CITY OF LONGMONT
DESIGN STANDARDS AND CONSTRUCTION SPECIFICATIONS
APPENDIX
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CONSTRUCTION PLANS DEVELOPMENT REVIEW CHECKLIST

The City of Longmont requires Construction Plans a Master Utility Plan, a Grading Plan and a Stormwater Management Plan (SWMP) submittals on development projects when improvements are proposed within City easements, or rights-of-way. The following checklist has been developed to assist in preparation of these Construction Plans. It includes items pertinent for the City's review and reflects established professional engineering practice for preparation of Construction Plans.

The general notes included with this checklist are to be used on all construction plan submittals. This list of general notes is not intended to be all inclusive for every project, therefore, additional notes may be appropriate.

The submitted construction plans should be complete and self supporting, including all details and documents necessary for the construction of the proposed improvements.

If you have any questions regarding items on this list, please call the City of Longmont Public Works Division at (303) 651-8304.

CONSTRUCTION PLANS SUBMITTAL CHECKLIST

DEVELOPMENT/PROJECT NAME: _____

LOCATION: _____

SUBMITTED BY: _____

FIRM: _____

CONTACT: _____

PHONE: _____

SUBMITTED DATE: 1 _____ 2 _____ 3 _____ 4 _____

DATE APPROVED: _____

	I. COVER SHEET FORMAT	PRESENT	COMMENT
A.	Project name	_____	_____
B.	Project location	_____	_____
C.	Vicinity map 1" = 500' or larger	_____	_____
D.	The cover sheet must include an index	_____	_____
E.	Name of Owner/Developer	_____	_____
F.	Name of Design/Engineer/Firm	_____	_____
G.	General notes	_____	_____
H.	Approval blocks	_____	_____
I.	24" X 36" plan sheet	_____	_____
J.	None of the terms in the general notes or index shall be abbreviated	_____	_____
K.	All abbreviations used as callouts must be defined	_____	_____

	II. GENERAL PLAN SHEET FORMAT		
A.	Scale: 1" = 50' horizontal or larger, 1" = 5' vertical, or larger	_____	_____
B.	North arrow	_____	_____
C.	Bar scale	_____	_____
D.	Title block	_____	_____
E.	24" X 36" plan sheets	_____	_____
F.	Original and revision dates	_____	_____
G.	Plans checked, sealed, signed, and dated by a Colorado Registered Professional Engineer	_____	_____
H.	A legend defining all symbols used must be included. As a minimum, the legend shall show different symbols and line types for all existing and proposed utility lines, fittings, and manholes, with the proposed items shown more prominently than the existing.	_____	_____

I.	Street names	_____	_____
J.	Right-of-way and flowline widths	_____	_____
K.	Match lines and sheet numbers	_____	_____
L.	Approval block	_____	_____
III.	HORIZONTAL AND VERTICAL CONTROL		
A.	Bench mark description and elevation (per Section 100)	_____	_____
B.	Section lines, or control lines with ties to section corner	_____	_____
C.	Beginning station tied and referenced to section line, or control line	_____	_____
IV.	CONSTRUCTION PLAN REQUIREMENTS		
A.	Existing street improvements for the full width of the street up to 50' beyond the construction limits depicted by dashed lines	_____	_____
B.	Proposed street improvements, depicted by solid lines	_____	_____
C.	Limits of construction noted	_____	_____
D.	Location of proposed and existing property lines, easements, rights-of-way, etc.	_____	_____
E.	List of quantities and costs (for preparing the PIA)	_____	_____
F.	Location of fixed objects (trees, poles, fences, etc.)	_____	_____
G.	Proposed and existing storm drainage improvements	_____	_____
H.	Curve layout, including radius, length of curve, P.I. deflection angle, degree of curvature, P.C., P.T. and offset	_____	_____
I.	Proposed striping and signing plan indicating lane widths, etc. (when applicable)	_____	_____
J.	Existing and proposed utilities, (these shall be on a separate plan sheet, see Master Utility Plan Requirements)	_____	_____
K.	Master Utility Plans (MUP) need to be of a large enough scale (preferably a single sheet) so as to be legible both on the lettering and the line weights of the proposed and existing utility lines	_____	_____
L.	Clearly show all phasing lines, where applicable, on the MUP	_____	_____
M.	Show the domestic water and sanitary sewer services to the individual lots on the MUP and the Plan & Profile sheets	_____	_____
N.	Show the proposed water lines in all profile views with both the bottom and top of pipe, not just top of pipe	_____	_____

O. Show line weights of 12-inch and larger pipes (water, sanitary, and storm) as a scalable width in all plan views _____ _____

P. Include stationing of all water, sanitary, and storm features such as manholes, valves, bends, and other appurtenances in the profile view _____ _____

Q. Show all utilities and crossings in profile, label invert elevations and clearances _____ _____

R. Graphically depict and station all water line deflections, bends, valves, and miscellaneous fittings in the profile view _____ _____

S. Show and label valves in the profile views _____ _____

T. Profiles shall depict water and sewer pipes that "go in and out of the page" _____ _____

U. Show proposed private under drains and cleanout locations on the plan & profile sheets _____ _____

V. Show and label Power & Communications trench line and equipment locations _____ _____

W. Show and label all proposed easements on the MUP and the plan and profile _____ _____

X. Denote the location and size of the proposed irrigation taps on the MUP and the plan and profile sheets _____ _____

Y. Denote the location of the electric meter for irrigation controllers _____ _____

Z. Show and resolve all conflicts with utility crossings, with a minimum of an 18-inch clearance _____ _____

AA. All sheets shall be drawn to scale. Specifically, the plan, profile, 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. _____ _____

BB. Provide a sheet that shows each irrigation tap and the areas (outlots, ROWs, etc.) that each tap will irrigate. This information needs to be on one sheet. The area being served by each irrigation tap should have a unique hatch pattern corresponding to that tap. This sheet will be similar to a phase map for the irrigation system. _____ _____

V. MASTER UTILITY PLAN REQUIREMENTS

A. Size and location of existing and proposed:

1. Water mains (depth and type) _____ _____
2. Valves and fire hydrants _____ _____
3. Water services/meter pits _____ _____
4. Backflow devices/curb stops _____ _____
5. Thrust restraints _____ _____
6. Valved/stubbed future ext. _____ _____
7. Hydrant spacing _____ _____

