

Stockton



1999

CITY OF STOCKTON

STANDARD

SPECIFICATIONS

The following Standard Specifications and Standard Drawings have been adopted by the City of Stockton as a guide for standardization of public works installations within the City.

THEY ARE NOT INTENDED TO BE A SUBSTITUTE FOR PROFESSIONAL ENGINEERING KNOWLEDGE, EXPERIENCE, OR JUDGMENT.

Any deviations from what is contained herein must be approved by the City Engineer.

This book also contains Countywide Standards that have been accepted by the City Council upon the recommendation of the City Engineer.

CITY OF STOCKTON

DEPARTMENT OF PUBLIC WORKS

IMPORTANT

REVISIONS ARE AVAILABLE IN THE CITY OF STOCKTON WEBSITE

Adopted 11/25/2003

AT WWW.STOCKTONGOV.COM

Revised 11/25/2003

**CITY OF STOCKTON
DEPARTMENT OF PUBLIC WORKS
STANDARD SPECIFICATIONS**

NOTICE

The following sections together with the Latest Edition of the State of California, Business and Transportation Agency, Department of Transportation (Caltrans), Standard Specifications, as modified except the metric units and/or supplemented herein shall be the Standard Specification for public works construction in the City of Stockton.

To the extent the Department of Transportation Standard Specifications implement the STATE CONTRACT ACT, (or certain provisions of the Public Contracts code which are inapplicable to charter cities) they shall not be applicable.

A copy of the Latest Edition of the State of California, Business and Transportation Agency, Department of Transportation, Standard Specifications is on file in the Office of the Director of Public Works of the City of Stockton. Copies may be obtained from the State of California, Department of Transportation, Publication Distribution Unit, 1900 Royal Oaks Drive, Sacramento, California 95819, or by calling (916) 445-3520.

The Standard Detail Drawings attached are the Standard Plans of the City of Stockton and take precedence over the Caltrans Standard Specifications in case of any conflicts.

These Specifications and Plans may be modified in special cases on an individual project basis by special engineering analysis if approved by the City Engineer.

Amendments to the Specifications of the Department of Transportation may be issued by the State of California from time to time and will require adoption by the Director of Public Works to become a part of the City of Stockton Standard Specifications.

The Director of Public Works may also issue clarifications and amendments to these Standard Specifications and Standard Detail Plans as required.

Revised 11/25/2003

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SECTION NO.**

DESCRIPTION

**COS SPEC.
PAGE NO.**

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SECTION 1

DEFINITIONS AND TERMS

1-1.02A Abbreviations - (Organizational)

The following contains additions to Section 1-1.02A of the Caltrans Standard Specifications:

AAMA	Architectural Aluminum Manufacturer's Association
AAN	American Association of Nurserymen
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AGA	American Gas Association
AIEE	American Institute of Electrical Engineers
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AMA	Acoustical Materials Association
ANSI	American National Standards Institute
APA	American Plywood Association
API	American Petroleum Institute
AREA	American Railway Engineering Association
ASA	American Standards Association
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWG	American Wire Gage
AWPA	American Wood-Preservers' Association
AWS	American Welding Society
AWWA	American Water Works Association
Caltrans	State of California, Department of Transportation
CLFMI	Chain Link Fence Manufacturers Institute
CRA	California Redwood Association
COS	City of Stockton
CS	Commercial Standards
DEPA	Grade Trademark of American Plywood Association
EIA	Electronic Industries Association
ESO	Electrical Safety Orders
FHA	Federal Housing Administration
FS	Federal Specifications

GSA-FSS	General Services Administration-Federal Supply Services
IEEE	Institute of Electrical Electronics Engineers
IES	Illuminating Engineering Society
IPCEA	Insulated Power Cable Engineers Association
MFMA	Maple Flooring Manufacturer's Association
MLMFA	Metal Lathe Manufacturer's Association
NBFU	National Board Fire Underwriters
NBS	National Bureau of Standards
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NPDES	National Pollution Discharge Elimination System
PCA	Portland Cement Association
PLIB	Pacific Lumber Inspection Bureau
PUC	Public Utilities Commission
RWQCB	Regional Water Quality Control Board
SCPI	Structural Clay Products Institute
SDI	Steel Deck Institute
SJI	Steel Joist Institute
SMACCNA	Sheet Metal and Air Conditioning Contractors National Association
SPR	Simplified Practice Recommendation
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	California State Water Resource Control Board
TCA	Tile Council of America
UBC	Uniform Building code - International Conference of Building Officials
UL	Underwriters's Laboratories, Inc.
USCE	United States Corps of Engineers
USC&GS	United States Coast and Geodetic Survey
USGS	United States Geological Survey
WCLIB	West Coast Lumber Inspection Bureau
WIC	Woodwork Institute of California
WWPA	Western Wood Products Association

Reference in the Standard Specifications or special provisions to any of the publications of the above listed associations, organizations or authorities as a specification included, shall be taken to mean the latest current edition at time of bidding unless specifically stated otherwise.

1-1.02B Abbreviations (Word)

#4	1/2" Rebar
AB	Aggregate base
ABS	Acrylonitrile-butadiene-styrene
AC	Alternating current
AC	Asphalt concrete
ACP	Asbestos cement pipe
AKA	Also Known As
AMP	Ampere
AS	Aggregate sub-base
AV	Average
Ave	Avenue
BC	Beginning of curve
Blvd	Boulevard
BM	Bench mark
BMP	Best Management Practice
BTU	British Thermal Unit
BVC	Beginning of vertical curve
BWG	Birmingham Wire Gage (iron and steel wire)
CB	Catch basin
CC or C/C	Center to center
CF	Cubic feet
CFM	Cubic feet per minute
CFS	Cubic feet per second
CIP	Cast in place
CIPCP	Cast in place concrete pipe
CL or \mathcal{C}	Center line
cm	Centimeter
CMP	Corrugated metal pipe
Conc	Concrete
Const	Construct
Cu	Cubic
CY	Cubic yard
D	Diameter of pipe inside height of semi-elliptical conduit, or D-load
d	Penny
Deg.	Degree or degrees
DF	Douglas fir
Dia	Diameter
Dwg	Drawing
E	East
Ea	Each

EC	End of curve
El or Elev	Elevation
EP	Edge of pavement
Eq	Equation
ESCP	Extra strength concrete pipe
EVC	End of vertical curve
EW	Each Way
Ex or Exist	Existing
FC (or FOC)	Face of Curb
FH	Fire hydrant
FL or L	Flow line
fpm	Feet per minute
fps	Feet per second
ft	Foot or feet
g	Gram
Ga	Gauge
Gal	Gallon
Galv	Galvanized
General Permit	General Construction Activity Storm Water Permit
GL	Ground line
GPM	Gallons per minute
Gr	Grade
H	High or height
HP	Horsepower
HR	Hour
Hor	Horizontal
IN	Instrument Number
IP	Iron pipe
KVA	Kilo Volt Amps
KW	Kilowatts
L	Length
Lb	Pound
LF	Linear foot
LH	Lamp hole
LS	Lump sum
Lin	Linear
Long	Longitudinal
Lt	Left
M	Meter
Max	Maximum
MEP	Maximum Extent Practicable
MFBM	Thousand feet board measure
MGD	Million gallons per day

MH	Maintenance Hole
M Gal	Thousand gallon
Mi	Mile
Min	Minimum
mm	Millimeter
Mon	Monument
N	North
NE	Northeast
NW	Northwest
No	Number
NOI	Notice of Intent
OC	On center
OG	Original ground
OD	Outside diameter
OR	Official Records of County
Oz	Ounce
PCC	Point of compound curve or Portland Cement Concrete
PG&E	Pacific Gas & Electric Co.
PI	Point of intersection
P/L or \mathbf{H}	Property line
PP	Power pole
pphm	Parts per hundred million
ppm	Parts per million
PRC	Point of reverse curve
Prop	Proposed
psf	Pounds per square foot
psi	Pounds per square inch
PT	Point of tangency
PacBell	Pacific Bell
PUE	Public Utility Easement
PVC	Polyvinyl chloride
Pvmt	Pavement
Q	Rate of flow or quantity
Qt	Quart
R	Radius
RP	Reduced Pressure
RCP	Reinforced concrete pipe
Rdwy	Roadway
Ret Wall	Retaining wall
Rt	Right
R/W	Right of way
S	South or slope

San	Sanitary
SC	Sewer Connection
SD	Storm drain (aka Storm Sewer)
Sec	Seconds
SF	Square foot
SE	Southeast
Spec	Specifications (aka Standard Specifications)
Sq	Square
Sq Ft	Square foot
Sq Yd	Square yard
SS	Sanitary sewer
St	Street
Sta	Station
Std	Standard
SY	Square Yard
SW	Southwest
SWPPP	Storm Water Pollution Prevention Plan
T	Tangent distance
T_a	Total Asphalt or Full Depth Asphalt
TBM	Temporary Bench Mark
V	Velocity of flow
VC	Vertical Curve
VCP	Vitrified clay pipe
Vert	Vertical
W	West or width
W/	With
WPJ	Weakened Plane Joint
WWF	Welded Wire Fabric
Yd	Yard or Yards

1-1.02C Symbols

E	Degree (s)
/	Per
%	Percent
'	Feet, Minutes
"	Inches, Seconds
x	By
@	At

1-1.03 Definitions

The following are additional definitions or definitions included in Caltrans Standard Specifications, which have been added to or modified for City of Stockton uses.

Acceptance (Caltrans Section 1-1.03) - The formal written acceptance by the City of Stockton of an entire contract which has been completed in all respects in accordance with the Standard Specifications and Plans and any modifications thereof previously approved.

Arterial (Street Classification) - That part of the roadway system serving as the principal network for through traffic flow. The routes connect areas of principal traffic generation and important rural highways entering the city.

Classification questions should be directed to the Traffic Engineering Section of the Public Works Department of the City of Stockton.

Attorney General - This term is to be interpreted to mean the City Attorney for the City of Stockton.

Auxiliary Lane - That portion of the roadway adjoining the traveled way for speed change or other purposes supplementary to through traffic movement

California - Shall be interpreted to mean Stockton where it is used as a point of delivery.

California Storm Water Best Management Practice Handbooks;

Volume 1: Municipal BMP Handbook;

Volume 2: Commercial/Industrial BMP Handbook;

Volume 3: Construction BMP Handbook; - Refer to Chapter 13, Stockton Municipal Code

Caltrans - The State of California, Business & Transportation Agency, Department of Transportation.

City - The City of Stockton, California.

City Attorney - The City Attorney of the City of Stockton. Any reference to the Attorney General in Caltrans specifications shall mean the City Attorney of the City of Stockton.

City Council - The Stockton City Council.

Code - The terms Government Code, Labor Code, etc. refer to codes of the State of California.

Collector (Street Classification) - A collector street is defined as a street which serves traffic movements within subdivision and connects this area with an arterial street or other collector street.

Classification questions should be directed to the Traffic Engineering Section of the Public Works Department of the City of Stockton.

Commercial - Refer to Chapter 16 of the Stockton Municipal Code.

Contract Price - The total amount of money for which the contract is awarded.

Contract Unit Price - The contractor's original bid for a single unit of an item of work in the Proposal.

Days (Caltrans Section 1-1.12) - Unless otherwise designated, days as used in the Standard Specification will be understood to mean working days.

Deeplift Asphalt Concrete - (See Full Depth Asphalt Concrete)

Deep Strength Asphalt Concrete - (See Full Depth Asphalt Concrete)

Department (Caltrans Section 1-1.13) - The Department of Public Works of the City of Stockton. Any reference to the terms "Department" or "Department of Transportation" in Caltrans Standard Specifications shall mean the Department of Public Works of the City of Stockton when referring to the administration of the project.

Director of Public Works - The executive officer of the Department of Public Works as created by law or the executive officer's assigned representative. Any reference to the terms "Director" or "Director of Transportation" in Caltrans Standard Specifications shall mean the Director of Public Works of the City of Stockton. Any reference to the terms "Director" or "Director of Public Works" shall also mean the Director of Municipal Utilities or Director's assigned representative on projects or contracts for which the Municipal Utilities Department is the responsible department.

Electrolier - Street light assembly complete, including foundation, standard, luminaire arm, luminaire, etc.

Engineer (Caltrans Section 1-1.18) - The City Engineer of the City of Stockton acting either directly or through properly authorized agents, such agents acting within the scope of the particular duties delegated to them. Any reference to the terms "Engineer" or "City Engineer" shall also mean the Director of Municipal Utilities on projects or contracts for which the Municipal Utilities Department is the responsible department.

Engineer's Estimate - The list of estimated quantities of work to be performed as contained in the "Bid Proposal" under "Department of Public Works, City of Stockton Estimate."

Full Depth Asphalt Concrete - The term FULL-DEPTH (registered by The Asphalt Institute with the U.S. Patent Office) certifies that the pavement is one in which asphalt mixtures are employed for all courses above the subgrade or improved subgrade. A FULL-DEPTH asphalt pavement is laid directly on the prepared subgrade. (The mathematical symbol Ta denotes Full-Depth or Total Asphalt.) (May also be referred to as Deep Lift or Deep Strength Asphalt Concrete)

Highway (Caltrans Section 1-1.24) - The whole right-of-way or area which is reserved for and secured for use in constructing the roadway and its appurtenances. Where the work is not specifically highway or street work, the term "highway" or "highway right-of-way" shall be interpreted to mean the property line or the bounded area of the site of the improvement/work or be deleted, where applicable.

Holiday - An undesirable discontinuity or break in the anticorrosion protection on pipe or tubing.

Industrial - Refer to Chapter 16 of the Stockton Municipal Code.

Laboratory (Caltrans Section 1-1.25) - The established laboratory of the City of Stockton and/or the laboratory chosen by, or approved by the City of Stockton and authorized to test materials and work involved in the contract.

Liquidated Damages (Caltrans Section 1-1.26) - The amount prescribed in the special conditions to be paid to the City of Stockton or to be deducted from any payments due or to become due to the Contractor for each day's delay in completing the whole or any specified portion of the work beyond the time allowed in the Standard Specifications.

Local (Street Classification) - Roadways used primarily for direct access to residential, commercial, industrial or other abutting property. They do not include roadways carrying through traffic. A local street is defined as a facility having the sole function of providing access to immediately adjacent land.

Clarification questions should be directed to the Traffic Engineering section of the Public Works Department of the City of Stockton.

Lowest Responsible Bidder - The company or firm whose bid is arithmetically lowest and who meets the criteria set forth in Stockton Municipal Code Section 3-025.

Luminaire - The lamp housing including the optical and socket assemblies (and ballast if so specified).

Other Agencies - Whenever reference is made to any Federal, State or County agency or officer, such reference shall be deemed made to any agency or officer succeeding in accordance with law to the powers, duties, jurisdiction, and authority of the agency or officer mentioned.

Plans - (aka Standard Plans and/or Project Plans as applicable) Refer to the definitions under Standard Specifications and Plans later in this section.

Project Plans - The project plans are specific details and dimensions peculiar to the work and are supplemented by the Standard Plans insofar as the same may apply. The Standard Plans shall also be interpreted to mean those Standard Plans incorporated within the document.

Proposal Form (Caltrans Section 1-1.32) - The approved form upon which the City of Stockton requires formal bids be prepared and submitted for work. (See Section 2-1.05)

Proposal Guaranty (Caltrans Section 1-1.33) - The cash, cashier's check, certified check, or bidder's bond accompanying the proposal submitted by the bidder, as a guaranty that the bidder will enter into a contract with the City of Stockton for the performance of the work if the contract is awarded to the bidder.

Residential - Refer to Chapter 16 of the Stockton Municipal Code.

Right-of-Way - Any reference to the term "right-of-way" or "highway right-of-way" shall be interpreted to mean the property right-of-way, property line or the bounded area of the side of work, where applicable.

Sand - aka Class 4 aggregate subbase shall conform to the provisions of Sections 19 and 25 of Cal Trans standard specifications. Class 4 aggregate subbase material shall be clean and free from vegetable matter and other deleterious substances. The percentage composition by weight of Class 4 aggregate subbase material shall conform to the following grading when determined by test method No. California 202.

<u>Sieve Sizes</u>	<u>Percentage Passing</u>
2 1/2	100%
NO. 200	2 - 35%

Class 4 aggregate subbase material shall also conform to the quality requirements shown in the following table

<u>Tests</u>	<u>Test Method No. Calif.</u>	<u>Requirements</u>
Sand Equivalent	217	20 min.
Resistance	301	55 min.

Service Connection - Service connections are all or any portion of the conduit, cable or duct, including meter, between a utility distribution line and an individual consumer.

Sewer - Any conduit intended for the reception and transfer of sewage and fluid industrial waste.

Sewer (Private) - A sewer, wholly within private property and maintained privately.

Sewer Connection - A sewer, within a public street, a public utility easement right of way, proposed to connect any parcel, lot or part of a lot with a main line sewer.

Specifications - (aka Standard Specifications) The written directions, provisions, and requirements contained in the "Standard Specifications and Plans" as published by the City of Stockton and as supplemented by the Special Provisions.

Special Provisions (Caltrans Section 1-1.37) - The special provisions are specific clauses setting forth conditions or requirements peculiar to the work and supplementary to these Standard Specifications and Plans. The State of California, Department of Transportation publication entitled "Labor Surcharge and Equipment Rental Rates and General Prevailing Wage Rates" are to be considered as a part of the special provisions.

Standard Specifications and Plans (Caltrans Section 1-1.29) - The official Project Plans and Standard Plans, profiles, typical cross sections, general cross sections, working drawings and supplemental drawings, or reproductions thereof signed by the City Engineer, which show the location, character, dimensions and details of the work to be performed. All such documents are to be considered as part of the Standard Plans whether or not reproduced in the special provisions.

In the above definition, the following terms are defined as follows:

- (a) Standard Plans - The Standard Detail Drawings of the Department of Public Works published as part of the Standard Specifications and Plans as may be adopted, or adopted and modified in the project plans.

- (b) Project Plans - The project plans are specific details and dimensions peculiar to the work and are supplemented by the Standard Plans insofar as the same may apply. The Standard Plans shall also be interpreted to mean those Standard Plans incorporated within the document.
- (c) Standard Specifications - The written directions, provisions, and requirements contained in the "Standard Specifications and Plans" as published by the City of Stockton and as supplemented by the Special Provisions.
- (d) Special Provisions (Caltrans Section 1-1.37) - The special provisions are specific clauses setting forth conditions or requirements peculiar to the work and supplementary to these Standard Specifications and Plans. The State of California, Department of Transportation publication entitled "Labor Surcharge and Equipment Rental Rates and General Prevailing Wage Rates" are to be considered as a part of the special provisions.

State - The State of California. Any reference to the terms "State" or "State of California" in Caltrans Standard Specifications with reference to administration of the project, shall mean the City of Stockton, where applicable.

State Treasurer - Shall be interpreted to mean the City of Stockton Finance Department, where applicable.

Storm Drain - (aka Storm Sewer) Any conduit and appurtenances intended for the reception and transfer of storm water.

Storm Water Management Program - The City of Stockton's Storm Water Management Program as delineated in the City's NPDES Permit for Storm Water Discharges from Municipal separate storm sewer systems.

Street - Any road, highway, parkway, freeway, alley, walk, or way.

Subcontractor - The individual, partnership, corporation or other legal entity entering into a contract with the contractor to perform a portion of the work.

Surety - Any individual, firm or corporation, bound with and for the contractor for the acceptable performance, execution, and completion of the work, and for the satisfaction of all obligations incurred.

Traveled Way - That portion of the roadway for the movement of vehicles, exclusive of shoulders and auxiliary lanes.

Utility - Tracks, overhead or underground wires, pipe lines, conduits, ducts, or structures, sewers or storm drains owned, operated, or maintained in or across a public right of way or private easement.

Welding Specifications - The directions, provisions and requirements contained in these Standard Specifications as modified and as supplemented by the special provisions. Caltrans "Standard Specifications for Welding Structural Steel" dated January 1981 is to be considered a part of these Standard Specifications. Whenever the term "these specifications" is used in this book, it means the provisions set forth in the City of Stockton Standard Specifications and Plans and Caltrans "Standard Specifications for Welding Structural Steel."

SECTION 2

PROPOSAL REQUIREMENTS AND CONDITIONS

2-1.01 Contents of Proposal Forms - The following is to be added: Prospective bidders will be furnished with proposal forms which will state the location and description of the contemplated construction and if applicable show the approximate estimate of the various quantities and kinds of work to be performed or materials to be furnished, with a schedule of items for which bid prices are asked. All special provisions will be grouped together and attached to the proposal form.

2-1.02 Approximate Estimate - The following is to be added: The quantities given in the notice to contractors, and in the proposal and contract are approximate only, being given as a basis for the comparison of bids. The City does not expressly or by implication, agree that the actual amount of work will correspond therewith, and reserves the right to increase or decrease the amount of any class or portion of the work, or to omit portions of the work, as may be deemed necessary or advisable by the Engineer.

2-1.03 Examination of Plans, Specifications, Contract, and Site of Work - The following is to be added:

No oral interpretations or clarification of the Standard Plans and Specifications and special provisions will be made prior to the bid opening. Any such requests shall be made in writing and will be answered in writing. If errors are found, the bidder shall provide written notification as soon as possible prior to the bid opening in order that letters of clarification can be prepared and given to all bidders.

Where the City has made investigations of subsurface conditions in areas where work is to be performed under the contract, or in other areas, some of which may constitute possible local material sources, such investigations are made only for the purpose of study and design. Where such investigations have been made, bidders or Contractors may, upon written request, inspect the records of the City as to such investigations subject to and upon the conditions hereinafter set forth.

The records of such investigations are not a part of the contract and are shown solely for the convenience of the bidder or contractor. It is expressly understood and agreed that the City assumes no responsibility whatsoever in respect to the sufficiency or accuracy of the investigations thus made, the records thereof, or of the interpretations set forth therein or made by the City in its use thereof and there is no warranty or guaranty, either express or implied, that the conditions indicated by such investigations or records thereof are representative of those existing throughout such areas or any part thereof, or that developments, not specifically looked for, may not occur, or that materials other than, or in proportion different from those indicated, may not be encountered.

2-1.05 Proposal Forms - The City will furnish to each bidder a standard proposal form, which when filled out properly, executed, and submitted shall be the bidder's bid. Bids, not presented on forms so furnished shall be considered non-responsive. Proposal forms are furnished with the Special Provisions and Project Plans and shall be obtained at the Public Works office of the City of Stockton, City Hall.

The proposal form is bound in a book together with the notice to contractors, special provisions, and contract. Neither the proposal form nor any other portion of the said book shall be detached therefrom. The proposal shall set forth for each item of work, in clearly legible figures, an item price and a total for the item in the respective spaces provided, and shall be signed by the bidder, who shall fill out all blanks in the proposal as therein required.

All bids shall be clearly and distinctly written and if any erasure or interlineation occurs therein, before the bid is filed with the City Clerk, said erasure or interlineation shall be initialed by the person authorized to prepare and execute the bid.

The proposal shall be submitted as directed in the "Notice Inviting Bids" under sealed cover plainly marked as a proposal, and identifying the project to which the proposal relates and the date of the bid opening thereof. Proposals that are not properly marked may be rejected at the discretion of the City.

2-1.07 Proposal Guaranty - All bids shall be presented under sealed cover and accompanied by one of the following forms of bidder's security:

The following shall be changed or added:

Cash, a cashier's check, a certified check, or a bidder's bond executed by an admitted surety insurer, made payable to the City of Stockton (rather than the Director of Transportation).

The security shall be in an amount equal to 10 percent of the amount of bid. A bid will not be considered unless one of the above described forms of bidder's security is enclosed with it.

2-1.075 Affirmative Action – All contract proposals and work on City of Stockton contracts utilizing federal funds (excluding DOT-assisted) shall conform to the City's Equal Employment Program as set forth in City Council Resolution 97-0393. Bidders and Contractors shall submit forms and documentation as required per City of Stockton Affirmative Action Guidelines.

For Federal DOT-assisted projects, the City's Disadvantaged Business Enterprise (DBE) program as set forth in Council Resolution 01-225 will apply. Bidders and Contractors shall submit forms and documentation as required by the City's DBE program.

There are no Affirmative Action or DBE requirements for projects funded solely with local and/or State funds.

2-1.08 Withdrawal of Proposals - Any bid may be withdrawn at any time prior to the time fixed in the public notice for the opening of bids only by written request for withdrawal of the bid filed with the City Clerk. The request shall be executed by the bidder or the bidder's duly authorized representative. The withdrawal of a bid does not prejudice the right of the bidder to file a new bid. Whether or not bids are opened exactly at the time fixed in the public notice for the opening of bids, a bid will not be received after that time, nor may any bid be withdrawn after the time fixed in the notice for the opening of bids.

