

CITY OF TURLOCK



STANDARD SPECIFICATIONS AND DRAWINGS 2016



CITY OF TURLOCK
DEVELOPMENT SERVICES
ENGINEERING DIVISION



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1 DEFINITIONS AND TERMS

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1 DEFINITIONS AND TERMS

PREFACE

The Standard Drawings and Specifications contained hereinafter shall be the Standard Drawings and Specifications for the City of Turlock and are to provide specific design and construction requirements for all improvements within the City.

All work shall be performed in accordance with the applicable sections of these Standard Drawings and Standard Specifications. The State of California, Department of Transportation Standard Specifications shall be the basis of reference and shall be referred to as "Caltrans Specifications" hereafter. In case of a conflict between this document and any other specifications, the specifications contained herein shall take precedence and shall be used in lieu of such conflicting specifications. The Standard Specifications shall take precedence over the Standard Drawings.

The City Engineer may authorize minor variances or changes in design, testing, materials and procedures where circumstances and good practice indicate the interests of the City and all concerned parties warrant such variance.

DEFINITIONS AND TERMS

1-1 GENERAL

Unless the context otherwise requires, wherever in the specifications and other contract documents the following abbreviations and terms, or pronouns in place of them, are used, the intent and meaning shall be interpreted as provided in this Section One.

Working titles having a masculine gender, such as "workman" and "journeyman" and the pronoun "he", are utilized in the specifications for the sake of brevity, and are intended to refer to persons of either sex.

1-2 ERRATA

Errata shall be issued for revisions to the Standard Specifications and/or Standard Drawings. Errata shall be available at the office of the City Engineer and on the City's website. Contractor shall assume full responsibility for verifying that the most current version of the Standard Specifications and Drawings are used.

1-3 ABBREVIATIONS

A		F	
AN	American Association of Nurserymen	F&B	Front & Back
AASHTO	American Association of State Highway and Transportation Officials	°F	Fahrenheit
AB	aggregate base	F, Flg	flang(ed)
AC	asphalt concrete	F & C	frame and cover
ACI	American Concrete Institute	F & G	frame and grate
ADA	American Disabilities Acts	Fdn	foundation
Adj	Adjacent	FG	finished grade
AISC	American Institute of Steel Construction	FH	fire hydrant
ANSI	American National Standards Institute	FL, F/L	flow line
Approx	approximate	Ft	foot, feet
Appurt	appurtenances	Ftg	footing
AREA	American Railway Engineering Association		
ASTM	American Society for Testing and Materials	G	
Ave	Avenue	G	underground gas line
AWPA	American Wood Preservers Association	Ga	gauge
AWS	American Welding Society	GAL	Gallon
AWWA	American Water Works Association	Galv	galvanized
		GIS	geographic information system
B		GPM	gallons per minute
BCR	begin curb return	GPS	global positioning system
Beg	begin	GV	gas valve
BL	base line		
Blvd	Boulevard	H	
Bldg	building	ha	hectare (10,000 m2)
BM	bench mark	HC	handicap
Bot	bottom	Horiz	horizontal
		HB	hose bib
C			
°C	Celsius	I	
C & G	curb and gutter	ID	inside diameter
Caltrans	California Department of Transportation	IN	inch
CB	catch basin	Inv	invert
CF	cubic foot	Int	intersection
CFS	cubic feet per second	ISTEA	Intermodal Surface Transportation Efficiency Act
CIP	cast in place		
Cl	class	J	
CL, C/L	center line	Jt	joint
Clr	clear, clearance	JP	Joint Pole
cm	centimeter		
CMP	corrugated metal pipe	K	
Cnd	conduit	k	kilo
CO	clean out	kg	kilogram
Conc	concrete	kg/m3	kilogram per cubic meter
Const	construction	kV	kilovolt
Cont	continuous		
CSP	corrugated steel pipe	L	
Ctr	center	L, l	liter, length
CY	cubic yard	LB	Pound
		LF	Linear Foot
D		Long	longitudinal
Deg	degree	LS	Lump Sum
Det	detail	Lt	left
Dia	diameter	Lum	Luminaire
Dim	dimension		
DIP	ductile iron pipe	M	
Dr	drive	m	meter
Dwg	drawing	m2	square meter
Dwy	driveway	m3	cubic meter
		mm	millimeter
E		Max	maximum
E, Elec	electrical	Med	median
EA	each	MH	manhole
EB	eastbound	Mi	Mile(s)
ECR	end curb return	Min	minimum
Elev, El	elevation	Misc	miscellaneous
EP	edge of pavement	MJ	mechanical joint
ES	edge of shoulder	Mkr	marker
ETW	edge of traveled way	ML	match line
Exc	excavation	Mon	monument
Exist, (E)	existing		
Exp	expressway		

Mtl material

N
N newton
NB northbound
NEMA National Electrical Manufacturers Association
No number