8. Valve spacing (500' max..) _____ _____
9. Air relief valves _____ _____
10. Blow-off – cleaning/flushing _____ _____
11. Pressure reducing valves _____ _____
12. Freeze protection _____ _____
13. Sewer mains (depth and type) _____ _____
14. Manholes _____ _____
15. Sewer services/clean outs _____ _____
16. Electric trench alignment _____ _____
17. Electric equipment locations _____ _____
18. Distances between electrical equipment _____ _____
16. Irrigation lines _____ _____
17. Utility crossing conflicts _____ _____
18. Landscaping conflicts _____ _____
19. Abandonment of existing lines _____ _____
20. Approval block _____ _____

VI. GRADING PLAN REQUIREMENTS

A. Contour lines (2' max. intervals) _____ _____
B. Existing features to include:
1. Existing site topography extending a min. of 50' past property limits _____ _____
2. Easements and rights-of way _____ _____
3. All Utilities _____ _____
4. Drainage ways of 100-year floodplain _____ _____
5. Irrigation ditches or laterals _____ _____
6. Buildings, fences, retaining walls, trees, and other physical features _____ _____
C. Proposed site conditions to include:
1. Proposed contours with match to existing contours _____ _____
2. Drainage flow arrows _____ _____
3. Grade breaks and slopes 3:1 or greater indicated on plan _____ _____
4. Cut and fill areas and quantities shown _____ _____
5. Proposed improvements to include:
a. Sidewalks, concrete trails, and other public improvements _____ _____
b. Driveway grades and dimensions _____ _____
c. Storm drainage structures _____ _____
d. Fences, retaining walls, and other physical site improvements(cross sections may be necessary to detail these features) _____ _____
e. Lowest finished floor elev. for all buildings _____ _____
6. Erosion protection _____ _____

VII. PROFILE CROSS SECTION REQUIREMENTS

A.	Two line profiles (flowlines) or centerline profile and cross sections every 50' extending a minimum of 50' beyond the project limits	_____	_____
B.	On widening/matching projects, three line profiles and cross sections every 25' extending a minimum of 50' beyond the project limits required	_____	_____
C.	Vertical curve data including length of curve, P.V.C., P.V.T., P.V.I., beginning and ending grades	_____	_____
D.	Profiles of all curb returns	_____	_____
E.	Existing profile elevations extended 50' beyond the ending/beginning of the project	_____	_____
F.	Cross sections extended 25' beyond property lines, when required	_____	_____

VIII. STANDARD DETAILS

A.	City, C.D.O.T., or any other necessary standard detail for:		
	1. Sanitary sewer construction	_____	_____
	2. Street construction	_____	_____
	3. Storm sewer construction	_____	_____
	4. Water line construction	_____	_____
	5. Erosion Control	_____	_____
	6. Any other required	_____	_____

IX. ELECTRIC REQUIREMENTS

A.	Electronic File	_____	_____
B.	Electric Service Request	_____	_____

STORMWATER MANAGEMENT PLAN (SWMP)

Stormwater Management Plan (SWMP) Requirements:

The Stormwater Management Plan (SWMP) is required for all developments that disturb one acre or more of permeable land. The Stormwater Management Plan is required by the State of Colorado and the City of Longmont to address erosion, sediment control, and water quality issues. All applicants will complete a SWMP and submit it to the City of Longmont for review and approval.

The Stormwater Management Plan will contain two parts - a report and plans detailed below:

Report Requirements:

Best Management Practices (BMPs) Report: This report will detail the BMPs that will be implemented and maintained by the applicant during construction as well as after the project is completed. This report may also be part of the Final Drainage & Erosion Control Report for a given project.

The Report will include:

Runoff Coefficient Pre Construction_____Post Construction

Area SF and Acres

Existing Soil Data

Existing Vegetation

Other water quality measures not included in SWMP referenced in other contract plans and specifications.

All Local Receiving Waters Listed

Area of Disturbance Quantified

Planting or seed plan included (species rates, types, method of planting, and soil preparation)

Description of interim stabilization (i.e. required for detours, stockpiles, temporary mulching between seeding windows)

Description of permanent Stabilization

A written spill prevention plan describing plans for storage, containment, clean up and disposal of chemicals, petroleum; liquid and solid waste, and residue from concrete wash water.

Plan Requirements:

Construction Site Materials Handling – Spill Prevention Plan: This plan will detail how spill containment will be managed and handled by the applicant. The site operator will need to provide each of the following to City of Longmont:

- A drawing depicting the location of the storage and staging areas for construction site equipment, supplies and materials.

Erosion Control Construction Plans*:* These plans will visually detail the types of erosion control that will be implemented, the BMPs, as well as identifying their locations.

Construction Phasing Plan: This plan shall detail the actual construction phasing.

Erosion and Sediment Control Inspection Checklist*:* This is the form used by the City's inspector as well as the contractor to inspect the site for deficiencies.

Copy of Construction Activity Permit application (including SWMP) as part of state permit: The purpose of this permit is to initiate the inspection process, ensure that the applicant is following the accepted plans, and provide a record of activity for future reports required by the State. This permit is required prior to any site grading.

BEST MANAGEMENT PRACTICES - INSPECTION CHECKLIST

Project Name:	Date of Project Inspection:
Project Contractor: Phone Number:	City Inspector: Phone Number:

Reason(s) for inspection:

☐ Required 14 Calendar Day Inspection for Active Sites
☐ Required Runoff Event Inspection for Active Sites
☐ Required 30 Calendar Day Inspection for Completed Projects
☐ Complaint: _____
☐ Other:

Construction Site Assessment:

a. Is the construction site perimeter contained? (Y/N)
b. Is offsite tracking minimized? (Y/N)
c. Are disturbed areas contained? (Y/N)
d. Estimate of disturbed area at the time of the inspection? _____ Area
e. Are areas that have achieved final grade permanently stabilized within 7 days? (Y/N)

SWMP Management:

a. Any changes to the SWMP during construction? (Y/N)
b. Are changes approved and noted on the Plans? (Y/N)

Best Management Practices (BMPs)