2-1.095 Relief of Bidders - The following is to be changed: If the bidder claims a mistake was made in the bidder's bid, the bidder shall give the City written notice within 3 days after the opening of the bids of the alleged mistake, specifying in the notice in detail how the mistake occurred.

2-1.10 Disqualification of Bidders - The following is to be added: Nothing in this section shall prohibit material suppliers or subcontractors from quoting prices to more than one bidder.

2-1.109 Competency of Bidders - Attention is directed to Section 7.1.01E, "Contractor's Licensing Laws," and the requirements of law referred to therein relating to the licensing of Contractors.

SECTION 3

AWARD AND EXECUTION OF CONTRACT

3-1.01 Award of Contract - The right is reserved to reject any and all proposals.

The award of the contract, if it be awarded, will be to the lowest and best responsible bidder whose proposal complies with all the requirements prescribed. Such award, if made, will be made as stated in the special provisions. If the lowest and best responsible bidder refuses or fails to execute the contract, the City of Stockton may award the contract to the second lowest and best responsible bidder.

All bids will be compared on the basis of the Engineer's Estimate of the quantities of work to be done.

3-1.02 Contract Bonds - The Contractor will be required to furnish a surety bond for the faithful performance of the Contractor's contract and also a labor and material bond, each in the sum of one hundred percent (100%) of the contract price.

The Faithful Performance Bond will be retained by the City of Stockton for twelve (12) months following final acceptance by the City of the improvements to guarantee correction of failure attributable to workmanship and materials. Upon said final acceptance by the City, the amount of the Faithful Performance Bond may be reduced to twenty percent (20%) of the actual improvement construction costs.

The bonds required of the Contractor shall be furnished by a company authorized to do a surety business in the State of California: said bonds shall be executed by the Surety and Contractor before or concurrently with the signing of the contract. The form of said bonds shall be approved by the City Attorney and the surety of Sureties shall be approved by the Director of Finance.

All alterations, extensions of time, extra or additional work and other changes authorized by these Standard Specifications, or any part of the contract may be made without securing the consent of the Surety on the contract bonds.

3-1.03 Execution of the Contract - The contract shall be executed within ten (10) days not including Saturdays and Sundays and legal holidays, after the bidder has received the contract, via certified mail.

3-1.04 Failure to Execute Contract - Failure of the lowest and best, the second lowest and best, or the third lowest and best to execute the contract and file acceptable bonds as provided herein within 10 days not including Saturdays, Sundays and legal holidays, after the bidder has received the contract, via certified mail, shall be just cause for the forfeiture of the proposal guaranty. The successful bidder may file with the City Clerk a written notice, signed by the

bidder or the bidder's authorized representative, specifying that the bidder will refuse to execute the contract if presented to the bidder. The filing of such notice shall have the same force and effect as the failure of the bidder to execute the contract and furnish acceptable bonds within the time herein before prescribed.

3-1.05 Return of Proposal Guaranties - Within 10 days after award of the contract to the lowest responsible bidder, the City of Stockton will return the proposal guaranties accompanying the proposals no longer being considered.

The proposal guarantee of the lowest responsible bidder will be held until evidence of insurance, a current City of Stockton business license, and satisfactory bonds are provided and the contract is fully executed and filed with the City Clerk.

If the lowest responsible bidder fails or refuses to enter into the contract to do said work, furnish said supplies, or to furnish the required bonds within 10 business days after award of contract, the proposal guarantee shall be forfeited to the City of Stockton.

SECTION 4

SCOPE OF WORK

4-1.02 Site Maintenance and Final Cleaning Up - The following is to be added: The Contractor shall conduct and cause all working forces at the site to maintain the site in a neat orderly manner throughout the construction operations. The work shall be conducted in a manner that will control the dust. When ordered to provide dust control, the Contractor shall use water or turn soil to reduce the dusty conditions, all to the satisfaction of the Engineer and in accordance with Section 10 of the Standard Specifications. During construction, the Contractor shall remove all rubbish and debris as it is generated to the satisfaction of the Engineer.

Contractor's activities shall conform to the requirements of the Storm Water Management Program and/or BMPs delineated in the project SWPPP. All appropriate provisions of the General Permit including Post-Construction Storm Water Management shall be adhered to.

Nothing herein, however, shall require the Contractor to remove warning, regulatory, and guide signs prior to formal acceptance by the City.

Full compensation for all site maintenance and cleanup will be considered as included in the prices paid for the various contract items of work and no separate payment will be made therefor.

4-1.03 Changes - The following is to be added: For contracts approved by the City Council for initial prices of less than One Hundred Thousand Dollars (\$100,000), individual and/or cumulative change orders of Twenty-three Thousand Five Hundred Seventy-eight Dollars (\$23,578) or that amount approved by City Council Action or greater require City Council approval. For contracts approved by the City Council with initial prices of One Hundred Thousand Dollars (\$100,000) or more, individual and/or cumulative changes orders which exceed Twenty-three Thousand Five Hundred Seventy-eight Dollars (\$23,578) or that amount approved by city Council Action plus ten percent (10%) of the initial contract price over One Hundred Thousand Dollars (\$100,000) require City Council approval. Change orders not meeting the above criteria require approval by the authorized CITY official executing this contract. The dollar amounts of change orders approved by specific City Council action, plus the dollar amounts of any change orders which predate such specific City Council action, shall not be counted in computing the authority limits set forth above for CITY officials to approve change orders hereunder.

When the compensation for an item of work is subject to adjustment under the provisions of this Section 4-1.03, the Contractor shall, upon request, promptly furnish the Engineer with adequate detailed cost data for said items of work.

In emergency situations, the authorized City official may issue a change order beyond the authority limits described above in order to:

- (a) Prevent interruption of the work which would result in a substantial increase in the costs to, or liability of the City; or
- (b) Protect the work, equipment, materials to be used in the work, human safety, or the environment at or near the work from substantial and immediate danger or injury; or
- (c) Protect, where damage or injury has occurred, the work, equipment or materials to be used in the work, human safety, or the environment from further or additional damage or injury or deterioration.
- (d) The authorized City official shall have the authority to issue change orders in such sums as is reasonably necessary for such emergency purposes. After issuing a change order in an emergency situation described above, the authorized City Official shall report such action and the reasons therefor to the City Council in writing not later than its next regularly scheduled meeting or as soon thereafter as is practicable.
- (e) Upon receipt of an approved contract change order, the Contractor shall proceed with the ordered work. If ordered in writing by the Engineer, the Contractor shall proceed with the work so ordered prior to actual receipt of an approved contract change order therefor. In such cases, the Engineer will, as soon as practicable, issue an approved contract change order for such work and the provisions in Section 4-1.03A, "Procedure and Protest," shall be fully applicable to such subsequently issued contract change order.

4-1.03A Procedure and Protest - The paragraph is to be changed as follows: Proposed contract change orders may be presented to the Contractor for the Contractor's consideration prior to approval by the Engineer. If the Contractor signifies the Contractor's acceptance of the terms and conditions of such proposed contract change order by executing such documents and if such change order is approved by the City Manager or City Council and issued to the Contractor, payment in accordance with the provisions as to compensation therein set forth shall constitute full compensation for all work included therein or required thereby. A contract change order approved by the City Manager or City Council is an executed contract change order as that term is used in Section 4-103B to 4-1.03D, inclusive. An approved contract change order shall supersede a proposed contract change order covering the same work.

4.103B Increased or Decreased Quantities - This section of Caltrans Specifications is to be deleted.

4-1.03B(3) Eliminated Items - The following is to be added: The City reserves the right to eliminate any contract item of work prior to the award of the contract without incurring any obligation to pay therefor. Should any contract item of the work be eliminated in its entirety following the award of the contract and in the absence of an executed contract change order covering such elimination, payment will be made to the Contractor for actual costs incurred in connection with such eliminated contract item if incurred prior to the date of notification in writing by the Engineer of such elimination.

4-1.04 Detours - The following is to be added: Whenever work is performed within the right-of-way of any roadway classified as an "Arterial" or "Collector" type roadway, as defined in these Standard Specifications, a detailed detour plan shall be required.

Clarification questions should be directed to the Traffic Engineering Section of the Public Works Department of the City of Stockton. The plan shall be designed and signed by an engineer registered with the State of California as a Professional Civil or Traffic Engineer. This detour plan shall be submitted to the Public Works Department for approval a minimum of 10 working days before the beginning of any roadwork. The cost of implementing and maintaining the detour plan shall be borne by the Contractor, utility company, or developer.

SECTION 5

CONTROL OF WORK

5-1.01 Authority of Engineer - The following is to be added: Unless otherwise stated, the words *directed, required, permitted, ordered, instructed, designated, considered necessary, prescribed, reviewed, approved, acceptable, satisfactory,* or words of like import, refer to actions, expressions, and prerogatives of the Engineer.

5-1.02 Plans and Working Drawings - The following is to be changed and/or added: Record drawings of all improvements shall be provided by the Contractor involved in constructing the improvement. Record drawings shall be neatly and accurately done on a set of Project Plans and delivered to the Department of Public Works as a condition precedent to acceptance of the project.

The Engineer shall review working drawings before any work involving these plans is performed.

On private development work, at the conclusion of construction, the Engineer who prepared the improvement plans will add to the Project Plans, for City record purposes, construction data based on information compiled and furnished by the Engineer, contractors, inspector and others.

On those facilities that will be extended in the future (such as sanitary lines, storm drain lines, water lines and curb and gutter installations), the Engineer shall shoot the grades at the end of the facilities and include the "as constructed" grades on the record drawings.

5-1.02A Trench Excavation Safety Plans - The following is to supersede Caltrans Specification: Attention is directed to Section 7-1.01E, "Trench Safety." Excavation for any trench 5 feet in depth or more shall not begin until the Contractor has obtained a permit per State of California Construction Safety Orders Section 1539 and Chapter 3.2 Article 2, Section 341 of the California Occupational Safety and Health Regulations (Cal/OSHA). For information regarding this provision Contractor is directed to contact Cal/OSHA in Modesto. A copy of this permit shall be available at the construction site at all times.

5-1.07 Lines and Grades - The following is to be added: The Engineer will set one bench mark on the job site and at the option of the Contractor will either (1) stake the center line, (2) stake an offset line, or (3) stake a base line with necessary grades as required one time only. It is expected that on small projects the City will provide the field services. On all subdivisions, or on large and complicated projects, the special conditions will set forth the extent of field service to be provided by the City and whether or not a licensed surveyor or civil engineer shall perform all or part of the engineering work. On Public Works contracts, however, engineering layout will be provided by the City of Stockton as noted in Items 1, 2, or 3

above. Where the City of Stockton does provide staking, it shall be preserved carefully by the Contractor and will only be replaced by the City in the case of malicious mischief or vandalism perpetrated by a third party.

The Contractor shall preserve all monumentation potentially affected by the work in accordance with Section 8771 of the Professional Land Surveyors Act in the Business and Professions Code of the State of California. Locations of known existing monumentation within the area of work shall be indicated on the plans. If required, tie-out of existing monuments shall be completed and appropriate documentation submitted to the City Engineer prior to beginning work. Unless otherwise specified, all construction staking or survey work shall be performed by an appropriately licensed land surveyor or civil engineer.

5-1.08 Inspection - Add the following: Projects financed in whole or part with State funds shall be subject to inspection at all times by the State agency involved.

The contractor shall perform all wet weather and dry weather inspections required to determine if all BMPs implemented are adequate and being maintained in accordance with the SWPPP and the requirements of the General Permit. The project site shall be subject to inspection at all times by the City to verify conformance with the General Permit and provisions of the Storm Water Management Program.

5-1.14 Cost Reduction Incentive - This section is expressly deleted and is not applicable to work done for the City of Stockton. This will be applied on a case by case basis and shall be stated in the special provisions.

SECTION 6

CONTROL OF MATERIALS

6-1.02 City Furnished Materials - The following supersedes Caltrans Section 6-1.02 in total: Materials furnished by the City will be available at locations designated in the special provisions or if not designated in the special provisions they will be delivered to the project. Said materials shall be hauled to the site of the work by the Contractor at the Contractor's expense, including any necessary loading and unloading that may be involved. The cost of handling and placing City furnished material shall be considered as included in the price paid for the contract item involving such City-furnished material.

The Contractor will be held responsible for all materials furnished to the Contractor, and he shall pay all demurrage and storage charges. City-furnished materials lost or damaged from any cause whatsoever shall be replaced by the Contractor. The Contractor will be liable to the City for the cost of replacing City-furnished material and such costs may be deducted from any monies due or to become due the Contractor.

6-1.03 Storage of Materials – The following is to be added: Materials shall be stored in such a manner to reduce their potential to pollute storm water run off from the site. Storage practices and storm water management from the storage area shall conform to the BMPs in the SWPPP and the requirements of the General Permit.

6-1.08 Foreign Materials - The following is to be added: The Contractor, at no cost to the City, shall supply the facilities and arrange for any testing required in Stockton which the City is not equipped to perform. All testing by the Contractor shall be subject to witnessing by the Engineer.

Where structural materials requiring mill test reports are obtained from foreign manufacturers, such materials shall be furnished only from those foreign manufacturers who have previously established, to the satisfaction of the Engineer, the sufficiency of their in-plant quality controls, as deemed necessary by the Engineer or his representative, to give satisfactory assurance of their ability to furnish material uniformly and consistently in conformance with these Standard Specifications. At the option of the Engineer, such sufficiency shall be established either by submission of detailed written proof thereof or through in-plant inspection by the Engineer or the Engineer's representative or such testing, by a local laboratory certified to be capable to perform the testing, as is determined to be necessary by the Engineer.

SECTION 7

LEGAL RELATIONS AND RESPONSIBILITY

7-1.01 Laws to be Observed – The following is to be added: The Contractor shall observe and comply with all requirements of the Storm Water Management Program, and the General Permit.

7-1.01A(2) Prevailing Wage - The following is to be added: The general prevailing wage rates for each craft, classification or type of workman are on file at the City Hall, City of Stockton, 425 N. El Dorado Street, Stockton, California. A copy of said wage rates shall be posted by the Contractor in a prominent place at the site of the work.

7-1.01A(4) Labor Nondiscrimination - The following is to be added: Attention is also directed to the requirement in Section 1431 of the Labor Code and sections 300 and 317 through 323 of Title 8 of the California Administrative Code that the Contractor shall submit the Contractor's Equal Employment Opportunity Program and certification fee to the Fair Employment Practice Commission, in the event that the bid price for the contract exceeds \$200,000.

Attention is directed to the requirements of the Stockton Municipal Code, Chapter 3, Part V, as amended with reference to the affirmative action requirements for Contractors on Public Works projects of the City of Stockton. Such requirements shall be followed. Guidelines and the necessary reporting requirements are contained in the publication entitled: "City of Stockton Affirmative Action Guidelines" which is made a part of these Standard Specifications by this reference. Failure of the Contractor to conform to the provisions of the City of Stockton's Affirmative Action Program will result in the Contractor's being subject to the penalties set forth in Section 3-028 of Part V of Chapter 3 of the Stockton Municipal Code.

7-1.01A(6) Worker's Compensation - The following is to be added: Pursuant to the requirements of Section 1860 of the Labor Code, the Contractor will be required to secure the payment of Worker's Compensation to the employees in accordance with the provisions of Section 3700 of the Labor Code.

The successful bidder previous to the entering of the contract to do the said work shall take out and maintain in full force and effect worker's compensation insurance with an insurance carrier authorized to transact business in the State of California, covering the bidder's full liability for compensation to any persons employed who may be injured in the carrying out of said contract or the dependents thereof. Evidence of such worker's compensation insurance shall be furnished to the City of Stockton by certificates in duplicate prior to the commencement of the work and said certificate shall contain a provision that the coverage

thereunder will not be canceled until at least thirty (30) days prior written notice has been given to the City.

7-1.01C Contractor's Licensing Laws - The following shall be added: In additions to the Contractor's license, the Contractor shall obtain a business license from the City of Stockton.

7-1.01D Vehicle Code - The following sections of the California State Vehicle Code shall be added: The lighting requirements in Section 25803; the brake requirements in Division 12, the following sections of the State of California Vehicle Code; the splash apron requirements in Section 27600; and, when operated on completed or existing treated base, surfacing, pavement or structures, except as otherwise provided in Section 7-1.02, "Weight Limitations," the weight limitation requirements contained in Division 15. Any other requirements which the City will require compliance with, will be set forth in the special provisions.

7-1.01E Trench Safety - The following shall be added: The Contractor shall furnish all labor, equipment and materials required to design, construct and remove all shoring, sheeting, lagging, cribbing, piling, or types of support for the walls of the project.

In making excavations for any project, the Contractor shall be fully responsible for providing and installing adequate sheeting, shoring and bracing as may be necessary as a precaution against slides or cave-ins and to fully protect all existing improvements of any kind from damage.

The Contractor shall obtain a permit from the Division of Industrial Safety (Cal-OSHA) and shall submit a copy of the approved permit to the City Engineer prior to the start of excavation. The cost of the permit shall be included in the total bid cost. Nothing in this section shall be construed to impose tort liability on the awarding body or any of its employees.

The criteria given by the California Department of Industrial Relations are MINIMAL. In addition to shoring any excavation, it shall be the Contractor's responsibility to provide any and all additional shoring required to support the sides of the excavation against the effects of loads which may exceed those derived by using the criteria set forth by said governing agency. The Contractor shall be solely responsible for any damages which may result from the Contractor's failure to provide adequate shoring to support the excavations under any or all of the conditions of loading which may exist or which may arise during construction.

Full compensation for performing the work described above shall be considered as included in the lump sum payment for "Trench Shoring" and no additional compensation will be allowed therefor.

7-1.01G Water Pollution - The following is to be added: All water pollution control work performed in accordance with the accepted program which is not otherwise required under the contract and which is ordered by the Engineer will be paid for as follows:

1. Such water pollution control work that may be accomplished under the various contract items of work will be measured and paid for as provided for under the contract.
2. Such water pollution control work not covered by contract items will be paid for as extra work as provided for in Section 4-1.03D.

7-1.02 Weight Limitations - The following is to be added: The Contractor will be permitted to operate unladen vehicles and to haul Portland cement concrete for paving on completed cement treated base, provided that:

- (1) The cement treated base has cured for 7 days;
- (2) Hauling is limited to the lane immediately adjacent to the median in each direction;
- (3) Maximum weight limitations set forth in Division 15 of the Vehicle Code are not exceeded; and
- (4) Block cracking does not occur under hauling operations.

If block cracking occurs, the Engineer may order said loads to be reduced so that the maximum weight upon any one wheel, or wheels, supporting one end of an axle, and resting upon the roadway, will not exceed 9,000 pounds. The Contractor shall not be entitled to any additional compensation nor extension of contract time by reason of such load reduction.

7-1.06 Safety & Health Provisions - The following shall be added: In all operations connected with the work herein specified, the Contractor shall observe the provisions of the Worker's Compensation and Safety Laws of the State of California, Division IV and V of the Labor Code, and shall use all of the accepted and best safety practices for the public and/or the Contractor's employees.

7-1.07 Sanitary Provisions - The following is to be added: The Contractor shall conform to the rules and regulations pertaining to sanitary provisions established by the State of California as may be applicable.

7-1.08 Public Convenience - The following is to be added: Adequate ingress and egress shall be maintained for fire, police and other emergency vehicles. Adequate ingress and egress shall be maintained at all times for residents, property owners, and business owners. The Contractor may be required to cover certain signs which regulate or direct public traffic to roadways that are not open to traffic.

In the event of a suspension of the work, attention is directed to Section 8-1.05, "Temporary Suspension of Work."

7-1.09 Public Safety - The flagmen shall perform their duties, and the work of furnishing and placing such signs, lights, flags, and other warning and safety devices shall all be performed as set forth in the current "Work Area Traffic Control Handbook" as published by Building News, Inc., Los Angeles, California (310-202-7775, 8:30 AM.-5 PM, M-F).

All safety devices and their maintenance shall conform to the latest requirements of Cal-OSHA and to the applicable provisions of the "Work Area Traffic Control Handbook."

7-1.092 Lane Closure - The following is to be added: Whenever a lane closure is made, the Contractor shall close the lane by placing fluorescent traffic cones, portable delineator, or other devices reviewed by the Engineer, along a taper and along the edge of the closed lane adjacent to public traffic. One telescoping flag tree with flags shall be placed at the beginning and at the end of the taper.

Fluorescent traffic cones shall be of good commercial quality, flexible material suitable for the purpose intended. The outer section of the portion above the base of the cone shall be at least 28 inches. The base shall be of sufficient weight and size or shall be anchored in a manner such that the traffic cone will remain in an upright position.

Portable delineators shall conform to the provisions in Section 7-1.093, "Portable Delineators."

If the traffic cones or portable delineators are damaged, displaced or are not in an upright position from any cause, said cones or portable delineators shall immediately be replaced or restored to their original location, in an upright position, by the Contractor.

Telescoping flag trees shall be of good commercial quality material, suitable for the purpose intended and shall be capable of maintaining an upright position at all times while in use.

The fluorescent traffic cones or portable delineators shall be placed at intervals as directed by the Engineer, but not to exceed 50 feet.

If the work requires that fluorescent traffic cones or portable delineators be placed in the lane open to public traffic, said cones or portable delineators shall be placed on a 1-1/2 foot width of the lane open to traffic along the side adjacent to the lane to be closed.

Traffic cones or portable delineators, telescoping flag trees with flags, and signs shall be placed before beginning work each day and shall be removed from the site of the work at the end of each working day.

The contractor shall specify the time limits of lane closure upon approval by the City Engineer.

Full compensation for furnishing, placing, maintaining and removing the traffic cones and telescoping flag trees with flags required for lane closure, shall be considered as included in the contract prices paid for the items of work requiring the lane closure and no separate payment will be made therefor.

The provisions for lane closure in this Section 7-1.092 will nowise relieve the Contractor from the Contractor's responsibility to provide such devices or measures as may be necessary to comply with Section 7-1.09, "Public Safety."

7-1.093 Portable Delineators - The following is to be added: Portable delineators shall be furnished, placed and maintained in accordance with the provisions in Section 7-1.08, "Public convenience," and 7-1.09, "Public Safety," and as provided in the special provisions.

Portable delineators, including the base shall be composed of a material that has sufficient rigidity to remain upright when unattended and shall be either flexible or collapsible upon impact by a vehicle. The base shall be of such shape as to preclude roll after impact. The base shall be sufficient weight or shall be anchored in a manner such that said delineator shall remain in an upright position.

If the portable delineators are damaged, displaced or are not in an upright position, from any cause, said delineators shall immediately be replaced or restored to their original location, in an upright position, by the Contractor.

The vertical portion of the portable delineators shall be of a brilliant orange or predominantly orange color. The posts shall be not less than 2-1/4 inches in width or diameter or, if tapered, shall have a cross-sectional area of not less than 100 square inches, measured, through the vertical axis of the delineator normal to the roadway. The minimum height shall be 37 inches above the traveled way.

Two 4-inch nominal width reflective bands shall be mounted a minimum 1-1/2 inches apart and at a height on the post so that one reflective band will be between 2.5 feet and 3 feet above the roadway surface.

Reflective bands shall conform to the following:

Reflective bands shall be flexible vinyl plastic, either white or yellow, and shall have not less than the following dry reflectance values at a 0.2 degree divergence angle, expressed in units of candlepower per foot candle square foot. The wet reflectance values shall not be less than 90 percent of the dry values.

Dry Reflectance Value

Angle of Incidence	4°	15°	30°
White	250	165	50
Yellow	150	110	30

All tests for reflectance value shall be performed in accordance with Test Method No. Calif. 642.

Only one type of portable delineator shall be used on the project. The type of portable delineator proposed for use on the project shall be submitted to the Engineer for approval prior to placement on the project.

When work is in progress in a trench or other excavation adjacent to the traveled way, the portable delineators shall be placed on the edge of pavement. At other times, the portable delineators shall be placed off of and adjacent to the edge of pavement.

The portable delineators shall be spaced as necessary for proper delineation as directed by the Engineer but not to exceed 50 feet.

The requirements in this Section 7-1.093 will in no way relieve the Contractor from the Contractor's responsibility to provide such devices or measures as may be necessary to comply with the provisions in Section 7-1.09, "Public Safety."

When no longer required for delineation, the portable delineators shall be removed from the site of the work. Full compensation for conforming to the requirements of this section shall be considered as included in the prices paid for the various contract items of work and no additional compensation will be allowed therefor.