O
OC on center
OD outside diameter
OG original ground

P
Pa Pascal
PB pull box
PC point of curvature
PCC portland cement concrete
Ped pedestrian
PG & E Pacific Gas & Electric
PI point of intersection
PkwY parkway
PL, P/L property line
PM post mile
POC point on horizontal curve
POT point on tangent
PP power pole
PPP perforated plastic pipe
PRC point of reverse curvature
PRF pavement reinforcing fabric
Proj project
Prop, (P) proposed
Pt point
PVC polyvinyl chloride
Pvmt pavement

R
R radius
R & S remove and salvage
RCP reinforced concrete pipe
Rd road
Reinf reinforcing or reinforced
Rel relocate
Reqd required
Ret retaining
RR railroad
Rt right
Rte route
RW, R/W right of way
Rwd redwood

S
Salv salvage
SB southbound
SD storm drain
Sec section
SFRR Sante Fe Railroad
SG subgrade
Shld shoulder
Sh sheet
SL, S/L station line
SPRR Southern Pacific Railroad
Spec(s) specification(s)
SPP slotted plastic pipe
SQFT square foot
SQYD square yard
SS sanitary sewer
slope stake
St street
St Lt street light, electrolier
STA, Sta station
Std standard
Str structure

SW sidewalk, or sound wall
Swr, S sewer

T
t metric ton (tonne = 1000 kg)
T underground telephone line
TC top of curb
Temp temporary
TG top of grade
TID Turlock Irrigation District
TO top of
TP telephone pole
Trans transition
TS traffic signal
TV underground television line
TWRR Tidewater Southern Railroad
Typ typical
Typ Sec typical section

U
UBC Uniform Building Code
UL Underwriters Laboratories Inc.
UPRR Union Pacific Railroad
USA Underground Service Alert
USC University of Southern California
USCGS United States Coast and Geodetic Survey

V
V valve, design speed
Var variable, varies
VCP vetrified clay pipe
Vert vertical

W
W water, width
WATCH Work Area Traffic Handbook
WB west bound
WV water valve
WE wing wall
WWM welded wire mesh

X
Xing crossing
X Sec cross section

1-4 ACCEPTANCE

“Acceptance” shall mean the formal written acceptance by the City Engineer of an entire contract which has been completed in all respect in accordance with the plans and specifications and any modifications thereof previously approved.

1-5 ADVERTISEMENT

“Advertisement” shall mean the published notice inviting bidders to submit sealed proposals for the construction of the project.

1-6 BIDDER

“Bidder” shall mean any individual, firm, co-partnership, or corporation submitting a proposal for the work contemplated, acting either directly or through properly authorized agents.

1-7 CITY

“City” shall mean the City of Turlock located in Stanislaus County, California.

1-8 CITY ENGINEER

“City Engineer” shall mean the duly designated City Engineer of the Engineering Division, licensed and registered in California to perform the duties of Engineer, as herein specified or duly authorized agent.

1-9 CONTRACT

“Contract” shall mean the written contract will cover the performance of the Work and the furnishing of labor, materials, tools and equipment in the construction of the Work, consisting of the Contract Documents. The contract shall be deemed to include all of the following: Notice to Contractors, the accepted Proposal, General Provisions, Special Provisions, Plans and Detailed Drawings, Agreement, Faithful Performance Bond, Labor and Materials Bond, Addendums and any and all supplemental agreements amending, decreasing or extending the work contemplated and which may be required to complete the work in a substantial and acceptable manner.

1-10 CONTRACTOR

“Contractor” shall mean the individual, partnership, corporation, or other entity or combination thereof, has entered into a Contract with the City, or Contractor’s duly authorized representative.

1-11 COUNCIL

“Council” shall mean the City Council of the City of Turlock, California.

1-12 DATE OF ACCEPTANCE

“Date of Acceptance” shall mean the date on which the council authorizes the issuance of a certificate of satisfactory completion and acceptance, or the issuance of a warrant to the Contractor in lieu of payment.

1-13 DAYS

“Days” shall mean unless otherwise designated, days as used in the specifications will be understood to mean calendar days.

1-14 DETOUR

“Detour” shall mean a temporary route for traffic around a closed portion of a road.

1-15 LIQUIDATED DAMAGES

“Liquidated Damages” shall mean the amount prescribed in the specifications, pursuant to the authority of Public Contract Code Section 10226, to be paid to the City or to be deducted from any payments due or to become due the Contractor for each day's delay in completing the whole or any specified portion of the work beyond the time allowed in the specifications.

1-16 MANAGER

“Manager” shall mean the City Manager of the City of Turlock.

1-17 PAVEMENT

“Pavement” shall mean the uppermost layer of material placed on the traveled way or shoulders. This term is used interchangeable with surfacing.

1-18 PLANS

“Plans” shall mean the official project plans and Standard Drawings, profiles, typical cross sections, cross sections, working drawings and supplemental drawings, exhibits, or exact reproductions thereof, approved 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 a part of the plans whether or not reproduced in the special provisions.

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

(A) Standard Drawings. The Standard Drawings of the City of Turlock.

(B) Project Plans. The project plans are specific details and dimensions peculiar to the work and are supplemented by the Standard Drawings insofar as the same may apply.