BMPs	BMP's		Reason for BMP Changes	Maintenance Required Y/N	BMP Action Item(s)	Corrective Action Date
	Req'd	Used				
Seeding						
Berm/Diversion						
Outlet Protection						
Other:						
Sediment Control, Materials Handling, and General Pollution Prevention						
Storm Drain Inlet Protection						
Silt Fence						
Sediment Trap/Basin						
Vehicle Tracking Control						
Stock Pile Mgmt.						
Street Sweeping						
Wind Erosion Control						
Other:						

Inspections and Maintenance Program Compliance Assessment	
☐ Inspections performed every ____ calendar days.	Course of Action:
☐ Inspections performed after runoff events.	Course of Action:
☐ Inspections performed every 30 calendar days since project completion.	Course of Action:
☐ Corrective measures completed within 3 calendar days of inspection.	Course of Action:
CERTIFICATION: I certify this Stormwater Management Plan Field Inspection Report is complete and accurate.	
Project Contractor (*Signature Required*)	Date:
City Inspector (*Signature Required*)	Date:

Comments:

GENERAL NOTES

1. All work within the public right-of-way, or easement shall conform to the City of Longmont Construction Specifications and Design Standards.

2. The Contractor is responsible for obtaining all required permits prior to commencement of any work on the project.

3. It is the Contractor's responsibility to notify the Owner/Developer, and the City, of any problems in conforming to the approved plans for any element of the proposed improvements prior to its construction.

4. It is the responsibility if the Developer during construction activities to resolve construction problems due to changed conditions, or design errors encountered by the Contractor during the progress of any portion of the project. If, in the opinion of the City, the modifications proposed by the Developer, to the approved plans, involve significant changes to the character of the work, or to the future contiguous public or private improvements, the Developer shall be responsible for resubmitting the revised plans to the City of Longmont for approval prior to any further accordance with the approved plans, or the approved revised plans, shall be removed and reconstructed according to the approved plan.

5. The Grading Plan is for rough grading only. Changes may be necessary to bring plans into conformance with approved Final Drainage Plan and Site plan.

6. A water truck, if called for by the Inspector, will be provided, by the Contractor, to keep dust in check.

7. Any settlement or soil accumulation, beyond the property limits, due to grading or erosion shall be repaired, by the Contractor, immediately.

8. No grading shall take place in delineated Flood Hazard Areas until the Final Drainage Plan has been approved and all appropriate permits have been obtained.

9. Any construction debris, mud tracking, sediment or other potential pollutants that may have been discharged to or, accumulate in, the flowlines and Public Rights of Way of the City,, resulting from the project, shall be removed immediately, by the Contractor. The Contractor shall immediately fix any excavation, or excessive pavement failure caused by the Project, and shall properly barricade the site until construction is complete. 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 Project's Letter of Credit for any costs incurred by the City.

10. The Contractor shall be solely, and completely responsible for the conditions at, and adjacent to the job site, including safety of all persons and property, during the performance of the work. This requirement shall apply continuously, and shall not be limited to normal working hours. The duty of the City to conduct construction review of the Contractor's performance is not intended to include review of the adequacy of the Contractor's safety measures in, on., or near the construction site.

11. The Contractor shall be responsible for obtaining utility locations at least 48 hours prior to commencement of construction.

12. All utility poles shall be relocated prior to placement of any concrete.

13. The Contractor shall notify all utility owners prior to adjusting all cleanouts, manholes, valves, boxes, survey monuments, and any other fixtures to finished grade prior to final paving.

14. The Contractor shall provide all lights, signs, barricades, flagpersons, or other devices necessary to provide for public safety in accordance with the current Manual on Uniform Traffic Control Devices, and the Longmont Supplement to the Manual on Uniform Traffic Control Devices.

15. The Contractor shall provide ingress and egress to private property adjacent to the project throughout the period of construction. Prior to beginning work, the Contractor shall obtain a written agreement from the property owners impacted by this access. Upon request, the Contractor shall provide a copy of these written agreements to the City.

16. Prior to final placement of surface pavement, all underground utility mains shall be installed and service connections stubbed out beyond curb line, when allowed by the utility. Service from public utilities and from sanitary sewers shall be made available for each lot in such a manner that will not be necessary to disturb the street pavement, curb, gutter, and sidewalk when connections are made.

17. Reproducible copies of "AS BUILT" plans shall be submitted to the City of Longmont prior to Construction Acceptance of the Public Improvements.

18. The Contractor shall notify the City Inspector at least 24 hours prior to desired inspection.

19. The Contractor shall be responsible for the inspection and maintenance of erosion control devices.

20. Construction staging areas will be required to stay within the limits of construction and as approved in the Stormwater Management Plan.

21. The Approved Stormwater Management Plan will be required on site at all times.

STORMWATER MANAGEMENT PLANS GENERAL NOTES

1. The contractor and/or authorized agents shall remove all sediment, mud, construction debris, or other potential pollutants that may have been discharged to or, accumulate in, the flow lines and public rights of ways of the City as a result of construction activities associated with this site development or construction project. Said removal shall be conducted in a timely manner.

2. This Construction Activities Stormwater Management plan has been submitted and approved as part of an application for a Stormwater Permit for Construction Activities filed with the City of Longmont. Additional erosion and sediment control measures may be required of the owner and his or her agents due to unforeseen erosion problems or if the submitted plan does not function as intended. The requirements of this plan shall be the obligation of the permit holder until such time as the plan is properly completed and the permit is released.

3. The contractor shall prevent sediment, debris and all other pollutants from entering the storm sewer system during all demolition, excavation, trenching, boring, grading or other construction operations that are part of this project. The contractor shall be held responsible for remediation of any adverse impacts to adjacent waterways, wetlands, etc., resulting from work done as part of this project.

4. The Contractor shall locate, install, and maintain all erosion control and water quality “Best Management Practices” as indicated in the approved Stormwater Management Plan.

5. The Developer, General Contractor, Grading Contractor and/or their authorized agents shall insure that all loads of cut and fill material imported to or exported from this site shall be properly covered to prevent loss of the material during transport on public rights of way.

6. Soils that will be stockpiled for more than 30 days shall be protected from wind and water erosion within 14 days of stockpile construction. If stockpiles are located within 100 feet of a drainageway, additional sediment controls such as temporary dikes or silt fence shall be required.

7. Approved erosion and sediment control Best Management Practices shall be maintained and kept in good repair of the duration of this project. Accumulated sediment and debris shall be removed from a BMP when the sediment or debris adversely impacts the functioning of the BMP.