7-1.094 Use of Private Property - The following is to be added: Should the Contractor intend to use privately owned property for the storage of any type of material, or equipment, or for vehicle parking or for any other purpose related to the work, the Contractor shall make the necessary arrangements and shall, precedent to such use, provide the Engineer with satisfactory written evidence that the owner of such property has granted permission of such uses. Prior to the final acceptance of the work, the Contractor also shall provide to the Engineer an acceptable written release from such owner indicating that all of the conditions of such agreement are satisfied.

7-1.12 Indemnification and Insurance - The following is to be added: The duty of the Contractor to indemnify and save harmless, as set forth herein, shall include the duty to defend, as set forth in Section 2778 of the California Civil Code provided, however, that nothing herein shall be construed to require the Contractor to indemnify the City against any responsibility or liability in contravention of Section 2782 of the California Civil Code, including any loss arising from design defect which is the result of the sole negligence of the City.

The Contractor shall, during the life of the contract, take out and maintain insurance coverage with an insurance carrier authorized to transact business in the State of California as will protect the Contractor or any subcontractor or anyone directly or indirectly employed by any of them or by anyone for whose acts any of them may be liable, from claims for damages because of bodily injury, sickness, disease, or death of the Contractor's employees or any person other than the Contractor's employees, or for damages because of injury to or destruction of tangible property, including loss of use resulting therefrom. Contractor shall be aware that the maintenance of proper insurance coverage is a material element of a contract with the City and that failure to maintain or renew coverage or to provide evidence of renewal may be treated as a material breach of contract.

The minimum limits of liability for such insurance coverage which shall include commercial general and automobile liability, including contractual liability assumed under the contract, shall be as follows:

1. Limit of Liability for Injury or Accidental Death

One Person	\$1,000,000
One Accident or Occurrence	\$1,000,000

2. Limit of Liability for Property Damage

Aggregate Liability for Loss	\$1,000,000
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Such liability insurance policies shall name the City as an additional insured by separate endorsement and shall agree to defend and indemnify the City against loss arising from operations performed under the contract and before permitting any subcontractors to perform work under the contract, the Contractor shall require subcontractors to furnish satisfactory proof that insurance has been taken out and is maintained similar to that provided by the Contractor as it may be applied to the subcontractor's work.

The Contractor shall, during the life of the contract, effect and maintain standard form builder's risk property insurance coverage with an insurance carrier authorized to business in the State of California, which shall include extended coverage, malicious mischief, vandalism, and windstorm coverage, and such coverage shall be applicable to those portions of the work that are subject, but not limited to, fire, theft, and vandalism. Coverage shall be

the amount of one hundred percent (100%) of the insured value thereof, including surplus materials and supplies incident to the work, and such scaffoldings, stagings, towers, forms and equipment as are not owned or rented by the Contractor, the cost of which is included in the cost of the work but shall not cover any tools owned by mechanics, any tools, equipment, scaffolding, staging, towers, and forms owned or rented by the Contractor, the capital value of which is not included in the cost of the work. The City shall be named as loss payee with the Contractor in such builder's risk property insurance policies and they shall be open to City's inspection upon City's request. The foregoing Builders Risk Insurance will not be required on work being performed exclusively on public street right-of-ways or utility easements.

The City and the Contractor waive all rights against each other for damages caused by fire or other perils to the extent covered by insurance under such builder's risk property policies, except such rights as they may have to the proceeds of such insurance coverage and the Contractor shall require similar waivers by subcontractors.

If the Contractor fails to effect and maintain the required builder's risk property insurance coverage, the City may insure its own interest. The City may deduct the cost of taking out, effecting and maintaining such liability and/or builder's risk property insurance coverages from any sums which may be due, or become due, to the Contractor, under the contract.

Evidence of both liability and builder's risk property insurance coverages shall be furnished to the City with form of certificates with endorsements prior to the commencement of the work and said certificates with endorsements shall contain a provision that the coverage or coverages thereunder will not be canceled until at least thirty (30) days prior written notice has been given to the City. The form of the Certificate of Insurance shall be as shown on the following pages of these Standard Specifications.

BROKER/AGENT INSURANCE CHECK LIST

Instructions: Please follow the format below for issuing the Certificate of Insurance to the City of Stockton. Broker/Agent must return completed certificates and endorsement to Risk Management – 425 North El Dorado Street, Stockton, CA 95202, prior to the start of any job.

General Contract Information:

- Name of Individual/Company: _____
- Address of Individual/Company: _____
- Contact Person: _____ Telephone: _____

PLEASE LIST THE FOLLOWING INFORMATION ON THE CERTIFICATE OF INSURANCE IN THE AREA TITLED "DESCRIPTION OF OPERATIONS."

- Contract Effective Date: ____/____/____
- Contract Expiration Date: ____/____/____
- Job Title: _____

Risk Management Requirements:

Fax completed Certificate of Insurance and "Additional Insured" Endorsement with original mailed to:

***CITY OF STOCKTON
425 N. EL DORADO STREET
STOCKTON, CA 95202
(209) 937-8833 – FAX
(209) 937-8629 - OFFICE***

SAMPLE CERTIFICATE AND ENDORSEMENT ATTACHED

NOTE: BROKER IS RESPONSIBLE FOR NOTIFYING THE CITY OF STOCKTON IF ANY CHANGES IN INSURANCE OR EXPIRATION OF INSURANCE TAKES PLACE.

ACORD CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YY)

PRODUCER	THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.
	INSURERS AFFORDING COVERAGE
INSURED	INSURER A.
	INSURER B.
	INSURER C.
	INSURER D.
	INSURER E.

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS
	GENERAL LIABILITY <input type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS MADE <input type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PROJECT <input type="checkbox"/> LOC				EACH OCCURRENCE \$ FIRE DAMAGE (Any one fire) \$ MED EXP (Any one person) \$ PERSONAL & ADV INJURY \$ GENERAL AGGREGATE \$ PRODUCTS - COMP/OP AGG \$
	AUTOMOBILE LIABILITY <input type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> NON-OWNED AUTOS				COMBINED SINGLE LIMIT (Ea accident) \$ BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$
	GARAGE LIABILITY <input type="checkbox"/> ANY AUTO				AUTO ONLY - EA ACCIDENT \$ OTHER THAN AUTO ONLY: EA ACC \$ AGG \$
	EXCESS LIABILITY <input type="checkbox"/> OCCUR <input type="checkbox"/> CLAIMS MADE <input type="checkbox"/> DEDUCTIBLE <input type="checkbox"/> RETENTION \$				EACH OCCURRENCE \$ AGGREGATE \$ \$ \$ \$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY				<input type="checkbox"/> WC STATUTORY LIMITS <input type="checkbox"/> OTHER E.L. EACH ACCIDENT \$ E.L. DISEASE - EA EMPLOYEE \$ E.L. DISEASE - POLICY LIMIT \$
	OTHER				

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/EXCLUSIONS ADDED BY ENDORSEMENT/SPECIAL PROVISIONS:

CERTIFICATE HOLDER	ADDITIONAL INSURED, INSURER LETTER:	CANCELLATION
CITY OF STOCKTON, RISK MGMT. DIVISION CITY HALL ANNEX 6 EAST LINDSAY STREET STOCKTON, CA 95202		SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL MAIL <u>30</u> DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT. AUTHORIZED REPRESENTATIVE

INSURED:

POLICY NUMBER:

COMMERCIAL GENERAL LIABILITY

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY

**ADDITIONAL INSURED--OWNERS, LESSEES
OR CONTRACTORS (FORM B)**

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART.

SCHEDULE

Name of Person or Organization:

CITY OF STOCKTON, ITS OFFICERS, AGENTS AND EMPLOYEES
425 N. EL DORADO STREET
STOCKTON, CA 95202-1997

(If no entry appears above, information required to complete this endorsement will be shown in the Declarations as applicable to this endorsement.)

WHO IS AN INSURED (Section II) is amended to include as an insured the person or organization shown in the Schedule, but only with respect to liability arising out of "your work" for that insured by or for you.

Signature
Authorized Representative

7-1.125 Legal Actions Against the City - In the event litigation is brought against the City concerning compliance by the City with State or Federal laws, rules, or regulations applicable to highway work, the provisions of this Section 7-1.125 shall apply.

7-1.13 Disposal of Materials Outside the Street or Other Right of Way - The following is to be added: Material disposal shall be in accordance with the requirements of the General Permit and/or the SWPPP, including the erosion and sediment control and post-construction storm water management requirement.

7-1.15 Relief from Maintenance and Responsibility - Delete the entire section in Caltrans and replace it with the following: Upon the request of the Contractor, the Director may relieve the Contractor of the duty of maintaining and protecting certain portions of the work which have been completed in all respects in accordance with the requirements of the contract and to the satisfaction of the Engineer, and thereafter except with the Contractor's consent, the Contractor will not be required to do further work thereon. In addition, such action by the Director will relieve the Contractor of responsibility for injury or damage to said completed portions of the work resulting from use by public traffic or from the action of the elements or from any other cause but not from injury or damage resulting from the Contractor's own operations or from the Contractor's negligence.

However, nothing in this Section 7-1.15 providing for relief from maintenance and responsibility will be construed as relieving the Contractor of full responsibility for making good defective work or materials found at any time before the formal written acceptance of the entire contract by the Director.

7-1.165 Damage by Storm, Flood, Tidal Wave or Earthquake - The following is to be added:
G. Termination of Contract - If the City determines to terminate the contract and relieve the Contractor of further obligation to perform the work, a contract change order so providing will be issued. Such change orders may provide for the Contractor to perform any work deemed by the Engineer as necessary to put the project in satisfactory condition for the termination of all work, and the Contractor will be paid for such work in accordance with Section 9-1.03, "Force Account Payment." Upon the issuance of such change order the Contractor will be relieved of further responsibility for damage to the work (excluding materials) as specified in Section 7-1.16, "Contractor's Responsibility of the Work and Materials," and will not be required to perform any further work on the project other than that specified in the change order.

When the Engineer determines that the work specified in the change order has been completed, the Engineer will proceed as set forth in Section 7-1.17, "Acceptance of Contract," and the Contractor will not be required to perform any further work thereon, and shall be relieved of the Contractor's responsibility for injury to persons or property.

Payment after acceptance will be subject to the provisions in Section 9-1.07, "Payment After Acceptance." The Contractor will be paid for the work done prior to the Occurrence (as defined in Section 7-1.165 of Caltrans specifications) at the applicable contract prices; the Engineer will determine the value of partially completed work by apportioning such price. If the Contractor has placed orders prior to the Occurrence for materials specially manufactured for the project and which are not suitable for use in other City projects or sale to others in the ordinary course of the seller's business, the Contractor will be paid the actual cost to the Contractor for such material or the cancellation charges, if any, for such order made by the vendor. The determination of whether the order shall be completed or canceled shall be made by the Engineer. Any material paid for shall become the property of the City and actual cost of any further handling will be paid for. The actual cost or charges to be paid will be computed in the same manner as if the work were to be paid for on a force account basis, as provided in Section 9-1.03, "Force Account Payment." No payment will be made for materials which have been damaged and are not acceptable for incorporation in the work in accordance with the requirements of the contract. The Contractor shall pay the City any amounts previously paid for such unacceptable material, and agrees that the City may deduct the amount thereof from any moneys due or which may become due to the Contractor under the contract.

7-1.17 Acceptance of Contract - The following is to be added: When the Engineer has made the final inspection as provided in Section 5-1.13, "Final Inspection," and determines that the contract work has been completed in all respects in accordance with the Standard Specifications and Plans, the Engineer will file a "Notice of Completion" with the County Recorder and immediately upon and after such filing, the Contractor will be relieved of the duty of maintaining and protecting the work as a whole, and will not be required to perform any further work thereon, and the Contractor shall be relieved of the Contractor's responsibility for injury to persons or property or damage to the work which occurs after such filing.

7-1.21 Repair of Equipment – The following is to be added: Maintenance practices shall be in accordance with the BMPs in the SWPPP and requirements of the General Permit.

7-1.23 Guaranty (General) - The following is to be added: The Contractor hereby unconditionally guarantees that the work will be done in accordance with the requirements of the contract, and further guarantees the work of the contract to be and remain free of defects of workmanship and materials for a period of one (1) year from the date of acceptance of the work as complete, unless a longer guarantee period is specifically required. The Contractor hereby agrees to repair or replace any and all work, together with any other adjacent work which may be displaced in so doing, that may prove to be not in accordance with the requirements of the contract or that may be defective in its workmanship or material within the guarantee period specified, without any expense whatsoever to the City, ordinary wear and tear and unusual abuse or neglect excepted.

Contract bonds are to be in full force and effect during the guarantee period.

The Contractor further agrees, that within ten (10) calendar days after being notified in writing by the Department of Public Works of any work not in accordance with the requirements of the contract or any defects in the work, the Contractor will commence and prosecute with due diligence all work necessary to fulfill the terms of this guarantee, and to complete the work within a reasonable period of time, and in the event the Contractor fails to so comply, the Contractor does hereby authorize the City to proceed to have such work done at the Contractor's expense and the Contractor will pay the cost thereof upon demand. The City will be entitled to all costs, including reasonable attorneys fees, necessarily incurred upon the Contractor's refusal to pay such costs.

Notwithstanding the foregoing paragraph, in an event of an emergency constituting an immediate hazard to the health and safety of the City's employees, property or the public at large, the City may undertake at the Contractor's expense without prior notice all work necessary to correct such hazardous condition when it was caused by work of the Contractor not being in accordance with contract requirements.

7-1.24 Guarantees (Specific) - The following is to be added: In addition to the general guarantee specified in Section 7-1.23, certain specific guarantees or warranties in excess of one year may be required by the special conditions. In such case, the items of work requiring specific guarantees shall be listed in the general conditions together with the various specified tenures of guarantee.

The Contractor shall provide a written guarantee for those items specified in the special provisions. The form of the guarantee shall be approved by the City. A separate guarantee shall be provided for each item, and shall include the scope and tenure as specified in the special provisions. The guarantee shall be signed by the general Contractor and by the Subcontractor or supplier who furnished materials or did work on the item.

Irrespective of counter-signature on the guarantee form, it shall be the general Contractor's responsibility to replace any work, together with any other adjacent work displaced in so doing which may be necessary to comply with the terms of the contract or which may be defective in workmanship or material. For the purposes of this section, the City will only recognize the Subcontractor or supplier as an employee of the General Contractor.

Special non-cancelable bonds shall be provided by the General Contractor or the General Contractor's Subcontractor or supplier to hold specific guarantees or warranties in effect for the specified tenure and in a specified amount agreeable to the Director of Public Works.

Said forms shall be signed, notarized and delivered to the Director of Public Works along with the special bonds required prior to any final retention payment to the Contractor.

SECTION 8

PROSECUTION AND PROGRESS

8-1.01 Subcontracting - The following is to be added to the third paragraph: The Engineer may also determine, on a case by case basis, items to be designated "Specialty Items." Where an entire item is subcontracted, the value of work subcontracted will be based on the contract item bid price.

8-1.02 Assignment - The following is to be added: No contract or portion thereof may be assigned without consent of the City of Stockton except that the contractor may assign money due, or which will accrue to them, under the contract. If given written notice, such assignment will be recognized by the City of Stockton to the extent permitted by law, but any assignment of money shall be subject to all proper setoffs and withholdings in favor of the City of Stockton and to all deductions provided for in the contract. All money withheld, whether assigned or not shall be subject to being used by the City of Stockton for completion of the work, should the contract be in default.

8-1.03 Beginning of Work - The following includes changes and/or additions: The Contractor shall begin work after the contract has been approved by the City Attorney and within ten (10) days after being given notice to proceed or otherwise as may be stated in the Special Provisions. Once started the Contractor shall diligently prosecute the same to completion within the time limit provided in the special provisions.

The Contractor shall arrange a pre-construction conference with the Public Works Department. Notice shall be given to the Public Works Department at least 72 hours in advance of the Contractor's intent to have a pre-construction conference. No work may be performed prior to a pre-construction conference.

The following is to be added:

(See Caltrans Standard Specifications for numbers (1) through (4))

(5) Notice in writing of the Contractor's intentions to start work prior to approval, specifying the date on which the Contractor intends to start, shall be given to the Engineer at least 24 hours in advance.

(6) Attending a pre-construction conference.

8-1.06 Time of Completion - The following is to supersede Caltrans Specifications: A working day is defined as any day, except Saturdays, Sundays, and City of Stockton legal holidays and days on which the Contractor is specifically required by the special provisions to suspend construction operations, and except days on which the Contractor is prevented by

inclement weather or conditions resulting immediately therefrom adverse to the current controlling operation or operations, as determined by the Engineer, from proceeding with at least 75 percent of the normal labor and equipment force engaged on such operation or operations for at least 60 percent of the total daily time being currently spent on the controlling operation or operations.

Should the Contractor choose to work on a Saturday, Sunday, or on a holiday recognized by the Labor Unions and/or the City, the Contractor shall reimburse the City of Stockton the actual cost of engineering, surveying, inspection, superintendence, and/or other overhead expenses which are directly chargeable to the contract. Should such work be undertaken at the request of the City, reimbursement will not be required.

8-1.08 Termination of Control - The following contains a change: The Contractor will be required to cooperate with the utilities and others during the rearrangement of utility and other improvements or street facilities, and any delay caused by the rearrangement will not be considered as right of way delays.

SECTION 9

MEASUREMENT AND PAYMENT

9-1.00 Lump Sum Contracts - The following is to be added: When required by the Special Provisions or requested by the Engineer, the Contractor shall submit to the Engineer within 15 days after award of contract, a detailed schedule in triplicate, to be used only as a basis for determining progress payments on a lump sum contract or any designated lump sum bid item. This schedule shall equal, in total, the lump sum bid and be in such form and sufficiently detailed as to satisfy the Engineer that it correctly represents a reasonable apportionment of the lump sum.

9-1.045 Determination of Rights - The following includes changes and/or additions: If the total monetary amount of all the Contractor's claims arising under or by virtue of the contract does not exceed \$25,000, such claims are subject to determination of rights under the contract by a hearing officer of the City Council of the City of Stockton.

The party seeking a determination of rights shall give notice in writing of the claim to the other party and to the City Council of the City of Stockton, setting forth therein the facts on which the claim is based. Such notice shall be given not later than 6 months after the issuance of the final estimate.

The City Council of the City of Stockton will appoint a hearing officer to hear such claim within 60 days after such notice but not before completion of the contract unless the City consents to earlier appointment. The hearing officer will hear and determine the controversy and render the hearing officer's decision in writing within 60 days after the hearing officer's appointment unless otherwise agreed to by the parties or unless for good cause the hearing officer extends such time. Each party shall bear its own costs and shall pay 1/2 of the cost of the hearing.

Rules and regulations adopted by the City Council of the City of Stockton pursuant to Section 14380 of the Government Code will govern the conduct of the hearings, including requirements as to pleadings and other documents to be filed. The rules and regulations may be obtained from the City Council of the City of Stockton.

Compliance with the notice requirements of this section does not relieve the Contractor of responsibility for complying with any notice or protest requirements specified in these Standard Specifications (e.g., Sections 4-1.03, "Changes," 8-1.06, "Time of Completion," 8-1.07, "Liquidated Damages," and 9-1.04, "Notice of Potential Claim") nor does compliance with the notice requirements of this section relieve the Contractor of responsibility for complying with the claims submission requirements in Section 9-1.07B, "Final Payment and Claims."

The notices required by this section shall be sent as follows: (a) to the City Council of the City of Stockton, 425 N. El Dorado Street, Stockton, California 95202; (b) to the Department; (c) to the Contractor: such notices will be sent to the business address set forth in the proposal.

If the address to which the notice to the City Council of the City of Stockton or to the Department is to be changed, the Department will notify the Contractor in writing of such change. The Contractor may change the address to which such notices are to be sent to the Contractor by giving the Department written notification of such change of address.

9-1.06 Partial Payments - Delete all of the third paragraph which states "The Department shall retain...file with the Department." Replace the third paragraph with the following: The City shall retain 10% of such estimated value of the work done and 10% of the value of materials so estimated to have been furnished and delivered and unused or furnished and stored as aforesaid as part security for the fulfillment of the contract by the contractor.

The 10% retention will remain with the City until 35 days after the date the notice of completion was recorded on.

9-1.07B Final Payment and Claims - Delete all of Section 9-1.07B from Caltrans Specifications and replace it with the following changes and additions:

After the work is completed, the Engineer will provide a proposed balancing change order, in writing, stating the total amount payable to the Contractor, including therein an itemization of said amount, segregated as to contract item quantities, extra work and any other basis for payment, and shall also show therein all dedications made or to be made for prior payments and amounts to be kept or retained under the provisions of the contract. All prior estimates and payments shall be subject to correction in the proposed balancing change order. The Contractor shall check the balancing change order and submit a written statement of all claims the Contractor has arising under or by virtue of the contract. No claim will be considered that was not included in which a notice or protest is required under the provision in Sections 4-1.03 "Changes," 8-1.06 "Time of Completion," 8-1.07 "Liquidated Damages," 8-1.10 "Utility and Non-Highway Facilities," and 9-1.04 "Notice of Potential Claim," unless the Contractor has complied with the note or protest requirements in said sections. On the Contractor's approval, or if the Contractor files no claim prior to signing the balancing change order, the following will take place:

1. The balancing change order, when signed by the Contractor, indicates that the Contractor agrees to the quantities contained therein as final quantities and the City of Stockton is then to pay up to 90% of the entire contract.
2. At this time, the City will file the Notice of Completion, which constitutes their acceptance of the work.

3. Thirty-five (35) days after the date the Notice of Completion is recorded, the Retention will be released and constitutes the final payment for the work.

If the Contractor files claims prior to signing the balancing change order, the City will revise the balancing change order accordingly if the claims are approved. Such balancing change order and payment shall be conclusive and binding against both parties to the contract on all questions relating to the amount of work done and the compensation payable therefor except as otherwise provided in Sections 9-1.03C "Records," and 9-1.09 "Clerical Errors."

The claims filed by the Contractor shall be in sufficient detail to enable the Engineer to ascertain the basis and amount of said claims. The Engineer will consider and determine the Contractor's claims and it will be the responsibility of the Contractor to furnish within a reasonable time such further information and details as may be required by the Engineer to determine the facts or contentions involved in the Contractor's claims. Failure to submit such information and details will be sufficient cause for denying the claims.

The Director of Public Works will make the final determination of any claims, which remain in dispute after review by the Engineer administering the contract. A board or person designated by said Director will review such claims and make a written recommendation thereon. The Contractor may meet with the Review Board or their staff to make a presentation in support of such claims.

Upon final determination of the claims, the Engineer shall then make and issue the Engineer's final balancing change order in writing and within 30 days thereafter the City will pay the entire sum, if any, found due thereon. Such final balancing change order shall be conclusive and binding against both parties to the contract on all questions relating to the amount of work done and the compensation payable therefor, except as otherwise provided in Sections 9-1.03C "Records," and 9-1.09 "Clerical Errors."

9-1.08 Adjustment of Overhead Costs - This section in Caltrans specifications is to be deleted and is not applicable to projects with the City of Stockton, unless specified otherwise.

SECTION 16

CLEARING AND GRUBBING

The following is added to Section 16-1.03 of the Caltrans Standard Specifications:

Where roots of existing trees are to be pruned, the following specification shall be followed:

All roots pruned shall be cut as smooth as possible with the least amount of surface wood exposed or at a 90 degree angle to the root end cut.

All root cuts made over one (1) inch in diameter shall be painted to seal with an approved type of tree seal paint.

SECTION 19

EARTHWORK

The following is to be added:

19-1.01 General - Lime stabilization may be acceptable as part of roadway structural section design, subject to approval by the Engineer. If approved, Lime Stabilization shall be in conformance with SECTION 24: LIME STABILIZATION.

19-3.066 Controlled Density Fill - CDF will be accepted in lieu of the standard backfill specifications. It shall be mandatory in all situations where the prevention of subsequent settlement after placement of backfill is required and in trenches eight (8) inches wide or less.

19-3.066A Strength Requirements - Non-structural controlled density fill that can be excavated by hand shall produce unconfined compressive 28-day strengths from 50 psi to a maximum of 200 psi. Controlled density fill that is to be excavated by hand shall contain aggregate no larger than 3/8" top size nor shall the 3/8" aggregate comprise more than 30% of the total aggregate content.

Structural controlled density fill shall produce unconfined compressive 28 day strengths from 200 - 1,200 psi, as determined by the project requirements. Coarse aggregate top size and coarse to fine aggregate ratios and contents shall be determined by the clearances surrounding embedded members and the workability requirements.

19-3.066B Materials - Cement shall meet the standards as set forth in ASTM C-150, Type II Cement.