1-19 PROPOSAL

“Proposal” shall mean the offer of the Bidder for the work when made out and submitted on the prescribed proposal form, properly signed and guaranteed.

1-20 PROPOSAL FORM

“Proposal Form” shall mean the approved form on which the City Engineer requires formal bids be prepared and submitted for the work.

1-21 PROPOSAL GUARANTY

“Proposal Guaranty” shall mean 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 for the performance of the work if the contract is awarded to him.

1-22 SPECIAL PROVISIONS

“Special Provisions” shall mean the special provisions are specific clauses setting forth conditions or requirements peculiar to the work and supplementary to these Standard Specifications.

1-23 SPECIFICATIONS

“Specifications” shall mean the directions, provisions, and requirements contained herein as supplemented by such special provisions as may be necessary, pertaining to the method and manner of performing the work or to the quantities and qualities of materials to be furnished under the contract. Supplemental agreements are written agreements executed by the Contractor and City Engineer, covering alterations, amendments or extensions to the contract, as hereinafter provided.

1-24 SUBGRADE

“Subgrade” shall mean that portion of the roadbed on which pavement, surfacing, base, sub base or a layer of any other material is placed.

1-25 SURFACING

“Surfacing” shall mean the uppermost layer of material placed on the traveled way or shoulders. This term is used interchangeable with pavement.

1-26 TRAVELED WAY

“Traveled Way” shall mean that portion of the roadway for the movement of vehicles, exclusive of shoulders.

1-27 WORK

“Work” shall mean all the work specified, indicated, shown or contemplated in the contract to construct the improvement, including all alterations, amendments or extensions thereto made by the contract change order or other written orders of the City Engineer.

1-28 WORKING DAY

See Section 8-1.06 of the Caltrans Specifications for a definition.

2 PROPOSAL REQUIREMENTS AND CONDITIONS

2-1 OBTAINING PLANS AND SPECIFICATIONS

General Provisions and Special Provisions may be obtained on the department's website for free as well as at the office of the City Engineer, 156 South Broadway, Ste 150, Turlock, CA, for the amount specified in the invitations for proposals. No refunds will be given.

2-2 CONTENTS OF PROPOSAL FORMS

Prospective bidders will be furnished with proposal forms which will state the location and description of the contemplated construction and will show the approximate estimate of the various quantities and kinds of work to be performed and materials to be furnished, with a schedule of items for which lump sum and/or unit prices are asked; also, instructions in regard to list of subcontractors and an affidavit form.

2-3 APPROXIMATE ESTIMATE

The quantities given in the Notice to Contractors, Proposal and Contract forms are approximate only, being given as a basis for the comparison of bids, and the City does not, expressly nor by implication, agree that the actual amount of work will correspond therewith, but reserves the right to increase or decrease the amount of any class or portion of the work, or to omit portions of work, as may be deemed necessary or expedient by the City Engineer.

2-4 EXAMINATION OF PLANS, SPECIFICATIONS, SPECIAL PROVISIONS AND SITE OF WORK

The actual sizes, locations and materials of existing utilities may vary from what is shown on the plans. Attention is directed to the possible existence of underground facilities not indicated on the plans or in the Special Provisions. The Contractor shall be responsible for verifying the locations and nature of the existing utilities, protecting them from damage and notifying the City Engineer of their location and nature.

The bidder shall examine carefully the site of the work contemplated and the proposal, plans, specifications and contract forms therefore. It will be assumed that the bidder has investigated and is satisfied as to the conditions to be encountered as to the character, quality and quantities of work to be performed and materials to be furnished, and as to the requirements of these Specifications.

Specific data required in regard to Public Utility Companies' pipes, conduits and structures shall be obtained from said Public Utility Companies. In case there should be any rubbish, stumps, trees, brush or other encumbrances on the line of work not covered by separate heading, they shall be removed by the contractor at his own expense.

Although the City of Turlock's soil conditions are homogenous and sandy in nature, various subsurface conditions such as hardpan, and ground water may be encountered. The City of Turlock will not be held responsible in any way for the type and character of subsurface conditions encountered. If a subsurface report is desired by the contractor/bidder, and one is not available at the office of the City Engineer, it will be the contractor's/bidder's responsibility and expense to verify the subsurface conditions by boring or other means necessary prior to bidding and/or performing work. Attention is directed to Section 7-8, "PRESERVATION OF PROPERTY" of these Specifications during boring and other miscellaneous operations.

Where there has been prior construction by the City or other public agencies within the project limits, records of such prior construction that are currently in the possession of the City and which have been used by, or are known to, the designers and administrators of the project will be made available for inspection by bidders or Contractors, upon written request, subject to the conditions hereinafter set forth. Such records may include, but are not limited to, as-built drawings, design calculations, foundation and site studies, project reports and other data assembled in connection with the investigation, design, construction and maintenance of such prior projects.

Inspection of such records of investigations and project records may be made at the office of the City Engineer. The records of investigations and project records are not a part of the contract and are available 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 project records, 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 are representative of those existing in or throughout such areas, or any part thereof, or that unlooked-for developments may not occur, or that materials other than, or in proportions different from those indicated, may not be encountered.