8. Modification/Termination of a Stormwater Discharge Permit for Construction Activity by the Developer, Contractor or their authorized agents shall require timely notification of and approval from the City of Longmont.

POWER & COMMUNICATIONS GENERAL NOTES

1. Where City of Longmont Power & Communications (LPC) overhead electric facilities exist in the development area, the Contractor must keep all equipment operation a minimum of ten feet from existing overhead electric lines. If this is not feasible, or conditions warrant additional protection or pole stabilization, the contractor must contact the LPC Operations Construction Coordinator at 303-651-8386. It is the contractor's responsibility to arrange protective covering and/or pole stabilization, 48 hours in advance. Should the electric facilities be damaged, the contractor must contact LPC at 303-651-8386. Additionally, all costs associated with repairs will be the responsibility of the Developer.

2. Where existing underground electric cable exists near the project work area, they cannot be de-energized for crossing purposes. The Contractor must take all precaution necessary to protect the construction crew. Should the Contractor damage these facilities, contact Longmont Power & Communications (LPC) immediately at 303-651-8386. LPC will repair the facilities and bill the Developer for costs associated with the repair or replacement of the cable.

3. Streets, parking surfaces and sidewalks cannot be paved or concrete placed until the conduit crossing for use by Longmont Power & Communications (LPC) has been installed. The contractor/developer is responsible for installing sleeves under roadways, culverts, ditches, sidewalks and existing utility facilities for the use of LPC's facilities. Notification and coordination of any ditch crossing is a developer responsibility. Generally, these installations are to have a minimum of thirty-six inches of cover and must conform to LPC standards.

4. The Contractor should organize the utility construction from deepest to shallowest; this includes private lighting and irrigation. Should LPC mobilize for construction efforts and find conflicts with shallow installations, the scope of the project may require extra charges.

SOILS REPORT DEVELOPMENT REVIEW CHECKLIST

The City of Longmont requires a soils report for all proposed construction within the City's Easements or Rights-of-way. The reports are to include information necessary to determine the characteristics of soils encountered within the project limits, and make recommendations on how to deal with problem areas.

The soils engineer shall investigate and recommend solutions to problems of:

Expansion of cohesive soils
Frost heave in silty soils
Potential ground water problems
Partially constructed streets
Use of sub-base filter fabric
Any other matter that may adversely affect the project design

Soil samples shall be taken at the proposed subgrade elevation and shall represent the soil of the subgrade. All boring depths shall extend a minimum of 3 feet below the proposed subgrade elevation. The boring locations shall not exceed a distance of 500 between borings, with a minimum of 2 borings per roadway. If more than one soil type is encountered in the boring, they shall be logged and tested separately. All design shall be based on the worst soil encountered from the standpoint of subgrade support. The soils report must demonstrate the adequateness of the structural section.

All subgrade shall have a minimum of ninety-five percent compaction at $\pm$ 2% of optimum moisture content to a depth of twelve inches.

The soils report shall be prepared by a professional engineer registered in the state, whose expertise is soils engineering. The report shall be submitted to the City Engineer for review and approval prior to the final approval of any construction drawings.

APPROVAL BLOCK

The following approval block must be on the title page of the submittal:

APPROVAL BLOCK

ENGINEERING REVIEW CITY OF LONGMONT	Review is for general compliance with City of Longmont standards and requirements. The City of Longmont is not responsible for the correctness of design, dimensions, details, quantities and design safety.

- ə No Exceptions Taken
- ə Make Corrections Noted
- ə Rejected – See Checklist

_____ _____

Review Engineer Date

SOILS REPORT SUBMITTAL CHECKLIST

The following checklist has been developed to assist in preparation of soils reports. It includes items pertinent for the City's review and reflects established professional engineering practice for pavement design. If you have any questions regarding items on this list, contact the City of Longmont Public Works division.

DEVELOPMENT/PROJECT NAME:_____

LOCATION:_____

SUBMITTED BY:_____

FIRM:_____

CONTACT:_____

PHONE:_____

SUMBITTED DATE: 1 _____ 2 _____ 3 _____ 4 _____

DATE APPROVED:_____

I.	REPORT FORMAT	PRESENT	COMMENT
A.	Title page with project address and approval block	_____	_____
B.	8½" x 11" report, bound or in a folder	_____	_____
C.	Dated, checked, signed and sealed by a Professional Engineer	_____	_____
D.	Original and revision dates	_____	_____
II.	SOILS INFORMATION		
A.	Boring locations on site plan	_____	_____
B.	Boring logs	_____	_____
C.	Gradation tests/Atterberg limits	_____	_____
D.	Compaction tests	_____	_____
E.	Percent swell*	_____	_____
F.	Soil classification (AASHTO)	_____	_____
G.	Problem areas on the site	_____	_____
H.	Groundwater levels	_____	_____
I.	Trenching restrictions	_____	_____
III.	CONSTRUCTION METHODS		
A.	Retesting after rough grading	_____	_____
B.	Construction sequence	_____	_____
C.	Lift thickness	_____	_____
D.	Problem areas and recommendations	_____	_____

*Note: If percent swell exceeds 1.5%, the report shall include the proposed method(s) to deal with swelling soil characteristics.

PAVEMENT DESIGN REPORT DEVELOPMENT REVIEW CHECKLIST

The following checklist has been developed to assist in preparation of pavement design reports. It includes items pertinent for the City's review and reflects established professional engineering practice for pavement design. If you have any questions regarding items on this list, contact the City of Longmont Public Works Division.

APPROVAL BLOCK

The following approval block must be on the title page of the submittal:

APPROVAL BLOCK

ENGINEERING REVIEW CITY OF LONGMONT	Review is for general compliance with City of Longmont standards and requirements. The City of Longmont is not responsible for the correctness of design, dimensions, details, quantities and design safety.

