will comply with all appropriate groundwater discharge permits associated with this project.

All general contractors, subcontractors and utility agencies shall comply with the approved, current SWMP for the project.

The Contractor is responsible for complying with the requirements of both the City Public Works Development Permit and the Storm water Discharge Permit Associated with Construction Activities Permit from CDPHE until the permits have been formally inactivated. The requirements include:

During Construction:

1. Designate a Certified Erosion Control Specialist. The ECS shall be a person other than the Contractor's superintendent, unless otherwise approved by the Engineer. The ECS shall be experienced in all aspects of construction and have satisfactorily completed an ECS training program authorized by the City.
2. Keep a current copy of the SWMP on site at all times.
3. Document any plan changes on the City-approved SWMP.
4. Install Best Management Practices (BMPs) according to specifications outlined in the SWMP.
5. Perform visual inspection daily.
6. Perform written inspections of stormwater and erosion controls every fourteen (14) days and following each significant storm event.
7. Maintain inspection records and maintenance records on-site with the SWMP at all times.
8. Provide SWMP and inspection records to City Inspector upon request.
9. Maintain and modify BMPs to reflect current conditions of the job site until Final Stabilization is achieved. Final Stabilization, as defined by the State of Colorado, is reached when all soil disturbing activities at the site have been completed and a uniform vegetative cover has been established with a density of at least seventy (70) percent or pre-disturbance levels or equivalent, permanent, physical erosion reduction methods have been employed.
10. In accordance with project schedule, implement phasing of grading and temporary vegetation cover to properly manage site runoff during periods of construction inactivity.

#### Post-Construction:

1. Engineer or Designee will determine when final stabilization is reached. Final Stabilization, as defined by the State of Colorado, is reached when all soil disturbing activities at the site have been completed and a uniform vegetative cover has been established with a density of at least 70 percent or pre-disturbance levels or equivalent, permanent, physical erosion reduction methods have been employed.
2. Remove all temporary BMP's.
3. Inactivate City development Permit and the Storm water Discharge Permit Associated with Construction Activity through Inactivation Notice or Notice of Transfer or Reassignment as determined by the Engineer.

The following shall apply to all construction activity:

1. All temporary erosion control facilities (intended to control erosion of any earth disturbance operation) shall be installed before any construction activities take place.
2. Waste disposal including solid waste, industrial waste, yard waste and any other pollutants or waste on any construction site shall be controlled through the use of BMP's. Waste or recycling containers shall be provided and maintained by the owner or contractor on construction sites where there is the potential for release of waste. Uncontained waste that may blow, wash or otherwise be released from the site is prohibited. Sanitary waste facilities shall be provided and maintained by the owner or contractor.
3. Ready-mixed concrete, or any materials resulting from the cleaning of vehicles or equipment containing or used in transporting or applying it, shall be contained on construction sites for proper disposal. Release of these materials is prohibited.
4. Soil stockpiles placement and height shall be controlled to comply with the stormwater quality standards.
5. Protect properties and roadways adjacent to the construction site from eroded sediment.
6. Wind erosion techniques shall be used to prevent dust, sediment or debris blowing from the site.
7. Limit the exposed area of any disturbed land to the shortest possible period of time.
8. Protect bulk storage structures for petroleum products and other chemicals to contain all spills and prevent any spilled material from entering the MS4 or waters of the State.

#### 113.05 INSPECTION

The purpose of Inspection is to determine if the BMP's are installed, in compliance with the approved with the approved Storm water Management Plan and are operating correctly.

Modification to control measures shall be implemented in a timely manner but in no case more than seven calendar days or as approved by the City.

For the sites where construction has not been completed the permittee shall make a thorough inspection of their stormwater management system at least every fourteen (14) days and after any precipitation or snow melt event that causes surface erosion.

For sites where all construction activities are completed but final stabilization has not been achieved due to a vegetative cover that has been planted but has not been established the permittee shall make a thorough inspection of their stormwater management system at least every month.

Results of the scheduled inspections should be recorded and kept on site at all times.

Public complaint response inspections will be performed within five working days of the complaint.

### **114.00 ENFORCEMENT**

The purpose of the Enforcement Action is to comply with section 14.26.160 of the Longmont Municipal Code.

Enforcement of storm water pollution prevention requirements for construction projects will be conducted by the City's inspectors and/or other City staff with enforcement authority. Violations observed will be documented by the inspectors in accordance with the City's existing procedures for recording violations. Depending on the severity of the violation, enforcement can range from a verbal warning, to a written notice, stop work order, and/or fines and prosecution. Violations of the minimum requirements for BMP's are to be treated with the same seriousness as violations of code provisions of similar importance. Permittee inspectors will conduct a follow-up inspection to determine if corrective actions have been taken in accordance with minimum requirements.

Existing inspection/enforcement procedures should be used to achieve compliance. If a significant and/or immediate threat to water quality is observed by a City inspector, action should be taken to require the developer/contractor to immediately cease the discharge. The typical progressive enforcement steps that each inspector should apply to the inspection enforcement program are:

1. Verbal warnings
2. Written warnings
3. Stop work orders
4. Civil and/or criminal penalties

A discussion of these steps is provided below:

#### 114.01 VERBAL WARNINGS

A common initial method of requesting corrective action and enforcing compliance is a verbal warning from the City's inspector to the contractor. Verbal warnings are often sufficient to achieve correction of the violation, often while the inspector is present at the construction site. The inspector will notify the developer/contractor's project supervisor of the violation, and document the violation and the notification to the project supervisor in the inspection file. A specific time frame for correcting the problem and a follow-up inspection date should be documented by the inspector. In judging the degree of severity, the City inspector may also take into account any history of similar or repeated violations by the same developer or contractor at this or other sites.

#### 114.02 WRITTEN WARNINGS

If the deficiency noted in the verbal warning is not corrected by the next inspection, a written notice of violation shall be issued describing the infraction that is to be corrected and the time frame for correction and for a follow-up inspection. A copy of the notice is to be given to the contractor's project supervisor or representative and placed in the active inspection file. If the violation has been corrected to the satisfaction of the inspector, the inspector will document compliance in the inspection file.

#### 114.03 STOP WORK ORDERS

If a notice of violation has not been addressed by the next inspection, or if the developer has not complied with their permit requirements, or if a significant threat to water quality is observed, a stop work order may be issued by the appropriate municipal official. Stop work orders prohibit further construction activity until the problem is resolved and provide a time frame for correcting the problem. The stop work order will describe the infraction and specify what corrective action must be taken. A copy of the stop work order will be given to the private contractor's project supervisor or representative and placed in the active inspection file. To restart work once a stop work order has been issued, the project supervisor or representative must request the municipal official to re-inspect the project and verify that the deficiencies have been satisfactorily corrected.

#### 114.04 CIVIL AND/OR CRIMINAL PENALTIES

Any person who violates any of the provisions in the Longmont Municipal Code under Section 14.26 of the Storm water Illicit Discharges and Permit Requirements shall be subject to one or more of the enforcement actions outlined including civil and or criminal penalties.