When a log of test borings or other record of geotechnical data obtained by the City's investigation of subsurface conditions is included with the contract plans, it is expressly understood and agreed that said record does not constitute a part of the contract, represents only the opinion of the City as to the character of the materials or the conditions encountered by it in its investigations, is included in the plans only for the convenience of bidders and its use is subject to all of the conditions and limitations set forth in this Section.

In some instances, information considered by the City to be of possible interest to bidders or contractors has been compiled as "Materials Information." Said "Materials Information" is not a part of the contract and is furnished solely for the convenience of bidders or contractors. It is understood and agreed that the fact that the City has compiled information as "Materials Information" and has exhibited or furnished to the bidders or contractors such "Materials Information" shall not be construed as a warranty or guaranty, express or implied, as to the completeness or accuracy of such compilations and the use of such "Materials Information" shall be subject to all of the conditions and limitations set forth in this Section.

When cross sections are not included with the plans, but are available, bidders or Contractors may inspect such cross sections and obtain copies for their use, at their expense.

When cross sections are included with the contract plans, it is expressly understood and agreed that said cross sections do not constitute part of the contract, do not necessarily represent actual site conditions or show location, character, dimensions and details of work to be performed, and are included in the plans only for the convenience of bidders and their use is subject to all the conditions and limitations set forth in this Section.

When contour maps were used in the design of the project, the bidders may inspect such maps, and if available, they may obtain copies for their use.

The availability or use of information described in this Section is not to be construed in any way as a waiver of the provisions of the first paragraph in this Section and a bidder or contractor is cautioned to make such

independent investigation and examination as he deems necessary to satisfy himself as to conditions to be encountered in the performance of the work and, with respect to possible local material sources, the quality and quantity of material available from such property and the type and extent of processing that may be required in order to produce material conforming to the requirements of the specifications.

No information derived from such inspection of investigations or compilation thereof made by the City or from the City Engineer, or his assistants, will in any way relieve the bidder or contractor from any risk or from properly fulfilling the terms of the contract.

2-5 PROPOSAL FORMS

All formal proposals shall be made upon forms to be obtained from the City Engineer. All items shown on Schedule of Bid Items shall be properly filled in and each sheet signed and the cost shall include all costs of labor, materials, equipment, State, Federal or other taxes applicable to the transaction. The completed forms shall be without inter-lineation's, erasures or alterations of any nature. If the proposal is made by an individual, his name and post office address must be shown; or, if made by a partnership, the name and address of each member of the firm or partnership must be shown; or, if made by a corporation, the proposal shall show the name of the State under the laws of which the corporation was chartered and the names, titles and business addresses of the president, secretary and treasurer of said corporation. The Bidder shall sign each page of bid form in the space provided for bidder's signature. All prices or monetary amounts shown on bids shall be written both in words and figures.

2-6 MATERIAL GUARANTY

Before any contract is awarded, the bidder may be required to furnish a complete statement of the origin, composition, and manufacture of any or all materials to be used in the construction of the work, together with samples, which may be subjected to the tests provided for in these specifications or in the special provisions to determine their quality and fitness for the work.

2-7 NOTICE TO CONTRACTORS

"Notice to Contractors" is published by the City Clerk for formally bid contracts in accordance with Section 22032 of the Public Contract Code. Among other provisions, the Notice to Contractors makes reference to Section 1770 et seq. of the Labor Code relating to determinations regarding prevailing wages. Contractor shall pay prevailing wages according to the rates established by these determinations. Copies of these determinations are on file in the Office of the City Engineer and shall be made available to any interested party on request, and also may be retrieved from the internet at www.dir.ca.gov/dlsr.

2-8 DETERMINATION OF AMOUNT BID - MATHEMATICAL ERROR

In determining the amount bid by each Bidder, the City may disregard computations that contain obvious mathematical errors in addition, subtraction, multiplication, and division that appear on the face of the Proposal. When such a mathematical error appears on the face of the Proposal, the City may, but shall not be obligated to correct any such error and compute the total amount bid by said Bidder on the basis of the corrected figure or figures to determine which Bidder has submitted the lowest bid, provided that the City shall have no responsibility or liability to any bidder if the City determines which Bidder has submitted the lowest bid without doing so.

When an item price is required to be set forth in the Proposal, and the total price for the item does not agree with a figure that is derived by multiplying the item price by the Project Estimate of the quantity of work to be performed for said item, the item price shall prevail over the total price for the item. The total

to be paid for each item shall be based upon the item price and not the total price for the item. If the Proposal contains only a total price for the item, and not the item price, the City shall determine the item price by dividing the total price for the item by the stated Project Estimate of the quantity of work to be performed for the item.

If the Proposal contains neither the item price nor the total price for the item, then it shall be deemed to be incomplete and the Proposal shall be rejected.

2-9 REJECTION OF PROPOSALS

Proposals may be rejected if they show any alteration of form, additions not called for, mathematical errors, conditional Bids, changes that make the Proposal illegible in any manner, or irregularities of any kind.