- ə No Exceptions Taken
- ə Make Corrections Noted
- ə Rejected – See Checklist

_____ _____

Review Engineer Date

PAVEMENT DESIGN REPORT SUBMITTAL CHECKLIST

DEVELOPMENT/PROJECT NAME:_____

LOCATION:_____

SUBMITTED BY:_____

FIRM:_____

CONTACT:_____

PHONE:_____

SUBMITTED DATE: 1 _____ 2 _____ 3 _____ 4 _____

DATE APPROVED:_____

	I. REPORT FORMAT	PRESENT	COMMENT
A.	Title page with project address and approval block	_____	_____
B.	8½" x 11" report, bound or in a folder	_____	_____
C.	Dated, checked, signed and sealed by a Professional Engineer (both soils and pavement if done by different parties)	_____	_____
D.	Original and revision dates	_____	_____
	II. SOILS INFORMATION		
A.	Boring locations on site plan	_____	_____
B.	Boring logs	_____	_____
C.	Gradation tests/Atterberg limits	_____	_____
D.	Proctor	_____	_____
E.	Percent swell*	_____	_____
F.	Soil classification (AASHTO)	_____	_____
G.	Problem areas on the site	_____	_____
H.	Ground water	_____	_____
I.	Trenching restrictions	_____	_____
	III. DESIGN CRITERIA		
A.	Roadway classification	_____	_____
B.	Forecast traffic volumes	_____	_____
C.	Construction traffic forecast	_____	_____
D.	18 KIP EDLA or DTN	_____	_____
E.	Serviceability index	_____	_____
F.	Regional factor	_____	_____

IV. PAVEMENT DESIGN

A.	Weighted structural number	_____	_____
B.	CBR Tests	_____	_____
C.	Design CBR/R value	_____	_____
D.	Subgrade properties	_____	_____
E.	Basecourse	_____	_____
F.	Pavement	_____	_____
G.	Alternatives	_____	_____

V. CONSTRUCTION METHODS

A.	Retesting after rough grading	_____	_____
B.	Paving sequence	_____	_____
C.	Lift thickness	_____	_____
D.	Problem areas and recommendations	_____	_____
E.	Construction traffic control plan	_____	_____

*Note: If percent swell exceeds 1.5%, the report shall include the proposed method(s) to deal with swelling soil characteristics.

CRITERIA FOR TRAFFIC IMPACT STUDIES

Introduction

1. This document outlines the policies and requirements for the preparation of Traffic Impact Studies (TIS) for development proposals in the City of Longmont. These requirements exist to ensure consistent traffic analysis practices for developments being considered.

2. The responsibility for evaluating the traffic impacts associated with a proposed development rests with the applicant. The applicant is responsible for retaining a qualified transportation professional to provide an accurate and complete accounting of probable traffic impacts related to the proposed development.

3. The City of Longmont Planning and Public Works staff are responsible for review of traffic impact studies to ensure that the study is completed accurately and in accordance with these requirements.

WHEN A TRAFFIC IMPACT STUDY IS REQUIRED

1. Unless waived by the City Engineer, the City requires a TIS for any new development proposal that could potentially have a significant impact (as determined by the City) on the transportation system. Any of the following may be considered significant impacts:

    a. Daily trip generation is projected to be 500 or more vehicles.

    b. Peak hour trip generation is projected to be 50 or more vehicles.

    c. Traffic from a development will impact adjacent residential neighborhoods.

    d. Driveway impacts on public streets related to turning movements or signal timing/progression.

    e. Significant citizen concern due to expected traffic impacts.

2. TIS may also be required when a previously approved development changes or expands in such a way that the approved access to the site is affected or trip generation estimates increase by more than 20% over the original estimates.

3. TIS may also be required for each phase of a large phased development. In this situation, an overall TIS would be completed for the overall proposal followed by an addendum prior to the development of each phase.

TRAFFIC IMPACT STUDY PREPARATION AND REVIEW PROCESS

1. The Developer is responsible for contacting the Planning Division before a development application is submitted to determine if a TIS will be required. The need for a TIS will be determined as part of the preapplication conference with the DRC.

2. Prior to the commencement of the TIS, a pre-submittal meeting must be held between the City and the transportation professional retained by the developer to discuss the scope of the study and the requirements for the study content and format. The pre-submittal meeting is intended to provide a firm base of cooperation and communication between the City, the developer, and the transportation consultant. At a minimum, topics discussed at such meetings will include study area, proposed land uses, trip generation, trip distribution, traffic projection year(s), intersections requiring analysis, signal timing assumptions and background traffic assumptions. A traffic study requirements form is included at the end of this document.

3. The developer shall submit five copies of the traffic impact study at the time that the development application is submitted. If the study fails to comply with the technical requirements and the scope of the study outlined in the pre-submittal meeting, the Developer will be advised in writing through the City's normal development review process. A study must be submitted and accepted by the City before the City Planning and Zoning Commission schedules the project for consideration.

4. The City will review the traffic impact study in conjunction with the Development Review Committee (DRC) schedule. The draft study must be submitted with the initial DRC material for review if the DRC schedule is to be maintained. If the study is required for a project that is not involved with the DRC review process, the City will review the draft study within 15 working days of the date of submittal. If study revisions are needed, the City will normally review the revised study within 10 working days of submittal. A longer review period will be necessary if the Colorado Department of Transportation (CDOT) or other agencies are involved in the review process.

TRAFFIC IMPACT STUDY REQUIREMENTS

1. Study Purpose and Site Description - The study shall include a brief description of the development application proposal (i.e. annexation, rezoning, subdivision, site plan application etc.) It shall also include a brief description of the development proposal including the site location, the size of the land parcel, general terrain features, the types of land uses being proposed and the proposed access points.

2. Study Area - The boundaries of the study area will be based on engineering judgment and an understanding of existing traffic conditions surrounding the site. The limits should be agreed upon at the pre-submittal meeting with staff. The boundaries of the study area shall be based on the size and extent of the proposed development and it's relation to significant streets and intersections. Large developments may require a study area extending beyond one mile due to the magnitude of potential impacts.
   As a minimum, the study area will include:

   a. Adjacent streets.

   b. Adjacent arterial/arterial or arterial/collector intersections.

   c. Site access points.

   d. Internal roads.

   A vicinity map that shows the site and the study area boundaries in relation to the surrounding transportation system must be included in the study. All arterial and collector streets in the study area and access points to the site should be shown on the map.

   Key intersections in the study area that will be analyzed in the study shall be identified at the pre-submittal meeting. The key intersections should be identified on the map.

3. Study Horizons - Three study horizons are required for analysis: The current conditions, short term and long term.

   The current (existing) conditions should be analyzed to establish a baseline of traffic conditions.