Fly ash shall meet the standards as set forth in ASTM C-618, for Class F pozzolans. The fly ash shall not inhibit the entrapment of air.

Air entraining agent shall meet the standards as set forth in ASTM C-260.

Aggregates need not meet the standards as set forth in ASTM C-33. Any aggregate, producing performance characteristics of the CDF, for any project will be accepted for consideration as follows. The amount of material passing a #200 sieve shall not exceed 12% and no plastic fines shall be present.

19-3.066C Mix Proportions - CDF shall be a mixture of cement, Class F pozzolan, sometimes coarse aggregate, air entraining agent and water. CDF shall be batched by a ready mixed concrete plant and delivered to the job site by means of transit mixing trucks.

The actual mix proportions shall be determined by the producer of the controlled density fill to meet job site conditions, minimum and maximum strengths and unit weight. Entrained air content shall be established for each job with the materials and aggregates to be used to meet the placing and unit weight requirements. Entrained air content may be as high as 20% for fluidity requirements.

19-3.066D Placement - CDF shall be discharged from the mixer by any reasonable means into the area to be filled. CDF shall be brought uniformly to the elevation as shown on the Standard Plans. Trench sections to be filled with CDF shall be contained at either end by bulkheads of earth fill.

All CDF is to be protected (plated) from traffic loading for at least 72 hours. Exception 4-inch wide trenches need not be plated but may not be paved for 72 hours. All CDF is to be protected from freezing for at least 72 hours after placement and may not be placed at temperatures less than 40F. Nonstructural CDF is to be used for installations that may require future maintenance.

19-3.066E Mix Design - Mix design shall be reviewed and approved by the Engineer.

Structural (200-1200 psi) (current spec 150-1200 psi)

With Aggregate

100 lbs Cement
450 lbs Fly Ash
342 lbs (41 gal) Water
1800 lbs Sand
815 lbs Pea Gravel

Without Aggregate (4-inch wide trenches)

100 lbs Cement
450 lbs Fly Ash
342 lbs (41 gal) Water
2625 lbs Sand

Nonstructural (50-200 psi) (current spec 50-150 psi)

With Aggregate

50 lbs Cement
400 lbs Fly Ash
342 lbs (41 gal) Water
1900 lbs Sand
815 lbs Pea Gravel

Without Aggregate (4-inch wide trenches)

50 lbs Cement
400 lbs Fly Ash
342 lbs (41 gal) Water
2725 lbs Sand

Note: Sand and pea gravel weights are dry weights. For all mixes, slump is greater than 8-inches. These are known to be loose, self-consolidating product / process. If for some reason a lower slump (stiffer mixture) is desired, the mix design and work process must be submitted for approval.

The engineer will select the appropriate mix design for the application at the site. The typical mix designs may be modified to suit local conditions and materials.

The following is substituted in place of Sections 19-5.03 and 19-5.04 of the Caltrans Standard Specifications:

19-5.03 Relative Compaction (95 Percent) - A Relative Compaction of not less than 95 percent shall be obtained for a minimum depth of 6 inches (0.5 foot) below the grading plane for the full width of any street and trench section.

19-5.04 Relative Compaction (90 Percent) - A Relative Compaction of not less than 90 percent shall be obtained in all material except as specified herein to be 95 percent or as may be otherwise specified in the Special Provisions, contract plans, or in the City of Stockton Standard Specifications and Plans.

SECTION 24

LIME STABILIZATION

The following are to be added to the appropriate sections of Section 24 of the Cal Trans Standard Specifications:

24-1.03 General – Add the following:

The use of lime stabilization shall be subject to submittal of a mix design prepared by a Contractor-provided licensed geotechnical engineer and approval of same by the Engineer. The approved mix design shall be based on the actual soils to be used and shall specify the type and amount of lime and the type and amount of curing seal to be applied.

The maximum allowable R-value attributable to lime-stabilized soil for purposes of roadway structural design shall be 50.

The maximum allowable design compressive strength attributable to lime-stabilized soil shall be 200 psi.

The gravel equivalency factor for lime-stabilized soil shall be 1.1.

The in-place moisture content of the soil immediately below the lime-stabilized layer shall be maintained above the optimum moisture content, as determined by California Test 373, prior to application of the lime.

A minimum of 4” of aggregate base shall be installed between lime-stabilized soil and asphalt concrete paving unless otherwise approved by the Engineer.

The preparation, spreading, mixing, compaction, rolling, grading and curing of lime-stabilized soil shall be completed under the observation of a Contractor-provided licensed geotechnical engineer who shall submit a Certificate of Compliance, in conformance with SECTION 6-1.07 CERTIFICATE OF COMPLIANCE, for the lime-stabilized soil prior to acceptance by the City.

24-1.05 Spreading - Add the following:

The area to be stabilized by lime treatment shall extend a minimum of two feet beyond the edge of pavement.

24-1.06 Mixing - Add the following:

The minimum depth of lime-stabilized soil shall be 12 inches. An additional three inches of lime-stabilized soil shall be added to all roadway structural design sections as a safety factor.

24-1.07 Compaction – Replace with the following:

Lime-stabilized soil shall be compacted to a relative compaction of not less than 95%.

SECTION 39

ASPHALT CONCRETE

The following is added to Section 39 of the Cal Trans Standard Specifications:

39-9.01 Full Depth Asphalt Concrete -Where a Full Depth section is specified, it shall be placed on a previously prepared subgrade as specified in 19-5.03 (Relative Compaction) to a tolerance of 0.05 foot above or below the subgrade established by the Engineer.

The final grade of the lift below the surfacing course shall not vary more than 0.05 foot above or below the planned grade for that course. The finished surface grade tolerance shall conform to Section 39-6.03 Compacting.

The thickness of the surface course shall be as specified in the Special Provisions, all other asphalt concrete below this point is considered base course.

Tack coat (paint binder) shall be SS-1h or CSS-1h type emulsion conforming to Caltrans Specifications Section 94 of the Standard Specifications. Tack coating as covered in Section 39-4.02, Paragraph 6 will be required before placement of the surface course. Tacking between base courses required at the rate of 0.01 to 0.03 gallons per square yard, if clean, heavier if dirty. Application in excess of .03 gallon per square yard will be at Contractor's expense.

Where Full Depth sections are placed in existing streets with established gutter sections, a continuous wedge shape section of asphalt paving shall be placed against the gutter edge, held below the gutter lip by the amount of the thickness of the surface course and feathered to subgrade in a width of not less than three feet before placement of the level courses, unless otherwise permitted by the Engineer.

Upon completion of all portions of the construction, including utility grade adjustments to finish grade, the surface course shall be placed, gutter lip to gutter lip, for the entire length of the project to provide a smooth uniform riding surface with a minimum of transverse joints for the entire project.

Paving shall feather smoothly into existing pavement. Side street construction shall have a section varying from a uniform cross-slope at ends of curb return to variable or parabolic section as required to match the existing street section. Transition shall be smooth and uniform between the points described above.

39-9.02 Material - Asphalt concrete shall conform to the provisions of Section 39 of the Caltrans Standard Specification. Unless otherwise specified, asphalt concrete shall be Type B.

For low or medium volume local streets, asphalt concrete for surface course paving shall be Type B, ½” maximum, coarse aggregate. Asphalt concrete shall have a viscosity grade of AR-4000 as specified by Caltrans Standard Specification Section 92. Asphalt concrete for base course paving for low or medium volume residential streets may be Type B, ½” maximum, coarse aggregate as specified above for surface course paving or as specified below for all other streets.

Unless otherwise specified or approved by the Engineer, asphalt concrete for base and surface course paving for all other streets shall be Type A, ¾” maximum, medium aggregate. Asphalt concrete shall have a viscosity grade of AR-8000 as specified by Caltrans Standard Specification Section 92.

For non-City projects, the precise asphalt binder content shall be in accordance with a mix design pre-approved by the City Engineer within six months of placement of the asphalt concrete. For City projects, the asphalt oil content shall be as specified in the project specification special provisions. Mix designs shall specify a target value for asphalt binder to be mixed with the aggregate in accordance with California Test No. 367 using proposed aggregate grading in conformance with Section 39-3.03.

Mix designs shall provide for a minimum stability value of 37 at the target asphalt binder value when measured in accordance with California Test No. 366. The minimum cohesiometer value of the fresh mix shall be 50, when measured in accordance with California Test No. 306. Mix designs shall provide not more than 5 percent and not less than 3 percent calculated air voids at the target value when measured in accordance with California Test No. 308A. The maximum swell for mix designs shall be 0.003 inches in 24 hours when measured in accordance with California Test No. 305. The minimum value of stability, after testing for Moisture Vapor Susceptibility (MVS) in accordance with California Test No. 307, shall be 30.

Cleaning and tacking for subsequent base courses will be required as stated in Section 39-9.01.

39-9.03 Placement and Compaction - The maximum compacted thickness of any one base course of asphalt concrete shall be six (6) inches. The maximum compacted thickness of the surface course (1/2" aggregate) of asphalt concrete shall be two and one-half (2.5) inches, and the minimum thickness shall be one (1) inch after compaction. Minimum compacted base course shall be four (4) inches.

A mechanical paving machine shall only be required for spreading the surface course and any leveling courses required.

In lieu of the conflicting provisions of Caltrans Standards Specifications Sections 39-5 and 39-6, asphalt concrete base courses may be spread and compacted by such mechanical means as will provide a surfacing of uniform smoothness and texture in such a manner as to prevent segregation of materials. Approval will be based on demonstrated performance of such equipment.

A prime coat of SC250 or MC250 shall be applied to all aggregate bases to be surfaced. The prime coat shall be applied at an rate of 0.2 gallon per square yard over the entire roadway area to be surfaced.

Rolling of Full Depth base courses shall be from the center of the paving pass to the edge.

The Contractor shall furnish a minimum of one (1) 10-ton steel wheel tandem roller (as specified in Caltrans Section 39-5.02) and one (1) 15-ton pneumatic tired roller.

Alternate compacting equipment or substitution of a vibratory roller for a pneumatic-tired roller will not be permitted, approved or reviewed.

Tire pressure of the pneumatic tire roller at the time of breakdown rolling shall be 90 psi unless a lesser tire pressure is permitted by the Engineer. It is suggested that the pneumatic tire roller have twenty (20) inch rims to help prevent bogging down. The pneumatic tire roller shall be used to break down the spread of asphalt concrete bases and shall operate immediately behind the paver or spreader.

All mixtures shall be spread at a temperature of not less than 250 degrees F. Base material compaction shall be completed before the mix reaches 200 degrees F.

Roller tires shall be preheated and operated hot and dry or have proper spray equipment for use of Roller-Ease to prevent pick up of hot mix.

All courses shall be compacted with a pneumatic roller. In truck routes, each course shall be pneumatic and steel rolled. Rolling shall continue until ruts are eliminated and the proper degree of compaction is achieved. Final rolling of the surface course shall be accomplished with a steel wheel tandem roller.

The surface of the completed base course at any point shall not vary more than 0.02 feet above or below the grade established for surface course placement.

The Contractor will be responsible for construction grades. The City will set a base line and furnish cuts for gutter flowlines and pavement centerline or edge of pavement grade. Base course surface prior to placement of surface course which does not meet the above

requirements shall be planed or filled at the contractor's expense in a manner acceptable to the Engineer that will not damage the existing compacted base and will obtain the required material compaction at required temperature.

SECTION 63

CAST-IN-PLACE CONCRETE PIPE

63-1.05 Construction - Add the following:

The use of cast-in-place concrete pipe shall not be allowed in areas with ground water less than five feet below the pipe soffit.

SECTION 71

SANITARY SEWERS AND STORM SEWERS

NOTE: THIS SECTION IS ADDED IN ITS ENTIRETY TO THE BLANK SECTION IN THE CALTRANS STANDARD SPECIFICATIONS.

Unless specifically differentiated herein, references to Sanitary Sewers also references Storm Sewers (aka. Storm Drains).

71-1.01 Description - This work shall consist of laying sewer pipe and constructing sewer structures as shown on the Project Plans, in accordance with these Standard Specifications and Plans, the Special Provisions and as directed by the Engineer.

The type of sewer pipe and sewer structures will be designated in the contract items.

71-1.02 Materials - Pipe, fittings, miscellaneous materials and the most common joint materials are described in this Section 71-1.02.

Portland cement used in the production of concrete products set forth in this Section 71-1.02 shall be Type II Modified cement conforming to the provisions in Section 90, "Portland Cement Concrete."

71-1.02A Reinforced Concrete Pipe (RCP) - Reinforced concrete pipe shall conform to A.S.T.M. Designation C-76 for the size and classes indicated on the Project Plans. For sanitary sewer applications, RCP shall be used only on sewer lines 36-inch and larger.

71-1.02A(1) Plastic Lining – All RCP used in sanitary sewer applications shall be lined with plastic lining. The full three hundred and sixty degrees (360°) of the interior circumference of all reinforced concrete pipe to be used in Sanitary Sewer Systems shall be sealed and protected with a polyvinyl chloride resin lining. Copolymer resins will not be permitted.

The plastic liner shall be impermeable to sewage gases and liquids and shall be nonconductive to bacterial or fungus growth. The lining shall be impact resistant, flexible, and shall have an elongation sufficient to bridge up to 1/8" settling cracks which may take place in the pipe or in the joint after installation without damage to the lining.

The lining shall be of a type that is permanently and physically embedded into the concrete pipe wall by the T-lock mechanism and shall not rely on an adhesive bond between the lining and pipe wall.

The lining at all pipe joints, and at all joints between individual sheets or sections of lines shall be continuously heat welded by the use of welding strips of the same kind and equivalent thickness of the material as the lines.

The contract shall submit for the Engineer's consideration written information as to the type, size, workmanship and other specifications for the plastic liner the Engineer proposes to use on any installation. Approval of this submission by the Engineer shall be obtained prior to any material being delivered to the job site.

71-1.02B Clay Pipe - Vitrified clay pipe shall conform to the specifications for extra strength pipe of A.S.T.M. Designation C-700 and C-301.

71-1.02C Ductile Iron Pipe - Ductile iron pipe shall comply with ANSI A21.51 (AWWA C151).

71-1.02D Acrylonitrile-Butadiene-Styrene (ABS) Pipe (Sewer Pipe) – Pipe sizes four (4) inch and six (6) inch diameter shall conform to ASTM D2751-80 with minimum wall thickness determined by SDR 35.

Pipe sizes eight (8) through fifteen (15) inch diameter shall conform to ASTM D2680-80 with Type OR or Type SC joints.

71-1.02E Polyvinyl Chloride (PVC) Pipe - All solid wall pipe and fitting in 4” through 15” diameters shall be type PSM SDR-35 PVC, ASTM 3034; 18" through 24" shall be type PS 46 PVC, ASTM F679. Pipe and fittings shall be marked as per ASTM requirements.

Profile wall polyvinyl chloride pipe (PWPVC) may be used for pipe sizes 21-inch through 48-inch.

PWPVC shall be manufactured from a PVC compound having a minimum cell classification of 12364A as defined in ASTM D 1784. Gasket shall meet the requirements of ASTM F 477.

PWPVC shall be closed profile, ASTM F 1803-97 for 21” – 48” diameters with a bell and spigot gasketed joint. The joint shall meet the requirements of ASTM D 3212. The pipe shall have a minimum pipe stiffness when tested in accordance with ASTM D 2412.

Tests for compliance with this specification shall be made according to the applicable ASTM Specifications at the time of manufacturing. The manufacturer shall provide a certificate of compliance with this specification. In addition, the CITY may, at his own expense, station a representative or third party inspector at the site of manufacture to continuously monitor the manufacturing process, and to independently test the pipe to verify conformance with the project specification. Pipe tests and frequency shall be determined by the City.

PWPVC Nominal Dimensions:

Nominal Diameter (in.)	Outside Diameter (in.)	Inside Diameter (in.)
21	22.110	20.75
24	25.040	23.50
27	28.232	26.50
30	31.430	29.50
36	37.800	35.50
42	44.200	41.50
48	50.57	47.50

Unless otherwise approved by the CITY, all pipe shall be unloaded in the original packaging using a forklift with fork arms long enough to reach beyond the last pipe bundle. Do not roll the pipe off of the truck. Pipe shall not be handled or secured using chains or cables; a nylon or textile strap is recommended.

In addition to the requirements reflected in Section 71-1.05 Pipe Laying, the pipe bedding shall be carefully placed and compacted in the haunching. The haunching area extends from the bottom of the pipe to the springline of the pipe. Bedding shall be placed in 6" loose lifts on alternate sides of the pipe. A Tamping bar or shovel shall be used to facilitate bedding consolidation on the lower quadrant of the pipe. The bedding shall be mechanically compacted using hand operated equipment in accordance with the manufacturer's recommendations. The bedding material and its proper placement are the most important factors affecting the performance (side support) of the pipe.

Initial Backfill shall be placed to protect the pipe from dropping of large rocks, large mechanical compaction equipment or other impact loads that may occur during final backfill.

Pipe Deflection Testing: Pipe testing shall be performed in accordance with Section 71-1.11B.

71-1.02F Miscellaneous Iron and Steel - Miscellaneous iron and steel items shall conform to the provisions in Section 75, "Miscellaneous Metal."

71-1.02G Reinforcement - Reinforcement shall conform to the provisions in Section 52, "Reinforcement."

71-1.02H Concrete - Concrete shall conform to the provisions in Section 51, "Concrete Structures," and Section 90, "Portland Cement Concrete."

71-1.02I High Density Polyethylene Pipe (HDPE) - HDPE pipe and fittings shall be made of high density, high molecular weight, Type III, Class C, Category 5, Grade P34 polyethylene meeting the requirements of ASTM D1248 and ASTM F894 unless specified otherwise herein. Wall configurations and thicknesses shall meet the deflection requirements of this section. Crushing and buckling strengths shall exceed that required from the loads anticipated. Pipe selection and deflection design shall also be based upon a pipe stiffness not less than 20 psi and a modulus of soil reaction no greater than 1400. Pipe stiffness shall be tested prior to installation in accordance with ASTM D2412 with a 5% deflection at a rate of 1/2 inches per minute.

71-1.03 Excavation and Backfill - Excavation and backfill shall conform to the provisions shown on City of Stockton Standard Plans No. 50 and 51.

The pipe shall be laid in a trench excavated to the lines and grades designated by the Engineer. The bottom of the trench shall be graded and prepared to provide a firm and uniform bearing throughout the entire length of the pipe barrel.

Suitable excavation shall be made to receive the bell of the pipe and the joint shall not bear upon the bottom of the trench. All adjustment to line and grade shall be made by scraping away or filling in with sand, gravel, or granular material under the body of the pipe, and not by wedging or blocking.

Trenches shall not be left open farther than 100 feet in advance of pipe laying operations or 100 feet to the rear thereof.

The excavation shall be supported so that it will be safe and that the ground alongside the excavation will not slide or settle and all existing improvements, either on public or private property, will be fully protected from damage.

All supports shall be removed after construction is completed and shall be withdrawn in a manner that will prevent the caving of the sides of the excavation. All openings caused by the removal of supports shall be filled with suitable material properly compacted.

71-1.04 Bedding - Bedding shall be defined as that material supporting, surrounding and extending to one foot above the top of the pipe. Where it becomes necessary to remove boulders or other interfering objects at subgrade for bedding, any void below such subgrade shall be filled with the bedding material designated on the Project Plans. Where concrete is specified to cover the pipe, the top of the concrete shall be considered as the top of the bedding.

If soft, spongy, unstable, or other similar material is encountered upon which the bedding material or pipe is to be placed, this unsuitable material shall be removed to the depth specified by the Engineer and replaced with bedding material suitably densified.

Bedding material shall first be placed so that the pipe is supported for the full length of the barrel with full bearing on the bottom segment of the pipe equal to a minimum of 0.5 times the outside diameter of the barrel. Densification of bedding for pipe shall be accomplished after the sheeting or shoring has been removed from the bedding zone. Alternate methods of pipe laying which are recommended by the pipe manufacturer may be used if reviewed by the Engineer. The bedding zone for PVC, ABS, and HDPE pipe shall be mechanically compacted before the remainder of trench is compacted.

Bedding material shall be sand, gravel, crushed aggregate, native free-draining granular material having a sand equivalent of not less than 20 as specified on Standard Plans Nos. 50 and 51 for trench backfilling.

Pea gravel is not acceptable. No aggregate shall exceed 1".

In cases where native material is suitable for use as bedding, the trench may be excavated to point above the invert grade and the trench bottom hand-shaped so that the bottom segment of the pipe is firmly supported on undisturbed material.

Bedding material for HDPE pipe shall be 3/4" crushed rock. The portion of the material that is larger than will pass a 3/8" sieve shall contain at least 50% of particles having three or more fractured faces. Not over 5% shall be pieces that show no such faces resulting from crushing. The gradation of the crushed rock shall be as follows:

<u>Sieve Size</u>	<u>3/4"</u>
1 1/2"	-
1 "	100
3/4 "	90-100
1/2 "	30-60
3/8"	0-20
No. 4	0-5
No. 8	-

This material shall be compacted to the density and level shown on Drawing 51-A.

71-1.05 Pipe Laying - Pipe shall be protected during handling against impact shocks and free fall. Pipe will be carefully inspected in the field before and after laying. If any cause for rejection is discovered in a pipe after it has been laid, it shall be subject to rejection. Any corrective work shall be reviewed by the Engineer and shall be at no cost to the City.

When connections are to be made to any existing pipe, conduit, or other appurtenances, the actual elevation or position of which cannot be determined without excavation, the Contractor shall excavate for, and expose, the existing pipe improvement before laying any pipe or conduit. The Engineer shall be given the opportunity to inspect the existing pipe or conduit before connection is made. When the new facilities interfere with the existing flow

of sewage, the Contractor shall provide satisfactory bypass facilities at the Contractor's expense.

The pipe shall be laid without break upgrade from structure to structure, with bell end upgrade, unless otherwise permitted by the Engineer.

All joints shall be cleaned and then sealed with the type of materials specified or required by the City. In the absence of such requirements the pipe shall be jointed with materials recommended by the pipe manufacturer for the purpose intended, and reviewed by the Engineer, in order to obtain a watertight joint against leakage and infiltration under all conditions of expansion, contraction, and settlement.

Whenever the work ceases for any reason, the end of the pipe shall be securely closed with a tight fitting plug or cover.

Whenever existing pipes are to be cut or abandoned, the open ends of said pipes shall be securely closed by a tight fitting plug or wall of concrete not less than 0.5 foot thick, or by a tight brick wall 0.67 foot thick with cement mortar joints.

Where ground water occurs, the bottom of the trench shall be kept entirely free of water during the pipe laying, filling the joints, and as long thereafter as directed by the Engineer.

All joints shall be carefully cleaned on the inside.

Stoppers for pipes and branches left unconnected shall be made of the same material as the pipe or of resilient joint material conforming to Section 71-1.02J, "Resilient Joint Material." After placing the stopper, it shall be covered with a layer of sealant. The sealant shall be sufficiently fluid to insure free flow around the stopper.

Concrete pipe with elliptical reinforcement shall be laid with the minor axis of the reinforcement cage in a vertical position.

Pipe shall be laid true to line and grade. Any pipe, which is not in true alignment or shows any undue settlement after laying shall be taken up and re-laid at the Contractor's expense.

Pipe sections shall be laid and joined in such a manner that the offset of the inside of the pipe at any joint will be held to a minimum at the invert. The maximum offset at the invert of pipe shall be 1 percent of the inside diameter of the pipe or 3/8 inch (9.5 mm), whichever is smaller.

In joining socket and spigot pipe, the spigot of each pipe shall be so seated in the socket of the adjacent pipe as to give a minimum of 3/8 inch (9.5 mm) annular space all around the pipe in the socket. Unavoidable offsets shall be distributed around the circumference of the pipe in such a manner that the minimum offset occurs at the invert.

Pipe shall be laid true to line and grade. Any pipe which deviates from the engineering alignment by 1/2" or grade by 1/4" or results in a reverse slope or shows any undue settlement after laying shall be taken up and re-laid.

After the joints have been made, the pipe shall not be disturbed in any manner.

During installation, linear expansion and contraction shall be kept below the manufacturer's recommendations. Strutting shall be mandatory for size 36" and larger. A strutting detail shall be reviewed by the City Engineer prior to installation. Pre-deflecting the pipe shall only be permitted subsequent to approval from the City Engineer.

71-1.06 Pipe Joints

71-1.06A Vitrified Clay Pipe - Either polyvinyl chloride or polyurethane compression joints may be used. Materials shall conform to A.S.T.M. Designation C-425.