When Proposals are signed by an agent, other than an officer or officers of the corporation authorized to sign contracts on its behalf or a member of a partnership, a “power of attorney” must have been filed with the City prior to opening Bids or shall be submitted with the Proposal; otherwise, the Proposal shall be rejected as irregular and unauthorized. The City reserves the right to waive any informalities or minor irregularities in the Bids.

2-10 PROPOSAL GUARANTEE

All Bids shall be accompanied by one of the following forms of Bidder’s security, referred to herein as the “Bidder’s Proposal Guarantee”: Cashier’s check, a certified check, or a Bidder’s Bond executed by a surety insurer admitted and duly authorized to transact business in the State of California, made payable to the City.

No Bidder’s Bond shall be accepted unless it substantially conforms to the Bond form included in the Special Provisions. Bidder’s Bond forms may be obtained from the Engineer.

2-11 SUBCONTRACTORS

Each Bidder and each Contractor shall, to the extent required by law, comply with and be subject to the Subletting and Subcontracting Fair Practices Act of the State of California. (Public Contract Code Sections 4100 et seq. hereafter referred to as the “Act”.) Each Bidder bidding on a Contract subject to the Act, shall in the Bid, on a form provided by the City, set forth:

The name and location of the place of business of each proposed Subcontractor who shall perform work or labor or render service to the prime Contractor in or about the construction of the Work, or a Subcontractor licensed by the State of California who, under a subcontract to the prime Contractor, specially fabricates and installs a portion of the Work or improvement according to detailed drawings contained in the Plans and Specifications, in an amount in excess of one-half of one percent of the prime Contractor’s total bid or, in the case of bids for the construction of streets or highways, including bridges, in excess of one-half of one percent of the prime Contractor’s total bid or \$10,000, whichever is greater.

The portion and dollar amount of the work that will be done by each such Subcontractor. The prime Contractor shall list only one Subcontractor for each such portion as is defined by the prime Contractor in the Bid.

2-12 PUBLIC OPENING OF PROPOSALS

Proposals shall be opened and read publicly at the time and place indicated in the Notice to Contractors. Bidders or their authorized agents are invited to be present.

2-13 RELIEF OF BIDDERS

A Bidder may request relief from its Bid, pursuant to the provisions of Public Contract Code Section 5100 through 5103, inclusive.

2-14 DISQUALIFICATION OF BIDDERS

City shall not consider more than one Proposal from an individual, partnership, corporation, or other entity or combination thereof, under the same or different names. If City has reasonable grounds to believe that any individual, partnership, corporation or combination thereof is interested in more than one Proposal as a prime Bidder for the work contemplated, City may reject all Proposals in which such individual, partnership, corporation or combination thereof is interested. If City has reason to believe that collusion exists among any Bidders, City may reject the Proposals. City may reject a Proposal in which the bid(s) submitted for one or more items are obviously unbalanced, as reasonably determined by City.

2-15 LICENSING OF BIDDERS

Attention is directed to the provisions of Chapter 9 of Division 3 of the Business and Professions Code concerning the licensing of Contractors.

All Bidders and Contractors shall be licensed in accordance with the laws of California and any Bidder or Contractor not so licensed is subject to the penalties imposed by such laws. The Bidder's or Contractor's license must be of a class that permits its holder to do the Work contemplated as of the date the Proposal is submitted and such license must be maintained for the duration of the work. The Bidder shall indicate its license number and class in the space provided for that purpose on the Proposal Form.

The City shall specify the classification of Contractor's license that a Contractor shall possess at the time a Contract is awarded. This shall be included in the Plans and Notice to Contractors (Public Contract Code Section 3300).

3 AWARD AND EXECUTION OF CONTRACT

3-1 AWARD

The award of the contract, if it be awarded, will be to the lowest responsible bidder whose proposal complies with all the requirements prescribed, provided his bid is reasonable, and it is to the interest of the City to accept it. The City reserves the right to increase or decrease the quantity of any item or portion of the work or to omit portions of the work as may be deemed necessary or advisable by the City Engineer. The award, if made, will be made within sixty (60) days after the opening of the proposals.

3-2 EXECUTION OF CONTRACT

The contract, in form and contents satisfactory to the City, shall be executed by the successful bidder and returned, together with the contract bonds and compensation and public liability policies or certificates, within ten (10) days, not including Sundays and legal holidays, after the first publication of the notice of award. No proposal shall be considered binding upon the City until the execution of the contract. Failure to execute the contract and file acceptable bonds, policies, or certificates as provided herein, within such ten (10) day period, shall be just cause for the annulment of the award, and forfeit of proposal guaranty to the City as liquidated damages.

3-3 PERFORMANCE AND PAYMENT BONDS

All bonds shall be on the forms provided by the City or as approved by the City Attorney.

The successful Bidder shall provide a Performance Bond and a Payment Bond to the City, each for a sum equal to one hundred percent (100%) of the Contract Price. Each Bond shall be executed by a surety insurer admitted and duly authorized to transact business in the State of California. If the Contract Price is increased by Change Order, Contractor shall increase the Performance and/or Payment Bond amount(s) if and to the extent required by the Engineer.