   The short-term horizon represents the planned opening year of the project. Both a background analysis and analysis with the project completed should be completed to assess the short-term impacts of the project. Assumptions about street improvements not associated with the study project in the short term should be based on projects shown in the City's Capital Improvement Program or projects that have already been financially obligated to a developer.

   The long term planning horizon represents conditions at 80% build out of the Longmont Planning Area as shown in the Longmont Area Comprehensive Plan (LACP). For land uses in compliance with the LACP this analysis should be completed using forecast volumes and roadway improvements as shown in the LACP. For land uses that are not in compliance with the LACP analyses for both the adopted land uses in the LACP and the proposed land uses should be completed so that the impact of the land use change can be evaluated.

When an overall traffic impact study is completed for a phased development the study shall look at all three study horizons. Addenda for each phase of development should only look at the current conditions and the short-term horizon.

4. Analysis Time Periods - Normally, the analysis time periods will be the weekday a.m. and p.m. peak hours. Under some circumstances the City may require analyses to occur at other times as appropriate.

5. Existing/Base Conditions

   a. Existing and Proposed Land Uses - A complete description (including a map) of the existing land uses in the study area as well as their current zoning, shall be included in the study. In addition, the future uses of all vacant land within the study area that may be developed within the projection year of the project must be identified. For the short term horizon only land where development applications have been approved should be considered as developed within the projection year. For the long-term horizon, land uses shown in the LACP should be assumed as developed within the projection year.

   b. Existing and Proposed Transportation System - The study shall describe the existing roadways and intersections in the study area including the road geometry and intersection traffic control. For the short-term horizon, assumptions about road improvements not related to the development shall be based on the City's Capital Improvement Program and on improvements already financially obligated to a developer. For the long-term horizon all improvements shown in the LACP within the study area should be assumed.

   c. Existing Traffic - Current a.m. and p.m. peak hour traffic volumes shall be obtained for the roadways and intersections within the study area. "Current" means counts less than a year old. A map or series of maps of the existing roadway network shall be prepared showing the existing conditions and volume counts including lane geometry, traffic control, access points, turning movement volumes and calculated peak hour factors.

   d. Background Traffic - For the short term horizon, background traffic shall be the sum of existing traffic volumes plus the addition of traffic from any not yet built but approved developments in the study area plus background traffic growth. Background traffic growth should be calculated from historical 24-hour volume counts in the City of Longmont in the vicinity of the proposed development. Staff will provide this information when it is available. The annual percentage of background traffic growth should be agreed upon at the pre-submittal meeting.

      For the long-term horizon, background traffic shall be based on the most recent traffic forecasts from the City's long range transportation model. Maps of both the short term and long term roadway network shall be prepared showing the projected conditions and projected volume counts including lane geometry, traffic control, access points, a.m. and p.m. peak hour turning movement volumes and calculated peak hour factors.

6. Site Related Traffic

a. Trip Generation - A summary table listing each type of land use, the size or amount involved, the trip generation rates used and the resultant total trips must be provided. Trip generation rates shall be calculated using data contained in the latest edition of the Institute of Transportation Engineers' (ITE) Trip Generation Manual or from a local trip generation study following procedures prescribed in the ITE Trip Generation Manual. If a local trip generation study is used to determine the trip generation rate, documentation of the trip generation study and the resulting rate should be included in an appendix of the traffic impact study.

The ITE Trip Generation Manual presents data on trip generation rates in various formats. A weighted average trip generation rate is shown. Also, when possible, a regression equation is presented that defines the line representing "best fit" of the data. Trip generation rates should be determined as outlined below.

Use Regression Equation When:

1. A regression equation is provided.

2. The independent variable is within range of data and either the data plot has at least 20 points.

3. Or the R^2 is greater than or equal to 0.75, equation falls within the data cluster in the plot and the standard deviation is greater than 110% of the weighted average rate.

Use the Weighted Average Rate When:

1. At least three data points.

2. Independent variable is within range of data.

3. Standard deviation is less than or equal to 110% of the weighted average rate.

4. R^2 is less than 0.75 or no equation provided.

5. Weighted average rate falls within data cluster plot.

Collect Local Data When:

1. Study site is not compatible with ITE land use code definition.

2. Only 1 or 2 data points; preferably when five or fewer data points.

3. Independent variable does not fall within range of data.

4. Neither weighted average rate line or fitted curve fall within data cluster at size of development.

Trip making reduction factors may be used after first generating trips at full ITE rates. These factors fall into two categories: those that reassign some portion of generated trips to the background stream of traffic, and those that remove or move generated trips. In all cases, the underlying assumptions of the ITE Trip Generation rates must be recognized and considered before any reductions are claimed.

The first category is when trips to the proposed development currently exist as part of the background traffic stream, referred to as pass-by trips. Pass-by percentages identified by ITE or in other industry publications may typically be used. But, the source of the percentages must be identified and the City must approve use. Pass-by traffic must continue to be assigned to site driveways and access points, but is not additive to the background traffic stream. An appendix that illustrates the assignment of pass-by trips must be included in the report.

The second category for adjustments is for internal site trips, transit use, and transportation demand management (TDM) actions. Reductions of these types may be allowed if analytic support is provided to show how the figures were derived. The City must approve any reductions that are claimed. Optimistic assumptions regarding transit use and TDM actions will not be accepted unless accompanied by specific implementation proposals that will become a condition of development approval. Such implementation proposals must have a high expectation of realization within a 3-year period after project initiation.

b. Trip Distribution - The percentage of trips to/from the proposed development to/from destinations in the region must be clearly shown graphically in the report. The consultant shall be responsible for estimating trip distribution. Marketing studies, sub-area transportation studies, documented existing traffic patterns and professional judgment may be used to make trip distribution assumptions. Whatever method(s) are used, the procedures and rationale used should be fully explained and documented in the study.

   Different trip distribution assumptions can be used for different land uses in mixed-use developments. If more than one set of distribution assumptions are made they should be shown on separate graphics.

c. Trip Assignment - Site generated traffic shall be assigned to the street system according to the trip distribution percentages determined in the previous step. The traffic assignment must be clearly shown graphically in the report.

7. Analysis and Identification of Impacts

   a. The project impacts shall be determined through an analysis procedure that follows the sequence of tasks outlined below.