Joints shall contain two sealing components, one bonded to the outside of the spigot and the other bonded to the inside of the socket. Sealing components shall be a plasticized polyvinyl chloride compound or polyurethane elastomer bonded to pipes and fittings at the pipe factory, and shall be cured to a uniform hardness and compressibility. The sealing components shall be shaped, sized, bonded, and cured in such a manner as to form a tight, dense, and homogenous compression coupling when the joint is assembled. Any imperfection in the sealing components will be cause for rejection.

Upon installation, the meeting surfaces shall be wiped clean of dirt and foreign matter, then an approved lubricant shall be applied to the joint surfaces. The spigot shall be positioned inside the socket and the joint shoved home. For large diameter pipe, a lever attachment or bar cushioned with a wooden block shall be used to shove the joint into place.

In no case shall a bar be used on an unprotected joint surface. Mating surfaces shall be in tight contact with each other upon completion of the joint installation.

Polyvinyl chloride joints may be used on curves, provided that the radius of curvature is not less than shown in the following table, unless beveled pipe or shorter lengths are provided:

Pipe Size Inches	Maximum Pipe Length Feet	Minimum Radius of Curvature Feet	Maximum Deflection
6	5	100	2° 00'
8	5	100	2° 00'
8	6	115	2° 00'
10	5	185	1° 33'
10	6	220	1° 33'
12	5	215	1° 20'
12	6	260	1° 20'
15	5	275	1° 03'
15	6	330	1° 03'

Polyurethane joints may be permitted for use on curves, provided that the radius of curvature is not less than shown in the following table, unless beveled pipe or shorter lengths are provided.

Pipe Size Inches	Maximum Pipe Length Feet	Minimum Radius of Curvature Feet	Maximum Deflection
6	5	100	2° 00'
8	5	100	2° 00'
8	6	115	2° 00'
10	5	170	1° 41'
10	6	205	1° 41'
12	5	150	1° 54'
12	6	180	1° 54'
15	5	190	1° 32'
15	6	225	1° 32'
18	5	225	1° 16'
18	6	275	1° 16'
21	5	265	1° 06'
21	6	315	1° 06'
24	5	240	1° 12'
24	6	290	1° 12'
27	5	270	1° 04'
27	6	325	1° 04'
30	5	300	0° 58'
30	6	360	0° 58'
33	5	275	1° 03'
33	6	330	1° 03'
36	5	295	0° 59'
36	6	355	0° 59'
39	5	325	0° 54'
39	6	385	0° 54'
42	5	345	0° 50'
42	6	415	0° 50'

71-1.06B Reinforced Concrete Pipe. All reinforced concrete sanitary sewer pipe shall be joined with rubber gasket joints.

Rubber gasket joints shall conform to the requirements of A.S.T.M. Designation: C443 and shall be flexible and able to withstand expansion, contraction and settlement.

All rubber gaskets shall be stored in as cool a place as practicable, preferably at 70° or less, and in no case shall the rubber gaskets be exposed to the direct rays of the sun for more than 72 hours.

Rubber gaskets, of the type requiring lubrication, shall be lubricated with the lubricant recommended and supplied by the manufacturer of the pipe.

The ends of the pipe shall be so formed that when the pipes are laid together and joined, they shall make a continuous and uniform line of pipe with a smooth and regular surface.

Joints shall be water-tight and flexible. Each joint shall contain a solid gasket of rubber or other material approved by the Engineer, which shall be the sole element responsible for water-tightness of the joint. This gasket shall be of circular cross section unless otherwise approved by the Engineer. The length and cross sectional diameter of the gasket, the annular space provided for the gasket, and all other joint details shall be such as to produce a water-tight joint. The slope of the longitudinal gasket contact surfaces of the joint with respect to the longitudinal axis of the pipe shall not exceed 2°.

Under ordinary laying conditions, the work shall be scheduled so that the socket end of the pipe faces in the direction of laying. Prior to placing the spigot into the socket of the pipe previously laid, the spigot groove, the gasket and the inside of the socket shall be thoroughly cleaned. Then the spigot groove, the gasket and the first 2 inches (50.8 mm) of the inside surface of the socket shall be lubricated with a soft vegetable soap compound.

The gasket shall be uniformly stretched when placing it on the spigot so that the gasket is distributed evenly around the circumference. The gasket shall be lubricated as per manufacturer's recommendations.

For pipe in which the inside joints are to be pointed, suitable spacers shall be placed against the inside shoulder of the socket to provide the proper space between abutting ends of the pipe.

After the joint is assembled, a thin metal feeler gage shall be inserted between the socket and the spigot and the positions of the gasket checked around the complete circumference of the pipe. If the gasket is not in the proper positions, the pipe shall be withdrawn, the gasket checked to see that it is not cut or damaged, the pipe relaid, and the gasket position again checked.

71-1.06C Ductile Iron Pipe. Ductile iron pipe joints shall comply with the following requirements:

<u>Type of Joint</u>	<u>Specification</u>
Rubber Gasket Push-On Joint	ANSI A21.11 (AWWA C111)
Mechanical Joint	ANSI A21.11 (AWWA C111)
Flanged Joint	ANSI B16.1, B.16.2, and A21.10 (AWWA C110)
Flanged Joint (Threaded Flanges)	ANSI B2.1

All rubber gasket, push-on, mechanical and flanged joint fittings for ductile iron pipe shall be manufactured in accordance with ANSI A21.10 (AWWA C110).

Slip-On Joint - The gasket and gasket seal inside the socket shall be wiped clean before the gasket is inserted. A thin film of soft vegetable soap compound shall be applied to the gasket and the outside of the spigot end of the pipe. The spigot shall then be positioned inside the socket and shoved home. Lubricant other than that furnished with the pipe shall not be used.

Mechanical Joints - The outside of the spigot and the inside of the socket shall be thoroughly cleaned of foreign matter. The gland and gasket shall then be slipped onto the spigot end of the pipe. The gasket shall be pressed evenly into the socket only after the spigot is seated in the socket. The gland shall be brought up evenly by tightening alternately the nuts spaced 180° apart. Bolts and nuts shall be coated with mastic following tightening.

Flanged Joints - Flanged Joints shall be firmly and fully bolted with machine bolts of proper size. Full circle reinforced neoprene rubber gaskets 1/16" thick shall be used at all flanged joints. Bolts and nuts shall be coated with mastic following tightening.

71-1.06D ABS Sewer Pipe

1. Pipe lengths and fittings shall be joined by utilizing elastomeric gaskets as referenced in A.S.T.M. D-2680 and D-2751 and meeting the requirements of A.S.T.M. D-3212 "Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals," or solvent weld joints.

Solvent weld joint or usage shall conform to A.S.T.M. F-402 "Safe Handling of Solvent Cements and Primers Used for Joining Thermoplastic Pipe and Fittings," and the following requirements:

- a. All ABS pipe joints, fittings and surfaces to be joined by solvent welding shall be connected with adhesive cement conforming to A.S.T.M. D2680 for ABS composite sewer pipe or to A.S.T.M. D2751 for 4-inch and 6-inch ABS solid wall pipe.
- b. Prior to joining ABS pipe joints, fittings and surfaces, dirt, mud or any other foreign material shall be thoroughly removed and cleaned from the joints, fittings and surfaces to be joined.
- c. A coat of adhesive cement shall be liberally and thoroughly applied to the joints, fittings and surfaces to be joined. After application of the adhesive cement, the pipe joints, fittings, and surfaces to be joined shall be immediately fitted and joined without interruption.

For bell and spigot connections, the spigot end of each pipe shall be fitted to the full depth of the bell socket.

- d. When the temperature is below 40° F., a primer shall be applied to the pipe surface to be cemented and joined.

2. Reducing Wyes:

- a. Reducing wyes for service laterals shall be either saddle type wyes or in-line bell and spigot type wye fittings. All reducing wyes shall be premoulded and factory fabricated.

- b. Saddle Fittings:

1. In addition to the solvent welding of the saddle to the main pipeline, the saddle type wye shall be attached to the main pipeline with a stainless steel clamp.
2. Tapping hole for saddle fittings shall be cut with a cutting instrument. The hole shall be of the same size and shape of the lateral pipe surface.

3. Exposed Pipe Cross-Sections:

Exposed cross-sections of the ABS composite sewer pipe shall be coated with adhesive cement prior to connection of pipe joints, fittings and surfaces.

4. Maintenance Hole Connections:

Maintenance hole connections shall be by rubber ring water stop installed on pipe and cast in center of maintenance hole wall or four (4) inches from outside face of maintenance hole base. Pipe section on water stop at maintenance hole shall have bell flush with outside of maintenance hole or no more than ten (10) inches outside maintenance hole.

71-1.06E PVC Pipe

1. All joints shall be integral wall bell and spigot configuration, factory formed in accordance with ASTM D3212. All rubber rings shall conform to A.S.T.M. F-477.
2. Reducing wyes for service laterals shall be in line bell and spigot type, factory moulded.
3. Saddle fittings for lateral connection will be permitted; solvent welded.
4. Maintenance hole connections shall be by rubber ring water stop installed on pipe and cast in center of maintenance hole wall or four (4) inches from outside face of maintenance hole base. Pipe section on water stop at maintenance hole shall have bell flush with outside of maintenance hole or no more than ten (10) inches outside maintenance hole.

71-1.06F HDPE Pipe

Joints for HDPE shall be bell and spigot or butt-fusion type. Bell and spigot types shall have an elastomeric gasket which will be compressed radially to form a watertight seal. The joint shall be designed to avoid displacement of the gasket when installed with the manufacturer's recommendations.

71-1.07 Deformation Testing - Following the placement and compaction of backfill and prior to placement of permanent pavement, the Contractors shall perform a deflection test on the pipe. If the pipe should fail the deflection test, the Contractor shall uncover the pipe and make adjustments in the bedding and/or backfill conditions that will be necessary to achieve a passing test. The trench shall be backfilled and street subgrade shall be recompacted and the pipe retested. Any corrective measures found necessary to meet the deflection requirements, including recompaction and regrading of the street subgrade, shall be included in the unit price bid for the sanitary sewer pipe.

See Section 71-1.11 for method and extent required.

- a. Maximum deflection for ABS composite sewer pipe installed is 4%.

71-1.08 Existing Maintenance Holes - Existing maintenance holes shall be adjusted to grade, remodeled or abandoned as shown on the Project Plans and in accordance with the provisions in Section 15, "Existing Highway Facilities."

When designated on the Project Plans, or directed by the Engineer, existing maintenance hole frames and covers shall be reset on new structures. Upon completion of the adjustment of existing maintenance holes to grade, the maintenance hole cover shall conform to the planned surface as specified for the finished asphalt concrete surface, Section 39.

All existing maintenance holes, lampholes and terminal cleanout frames and covers that are removed become the property of the City of Stockton.

71-1.09 Sewer Structures - New maintenance holes, lampholes, terminal cleanout structures, and pipe chimneys for sewers shall be constructed in accordance with the details shown on the Standard Plans, as specified in this Section 71-1.09 and as directed by the Engineer.

Precast maintenance hole, pipe maintenance holes shall conform to the Standard Plans, the Project Plans, and the applicable sections in Section 70.

Maintenance hole frames shall be secured to the maintenance hole cover and riser barrels with full mortar bed or full circle concrete collar that will effectively secure the frame to the maintenance hole structure and provide a uniform bearing for the frame.

Concrete for sewer structures shall be Class A as described in Section 90-1.01. Concrete for sewer maintenance bases shall be Class B.

When the maintenance hole is located in the pavement area, it shall not be constructed to final grade until pavement has been completed.

Where new work is jointed to the surface of unfinished work, the latter shall be thoroughly cleaned.

All joints on the inside of structures and sewers shall be neatly struck and pointed where plastering is not specified on the plans.

The inside bottoms of existing maintenance holes, where new connections are made, and of new maintenance holes shall be shaped to provide channels conforming to the size and shape of the lower portion of the inlets and outlets of the maintenance holes. The channels shall vary uniformly in size and shape from inlet to outlet.

No pipe shall project more than 0.17 foot into a maintenance hole and in no case shall the bell of a pipe be built into the wall of a maintenance hole or structure.

All concrete shall be cured for a period of not less than 10 days after being placed and shall be protected from damage.

71-1.09A Maintenance Hole Interior Linings and Coatings

General - The interior of all new maintenance holes along sanitary sewer lines 24" and larger, which will be maintained by the City, shall be either lined or coated. In addition, the interior of any existing City Maintenance hole(s), downstream from a new Sanitary Sewer system, determined by the City Engineer, to be adversely affected by the additional sewage, shall be either lined or coated.

Material - If lined, the material shall be made of polyvinyl chloride and conform to the requirements as set forth in Section 71-1.02A(1).

If coated, the coating shall be resistant to attack from the following: bleaches; sulfuric, acetic, hydrochloric, phosphoric, nitric, chromic, oleic, and stearic acids; sodium and calcium hydroxides; ammonium, sodium, calcium, magnesium, and ferric chlorides; ferric sulfate, hydrogen sulfides, petroleum oils and greases, vegetable and animal oils, fats, greases, soaps and detergents. The coating shall be impermeable to sewage gases and liquids and shall be non-conductive to bacterial or fungus growth.

Acceptable coatings are as follows:

<u>PRODUCT NAME</u>	<u>PRODUCT TYPE</u>	<u>MANUFACTURER</u>
120 Vinester	Vinylester Mortar	Tnemic Company, Inc.
Chesterton 798	Epoxy Mortar	A.W. Chesterton Company
Concresive 1305	Epoxy	Adhesive Engineering Company
Hydro-pox	Epoxy	Con-Tech
I.E.T. System 3	Polyester Mortar	Integrated Environmental Technologies
I.P.I. Crystal Quartz	Epoxy Mortar	Integrated Polymer Industries, Inc.
Lining No. 210	Epoxy	Sauereisen Cements
Maga Quartz	Epoxy Mortar	Belzona Molecular, Inc.
Mainstay DS-4	Epoxy Mortar	Mainstay Corporation
Quantum	Polyester Mortar	Polymorphic Polymer's Corporation
Semstone 140S	Epoxy Mortar	Sentry Polymers

The City Engineer, at the City Engineer's discretion may , at any time, determine that a product is not suitable for specific applications. Additionally, this list may be reviewed annually by the Materials Review Committee and products may be determined not suitable for specific applications.

Surface Preparation - For coatings, it is the intent of this standard that the application surface be clean and dry. Surfaces shall be cleaned to achieve an ASTM D-4259 Standard by abrasive blast cleaning methods. All surfaces shall be cleaned to remove all dirt, dust, corrosion products, loose concrete, debris, grease, oils, growths and foreign matter. On new concrete and metal surfaces, a sandblasting shall be used to remove all laitance. Coatings shall be applied only to a sound clean surface profile consistent with the manufacturer's published recommendation.

New concrete shall be aged no less than 30 days prior to application.

Cracks, joints, eroded and damaged areas shall be sealed with a compatible grout/putty as recommended by the coating manufacturer prior to the application of the coating material.

Application - All coating materials shall be applied in a manner and thickness consistent with the manufacturer's published recommendation.

All coatings shall be applied in a manner consistent with all applicable environmental and health and safety regulations. At a minimum, during application, the applicators shall use protective clothing, eye protection, chemical resistant gloves, and air respirators.

The coating shall be free of blisters, pinholes, holidays, or discontinuities.

Inspection - All coating work shall be performed in the presence of the designated City construction inspector. All coating work done in the absence of the inspector is subject to rejection unless specifically allowed by the inspector. The inspector shall be provided access to the construction site and to those areas subject to the performance of work under this standard.

Testing - All testing shall be performed by the contractor in the presence of a City inspector. All lining and coating work shall be high-voltage spark tested at a minimum 125 volts per mil film thickness of coating. Contractor shall verify to the City that the test equipment is in proper working condition prior to spark testing. Use Tinker-Razor AP-W test equipment or approved equal.

Repairs of Holidays or Pinholes - All areas to be repaired, as determined by inspection and testing, shall be repaired in accordance with the product manufacturer's recommendations.

71-1.10 Trench Resurfacing - Trenches in existing streets, except streets which are to be closed or abandoned, shall be resurfaced with the type and thickness of bases, surfacing or pavement, as shown in these Standard Specifications and Plans. The Contractor shall proceed immediately to resurface any part of any excavation upon notice from the Engineer without

waiting for completion of the full length of the sewer. All trenches shall be backfilled or covered at the end of each working day. Any temporary trench patching shall be approved by the City Engineer.

71-1.11 Testing:

71-1.11A Cleaning - Prior to performing tests, the pipe installation shall be thoroughly cleaned. Cleaning shall be performed by the Contractor by means of an inflatable rubber ball. The ball shall be of a size that will inflate to fit snugly into the pipe to be tested. The ball shall be controlled with a tag line. The ball shall be placed in the last lamphole or maintenance hole on the pipe to be cleaned, and water shall be introduced behind it. The ball shall pass through the pipe with only the pressure of the water impelling it. All debris flushed out ahead of the ball shall be removed at the first maintenance hole where its presence is noted. In the event cement or wedged debris or a damaged pipe shall stop the ball, the Contractor shall remove the obstruction.

71-1.11B Deflection Test for ABS, PVC, (Solid Wall and Profile Wall), and HDPE Sanitary Sewer Pipe – A short-term deflection test shall be conducted no sooner than 30 days after the placement and densification of backfill. The Contractor shall furnish all equipment needed to complete this test. The cost for the deflection test shall be included in the unit price bid for the sanitary sewer pipe.

For PVC pipe, the allowable short-term deflection shall be 5%. The minimum allowable I.D. (O.D. of the mandrel) shall be established by the pipe manufacturer.

For ABS Pipe - All mainline pipe shall be cleaned and then mandrelled to measure for obstructions (deflection, joint offsets, lateral intrusions, etc.). A rigid mandrel with a circular cross-section having a diameter at least 96% of the specified average inside diameter shall be pulled through the pipe. The method of measuring the deflection shall be reviewed by the City Engineer. Any pipe through which the mandrel will not pass shall be said to have failed and will be repaired by the Contractor at the Contractor's expense.

For HDPE pipe--maximum long term deflection for HDPE pipe shall be no more than 5%. Long-term deflection shall be calculated as the short-term deflection multiplied by a deflection lag factor based upon the average inside diameter of the pipe. In no case shall a deflection lag factor of less than 1.5 be accepted. Mandrel deflection tests may be required during installation as specified by the City Engineer. Mandrels used in testing shall have an odd number of legs totaling no less than nine. Pipe sections not meeting the deflection requirements shall be excavated, re-installed, and subject to an additional 30-day deflection test.

At the Engineer's option, the Engineer may require a sample of ten percent (10%) of the laterals randomly selected by the inspectors shall also be tested for deflection. If difficulty is encountered in passing the mandrel test, the inspector may direct that a larger sample of laterals be tested up to and including one-hundred percent (100%) of all laterals.

The Contractor shall furnish properly sized mandrels for size and type of pipe installed. Certification of proper mandrel size shall be required and mandrel identified in a manner to identify with certification.

At the Contractor's expense, all locations with deflection greater than allowable shall be excavated, repaired or replaced, backfilled and retested.

71-1.11C General - All leakage tests shall be completed and approved following the placement and densification of the back fill, but prior to placing of permanent surfacing.

When leakage or infiltration exceeds the amount allowed by the specifications, the Contractor at its expense shall locate the leaks and make the necessary repairs or replacements in accordance with the specifications to reduce the leakage or infiltration to the specified limits. Any individually detectable leaks shall be repaired, regardless of the results of the tests. Leakage tests shall be made on completed pipelines as follows:

1. Gravity Sanitary Sewer (24 inches (610 mm) or less in diameter where difference in elevation between inverts of adjacent maintenance holes is 10 feet (3.05 M) or less) - Water exfiltration test or water infiltration test as directed. The Engineer may allow substitution of an air pressure test for the water exfiltration test.
2. Gravity Sanitary Sewers (24 inches (610 mm) or less in diameter where difference in elevation between inverts of adjacent maintenance holes is greater than 10 feet (3.05 M) - Air pressure test.
3. Gravity Sanitary Sewers (greater than 24" (610 mm) in diameter) - Air pressure test or water infiltration test as directed.
4. Pressure Sewers (force mains) - Water pressure test at 50 psi (345 kPa) over pipe pressure classification or designation.

71-1.11D Water Exfiltration Test - Each section of sewer shall be tested between successive maintenance holes by closing the lower end of the sewer to be tested and the inlet sewer of the upper maintenance hole with stoppers. The pipe and maintenance hole shall be filled with water to a point 4 feet (1.22 M) above the invert of the sewer at the center of the upper maintenance hole; or if ground water is present, 4 feet (1.22 M) above the average adjacent ground water level.

The allowable leakage will be computed by the formulae:

$$E = 0.0001 LD \sqrt{H} \text{ for mortared joints.}$$

$$E = 0.00002 LD \sqrt{H} \text{ for all other joints.}$$

where:

L is the length of sewer and house connections tested, in feet.

E is the allowable leakage in gallon per minute of sewer tested.

D is the internal diameter of the pipe in inches.

H is the difference in elevation between the water surface in the upper maintenance hole and the invert of the pipe at the lower maintenance hole; or if ground water is present above the invert of the pipe in the lower maintenance hole, the difference in elevation between the water surface in the upper maintenance hole and the ground water at the lower maintenance hole.

However, the maximum shall not exceed 200 gallons per inch of internal diameter per mile per day.

The Contractor shall, at its expense, furnish all water, materials and labor for making the required test. All tests shall be made in the presence of the Engineer.

71-1.11E Water Infiltration Test - If, in the opinion of the Engineer, ground water is encountered in the construction of a section of the sewer, the Engineer may require the pipe be tested by the Water Infiltration Test as follows:

The end of the sewer at the upper structure shall be closed sufficiently to prevent the entrance of water, and pumping of ground water shall be discontinued for at least 3 days, or until the ground water has recovered its normal status level, after which the section shall be tested for infiltration.

The infiltration into each individual reach of sewer between adjoining maintenance holes shall not exceed that allowed by the formula in Section 71-1.11D where H is the difference in the elevation between the ground water surface and the invert of the sewer at the downstream maintenance hole.

Unless otherwise specified, infiltration will be measured by the Engineer using measuring devices furnished by the City.

All visible leaks shall be repaired by the Contractor regardless of volume involved.

71-1.11F Air Pressure Test - The Contractor shall furnish all materials, equipment and labor for making an air test. Air test equipment shall be approved by the City prior to the beginning of the test.

Each section of sewer shall be tested between successive maintenance holes by plugging and bracing all openings in the main sewer line and the upper ends of all sewer connections. Prior to any air pressure testing, all pipe plugs shall be checked with a soap solution to detect any air leakage. If any leaks are found, the air pressure shall be released, the leaks eliminated, and the test procedure started over again.

The final leakage test of the sewer main line and branching sewer connections, shall be conducted in the presence of the Engineer in the following manner:

1. Clean pipe to be tested by propelling snug fitting inflated rubber ball through the pipe with water.
2. Plug all pipe outlets with suitable test plugs. Brace each plug securely.
3. If the pipe to be tested is submerged in ground water, insert a pipe probe by boring or jetting, into the backfill material adjacent to the center of the pipe, and determine the pressure in the probe when air passes slowly through it. This is the back pressure due to ground water submergence over the end of the probe. All gauge pressures in the test should be increased by this amount.
4. Add air slowly to the portion of the pipe installation under test until the internal air pressure is raised to 4.0 psig.
5. After an internal pressure of 4.0 psig is obtained, allow at least two minutes for air temperature to stabilize, adding only the amount of air required to maintain pressure.
6. When pressure decreases to 3.5 psig, start stop watch.
- 6a. The following applies to all pipes other than PVC and ABS (see 6b):

Determine the time in seconds that is required for the internal air pressure to reach 2.5 psig. Minimum permissible pressure holding times are indicated by the following formula and table in seconds:

$$t = k \left(\frac{d}{g} \right)$$

where t = minimum required time in seconds
k = constant 0.022

d = nominal pipe diameter in inches
 g = allowable air loss rate per unit
 area, 0.003 cu. ft./min./sq. ft.
 of internal/surface area

psig = pounds per square inch gage

**MINIMUM HOLDING TIME IN SECONDS REQUIRED FOR PRESSURE TO DROP
 FROM 3 ½ TO 2 ½ PSIG**

PIPE DIAMETER

		4"	6"	8"	10"	12"	15"	18"	21"	24"	27"	30"	33"	36"	39"
L E N G T H O F L I N E I N F E E T	25	4	10	18	28	40	62	89	121	158	200	248	299	356	418
	50	9	20	35	55	79	124	178	243	317	401	495	599	713	837
	75	13	30	53	83	119	186	267	364	475	601	743	898	1020	1105
	100	18	40	70	110	158	248	256	485	634	765	851	935		
	125	22	50	88	138	198	309	446	595	680					
	150	26	59	106	165	238	371	510							
	175	31	69	123	193	277	425								
	200	35	79	141	220	317									
	225	40	89	158	248	340									
	250	44	99	176	275										
	275	48	109	194	283										
	300	53	119	211											
	350	62	139	227											
	400	70	158												
	450	79	170												
	500	88													
550	97														
600	106														
650	113	170	227	283	340	425	510	595	680	765	851	935	1020	1105	

- NOTES: (1) TO BE USED WHEN TESTING ONE DIAMETER ONLY
 (2) The above air pressure test procedure is based on ASTM C828. Any special situations or conditions shall conform to this ASTM Standard.