Notwithstanding the foregoing, for any Contract awarded for a Contract Price of \$25,000.00 or less, no Performance Bond or Payment Bond will be required unless it is specifically required in the Special Provisions, except as otherwise required by any Laws or Regulations.

3-4 INSURANCE

Contractor shall not commence work under this agreement until Contractor has obtained approval regarding all insurance requirements, forms, endorsements, amounts, and carrier ratings, nor shall Contractor allow any subcontractor to commence work on a subcontract until all similar insurance required of the subcontractor shall have been so obtained and approved. Contractor shall procure and maintain for the duration of this Contract insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by Contractor, his agents, representatives, employees or subcontractors. The minimum insurance requirements can be found on file with the City Engineer.

3-5 PROOF OF CARRIAGE OF INSURANCE FORMS

Contractor shall furnish City on City forms (or others as approved), through the City Engineer, concurrently with the execution hereof, with satisfactory proof of carriage of the insurance required, and that each carrier shall give City at least thirty (30) days prior notice of the cancellation of any policy during the effective period of this contract.

4 SCOPE OF WORK

4-1 INTENT OF PLANS AND SPECIFICATIONS

The intent of the Plans and Specifications is to prescribe the details for the completion of the Work that Contractor undertakes to perform in accordance with the terms of the Contract. Where the Plans and Specifications describe portions of the Work in general terms, but not in complete detail, it is understood that only the best general practice is to prevail and that only materials and workmanship of the best quality shall be used. Unless otherwise specified, Contractor shall furnish all labor, materials, tools, equipment, and incidentals, and do all the Work involved in executing the Contract in a satisfactory and workmanlike manner.

4-2 CHANGES IN THE WORK

The City of Turlock reserves the right to increase or decrease the quantity of any item or portion of the work or to omit portions of the work as may be deemed necessary or advisable by the City Engineer; also, to make such alterations or deviations, additions to, or omissions from the plans and specifications, as may be determined during the progress of the work to be necessary and advisable for the completion thereof.

Upon written order of the City Engineer, the Contractor shall proceed with the work as increased, decreased or altered.

ALTERATIONS INVOLVING CHANGES IN THE CHARACTER OF THE WORK

In the event the Contractor is ordered to make alterations involving an increase or decrease in the quantity of any item or portion of the work, or to omit portions of the work, which increases, decreases or omissions do not materially change the character of the work from that on which the Contractor's bid prices were based, no adjustment will be made for any increase or decrease in the cost of any given item unless the quantity of such item is increased or decreased more than twenty-five percent (25%) of the contract amount of such item.

If an increase or decrease is made which together with previous orders or agreed changes in quantity, increases or decreases the amount of any item more than twenty-five percent (25%) of the contract amount thereof, an adjustment of compensation will be made. Such adjustment will be based on the increased or decreased actual cost per unit of said item or items to the Contractor or, at the option of the City, such adjustment will be made on the basis of force account. In any case, such adjustment shall apply only to the excess of the increase or decrease over twenty-five percent (25%) of the original contract amount of such item or items.

The City Engineer shall determine the amount of such adjustment and his decision shall be final and conclusive between the parties. Where the character of the work is materially changed or made materially different, the following subsection 4-2B of this article shall govern and this subsection shall not apply.

ALTERATIONS INVOLVING CHANGES IN THE CHARACTER OF THE WORK

If the character of the work is materially changed by reason of an order of the City Engineer from that on which the Contractor based his bid price, adjustment will be made as may be agreed upon between the City Engineer and the Contractor, or, in the event of failure to agree, the Contractor will be paid on the basis of force account in accordance with the provisions of the following action of these specifications entitled "Extra Work".

By way of example and without limitation, the ordinary adjustments of alignment and grade to balance quantities or improve field conditions shall not be considered a material change in the character of the work and the slopes shown on the cross-sections shall not be considered an indication of the class of material to be excavated, but are used only for the basis of determining the approximate estimate of the quantities and to define the limitations of the work.

When the City Engineer and the Contractor fail to agree as to whether an alteration ordered by the City Engineer constitutes a material change or difference in the character of work as herein contemplated, or fail to agree on the compensation to be allowed for such altered work, the Contractor shall forthwith proceed with the altered work upon written order from the City Engineer. Pending a settlement of the dispute, the Contractor shall file with the City Engineer within ten (10) days after receiving such written notice to proceed a protest setting forth in detail in what particulars the character of the work was changed and by what amount the unit cost was increased. The failure of the City Engineer to recognize a change in the character of the work when ordering alterations shall in no ways be construed as relieving the Contractor of his duty and responsibility for filing a protest as above provided. The Contractor shall receive no additional compensation for such altered work unless he files such a protest within ten (10) days after receiving notice from the City Engineer to proceed a full settlement shall be made on the basis of the contract unit prices.