      1. Assessment of existing conditions.

      2. Assessment of short term background conditions.

      3. Assessment of short term conditions with the planned land use shown in the LACP for the land being proposed for development (this task is only needed when the proposed development is requesting a land use amendment).

4. Assessment of short term conditions with the proposed development.

5. Assessment of long term background conditions.

6. Assessment of the long term conditions with the proposed development when a land use amendment is being requested.

b. Highway Capacity Analysis - Assessment techniques for existing conditions, short term background and short term with the development will include a capacity and level of service (LOS) analysis for the key intersections identified in the study area during the identified analysis time periods. For signalized intersections the analyses shall be completed using the operational analysis methodology shown in the latest edition of the Highway Capacity Manual published by the Transportation Research Board. Both volume to capacity ratio (v/c ratio) and level of service for each movement shall be reported in a table or diagram for each signalized intersection analyzed. The overall intersection level of service shall also be reported. The City of Longmont's benchmark for traffic congestion states that all signalized intersections should be maintained at overall LOS D or better. In addition, the benchmark requires that all movements that have 5% or more of the total entering intersection volume should be maintained at LOS D or better and have a volume to capacity ratio less than 1.0. Therefore, any signalized intersections or movements at signalized intersections that exceed these thresholds should be noted.

The capacity and level of service analysis at signalized intersections shall be performed using the following assumptions:

1. Peak hour factors should be calculated on an approach by approach basis from the turning movement count data collected for the analysis.

2. Right turns on red should not be considered unless specific data documenting the percentage of turns on red is collected.

3. Unless approved by the City at the pre-submittal meeting all arrival types shall be assumed to be type 3 as defined in the Highway Capacity Manual.

4. Signal controller unit extension should be assumed to be 3.0 for through movements and 2.0 for left turn movements unless otherwise approved by the City.

5. Start up lost time should be assumed to be 2.0 seconds unless otherwise approved by the City.

6. Extension of effective green should be assumed to be 3.0 seconds unless otherwise approved by the City.

7. Traffic signal timing parameters for the existing conditions will be the actual signal timing in effect unless determined otherwise by the City. Traffic signal timing parameters for the short term background conditions and the short term conditions with the development will use signal cycle lengths between 80 and 120 seconds. Cycle lengths and Individual green intervals will be calculated to provide the least overall intersection delay

while maintaining all movements below benchmark thresholds whenever possible. Clearance intervals shall be the actual times currently in effect for all scenarios analyzed. Where different signal phasing from the existing is used for the analysis this change shall be noted in the list of traffic impacts. Where traffic signals are part of a coordinated signal system or where proposed new signals are within a half mile of another signal the cycle lengths used for analysis should be the same at all intersections analyzed.

8. Saturation flow rate will be assumed to be 1900 pcphgpl.

9. Lane widths should be assumed to be 12 feet wide unless other data shows otherwise.

10. 2% trucks should be assumed for all movements unless approved otherwise by the City.

11. Saturation flow adjustment factors should be as per the Highway Capacity Manual.

12. Where dual left turns exist or are proposed they shall be assumed to operate in a protected only mode.

13. Free running right turns that are not effected by the signal timing should be excluded from the analysis.

Level of service analysis for unsignalized intersections shall be done in accordance with the methodology for unsignalized intersections in the latest edition of the Highway Capacity Manual. The results of the unsignalized intersection analysis should be shown in the table or diagram used for signalized intersection results. The following assumptions should be used for the analysis of unsignalized intersections:

1. Duration of analysis period is assumed to be .25 hour.

2. Peak hour factors should be calculated on an approach by approach basis from the turning movement count data collected for the analysis.

3. 2% trucks should be assumed for all movements unless approved otherwise by the City.

4. Saturation flow rate will be assumed to be 1700 pcphgpl.

5. Critical gap and follow up time shall be in accordance with the values given in the Highway Capacity Manual.

Assessment techniques for both long term background and long term with the proposed development will require analysis using the planning methodology for signalized intersections and the unsignalized intersection methodology for unsignalized intersections as outlined in the latest edition of the Highway Capacity Manual. The condition (i.e. under capacity, near capacity, over capacity etc.) for signalized intersections and the level of service for unsignalized intersections should be reported in a table or diagram.

The following assumptions shall be used for the long-range signalized intersection analysis.

1. A peak hour factor of 0.9 shall be used.

2. Cycle lengths between 80 and 120 seconds shall be used.

Assumptions for the long-range unsignalized intersection analysis shall be the same as for the short-term analysis.

c. Access Evaluation - Assessment techniques for existing conditions, short term background, short term with the development, long term background and long term with the development will also include an evaluation of each proposed access point. Accesses should be considered intersections and included in the level of service/capacity analysis described above.

Safety is the top priority at access points. The City has developed standards for the spacing and design of access points to provide optimum safety. Accesses should be reviewed to ensure compliance with City (and CDOT if on a State Highway) standards. Proposed access points that do not meet the pertinent standards should be noted. In addition, all access points should be evaluated to determine what auxiliary lanes are required in accordance with City standards and the State Highway Access Code (where applicable).

d. Evaluation of Signal Progression in Coordinated Signal Systems – According to City Standards, intersections with the potential for signalization should be spaced no closer than one half mile. If a development proposes an access or intersection that is projected to be signalized and is less than a half mile from other signals or other planned signals a progression analysis shall be conducted to demonstrate that a new signal can be installed without negatively impacting progression.

The analysis shall consider all existing signals or possible future signals within one mile in each direction from the proposed signal location. On existing coordinated arterials, it must be demonstrated that the existing bandwidth in each direction can be maintained with the new signal installed. Where a new coordinated system will occur as a result of the new signal it must be demonstrated that a bandwidth of at least 45% can be achieved in each direction unless otherwise directed by the City. The following assumptions shall be used for the progression analysis:

1. A cycle length between 80 and 120 seconds should be used for analysis.

2. Actual prevailing speeds on the arterial shall be used for travel speed in the analysis.

3. Split assumptions shall be based on projected turning movement volumes and designed to maintain all movements with at least 5% or more of the total intersection traffic at LOS D or better and below v/c ratio of 1.0 in keeping with the City of Longmont Congestion Benchmark. Where pedestrian volumes are expected to be high (to be determined in the pre-submittal meeting), side street splits long enough to accommodate pedestrians shall be used assuming a 4.0 fps walking speed.
4. Where left turn arrows are anticipated, protected/permissive phasing should be assumed unless dual left turns are projected. Then, protected only left turn phasing should be assumed.