- 6b. For PVC and ABS lines the following table lists the minimum times allowed for a pressure drop from 3.5 psi to 3.0 psi in excess of the ground water pressure at the top of the pipe.

Pipe Dia (in)	Min Time (min sec)	Lgth for Min Time (ft)	Time for Lngr Lgth (sec)	Specification Time for Length (L) shown (min:sec)							
4	1:53		.190L	1:53	1:53	1:53	1:53	1:53	1:53	1:53	1:53
6	2:50		.427L	2:50	2:50	2:50	2:50	2:50	2:50	2:51	3:12
8	3:47		.760L	3:47	3:47	3:47	3:47	3:48	4:26	5:04	5:42
10	4:43		1.187L	4:43	4:43	4:43	4:57	5:56	6:55	7:54	8:54
12	5:40		1.709L	5:40	5:40	5:42	7:08	8:33	9:58	11:24	12:50
15	7:05		2.671L	7:05	7:05	8:54	11:08	13:21	15:35	17:48	20:02

SAFETY NOTE:

The air test may be dangerous if, because of ignorance or carelessness, a line is improperly prepared. It is extremely important that the various plugs be installed and braced in such a way as to prevent blowouts. Inasmuch as a force of 250 lbs. is exerted on an 8" plug by an internal pipe pressure of 5 psi, it should be realized that sudden expulsion of a poorly installed plug or of a plug that is partially deflated before the pipe pressure is released can be dangerous.

As a safety precaution, pressurizing equipment should include a regulator set at perhaps 10 psi to avoid over-pressurizing and damaging an otherwise acceptable line. No one shall be allowed in the maintenance holes during testing.

IF THE TIME LAPSE IS LESS THAN THAT SHOWN IN THE TABLE, THE CONTRACTOR SHALL MAKE THE NECESSARY CORRECTIONS TO REDUCE THE LEAKAGE TO ACCEPTABLE LIMITS.

71-1.11G Televising of Sanitary Sewers - Following the placement and compaction of backfill and completion of other required testing, but prior to the placing of pavement, the Contractor shall televise all sewer lines for conformance to the Project Plans and specifications. A tape and log of the televising shall be delivered to the Engineer within a week of televising. If defective pipes or conditions are discovered they shall be corrected at no cost to the City. Any corrective work proposed shall be approved by the Engineer.

The City may also televise sewer lines prior to the expiration of the one year warranty. If a defective condition is found, it shall be presumed to be caused by defective workmanship or materials. The developer and/or Contractor shall be notified and shall correct the work in a manner approved by the Engineer.

71-1.12 Measurement - Sewer work performed under Section 71, "Sewers," will be designated in the contract item by size, type, thickness, quality, or whatever information is necessary for identification.

The lengths of the various types of sewer pipe to be paid for by the linear foot; measured from centerline of maintenance hole to center line of maintenance hole between structures or to end of line not terminated at a structure.

Pipe bends, wyes, tees and other branches will be measured by the linear foot for the sizes of pipes involved. Bends will be measured along centerlines. Wyes, tees, and other branches will be measured along centerlines to the point of intersections.

Quantities of precast concrete pipe sewer maintenance holes, lampholes, terminal cleanout structures, and pipe chimneys will be determined as units from actual count, except new frames and covers.

New frames and covers will be considered as a part of the structure to which the frame and cover is attached and no additional compensation will be allowed therefor.

The quantities of permanent trench resurfacing to be paid for shall be the actual quantities placed within limits up to a maximum width of 3 feet greater than the outside diameter of the pipe or structure. Temporary trench resurfacing shall be paid for by the Contractor.

Trench quantities in excess of the above shall be at the Contractor's expense unless approved otherwise by the Engineer.

71-1.13 Payment - Items of work, measured as provided in Section 71-1.12, "Measurement," will be paid for at the contract price per linear foot for the various sizes of pipes, types of sewer maintenance holes, lampholes, terminal cleanout structures, and the contract price per ton or square foot for the various types of surfacing.

Full compensation for structure excavation; structure backfill; bar reinforcing steel and concrete will be considered as included in the contract price paid for the various items of sewer work and no separate payment will be made therefor.

Shaping the bottoms of new maintenance holes will be considered as a part of the maintenance hole and no separate payment will be made therefor.

Full compensation for all tunneling and jacking of pipe, capping open ends of pipe, joining of pipe to other pipe or structure, shaping bottoms of existing maintenance holes, utility support and protective work operations required to accommodate or safeguard public traffic, testing the sewer line, furnishing and disposing of water and equipment used for testing and all other incidental work and material required to construct the sewer system shall be considered as included in the prices paid for the various contract items of sewer work and no additional compensation will be allowed therefor.

The above prices and payments shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing sewers, complete in place, as shown on the Project Plans, and as specified in these specifications and the special provisions, and as directed by the Engineer.

71-1.14 Abandonment - Sanitary sewer lateral abandonment shall be done at the property line. Provide bell end or collar with air tight plug, as specified in the U.P.C., at the end of the line.

SECTION 74

STORM AND SANITARY SEWER PUMPING PLANT EQUIPMENT

This section of Caltrans Standard Specifications is deleted in its entirety.

Replace with the following:

Specifications and Plans for pumping plant equipment shall be prepared in accordance with the Municipal Utilities Department Pump Station Guidelines and as approved by the Director of Municipal Utilities.

SECTION 75

MISCELLANEOUS METAL

The following is to be added:

75-1.02 Miscellaneous Iron and Steel - The following specification shall be added to this section of Caltrans Standard Specifications:

75-1.02A Maintenance Hole Frames and Covers - Gray iron castings shall conform to and/or exceed the requirements of ASTM A48-76, Class 30 and test bar size shall be as stated in Table I.

A "Certificate of Compliance" signed by an authorized agent of the manufacturer or supplier shall be required.

Each certificate so furnished shall be accompanied by a copy of test results stating that the material has been sampled, tested, and inspected in accordance with the provisions of the latest issue of ASTM A-48, Gray Iron Castings. Test bars shall be cast and tested for the first lot of casting and every four (4) months thereafter. If production is interrupted for any period longer than four months, test bars shall be cast and tested from the initial lot after production is resumed and every four (4) months thereafter. The first lot is defined as the first castings produced after January 1st of each year. The tension tests specified shall be performed and the results certified by an independent testing laboratory located in the United States of America.

In addition, current certified test reports for testing in accordance with AASHTO HS-20 loading shall be furnished.

Units furnished shall be identifiable with reference to the above tests.

Machined surface tolerances shall produce true, uniform bearing surfaces.

All frames and lids shall be interchangeable with like seat design. Dimensional fit tolerances shall not exceed those allowed on designated specified units detailed on Standard Drawing No. 54.

Maintenance hole frame and covers and catch basin frames and covers shall be wire brushed removing all dirt and loose mill scale and rust and given a coat of coal tar pitch at 180° F.

75-1.02B Identifying Castings - All gray iron castings shall be marked on the top surface with the English name of the country of origin; manufacturer's name, lot number, and initials or logo type. In addition, the month and year of manufacture shall be cast on the frame and cover adjacent to the name of the manufacturer. Such marking shall be made by means of stamping, cast-in-mold lettering, etching, or engraving.

SECTION 76

DOMESTIC WATER FACILITIES

NOTE: THIS SECTION IS ADDED IN ITS ENTIRETY TO THE BLANK SECTION IN CALTRANS STANDARD SPECIFICATIONS.

76-1.01 Description - This work consists of furnishing and installing pressure water pipe control valves, thrust blocks, fire hydrant tees, fire hydrants and service lines, all as shown on the Project Plans or as directed by the Engineer, and as specified in the Standard Specifications and Plans and the special provisions.

76-1.01A Right of Way - All City owned domestic water facilities located on private property shall be installed within a 10' (min.) wide easement which shall have been dedicated to the City of Stockton.

76-1.01B Facilities Standards - Unless otherwise noted, all domestic water facilities shall be designed in accordance with the California Water Works Standards and the American Water Works Association.

76-1.02 Materials - All pipe and fittings (except valves) shall have a minimum working pressure of one hundred twenty five (125) pounds/square inch and conform to the following requirements:

76-1.02B Ductile Iron Pipe - Ductile iron pipe for water and other liquids shall be furnished in the sizes; classes; grades or nominal thicknesses; and joint types designated on the Project Plans or in the Special Provisions.

Ductile iron pipe shall comply with ANSI A21.51 (AWWA C151) and have cathodic protection and test stations.

Ductile iron pipe is to be used on all water crossings or where required by State Health Code sanitary sewer water line clearance regulations. Pipe shall utilize either flange, mechanical or push on rubber gasket joints. Pipe shall be minimum standard thickness with standard cement lining (USA Std. A21.4).

Ductile iron pipe joints shall comply with the following requirements for the types:

<u>Type of Joint</u>	<u>Specifications</u>
Rubber Gasket Push-on Joint	ANSI A21.11 (AWWA C111)
Mechanical Joint	ANSI A21.11 (AWWA C111)
Flanged Joint	ANSI B16.1, B.16.2 and A21.10 (AWWA C110)

Flanged Joint (Threaded Flanges)

ANSI B2.1.

All rubber gasket, push-on, mechanical and flanged joint fittings for ductile iron water pipe shall be manufactured in accordance with ANSI A21.10 (AWWA C110).

Unless otherwise specified, the internal surfaces of ductile iron water pipe and fittings shall be lined with a uniform thickness of cement mortar then sealed with a bituminous coating in accordance with ANSI A21.4 (AWWA C104). The outside surfaces of ductile iron pipe and fittings for general use shall be coated with a bituminous coating 1 mil (0.0254mm) thick in accordance with ANSI A21.6 or ANSI A21.51.

76-1.02C Polyvinyl Chloride (PVC) Pipe - Polyvinyl Chloride pipe shall be furnished in the classes, sizes, and grades designated on the Project Plans and Special Provisions.

Polyvinyl Chloride pipe shall meet the requirements of AWWA C-900 "Polyvinyl Chloride (PVC) Pressure Pipe." Pipe sized shall be 6" through 12" only - AWWA Class 150 minimum. All Class 150 pipe shall meet the requirements of DR 18 and Class 200 pipe shall meet the requirements of DR 14 with O.D.

However, pipe sizes from 16" through 24" may be used for transmission lines; no house service taps/laterals are allowed in these sizes. Pipe shall be DR-18 (235 psi) only, conforming to the requirements of AWWA C-905 "Polyvinyl Chloride (PVC) Water Transmission Pipe" in O.D. sizes. Pipe embedment zone (O.D. plus 12") shall conform to City of Stockton Standard Drawing No. 50.

All pipes shall be suitable for use as a pressure conduit. Provisions shall be made for expansion and contraction at each joint with an "O" ring elastomeric gasket seal meeting the requirements of ASTM D-1869 and F-477. Solvent welded joints will not be permitted. The bell section shall be designed to be at least as strong as the pipe wall.

76-1.02D Valves - This specification includes three (3) inch through twelve (12) inch diameter gate valves and twelve (12) inch or larger diameter butterfly valves and operators intended for buried service in a domestic water system.

Gate valves shall be double disc with non-rising stem meeting or exceeding the latest revisions of AWWA C-500 with a design working pressure of one hundred seventy-five (175) psi. Valve pattern shall be Metropolitan or Muller No. A-2380 with valve disc seats of Grade 1 bronze, double disc type with parallel seats.

Butterfly valves shall meet or exceed the latest revisions of AWWA C-504 with a design working pressure of 150 psi. Operators for butterfly valves twenty (20) inches and smaller shall be Class 150; larger operator will be as specified in the special provisions and designed for actual line conditions as covered in AWWA C-504, Appendix A.

Valve ends shall be mechanical joint or flanged in accordance with AWWA C-500 unless otherwise specified.

Valves for use with flanged pipe shall be cast with Class 125 flanges, dimensions and drilling shall conform to ASA B 16.1. Flange boltholes shall be spot faced if flange fillets interfere with both heads and nuts.

Tapping sleeves for A.C. and cast iron water mains shall be full body shell, with full body gasket or split sleeve, end and side gasket seal. Inlet flange and tapping gate valve flanges shall be Class 125 flange. Tapping sleeves shall be M & H 1174 and 1274 (all sizes); Romac SST and Clow 3490-AS (over 12 inch only) or an approved equal. Taps for steel pipe, CMC and/or CML, will require review and approval by the City Engineer.

All stem seals, gate valves and butterfly valves, shall be O-rings only.

Wrench nuts shall be made of top grade cast iron, fitting the top of the valve stem and secured by nut or key. Wrench nuts shall be one and fifteen sixteenth (1-15/16) inch square at the top and two (2) inches square at the bottom.

Valves requiring operating wrenches exceeding six (6) feet in length shall have extension and guides installed in valve boxes.

The open direction shall be left (counter-clockwise) and the closed direction right (clockwise).

76-1.02F Valve Boxes - Valve boxes and covers shall conform to City of Stockton Standard Plan No. 99.

76-1.02G Gaskets - Gaskets for flanged joints shall be full circle one-sixteenth (1/16) inch thick asbestos composition gaskets.

76-1.02H Thrust Blocks - Thrust blocks shall conform to City of Stockton Standard Drawings. Concrete for thrust blocks shall be Class B with one and one-half (1-1/2) inch max. size aggregate in accordance with Section 90 of the Standard Specifications.

76-1.02I Fire Hydrants - Fire hydrants shall conform to the requirements of the Fire Department of the City of Stockton as shown on the Standard Plan No. 101 and the following:

- a. All hydrants shall comply with AWWA C502, latest revision.
- b. All operating valves shall be located below grade and protected by "break-off" features so that no water flows if hydrant is knocked off.
- c. Hydrant main valve seat shall be a minimum 5-1/4 inches.

- d. Hydrant valve shall be molded non-swelling rubber.
- e. Hydrant main valve seat shall be threaded into a bronze to bronze subseat.
- f. Hydrant bury shall be 36 inches from connection to ground flange. Materials to extend the length of bury shall be readily available.

76-1.02J Service Lines - Service lines up to and including meter connection shall be as detailed in City of Stockton Standard Plan Nos. 93 and 94, as applicable for the service intended and with the AWWA Standard C-800.

- 1. Service line connections are not permitted on pipe sizes 16" and greater.
- 2. Threads for line pipes shall be as specified in the AWWA standard for threads for underground service line fittings.
- 3. Type of service line pipe shall be limited to the following:
 - a. Copper water tube, Type K or ASTM B-88.
 - b. Ultra High Molecular Weight (UHMW) P.E. 3406, P.E. 3408, CS 255-63, Polyethylene as manufactured by Driscopipe, Orangeburg or an approved equal in one (1) inch iron pipe sizes only. Plastic pipe larger than one (1) inch and up to and including two (2) inch iron pipe sizes shall be PB 2110 Polybutylene. Connection of plastic pipe shall be made using Mueller 110 compression connections or approved equal.
 - c. Services two (2) inches and larger shall be considered as a special condition and will require the prior approval of the Water Superintendent and City Engineer.
 - d. Saddles or service clamps shall be used on all PVC taps and shall be designed specifically for PVC pipe. Saddles or service clamps shall be Rockwell No. 381 or approved equal.
- 4. Service lines, if abandoned, must be severed at the main.

76-1.02K Water Meters - Unless otherwise specifically noted, water meters will be purchased and installed by the City of Stockton.

For meters larger than two inch it will be the Contractor's responsibility to contact the City of Stockton prior to installation of meter boxes to ascertain the dimensions of the meters currently in stock.

It shall be the Contractor's responsibility to set meter box and service fittings in such a manner that City meter can easily be dropped in place. See Standard Plans for minimum clearance dimensions.

76-1.03 Installation

76-1.03A Installation of Water Mains

76-1.03A(1) Description - The Contractor shall, unless specified otherwise, furnish all material, equipment, tools and labor necessary to do the work required, and unload, haul and distribute all pipe, castings, fittings, valves, hydrants and accessories. The Contractor shall also remove pavement as stipulated; excavate trenches and pits to the required dimensions; excavate bell holes; construct and maintain all bridges for traffic control sheet, brace, and support the adjoining ground or structures where necessary; handle all drainage or ground water; provide barricades, guards, and warning lights; lay and test the pipe, castings, fittings, valves, hydrants, and accessories; backfill and consolidate the trenches and pits; restore the roadway surface unless otherwise stipulated; remove surplus excavated material; clean the site of the work; and maintain the street or other surface over the trenches as specified. All connections to existing lines shall be flanged by fittings with isolation plates.

76-1.03A(2) Excavation - Trench excavation shall conform to the requirements of the City of Stockton Standard Plans No. 50 and No. 51.

The bottom of the trench shall be carefully graded as indicated in Section 71-1.03 of the Standard Specifications.

76-1.03A(3) Jacking - Jacking shall conform to the City of Stockton Standard Plan No. 60.

76-1.03A(4) Pipe Laying - The pipe shall be handled with care at all times and in a manner that meets the approval of the Engineer. Extreme care shall be exercised in the use of any mechanical devices used in laying the pipe to avoid scarring or other damage.

The Engineer shall be the judge of whether a pipe is seriously damaged and any pipe so classified shall be permanently removed from the site of the work.

The inside of all pipes and couplings shall be free from dirt, grease, or other deleterious materials. The open ends of all pipe previously laid shall be adequately plugged water tight whenever pipe laying operations are suspended at the end of each work day, or for any other reason.

Select fine damp earth shall be placed and thoroughly compacted across the bottom of the trench to provide full support of all the pipe. Bells and/or couplings shall have soil removed to provide a uniform bearing.

In joining asbestos cement pipe, a thin coating of non-toxic and water soluble lubricant shall be applied to the entering level and back to the first machined shoulder of the pipe to be coupled. The rubber rings shall be set in the coupling grooves, and the couplings shall be placed between the pipe ends. The pipe shall be moved so that ends butt snugly against the rubber rings. A representative of the pipe manufacturer shall be present when the pipe laying commences in order to insure the proper installation of the pipe.

76-1.03A(5) Backfilling - Backfilling shall not be completed until the pipe has been properly installed to the satisfaction of the Engineer.

Backfill materials shall be placed on both sides of the pipe simultaneously to prevent any undue strain on the pipe.

Imported sand or an approved clean granular material free of all lumps and debris, passing 100% through the 3/4 inch sieve and having 5% to 20% passing the No. 200 sieve, with a minimum sand equivalent of 20 material shall be placed in the trench in six (6) inch layers to a depth of twelve (12) inches above the pipe and shall be hand tamped, or compacted to 85 percent relative compaction.

The balance of the trench shall be backfilled and compacted as shown by jetting or mechanical means on Standard Plans Nos. 50, 50A and 51, 51A, 51B. This Standard shall be used as a minimum in all new construction unless otherwise noted in the Special Provisions.

Backfilling and bedding for P.V.C. pipe shall be performed in accordance with Section 71-1.04 Bedding of these Standard Specifications for P.V.C. pipe.

The Contractor shall do all excavating, loading, hauling, placing and compacting of the material in place.

All pipe damaged during construction operations shall be replaced by the Contractor at the Contractor's expense to the satisfaction of the Engineer.

76-1.03A(6) Trench Resurfacing - Trenches in existing streets, except streets which are to be closed or abandoned, shall be resurfaced with the type of thickness of bases, surfacing or pavement shown on the Standard Plans.

The Contractor shall proceed immediately to resurface any part of any excavation upon notice from the Engineer without waiting for completion of the full length of line.

76-1.03B(1) Testing - The test for hydrostatic pressure shall commence no sooner than seven (7) days after the last concrete thrust block has been cast with standard cement or at least after thirty-six (36) hours with high early strength cement, and after backfilling and compacting the trench to the plane upon which the asphalt concrete surfacing is to be placed. The Contractor shall take the necessary precautions to insure that the pipe fittings, couplings,

valves, and other appurtenances are not displaced during the test. The pipe shall be filled with water at least twenty-four (24) hours prior to the time of the test. Each section of the completed pipe under test shall be subjected to a hydrostatic test pressure of one hundred twenty-five (125) pounds per square inch for two (2) hours. During this period of the test, all pipe shall be inspected for leaks, and any leaks failures, or imperfect construction revealed during the period of tests shall be corrected by the Contractor at the Contractor's own cost and expense.

After a satisfactory hydrostatic pressure test, the line shall be tested for leakage. The line shall be maintained at a sixty (60) pound per square inch pressure for seven (7) days. The leakage during this period shall not exceed 0.100 gallons for each inch of diameter for each joint for twelve (12) foot pipe lengths in the section under test in a twenty-four (24) hour period.

It shall be the Contractor's responsibility to locate and repair the points of line failure; fill, recompact the trench and retest the section of line in the event the line fails the leakage test.

76-1.03B(2) Interruption of Service - No valve or other control on an existing system shall be operated for any purpose by the Contractor. The City of Stockton will operate all valves, hydrants, blowoffs and curb stops.

76-1.03C Disinfecting Water Mains

76-1.03C(1) General –

1. The interior of all pipe, fittings, and other accessories shall be kept as free as possible from dirt, foreign material and bacteria at all times. During pipe laying operations, when bacterial contamination of interior pipe surfaces is obvious or suspected by the Engineer, the Engineer may order said surfaces to be swabbed with an approved bactericidal solution.

Disinfecting chemicals and additives shall comply with the requirements of Title 22, Division 4, Chapter 18 as Regulated by the State of California, Department of Health Services.

2. Disinfection of water mains shall be insured before permission for their connection to the City's water distribution system will be granted.

Chlorinated water may be disposed of in the sanitary sewer with prior approval from the Municipal Utilities Department (MUD). Without MUD approval, water must be declorinated and disposed of in the sanitary sewer. Chlorinated water or declorinated water shall not be disposed of in the storm drain system.

Disinfecting water mains shall be performed after all water related appurtenances have been installed.

3. Bacteriological samples used to satisfy the disinfection requirement of section 76-1.03C shall be collected under the direction of a Public Works Department inspector, or the inspector's agent, by personnel trained in the proper techniques for obtaining bacteriological samples, and shall be analyzed by a laboratory certified by the California Department of Health Services. It is suggested that the project contractor to be present to insure that all parties agree to the appropriateness of the sample locations.
4. The Municipal Utilities Department Laboratory is certified to perform the required bacteriological analyses and can provide properly trained personnel to collect samples.
 - a. It is not required that the City laboratory perform these tasks. The inspector or contractor may choose to use the services of a commercial laboratory as long as all technical requirements are met.
 - b. The City laboratory may be called upon, at no additional cost to the contractor, to collect and analyze one set of samples, and if that test fails, one set of retest samples after reesterilization of the main as in section 76-1.03C4. Any sampling/analysis after the first retest will be billed to the contractor on a time and materials basis.
 - c. The City laboratory requires that scheduling be done at least 48 hours in advance of the sampling event. Normally this is sufficient time to allow the person assigned to this task to schedule the field work and to insure sufficient facilities exist in the laboratory to complete the analysis.
 - d. The City laboratory provides these services to the Public Works Department, not the contractor. There will be no direct communication of analysis results to the contractor; the report of the results of analyses will be made only to the inspector, or the inspector's agent, who requested the test, and to the Deputy Municipal Utilities Department Director/Water & Collection System.
 - e. If the City laboratory cannot accommodate the requested time schedule, the inspector or contractor may choose to use a commercial laboratory for sample collection and/or analysis.
5. If a commercial laboratory is used, a copy of the analysis report will be forwarded to the Deputy Municipal Utilities Department Director/Water & Collection System.

76-1.03C(2) Isolation of New Mains - All new water lines shall be completely isolated from any existing main until they have been tested and disinfected to the satisfaction of the Engineer. New mains may be filled from existing mains only by temporary tap thereto and through a State Department of Health approved backflow prevention unit so as to provide positive backflow prevention provided by City of Stockton. When new main is properly disinfected and the isolation dam is removed from connection flange or other type connection is made, extreme care shall be exercised to prevent the entry of contamination. Connection fittings shall be thoroughly swabbed with an approved bactericide immediately prior to their installation.