4-3 EXTRA WORK

New and unforeseen items of work will be classed as extra work when the item cannot be covered by any of the various items or combination of items for which there is a bid price. The Contractor shall do such extra work and furnish such materials and equipment as may be required in writing by the City Engineer, but shall do no extra work except upon written order from the City Engineer, and in the absence of such written order he shall not be entitled to payment for such extra work. All bills for extra work done in any month shall be filed in writing with the City Engineer before the fifteenth of the following month. For such extra work the Contractor shall receive compensation at the prices previously agreed upon in writing, or upon a failure to agree upon prices, he shall be paid on force account.

The City reserves the right to furnish any material deemed expedient and the Contractor shall have no claim for profit on the cost of such materials. All extra work shall be adjusted daily upon report sheets furnished to the City Engineer by the Contractor and signed by both parties, which daily reports shall thereafter be considered the true record of extra work done.

4-4 CHANGE OF CONTRACT PRICE

The contract price may only be changed by a contract change order. The value of any work covered by a contract change order for an adjustment in the contract price will be determined in the City's sole discretion as follows:

- (a) If the work performed is on the basis of unit prices contained in the contract documents, the change order will be determined in accordance with the provisions in Section 4-1.05, "Changes and Extra Work", of the Caltrans Standard Specifications; or
- (b) If the work performed is not included on the engineers estimate associated with a unit price, the change order will be by a mutually agreed lump sum; or

- (c) If the change order is not determined as described above in either 16 (a) or 16 (b), the change order will be determined on the basis of force account in accordance with the provisions below.

FORCE ACCOUNT

For work paid by force account, the Engineer compares the City's records to the Contractor's daily force account work report. When the Engineer and the Contractor agree on the contents of the daily force account work reports, the Engineer accepts the report and the City pays for the work. If the records differ, the City pays for the work based only on the information shown on the City's records.

If a subcontractor performs work at force account, accept an additional 2 percent markup to the total cost of that work paid at force account, including markups specified as below, as reimbursement for additional administrative costs.

The markups specified in labor, materials, and equipment includes compensation for all delay costs, overhead costs, and profit.

If an item's unit price is adjusted for work-character changes, the City excludes the Contractors cost of determining the adjustment.

Payment for owner-operated labor and equipment is made at the market-priced invoice submitted.

Labor

Labor payment is full compensation for the cost of labor used in the direct performance of the work plus a 5 percent markup. Force account labor payment consists of:

1. Employer payment to the worker for:
 - 1.1. Basic hourly wage
 - 1.2. Health and welfare
 - 1.3. Pension
 - 1.4. Vacation
 - 1.5. Training
 - 1.6. Other State and federal recognized fringe benefit payments
2. Labor surcharge percentage in *Labor Surcharge and Equipment Rental Rates* current during the work paid at force account for:
 - 2.1. Workers' compensation insurance
 - 2.2. Social security
 - 2.3. Medicare
 - 2.4. Federal unemployment insurance
 - 2.5. State unemployment insurance
 - 2.6. State training taxes
3. Subsistence and travel allowances paid to the workers
4. Employer payment to supervisors, if authorized

The 5 percent markup consists of payment for all overhead costs related to labor but not designated as costs of labor used in the direct performance of the work including:

1. Home office overhead
2. Field office overhead

3. Bond costs
4. Profit
5. Labor liability insurance
6. Other fixed or administrative costs that are not costs of labor used in the direct performance of the work

Materials

Material payment is full compensation for materials the Contractor furnishes and uses in the work. The Engineer determines the cost based on the material purchase price, including delivery charges, except:

1. A 5 percent markup is added
2. Supplier discounts are subtracted whether the Contractor takes them or not
3. If the Engineer believes the material purchase prices are excessive, the City pays the lowest current wholesale price for a similar material quantity
4. If the Contractor procured the materials from a source the Contractor wholly or partially own, the determined cost is based on the lower of the:
 - 4.1. Price paid by the purchaser for similar materials from that source on Contract items
 - 4.2. Current wholesale price for those materials
5. If the Contractor does not submit a material cost record within 30 days of billing, the determined cost is based on the lowest wholesale price:
 - 5.1. During that period
 - 5.2. In the quantities used

Equipment Rental

Equipment rental payment is full compensation for:

1. Rental equipment costs, including moving rental equipment to and from the change order work site using its own power.
2. Transport equipment costs for rental equipment that cannot be transported economically using its own power. No payment is made during transport for the transported equipment.
3. 5 percent markup.

If the Contractor wants to return the equipment to a location other than its original location, the payment to move the equipment must not exceed the cost of returning the equipment to its original location. If the Contractor uses the equipment for work other than work paid by force account, the transportation cost is included in the other work.

Before moving or loading the equipment, obtain authorization for the equipment rental's original location.

The Engineer determines rental costs:

1. Using rates in *Labor Surcharge and Equipment Rental Rates*:
 - 1.1. By classifying equipment using manufacturer's ratings and manufacturer-approved changes.
 - 1.2. Current during the work paid by force account.
 - 1.3. Regardless of equipment ownership; but the City uses the rental document rates or minimum rental cost terms if:
 - 1.3.1. Rented from equipment business the Contractor does not own.
 - 1.3.2. The Labor Surcharge and Equipment Rental Rates hourly rate is \$10.00 per hour or less.