5. Lagging left turns will not be allowed for protected/permitted left turn phases.

Any access where the required bandwidth cannot be achieved should be noted. Any such access shall remain unsignalized and have turning movements limited by driveway design and/or median islands to prevent the need for signalization. Time-space diagrams shall be included in an appendix to the study.

e. Other analysis required on a case by case basis – Where the City deems it appropriate, other types of analysis may be required in the traffic impact study. Other types of analysis may include but are not limited to: Sight distance evaluation, transit and TDM opportunities, pedestrian/bicycle needs, environmental evaluations and evaluation of neighborhood impacts.

IMPACT MITIGATION MEASURES

1. Summary of analysis - A conclusions and recommendations chapter should be included in the traffic impact study. The results of the analysis should be summarized in this chapter. This summary should note all impacts to the transportation system and recommendations for site access, roadway improvements and travel demand strategies needed to maintain traffic flow safely and at a level of service in keeping with the City's congestion benchmark. In the event that the analysis indicates unsatisfactory levels of service or v/c ratio at any study intersection a description of proposed mitigation techniques or physical improvements to remedy deficiencies must be included. It should be noted if the recommended improvements are part of the City's Capital Improvement Program, are already financially obligated to another developer or if there is currently no funding dedicated for the improvements.

2. Transportation Demand Management – If TDM measures are recommended to mitigate unsatisfactory traffic conditions a specific TDM Implementation Proposal shall be developed and presented to the City. If accepted, this Implementation Proposal will become a condition of approval of the land use action requested.

3. Evaluation of Proposed Improvements – If unsatisfactory levels of service or v/c ratio are predicted by the study and recommendations are made for mitigation. Additional analysis must be presented which demonstrates the effectiveness of the mitigation.

Longmont Power & Communications – **ELECTRIC SERVICE REQUEST**

Project Name or Address: _____

Primary Contact Name and Phone Number: _____

Submit this document with initial Site Plans or Public Improvement Plans into the City of Longmont's Design Review process or prior to applying for a Building Permit Application where electric utility service is required. This form initiates the engineering and design process for an electric service extension or revision of existing electric services within the City of Longmont.

Provide one paper copy and an electronic file to include the items listed below. Refer to the City of Longmont Design Standards for electronic file requirements and LPC submittal requirements.

	Residential Development		Commercial / Industrial	
	Single Family	Multi Family	Subdivision	Site Plan – Single Location
Utility Plan with Existing and Proposed Utilities; Sewer, Water, Storm Drainage, Electric, Gas, Communications	X	X	X	X
Landscape Plan	X	X	X	X
Electric Meter(s) Location	NA	X	When available	X
Electric Transformer(s) Location	NA	X	When available	X
New / Upgrading Electric One-Line Diagram	Square Footage Ranges Electric Heat (yes or no)	X	When available	X

Party responsible for payment of temporary electric facilities

Temporary Electric Facilities ❑ NA

Name:

Address:

Phone:

Temporary Metering ❑ NA

Name:

Address:

Phone:

Party responsible for payment of final electric facilities

Final Electric Facilities

Name:

Address:

Phone:

Final Metering ❑ NA

Name:

Address:

Phone:

Party responsible for payment of energy usage

Temporary Energy Usage ❑ NA

Name:

Address:

Phone:

Final/Permanent Energy Usage ❑ NA

Name:

Address:

Phone:

Comments:

Applicant: _____ Date: _____

PUBLIC IMPROVEMENT PLAN SUBMITTAL FOR DEVELOPMENT REVIEW

Applicant: _____ Consultant: _____
Address: _____ Address: _____
_____ _____
_____ _____
Phone: _____ Phone: _____
Fax No: _____ Fax No: _____

Project Name: _____

Project Description: _____
_____

Attachments (Check all applicable):

Public Improvements Plan Set (Water, Wastewater, Street, Storm Drainage, Landscaping and Irrigation, LPC, etc.)	_____	(Per appropriate City Criteria including the City of Longmont Design Standards and Construction Specification, Landscaping Regulations, etc.)
Soils Report	_____	(Per City of Longmont Design Standards and Construction Specifications)
Pavement Design Report	_____	(Per City of Longmont Design Standards and Construction Specifications)
Traffic Report	_____	(If not previously submitted and required per City of Longmont Design Standards and Construction Specifications)
Drainage Report	_____	(If not previously submitted and required per City of Longmont Design Standards and Construction Specifications)
Variance Requests	_____	
Plan Review Fee	_____	(Call for current fee)

PRECONSTRUCTION MEETING MINUTES FORM

Date _____

Project Name _____

Project Location _____

Developer:_____

Name _____
Address _____
Phone_____
Contact Person _____
Contractor:_____

Name _____
Address _____
Phone_____
Job Foreman _____
Subcontractors_____
_____
Surveying/Staking _____
City Water/Wastewater Inspector _____
City Public Works Inspector_____
City Parks/Forestry Inspector_____

Begin Construction Date _____

Materials:
Type, Size,
Quantity &
Brand Name

Pipe: _____ Storm:_____
Water:_____
Sewer:_____

Compaction Tests _____

_____

Required Permits:

Work in ROW	_____	County/State Hwy	_____
Ditch Co.	_____	Groundwater Dschg.	_____
Railroad	_____	Other	_____

Construction Water Source _____

Remarks

_____ Schedule utility locates (a.c. pipe?)
_____ Street clean-up/Dust control/Drainage Control
_____ Interruption of Services
_____ Field Changes
_____ Plug existing sewer mains
_____ Other:

INSTRUCTIONS TO DEVELOPER

_____ Construction/Final Acceptance
_____ As-built drawings
_____ Other

ATTENDEES OF THE MEETING

SIGNATURE	NAME	REPRESENTING
_____	_____	CITY PUBLIC WORKS ENG.
_____	_____	CITY WATER UTILITIES ENG.
_____	_____	CITY PUBLIC WORKS INSP.
_____	_____	CITY WATER UTILITIES INSP.
_____	_____	CITY PARKS DEVELOPMENT
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____