Flush the mains thoroughly at the end of the contact period. The orthotolidine test shall show no more chlorine in the water leaving the main than in the water entering the main.

The Engineer will collect a sample for bacteriological examination in a sterile bottle provided by the laboratory. On the label, give date, address, and the estimate number for the job. Where possible the sample should be taken from a service located near the end of the chlorination section, otherwise, it may be taken through the same blowoff used for flushing the heavily chlorinated water out of the main so that the blowoff is sterilized.

If the bacteriological tests are unsatisfactory, the main shall be resterilized using Method No. 2, and the sterilization repeated, if necessary, until satisfactory results are obtained.

76-1.03C(3) Method No. 1 - H.T.H. Tablet Method - This method is preferred for short jobs and for small diameter pipe of any kind. It cannot be used where trench water has entered the main. The main cannot be flushed prior to sterilization, so the method requires that the pipe be kept clean during installation.

Using Permatex No. 1 as an adhesive, fasten the required number of tablets (see Table I) to the inside top of each length of pipe. Tubes of Permatex may be purchased locally at any auto parts store. The tablets may be fastened to the pipe before it is placed in the trench providing the top of the pipe is marked to insure that the tablets are on the top of the pipe after installation.

When installing asbestos cement pipe, each butt end shall be treated by using a H.T.H. tablet as a piece of chalk. Fasten extra tablets to the beginning of the first length of pipe. To be sure that these tablets start to dissolve as the water enters the main, they should be placed in rows about half an inch above the bottom of the pipe. Use one tablet for each inch of diameter. For long runs, this should be repeated about every 500 feet.

When using dresser or similar couplings, an additional tablet shall be crushed and placed in the annular space between the coupling and the pipe. Fill the pipe very slowly and proceed as outlined under General Instructions.

76-1.03C(4) Method No. 2 - H.T.H. Solution with Hand Pump Method - This method is general in scope and shall be used when it is necessary to rechlorinate an existing main. When this

method is used on a main coupled with dresser or similar couplings, a pinch of H.T.H. powder shall be placed in each coupling as the main is laid.

Equipment required includes an ordinary hand test pump, solution hose, and a five gallon can to contain the chlorine solution.

A compact and convenient assembly can be made by mounting the solution can and the pump on suitable board with a pipe connection from the tank on the suction side of the pump.

H.T.H. comes as a powder which shall be dissolved in water. Strong chlorine solutions should be handled with care since they are irritating to the skin and will damage shoes and clothes.

Make up chlorine solution according to Table II. The quantity required is estimated from Table II. An excess volume should be prepared so as not to empty the container before the job is complete.

Connect pump to main. Use a corporation cock for this purpose and make connection at or ahead of the inlet end of the new line.

After flushing the line thoroughly adjust flow by timing the period required to fill a five-gallon can.

Pump chlorine solution into the line at a rate of one gallon of solution in three minutes.

Continue pumping until orthotolidine tests on a sample taken from discharge end of line being treated shows a red color, or until the odor of chlorine is noticed.

After finishing application of chlorine, close valve or blow-off. Disconnect and flush pump thoroughly with fresh water.

Refer to instruction flushing and sampling.

If the above procedure has to be varied because of some unusual condition, it will be necessary only to regulate the pump, control the water flow, or adjust the strength of the chlorine solution to give a dose of at least 50 ppm.

TABLE I
NUMBER OF TABLETS REQUIRED FOR
MAIN STERILIZATION

Length of Section	Diameter of Pipe					
	2"	4"	6"	8"	10"	12"
13' or Less	1	1	2	2	3	5
18'	1	1	2	3	5	6
20'	1	1	2	3	5	7
30'	1	2	3	5	7	10
40'	1	2	4	6	9	14

TABLE II
CHLORINE SOLUTION STRENGTH
HAND PUMP METHOD OF MAIN CHLORINATION

Amount of Chemical in 5 Gallons of Solution

Discharge Rate	H.T.H.
GPM	
10	0.25 lbs.
20	0.50 lbs.
35	0.75 lbs.
50	1.00 lbs.
75	1.50 lbs.
100	2.00 lbs.

Choose a suitable discharge rate and determine the time required to apply the chlorine from Table III.

Compute the gallons of solution required by dividing this time by 3.

Use the above table to determine the strength of solution required. Example: If the estimate time from Table III is 35 minutes, 11-2/3 gallons will be required; and if the discharge rate is 50 GPM, the solution should contain one pound of H.T.H. in five gallons. Prepare fifteen gallons of solution so as to be sure of having an adequate amount. Operate the hand pump at a rate of five gallons in fifteen minutes, or one gallon in three minutes.

TABLE III

Time in Minutes to Apply Chlorine to 100 Feet of Pipe

Discharge Rate GPM	2"	4"	6"	8"	10"	12"
10	2	7	15	26	41	59
20		3	7	13	20	29
35		2	4	8	12	17
50			3	5	8	12
75			2	4	6	8
100				3	4	6

The above table is used to estimate the time required to apply chlorine. For example: 700' of 8" main can be filled with chlorine solution in 35 minutes with a discharge rate of 50 GPM.

76-1.04 Measurement - The work to be performed under these Standard Specifications will be listed in the contract items by size, class type, or whatever information is necessary for identification.

The length of pipe to be paid for will be the slope length designated by the Engineer.

Pipe bends, wyes, tees, and other branches will be measured by the linear foot for the sizes of pipes involved.

76-1.05 Payment - Items of work, measured as provided in Section 70-1.04, "Measurement," will be paid for at the contract prices per linear foot for the various sizes and types of pipe; the contract unit prices per ton, cubic yard or square foot for the various types of surfacing required.

Full compensation for excavation, backfill, thrust blocks, testing, sterilizing and fittings will be considered included in the various contract items and no additional allowance will be made therefor.

SECTION 77

STORM WATER BASINS

NOTE: THIS SECTION IS ADDED IN ITS ENTIRETY TO THE BLANK SECTION IN CALTRANS STANDARD SPECIFICATIONS DATED JULY 1992.

77-1.01 Definitions

“Detention Basin” – A facility which stores storm water for a relatively short time designed with type of metered outlet.

“Wet Detention Basin” – A lake having a metered outlet utilizing differential water levels for storm water detention purposes.

“Retention Basin” – A facility which stores storm water for an indefinite period of time not usually designed with a metered outlet.

77-1.02 Basin Notes

1. Storm water basins, shall only be allowed if downstream improvements are either not feasible or impractical from a cost standpoint at the time of development. Unless otherwise approved by the City Engineer, basins will not be considered a permanent means for handling peak storm runoff flows. A plan may be required outlining the proper abandonment of the basin in the future.
2. Basins shall be constructed such that the collection system drains into the basin by gravity. Basins designed with surface berms or levees may be subject to additional design criteria other than that stated below.
3. Basins constructed in the proximity of the airport may be subject to additional design criteria due to avigational concerns.

77-1.03 Detention Basin Design

77-1.03A Detention Basins With No Discharge Limitations

77-1.03A(1) Volume – One 10yr – 48hr event calculated by $V=CAR/12$. The rainfall value for a 10yr – 48hr event in Stockton shall be 3.12 inches.

where, C = Runoff Coefficient
A = Area of Collection
R = Rainfall Value = 3.12 inches

77-1.03A(2) Collection System – The starting point for hydraulic grade calculations in collection system design shall be the water surface in the pond generated by the volume of 1 10yr – 48hr storm or the top of the inlet pipe, whichever is higher. Hydraulic grade shall be kept a minimum of 1 foot below the top of curb at any point in the subdivision.

77-1.03B Detention Basins With Discharge Limitations – Design criteria shall be the same as that listed for detention basins without discharge limitations except for as follows:

77-1.03B(1) Volume – 150% of the 10yr – 48hr storm calculated by $V=CAR/12$. The rainfall value for a 10yr – 48hr event in Stockton shall be 3.12 inches.

where, C = Runoff Coefficient
A = Area of Collection
R = Rainfall Value = 3.12 inches

77-1.03B(2) Collection System – The starting point for hydraulic grade calculations in collection system design shall be the water surface in the pond generated by the volume of 1 10yr – 48hr storm or the top of the inlet pipe, whichever is higher. Hydraulic grade shall be kept a minimum of 1 foot below the top of curb at any point in the subdivision.

77-1.03B(3) Water Surface – The maximum anticipated static water surface, determined by the volume criteria above. This water surface must remain at least 1 foot below the top of curb at the lowest point in the subdivision.

77-1.03C Wet Detention Basins – Basins designed as lakes with the fluctuation of water levels allowing detention of storm water runoff may be allowed where feasible. These basins, however, may not be allowed in certain areas of the City due to avigational hazards posed by waterfowl. Volume, collection system, and water surface design requirements for these basins shall be the same as for all other detention basins and will depend on the specific discharge requirements at the given location. Inlet lines and structures shall direct all storm water flows into the basin.

77-1.03D Retention Basins – Retention basins shall not be allowed unless approved by the City Engineer.

SECTION 86

SIGNALS, LIGHTING, AND ELECTRICAL SYSTEMS

The following are to be added to the appropriate sections of Section 86 of the Cal Trans Standard Specifications:

86-2.08E Signal Interconnect Cable (SIC) – Single mode fiber optic cable (minimum 12 strand) shall be installed from any new or modified traffic signal to the nearest available connection point on the City's fiber optic communication network. All electronic equipment necessary for the traffic signal to communicate with the City's central traffic control system shall be required.

2 ½" PVC (Schedule 80) interconnect conduit shall be installed between the new or modified traffic signal and the nearest available connection point on the City's fiber optic communication network. No. 6 pull boxes shall be installed at +/- 500 feet intervals over the length of interconnect conduit.

86-2.09B Installation - Traffic monitoring camera(s) shall be installed as part of new or modified traffic signals. Traffic monitoring camera(s) shall be either one pan-tilt-zoom (PTZ) camera or four fixed cameras per intersection. Fiber optic video/data modems (field and central) shall be installed to transmit the video images and data control (PTZ) between the traffic signal and the City's central traffic control system.

Emergency Vehicle Pre-emption detectors shall be installed on luminaire arms for each approach to a new or modified traffic signal. All accompanying electronic equipment necessary to send the pre-emption signal to the traffic signal controller shall be supplied and installed.

SECTION 90

PORTLAND CEMENT CONCRETE

The following is added to the appropriate sections of Section 90 of the Cal Trans Standard Specifications:

On reconstruction and removal projects which remove sidewalk, the sidewalk shall be replaced with a score pattern, either matching the existing pattern or meeting current sidewalk installation standards for new sidewalks, which most enhances the visual appearance of the whole sidewalk. The overall trend toward a specific pattern (new or existing) shall be considered in the decision. The Engineer shall make the final determination of the score pattern to be used.

The use of fly ash to improve the workability of concrete may be allowed subject to approval by the City Engineer. The amount of fly ash to be used shall be per an approved mix design. Substitution of fly ash or other mineral admixture in place of the required portland cement shall not be allowed.

SECTION 100

STREET OPENING AND PAVEMENT RESTORATION REGULATIONS

NOTE: THIS SECTION IS ADDED IN ITS ENTIRETY TO THE BLANK SECTION IN CALTRANS STANDARD SPECIFICATIONS.

100-1.01 Excavation - Any trench cuts within the street right of way to access **or install** a utility line or any related facility in excess of four (4) square feet or four (4) feet long, whichever is smaller, shall be considered an excavation and requires an excavation permit, which will be issued as part of an encroachment permit.

100-1.011 Excavator – The applicant/permittee to whom an encroachment permit is issued for the purposes of excavation may be referred to, for purposes within this section, as the excavator for the project.

100-1.012 Excavation Permit – The Encroachment Permit that is issued for any work within the street right of way that meets the definition of an excavation as described in Section 100-1.01, above, shall be referred to as an excavation permit for purposes within this section.

100-1.013 Trench Cut Fee - All excavations as defined above are subject to the trench cut fee. The fee shall be collected as part of the encroachment permit fee for the project.

100-1.02 Moratorium

1. Newly constructed or resurfaced streets shall be termed moratorium streets within this section. Permission to excavate in newly constructed or resurfaced streets will not be granted for three (3) years after the completion of street overlays. An overlay consists of a ½ inch or thicker layer of asphalt. For those streets with chip seal, slurry seal coatings, or micro paving with less than ½ inch of new pavement, the moratorium shall be for three (3) years. Utilities shall plan well enough in advance to determine alternate methods of making necessary repairs to avoid excavating in newly resurfaced streets. Exceptions to the above policy are as follows:
 - A. Emergencies which endangers life or property.
 - B. Interruption of essential utility service.
 - C. Work that is mandated by City, State or Federal legislation.

- D. Service for buildings where no other reasonable means of providing service exists.
 - E. Other situations deemed by the City Engineer to be in the best interest of the general public.
2. To excavate in a moratorium street a waiver must be obtained.
- A. To request a waiver, the applicant must submit a written request to the City Engineer or his designee. The request must include:
 - 1) The location of the excavation.
 - 2) Description of the work to be performed.
 - 3) Why the work was not performed before the street was paved.
 - 4) Why the work can not be deferred until after the moratorium
 - 5) Why the work can not be performed at another location.
 - 6) Why is it justified to excavate a moratorium street.
 - B. Any excavation in the moratorium streets will be repaired with full lane paving on the street as follows: (See Drawing No. 50-E, and refer to section 100-1.06 paving).
 - 1) Overlaid or reconstructed streets: All lanes that are affected shall be ground down 1.5 inches and repaved with 1.5 inches of asphalt concrete.
 - 2) Slurry sealed, chip sealed, or microsurfaced streets: All lanes that are affected shall be resurfaced per Section 100-1.06 paving.
 - 3) A minimum of one (1) ft. on either side of trench shall be resurfaced if the excavation is a lateral cut. For longitudinal trenches the entire length plus one (1) ft. on either end shall be resurfaced.
 - 4) Exception – Full lane width restoration shall not be required if the work is not considered an excavation as defined in section 100 – 1.01.

100-1.03 Permits - Any and all construction work within the city right of way shall be done by obtaining an encroachment permit. Anyone doing excavation work within the City of Stockton street right-of-way shall obtain an encroachment permit for the purposes of excavation in addition to any other permits required. This also applies to all City departments.

1. The permit application may be obtained at the City's Permit Center. A faxed copy may be obtained by calling 937-8900.
2. Except in an emergency, excavation permits shall be taken out in advance of excavation work. An emergency is considered to exist only when life or property is endangered or when an essential utility service is or may be interrupted during weekends, holidays, or between 5 p.m. and 8 a.m. of normal working days
3. The excavator shall notify the Permit Center and apply for an excavation permit for "emergency work" within four (4) hours after the Permit Center opens.
4. As a condition of the permit to excavate, the applicant shall have been provided an inquiry identification number by a regional notification center (Underground Service Alert, USA) pursuant to Section 4216, Chapter 1153, Assembly Bill #1606 of the California State Law.
5. Prior to applying for an excavation permit, the excavator must register with the Public Works Department. The owner or the contractor performing the work may apply for the permit. The owner of the facility shall determine who applies for the excavation permit. However, if the applicant is not the owner of the facility to be excavated, the applicant must provide documentation that the applicant is authorized to act on behalf of the owner.
 - A. The following must be provided to become registered to get an excavation permit:
 - 1) A Cash Deposit equal to 3% of the project cost with a minimum of \$1000 and a maximum of \$25,000. Companies working under a franchise agreement with the City are not required to post the cash deposit until they have violated the City standards or permit requirements.
 - 2) A current Business License.
 - 3) Current evidence of Insurance.
 - 4) 24 hr. Phone Number for emergencies.
 - 5) The name, telephone number, and mailing address (fax number, pager, and e-mail address if available) of the person who will receive all official correspondence from the Department.
 - B. If an account is past due or not in good standing, a permit cannot be issued until the account is brought into good standing. The account is past due if

the fines are not paid and are deducted from the deposit. To bring the account to good standing, all fees and fines must be paid.

6. If an excavator damages other facilities during their excavation work:
 - A. They do not need another excavation permit if no additional excavation is required to repair the damaged facility. In this case the original permittee shall maintain the site and restore the pavement.
 - B. They need an additional excavation permit if additional excavation and trenches are needed to repair the damaged facility.

7. All applications shall include a plan indicating the following:
 - A. Name of the street to be excavated and the nearest cross streets.
 - B. Distance from the face of the curb.
 - C. Distance from the intersection.
 - D. The size of the excavation (length and width).
 - E. The location of any above ground facilities to be installed, showing:
 - 1) Distance from curb and any street facilities/furniture.
 - 2) Purpose of the facility.
 - 3) Size of the facility.
 - 4) Location of doors and door swing.
 - F. The location of any underground facilities to be installed showing:
 - 1) Conduits vaults, maintenance holes, pipes, etc.
 - 2) Structural detail and additional information for installation of the structures such as vaults and maintenance holes.
 - 3) The construction method of the structure to be installed.
 - 4) Construction detail, locations, size, design criteria and the purpose of the facility.

- G. Cross section of a typical trench indicating:
 - 1) The approximate depth of the facility to be installed.
 - 2) Trench backfill depth, compaction and layer depths.
 - 3) Pavement section detail (type and depths)
 - 4) Plans, structural details, and trench cross section must be signed and stamped by a licensed Civil Engineer, when legally required.
 - H. The plan may show the approximate location of the excavation provided that on an "as-built" plan, the exact location of the excavation is shown. This shall be submitted prior to the permit being finalized and filed.
8. Pre-Construction meeting:
- A. A pre-construction meeting shall be held for all projects that are scheduled to take longer than 15 working days to complete.
 - B. The owner, contractor, any other agency that is involved and the Public Works Department shall attend this meeting.
 - C. There will be a fine for projects that are supposed to be completed within 15 days, and are not completed within the allowed time, if a pre-construction meeting was not held.
 - D. A traffic control plan shall be provided with the submittal of the application, and approved prior to the pre-construction meeting.
9. Permit duration shall be indicated on the permit:
- A. All permits shall include estimated start and completion dates. A permit is valid from the construction start date specified on the approved permit until the specified completion date.
 - B. Excavation permits are not valid if other required permits are not obtained or required notifications are not given.
 - C. No disruption of traffic is allowed after 3:00 PM and before 9:00 AM unless specifically approved for these hours.
 - D. Some permits may be valid on specific dates. They may be approved with special conditions specifying the dates:

- 1) When work shall not be done.
 - 2) When work must be completed.
 - 3) Before which work shall not start.
- E. Permits expire and become void unless otherwise amended:
- 1) Thirty days after the start date, if no work has begun.
 - 2) If the work is not diligently prosecuted and there are long delays after the work has started.
 - 3) When the excavation, including the trench restoration is not completed within the duration specified on the permit or on the date specified on the permit as the expiration date.
- F. The work is determined to be proceeding diligently if:
- 1) Once a project begins, work continues on a daily basis, except for weekends, holidays, inclement weather, labor disputes or any other emergency.
 - 2) Once a project begins, the work continues uninterrupted until such work no longer affects public convenience, health or safety. If the project is a multi agency project, a one-week time will be allowed for one agency to move out and another to move in to complete their work.
 - 3) The permittee ensures that all necessary materials and supplies are on hand and ready for use so as not to delay the excavation and the prompt restoration of the public right-of-way.
10. A valid permit may be extended by:
- A. Requesting an extension prior to the expiration date by:
- 1) Specifying the dates that need to be changed
 - 2) Explaining why an extension is needed.
11. All the excavation permit fees are due at the time the permit application is submitted.

- A. Checks should be made out to the City of Stockton. The check shall include:
 - 1) The permit number
 - 2) The type of fees being paid (Administration fee, Inspection, extension, reapplication, etc.)
 - 3) All the fees, fines and penalties, not collected with the application will be billed by the city and shall be paid within 30 days. If they are not paid within 30 days, then these fees, fines and penalties will be deducted from the deposit. Utility companies working under a franchise agreement have 90 days to pay. If a contractor working for a utility company does not pay, the owner/utility company will be responsible to pay these fees, fines, and/or penalties.
 - 4) If a violation occurs and the fines are deducted from the deposit, no other application will be processed until the deposit has been put in place with the city and all conditions are met. For companies without a deposit, if the fines are not paid on time, no other permit will be issued.

- 12. If an application has been withdrawn or an approved permit is cancelled prior to the start of work:
 - A. Inspection fee and trench cut restoration fees will be refunded.
 - B. To request a refund a written request must be submitted to the City Engineer.
 - C. The request shall include:
 - 1) The reason for cancellation or withdrawal
 - 2) The application number

- 13. By accepting an excavation permit, the permittee and the owner of the facility(ies) for which the permit has been issued agree:
 - A. To follow all rules, regulations, special conditions, and code requirements.
 - B. To assure that their employees, contractors, and subcontractors comply with all rules, regulations, permit conditions and code requirements.

C. To indemnify the city.

14. The excavation permit must be available during work periods at the excavation site, until the project is completed and signed off by the City. Permit must be shown to the city employees on request.
15. The City and various utility companies must coordinate their Capital Improvement Programs. This information shall be shared through the monthly utility coordination meeting.

The information about any planned work in the street right-of-way shall be shared at the earliest possible time.

Various utility owners are encouraged to coordinate their excavation of the streets so that all work is done simultaneously and that the street is not excavated frequently within the same year.

16. The excavator shall provide public notifications when excavating in the public right-of-way.
 - A. Provide 11"x17" posters with 1-inch minimum letters at beginning and end of the project and every 300 feet in between. Notes must contain:
 - 1) The names, address, and telephone number of the owner and the permittee.
 - 2) The start and completion dates of the project.
 - B. Major projects lasting 15 working days or longer, the excavator shall:
 - 1) Mail notices to or notify, after the permit has been issued but no more than 30 days before the anticipated start date of work:
 - a) Property owners, residents, or occupants of the affected blocks.
 - b) Schools and churches in the area and the San Joaquin Regional Transit District.
 - c) Provide the City with a copy of the notice.
 - 2) At least 5 days but not more than 15 calendar days prior to starting construction, post and maintain 11" X 17" notices at beginning and end of the project and every 300 feet in between and deliver a copy of same notice to each dwelling unit on the block. The notices must contain:

- a) The name, address, and telephone number of the owner and the permittee.
 - b) A description of the project.
 - c) The start and completion dates of the project.
 - d) The name, address and 24-hour telephone number of a contact person.
17. A project sign is required for all major projects to be installed at either end of the project. The location for the sign to be worked out by the excavator and the City.
- A. The sign shall be a minimum of 24" x 36" with 2" minimum letters. It shall be hung on 4" x 4" wooden posts or a standard metal sign posts and include:
- 1) Project name, description, and Permit number.
 - 2) Permittee's name, address and 24 hour phone.
 - 3) Owner's name.
 - 4) Start date and completion date of the project.

100-1.04 Excavation Material

- 1. Pavement shall be cut to a straight, neat, vertical line prior to excavation.
- 2. All excavated material not suitable for backfilling shall be removed from the job site within twenty-four (24) hours. Excavated material suitable for backfilling may be stored on the job site for a maximum of five (5) working days, provided it does not occupy any more street space than the permit allows and provided this material is completely prevented from blowing, washing, or being thrown about at all times. Material may be stored on the adjacent private property if a written approval from the property owner has been obtained.
- 3. No trench shall be opened on any street that is not backfilled or plated at the end of the same day. Fines will be charged if any trench is left open.

100-1.05 Backfill

- 1. Trenches shall be backfilled with sand or suitable site excavated material. Compaction of backfill shall be in accordance with Drawing No. 50 or 50-A.
- 2. When undermining occurs, remove existing pavement as required to compact the backfill and restore the pavement.

3. Each encroachment permit will specify the number of compaction tests required. Each compaction test shall be certified by an independent laboratory and submitted to the City Encroachment Permit Inspector. If the results of compaction test show generally poor or marginal compliance with City compaction requirements, the number of compaction tests may be increased by the Engineer to help insure that proper compaction is being achieved.
4. A CONTROL NUMBER SHALL BE OBTAINED by calling (209) 937-8900 one (1) day in advance of the start of work on any encroachment permit. A copy of the permit and control number shall be on site during the construction.

100-1.06 Paving

1. Trenches shall be paved as shown on Drawing No. 50 or 50-A. After the trench has been backfilled and immediately prior to placing asphalt concrete, the existing asphalt concrete shall be saw cut, or milled according to City Standards, to a vertical face. New AC paving shall be butt joined to the existing asphalt concrete vertical face. No feathering of new paving to existing paving is allowed. The vertical faces shall be tack coated. In moratorium streets, placement of the final one and one-half (1 ½) inches of AC wearing surface shall be done by a paving machine or spreader box. Asphalt concrete shall be delivered and compacted in accordance with the Standard Specifications and Plans

To allow for proper placement of the new pavement section, damaged pavement outside of the original trench cut lines shall be removed by cutting in lines perpendicular to or parallel to the original trench lines. No diagonal cuts are to be made. Undamaged pavement of three (3) feet or less between two damaged areas shall also be removed. (See Drawing No. 50-B)

2. Pavement will be restored using the "T Section" shown on Drawing No. 50.
3. For trenches in moratorium streets parallel to the centerline of the street, the entire lane shall be key-cut one and one-half (1 ½) inches, deep and repaved with asphalt concrete. For trenches in moratorium streets with chip seal or slurry seal coatings, the entire lane shall be resurfaced with these coatings.
4. Trenches in concrete streets shall be paved with concrete pavement. The thickness of the new pavement shall be equal to the thickness of the existing pavement with the minimum thickness to be six (6) inches in the roadway.
5. Trenches in arterial streets, with asphalt wearing surfaces, shall be paved with not less than eleven and one-half (11 ½) inches asphalt concrete topped with one and one-half (1 ½) inches of asphalt concrete wearing surface or match the existing pavement if it is more.

6. Trenches in local and collector streets shall be paved with not less than six and one-half (6 ½) inches asphalt concrete topped with one and one-half (1 ½) inches of asphalt concrete wearing surface or match the existing pavement if it is more.
7. Pavement shall be restored within fourteen (14) working days from the time the entire trench is backfilled. For minor excavations such as service installations, the pavement shall be restored within thirty (30) working days from the time the entire trench is backfilled. The asphalt concrete wearing surface shall be placed within five (5) working days after placement of asphalt concrete base, weather permitting.
8. Asphalt pavement shall be compacted to obtain a minimum of ninety-five percent (95%) of relative compaction. The asphalt concrete wearing surface shall have no irregularity greater than five-sixteenths of an inch (5/16") in ten feet (10') in any direction.
9. On collector and arterial streets steel plates shall be used when ordered by the permit inspector to facilitate traffic flow and to protect the excavation until finished pavement is restored. Steel plates used to bridge a street opening shall be ramped to the elevation of the adjacent pavement and secured against movement in any direction. Temporary ramps shall be constructed of asphalt and shall have a gradual slope. On all other streets, temporary asphalt cutback is permitted.
10. After trench paving, utility trenches shall be color-coded with the 4" stenciled initials of the company doing the trench. These initials will be prescribed by the City of Stockton as stated below and the color shall be as prescribed by the Underground Service Alert (USA). The initials shall be stenciled on the existing asphalt adjacent to the new trench. When paving is complete, the initials shall be painted, using Krylon (or an approved equal), at the beginning and end of each trench and at each intersection, if applicable. The use of colored identifying disks in place of painting is allowed.

Company	Color	Initials
PG&E - Electric	Red	PG&E
PG&E - Gas	Yellow	PG&E
Pacific Bell	Orange	PB
Cable TV	Orange	TV
Cal Water	Blue	CW
City of Stockton - Water	Blue	COS
City of Stockton - Electric	Red	COS
City of Stockton - Sewer	Green	COS

Any agency not listed above must contact Public Works to be assigned initials

before performing any excavation or trenching activities in the City of Stockton.

USA Codes are:

Electric	Red
Gas-Oil	Yellow
Communication - CATV	Orange
Water	Blue
Sewer	Green
Temporary Survey Markings	Pink
Proposed Excavation	White

All painted USA markings shall be removed by the permittee after the work has been completed.

11. Wheelchair ramps shown on Drawing No. 31 or 32 shall be constructed where any portion of the curb, at a legal pedestrian crosswalk or any portion of the sidewalk in immediate contact with such curb is removed, except where there is an existing wheelchair ramp in the cross-walk or where there is a subsidewalk basement behind the crosswalk.
12. All damaged pavement markings and striping shall be replaced and restored by the excavator.

100-1.07 Defects

1. Depressed trench pavement shall be repaired as follows:
 - A. Wearing surface defects - remove and restore wearing surface.
 - B. Major defects - excavate, remove and restore surface and base.
 - C. The Permit Inspector will determine the severity of the defect.
2. Work not complying with the above requirements shall be rejected, removed, and redone to the satisfaction of the City Engineer.
3. The owner of the facility/utility company is responsible for the roadway defects appearing after the permittee restores the trench (area adjacent to the trench). The owner is responsible for maintenance, repair or reconstruction of the excavation site's affected area until the city reconstructs, repaves, or resurfaces the street.
4. If there is a trench related failure after the work by the city, the owner of the facility/utility company is responsible for its repair.

5. The owner of the facility/utility company is responsible to maintain the trenches and repair any defects that may appear. The City Engineer will determine who is responsible for a defect when one is detected and will notify the responsible party and direct them to repair the facility.

When the City determines that an excavation or a defect is hazardous or constitutes a public nuisance or other imminent threat to public health, safety, or welfare, the City Engineer may order the responsible party to remedy the condition immediately.

- A. If the responsible party refuses or fails to make the needed repairs immediately, the City will make the repairs and:
 - 1) The responsible party will be charged all the actual costs including administration, construction, consultant fees, equipment, inspection, notification, remediation made necessary by the action of the permittee, repair, and restoration.
 - 2) The repair or restoration by the City does not relieve the responsible party from liability for future pavement failures.
 - 3) If the responsible party fails or refuses to pay the restoration cost, the cost of the repair or restoration will be deducted from the responsible party's deposit.

6. If the owner/person responsible for the roadway defect does not make the required repairs, the City will make the repairs and the responsible party will be charged for all the actual cost of repair, including but not limited to administration, construction, consultant fees, equipment, inspection, notification, remediation made necessary by the action of the permittee, and restoration. Repairs or restoration by the City does not relieve the responsible party(s) from liability for future pavement failures. If the responsible party fails or refuses to pay the cost of the repair, the cost will be deducted from the responsible party's deposit.

100-1.08 Violations

100-1.08.1 Excavation Violations - Any violation of the above regulations may result in the revocation of the encroachment permit and/or be subject to a citation process and/or fine. The fines for various violations are as follows:

VIOLATIONS	PENALTY (Not to exceed amount shown)
1. Working without a Permit(s),	\$1,000 and Stop Work

VIOLATIONS	PENALTY (Not to exceed amount shown)
control number not called in.	
2. Excavation without providing Public Notice	\$1,000 and Stop Work
3. Beginning a "Major Project" without having a Pre-Construction Meeting	\$500 per occurrence, per day
4. Violation of Permit Conditions	\$500 per occurrence, per day
5. Improper Site Protection: Improper plating, path of travel, barricading, etc.	\$500 per occurrence, per day
6. No permit on site	\$250 per occurrence, per day
7. Improper Trimming of Trench	\$250 per Trench
8. Any trench left open after the allowed work hours that is not back filled and covered.	\$250 per day
9. Improper Public Notice: No Project Sign, wrong information on sign/notice	\$100 per block, per day
10. Non-compliance with Trench Restoration Requirements	\$250 per trench, per day
11. Improper Housekeeping: Failure to remove spoil, dirty site, no sweeping, etc.	\$100 per block, per day
12. Other Excavation Code Violations	\$100 per occurrence, per day
13. Call for Inspection but not ready to be inspected	\$250 per occurrence, per day

The above fines, when assessed, shall be deducted from the cash deposit required by 100-

1.03 5A of this section or will be paid by the applicant if there is not a cash deposit.

To appeal any citations, fines, or other requirements, the Stockton Municipal Code procedure for appeal shall be followed. If there are any fines they must be paid and will be reimbursed if the appeal is valid.

100-1.08.2 Other Violations-Any violation of the above regulations and/or Chapter 9 of the Stockton Municipal Code may result in the revocation of the encroachment permit and/or be subject to an administrative citation per Stockton Municipal Code Sections 1.042-1.059.

Violations include but are not limited to working without a permit, failure to obtain a control number before starting work, no permit on the work site, failure to comply with the permit's conditions, provisions and requirements, improper work area housekeeping, and work left open after allowed work hours that is not filled/covered.

SECTION 101

STREET MICROSURFACING

NOTE: THIS SECTION IS ADDED IN ITS ENTIRETY TO THE BLANK SECTION IN CALTRANS STANDARD SPECIFICATIONS.

101-1.01 Description - The work shall consist of installing a specialized slurry seal – either Type II or Type III Microsurfacing - on streets as shown on the plans. The installation work shall generally consist of the following:

1. Cleaning of existing pavement surface.
2. Removal of existing pavement markers.
3. Mixing of a polymer modified, cationic microsurfacing emulsion (MSE) - water and additives, mineral filler, and aggregate - and spreading of the mixture on cleaned pavement surface
4. Re-instatement of pavement markings / markers.

101-1.02 Materials:

101-1.02A Microsurfacing Emulsion (MSE) – The MSE shall be homogenous. The polymer shall be milled or blended into the asphalt or blended into the emulsifier solution prior to the emulsification process. The MSE shall contain a minimum of 3 percent polymer solids based on mass of MSE residual asphalt. A Certificate of Compliance shall be furnished with each shipment of MSE in conformance with the requirements in Section 94-1.05, “Test Report,” of the Standard Specifications.

The MSE shall conform to the following requirements:

Requirements for Polymer Modified, Cationic Microsurfacing Emulsion (MSE)

Tests on MSE:

Test	Test Method	Requirement
Viscosity @ 25°C, SSF	AASHTO T 59	15-90 sec
Sieve Test, max.	AASHTO T 59	0.30%
Settlement, 5 days, max.	ASTM D 244	5%
Storage Stability, 1 day, max.	AASHTO T 59	1%
Residue by Evaporation, min.	California Test 331	62%

Tests on Residue from Evaporation Test:

Test	Test Method	Requirement
G* @ 20°C, 10 rad/sec, MPa	AASHTO TP 5	Report Only
Penetration @ 25°C	AASHTO T 49	40-90
Phase Angle @ 50°C, 10 rad/sec, PA (max) - PA base	AASHTO TP 5	Report Only
Softening Point, min.	AASHTO T 53	57°C
Stiffness @ -12°C, MPa, and M-value	AASHTO TP 1	Report Only

101-1.02B Water and Additives - Water shall be of such quality that the asphalt will not separate from the MSE before the microsurfacing is placed on the pavement. If necessary for workability, additives that will not adversely affect the microsurfacing product may be used.

101-1.02C Mineral Filler - Mineral filler shall be portland cement or hydrated lime that is free of lumps. Portland cement shall be either Type I, Type II, Type III or a combination thereof. The type of mineral filler shall be determined by the Contractor based on laboratory mix designs. The mineral filler will be considered part of the aggregate gradation requirement.

101-1.02D Aggregate - Type II aggregate may be used on low to moderate speed traveled ways, residential streets, pedestrian traffic areas, shoulders and areas where a smoother surface texture is desired. Generally, Type III aggregate is used on high speed traveled ways and areas where a coarse surface texture is desired. Type III aggregate must be used when filling wheel path depressions and on bridge decks. **The Engineer shall decide the aggregate type to be used on the project.** The aggregate shall be free from vegetable matter and other deleterious substances. Aggregate shall be free of lumps and oversize particles. One hundred percent of the parent aggregate shall be larger than the largest stone in the gradation to be used.

Aggregate shall conform to the grading and quality requirements prior to the addition of the MSE. If aggregates are blended, each component aggregate shall conform to the Sand Equivalent and Durability Index requirements.

The percentage composition by mass of aggregate, including mineral filler, shall conform to the following grading requirements:

TYPE II

Sieve Sizes	Percentage Passing
9.5-mm	100
4.75-mm	94 - 100
2.36-mm	65 - 90
1.18-mm	40 - 70
600- μ m	25 - 50
75- μ m	5 - 15

TYPE III

Sieve Sizes	Percentage Passing
9.5-mm	100
4.75-mm	70 - 90
2.36-mm	45 - 70
1.18-mm	28 - 50
600- μ m	19 - 34
75- μ m	5 - 15

The aggregate, excluding mineral filler, shall conform to the following quality requirements:

Test	California Test	Requirement
Sand Equivalent, min.	217	68
Durability Index, min.	229	55
Percentage of Crushed Particles, min. ¹	205	100%
Los Angeles Rattler Loss at 500 Rev., max. ²	211	35%

Notes:

1. California Test 205, Section D, is amended to read: "Any particle having 2 or more freshly, mechanically fractured faces shall be considered a crushed particle."
2. California Test 211, Los Angeles Rattler, shall be performed on the parent aggregate before crushing

If the results of the aggregate grading do not meet the specified gradation, the microsurfacing represented by the test shall be removed. However, if requested in writing by the Contractor and approved by the Engineer, the microsurfacing may remain in place and the Contractor shall pay to the City \$2.00 per ton for the aggregate represented by the tests and left in place.

If the results of the Sand Equivalent test for aggregate do not meet the specified requirement, the microsurfacing represented by the test shall be removed. However, if requested in writing by the Contractor and approved by the Engineer, the microsurfacing may remain in place and the Contractor shall pay to the City \$2.00 per ton for the aggregate represented by the tests and left in place.

When the results of both the aggregate grading and the Sand Equivalent tests do not conform to the specified requirements and if the microsurfacing is allowed to remain in place, both payments to the City shall apply.

No single aggregate grading or Sand Equivalent test shall represent more than 275 tons or one day's production, whichever is smaller.

101-1.03 Mix Design - At least 10 days before the microsurfacing placement commences, the Contractor shall submit for approval of the Engineer a laboratory report of tests and a proposed mix design covering the specific materials proposed for use on the project.

The percentages of each individual material proposed in the mix design shall be shown in the laboratory report. Adjustments may be required during construction based on field conditions. Individual materials shall be within the following limits.

MSE Residual Asphalt	5.5% to 9.5% by dry mass of aggregate
Water and Additives	As needed
Mineral Filler	0% to 3% by dry mass of aggregate

The mix design and aggregate tests shall be performed by a laboratory capable of performing the applicable International Slurry Surfacing Association (ISSA) tests. The proposed microsurfacing mixture shall conform to the specified requirements when tested in conformance with the following tests:

Test	ISSA Test Method	Requirements
Wet Cohesion @ 30 Minute (Set), min. @ 60 Minute (Traffic), max.	TB* 139	12 kg-cm 20 kg-cm
Excess Asphalt, max.	TB* 109	540 g/m ²
Wet Stripping, min.	TB* 114	90%
Wet Track Abrasion Loss 6-day Soak, max.	TB* 100	810 g/m ²
Displacement Lateral, max. Specific Gravity After 1000 Cycles of 57 kg, max.	TB* 147A	5% 2.10
Classification Compatibility, min.	TB* 144	(AAA, BAA) 11 grade points
Mix Time @ 25°C, min.	TB* 113	Controllable to 120 Seconds

TB* = Technical Bulletin

The laboratory that performed the tests and designed the mixture shall sign the laboratory report. The report shall show the results of the tests on individual materials and shall compare their values to those required by these special provisions. The report shall clearly show the proportions of aggregate, water (minimum and maximum), additive usage, mineral filler (minimum and maximum), and MSE residual asphalt content (minimum and maximum) based on the dry mass of aggregate. The laboratory shall report the quantitative

effects of moisture content on the unit mass of the aggregate (bulking effect) in conformance with the requirements of ASTM Designation: C 29M. Previous laboratory reports covering the same materials may be accepted provided the material test reports were completed within the previous 12 months. The mix design shall further show the recommended changes in water, additive, and mineral filler proportions for high temperature weather conditions by reporting proportions of materials required for 60 seconds of mix time with materials heated to 38°C. This 38°C mixing report will not be required for projects requiring nighttime application.

The component materials used in the mix design shall be representative of the microsurfacing materials proposed by the Contractor for use on the project.

Once the mix design is approved by the Engineer, no substitution of other material will be permitted unless the materials proposed for substitution are first tested and a laboratory report is submitted for the substituted design in conformance with these special provisions. Substituted materials shall not be used until the mix design for those materials has been approved by the Engineer.

The completed mixture, after addition of water and additives, if additives are used, shall be such that the microsurfacing mixture has proper workability. At the expiration of the time allowed by the Engineer for closure of lanes the microsurfacing mixture shall be sufficiently cured to support unrestricted traffic.

101-1.04 Proportioning - Aggregate, water, additives (if used), mineral filler, and MSE shall be proportioned by volume utilizing the mix design approved by the Engineer. If more than one kind of aggregate is used, the correct amount of each kind of aggregate to produce the required grading shall be proportioned separately, prior to adding the other materials of the mixture, in a manner that will result in a uniform and homogeneous blend.

The aggregate shall be proportioned using a belt feeder operated with an adjustable cutoff gate. The height of the gate opening shall be determinable. The MSE shall be proportioned by a positive displacement pump. Variable rate emulsion pumps, if used, shall be calibrated and sealed in the pump's calibrated condition in conformance with California Test 109 prior to usage.

The delivery rate of aggregate and MSE per revolution of the aggregate feeder shall be calibrated at the appropriate gate settings for each mixer-spreader truck used on the project in conformance with California Test 109.

The aggregate belt feeder shall deliver aggregate to the pugmill with such volumetric consistency that the deviation for any individual aggregate delivery rate check-run shall not exceed 2 percent of the mathematical average of 3 runs of at least 3 tons each. The emulsion pump shall deliver MSE to the pugmill with such volumetric consistency that the deviation for any individual delivery rate check-run shall be within 2 percent of the mathematical

average of 3 runs of at least 1135 L each. The water pump shall deliver water to the pugmill with such volumetric consistency that the deviation for any individual delivery rate check-run shall be within 2 percent of the mathematical average of 3 runs of at least 1135 L each.

The MSE storage tank shall be located immediately before the emulsion pump and shall be equipped with a device which will automatically shut down the power to the emulsion pump and aggregate belt feeder when the MSE level is lowered to a point where the pump suction line is exposed.

A temperature-indicating device shall be installed in the emulsion storage tank at the pump suction level. The device shall indicate the temperature of the MSE and shall be accurate to within 5°C.

The belt delivering the aggregate to the pugmill shall be equipped with a device to monitor the depth of aggregate being delivered to the pugmill. The device for monitoring the depth of aggregate shall automatically shut down the power to the aggregate belt feeder whenever the depth of aggregate is less than the target depth of flow. A second device shall be located where the device will monitor the movement of the aggregate belt by detecting revolutions of the belt feeder. The devices for monitoring no flow or belt movement shall automatically shut down the power to the aggregate belt when the aggregate belt movement is interrupted. The device to detect revolutions of the belt feeder will not be required where the aggregate delivery belt is an integral part of the drive chain. To avoid erroneous shutdown by normal fluctuation, a delay of 3 seconds will be permitted between sensing and shutdown of the operation.

101-1.05 Mixing and Spreading Equipment - The microsurfacing shall be mixed in continuous pugmill mixers of adequate size and power for the type of microsurfacing to be placed. All indicators shall be in working order prior to commencing mixing and spreading operations.

Mixer-spreader trucks shall be equipped to proportion the aggregate, water, additives (if used), mineral filler, and MSE by volume. Rotating and reciprocating equipment on mixer-spreader trucks shall be covered with metal guards.

The mixer-spreader truck shall not be operated unless low-flow and no-flow devices and revolution counters are in good working condition and functioning and metal guards are in place. The required indicators shall be visible while walking alongside the mixer-spreader truck.

Aggregate feeders shall be connected directly to the drive on the emulsion pump. The drive shaft of the aggregate feeder shall be equipped with a revolution counter reading to the nearest one-tenth of a revolution.

In addition to the provisions in the fourth paragraph of Section 5-1.10, "Equipment and Plants," of the Standard Specifications, the identifying number of mixer-spreader trucks shall

be at least 75 mm in height, located on the front and rear of the vehicle.

The microsurfacing mixture shall be spread by means of a spreader box. However, when wheel path depressions have a cross section that is deformed 12.5 mm or more, the individual wheel paths shall first be filled utilizing a wheel path depression (rut) box.

101-1.05A – Spreader Box - The spreader box shall be capable of placing the microsurfacing a minimum of 3.6 m wide and shall prevent the loss of microsurfacing from the box. Spreader boxes over 2.38 m in application width shall have baffles, reversible motor driven augers or other suitable means to insure uniform application on superelevated sections and shoulder slopes. Spreader box skids shall be maintained in such manner as to prevent chatter (wash boarding) in the finished mat. The spreader box shall be clean and free of microsurfacing and MSE at the start of each work shift.

The spreader box shall have a series of strike-off devices at the rear of the box. The leading strike-off device shall be fabricated of steel, stiff rubber or other suitable material. The number of strike-off devices shall be determined by the Contractor. The first strike-off device shall be designed to maintain close contact with the pavement during the spreading operations, shall obtain the thickness required, and shall be capable of being adjusted to the various pavement cross sections for application of a uniform microsurfacing finished surface. The final strike-off device shall be fabricated of flexible material suitable for the intended use and shall be designed and operated to ensure that a uniform texture is achieved in the finished surface of the microsurfacing. The final strike-off device shall be cleaned daily and changed if problems with longitudinal scouring occur.

Flexible fabric drags attached to the rear of the spreader box shall not be used.

101-1.05B Wheel Path Depression (Rut) Box - The wheel path depression (rut) box shall be designed to have adjustable strike-off devices to regulate the depth and shall have a width of between 1.52 m and 1.81 m. Hydraulic augers, or similar devices, shall be installed and shall be capable of moving the mixed material from the rear to the front of the filling chamber. These devices shall also be capable of guiding the larger aggregate into the center, deeper section of the wheel path depression, and forcing the finer material toward the outer edges of the spreader box. In areas inaccessible to the wheel path depression (rut) box, the microsurfacing mixture may be spread by other methods approval by the Engineer.

101-1.06 Placing - The microsurfacing mixture shall be uniformly spread on the existing surfacing within the rate specified without spotting, rehandling, or otherwise shifting the mixture. The microsurfacing mixture shall not be placed when directed otherwise by the Engineer, when the ambient temperature is below 10°C, or during unsuitable weather. Microsurfacing shall not be placed if rain is imminent or if there is the possibility that there will be freezing temperatures within 24 hours.

When wheel path depressions have a cross section that is deformed 12.5 mm or more, the individual wheel paths shall first be filled utilizing a wheel path depression (rut) box. The depth of the wheel path depression shall be determined after adjacent ridges have been removed. The maximum single application for wheel path depressions shall be 25 mm. Wheel path depressions of depths greater than 25 mm shall require multiple applications in each depression.

Wheel path depression repair shall be constructed with a slight crown to allow for initial compaction by traffic on the microsurfacing.

Freshly filled wheel path depressions shall be compacted by traffic for a minimum of 12 hours before additional lifts of microsurfacing material are placed for rut filling purposes or as surface courses.

Prior to placement of the microsurfacing, the pavement markers shall be removed and the surface shall be cleaned by sweeping, flushing or other means necessary to remove loose particles of paving, dirt, and other extraneous material. When required by local conditions, the roadway surface may be fogged with water ahead of the spreader box. The application of the fog spray may be adjusted to suit temperatures, surface texture, humidity, and dryness of pavement.

Microsurfacing shall be spread at a rate within the following ranges of kilograms of dry aggregate per square meter.

Microsurfacing Type	Location	Spread Rate
Type II	Full Lane Width	5.5 – 11.0
Type III ¹	Full Lane Width	11.0 – 17.5
Type III ²	Full Lane Width	16.0 – 17.5

Notes:

1. For microsurfacing over asphalt concrete pavement.
2. For microsurfacing over portland cement concrete pavement and concrete bridge decks.

Longitudinal joints shall correspond with the edges of the final traffic lanes. The Engineer may permit other patterns of longitudinal joints if the patterns will not adversely affect the quality of the finished product.

Through traffic lanes shall be spread in full lane widths only. Longitudinal joints common to 2 traffic lanes shall be butt joints with overlaps not to exceed 76 mm. Building paper shall be placed at the transverse joints to avoid double placement of the microsurfacing. Other suitable methods to avoid double placement of the microsurfacing will be allowed. Hand tools shall be available to remove spillage.

The mixture shall be uniform and homogeneous after placing on the surfacing and shall not

show separation of the MSE and aggregate after setting. The completed surface shall be of uniform texture and free from ruts, humps, depressions, or irregularities. Adequate means shall be provided to protect the microsurfacing from damage by traffic until such time that the mixture has cured sufficiently so that the microsurfacing will not adhere to or be picked up by the tires of vehicles.

The microsurfacing shall be swept approximately 24 hours after placement to remove loosened or shed aggregate particles. Thereafter, the microsurfacing shall be swept, when directed by the Engineer, for up to 10 days after placement to remove loosened or shed aggregate particles. Sweeping shall be performed in such a manner that the microsurfacing will not be damaged.