2. Using rates established by the Engineer for equipment not listed in *Labor Surcharge and Equipment Rental Rates*. The Contractor may submit cost information that helps the Engineer establish the rental rate; but the City uses the rental document rates or minimum rental cost terms if:
 - 2.1. Rented from equipment business the Contractor does not own.
 - 2.2. The Engineer establishes a rate of \$10.00 per hour or less.
3. Using rates for transport equipment not exceeding the hourly rates charged by established haulers.

Equipment rental rates include the cost of:

1. Fuel	7. Repairs and maintenance
2. Oil	8. Depreciation
3. Lubrication	9. Storage
4. Supplies	10. Insurance
5. Small tools that are not consumed by use	11. Incidentals
6. Necessary attachments	

The City pays for small tools consumed by use. The Engineer determines payment for small tools consumed by use based on Contractor-submitted invoices.

The Engineer may authorize rates in excess of those in the *Labor Surcharge and Equipment Rental Rates* if:

1. The Contractor submits a request to use rented equipment
2. Equipment is not available from the Contractors normal sources or from one of the Contractors subcontractors
3. Rented equipment is from an independent rental company
4. Proposed equipment rental rate is reasonable
5. The Engineer authorizes the equipment source and the rental rate before the Contractor uses the equipment

Equipment on the Job Site

For equipment on the job site at the time required to perform work paid by force account, the time paid is the time:

1. To move the equipment to the location of work paid by force account plus an equal amount of time to move the equipment to another location on the job site when the work paid by force account is completed
2. To load and unload equipment
3. Equipment is operated to perform work paid by force account and:
 - 3.1. Hourly rates are paid in 1/2-hour increments
 - 3.2. Daily rates are paid in 1/2-day increments

Equipment Not On the Job Site Required for Original-Contract Work

For equipment not on the job site at the time required to perform work paid by force account and required for original-Contract work, the time paid is the time the equipment is operated to perform work paid by force account and the time to move the equipment to a location on the job site when the work paid by force account is completed.

The minimum total time paid is:

1. 1 day if daily rates are paid

2. 8 hours if hourly rates are paid

If daily rates are recorded, equipment:

1. Idled is paid as 1/2 day
2. Operated 4 hours or less is paid as 1/2 day
3. Operated 4 hours or more is paid as 1 day

If the minimum total time exceeds 8 hours and if hourly rates are listed, the City rounds up hours operated to the nearest 1/2-hour increment and pays based on the hours shown the following table. The table does not apply when equipment is not operated due to breakdowns, in which case rental hours are the hours the equipment was operated.

Equipment Rental Hours

Hours operated	Hours paid
0.0	4.00
0.5	4.25
1.0	4.50
1.5	4.75
2.0	5.00
2.5	5.25
3.0	5.50
3.5	5.75
4.0	6.00
4.5	6.25
5.0	6.50
5.5	6.75
6.0	7.00
6.5	7.25
7.0	7.5
7.5	7.75
≥8.0	hours used

Equipment Not On the Job Site Not Required for Original-Contract Work

For equipment not on the job site at the time required to perform work paid by force account and not required for original-Contract work, the time paid is the time:

1. To move the equipment to the location of work paid by force account plus an equal amount of time to return the equipment to its source when the work paid by force account is completed
2. To load and unload equipment
3. Equipment is operated to perform work paid by force account

Non-Owner-Operated Dump Truck Rental

Submit the rental rate for non-owner-operated dump truck rental. The Engineer determines the payment rate. Payment for non-owner-operated dump truck rental is for the cost of renting a dump truck, including its driver. For the purpose of markup payment only, the non-owner-operated dump truck is rental equipment and the owner is a subcontractor.

The above markups shall constitute full compensation for all home office overhead, field office overhead, bond costs, profit, labor liability insurance, and other fixed or administrative costs that are not costs specifically designated as cost or equipment rental as stated above. The total payment made as provided above shall be deemed to be the actual cost of the work and shall constitute full compensation therefor.

When extra work to be paid for on a force account basis is performed by a subcontractor, approved in conformance with the provisions in Section 5-1.13, "Subcontracting," an additional markup of 2 percent will be added to the total cost of that extra work including all markups specified in this Section. The additional 2 percent markup shall reimburse the Contractor for additional administrative costs, and no other additional payment will be made by reason of performance of the extra work by a subcontractor.

4-5 CHANGE OF CONTRACT TIME

The contract time may only be changed by a contract change order. The value of any work covered by a contract change order for an adjustment in the contract time will be determined as follows:

- (a) Additional working days will be awarded where the amount of time is mutually agreed upon by Contractor and Engineer; or
- (b) Additional working days will be awarded where Contractor is prevented from completing any part of the work identified on the critical path and:
 - a. where the delay is caused by acts of public enemy, fire, floods, tsunamis, earthquakes, epidemics, quarantine restrictions, strikes, labor disputes, shortage of materials and freight embargos, provided that Contractor shall notify Engineer in writing of the causes of delay within 15 days from the beginning of that delay; or
 - b. where the delay is caused by actions beyond the control of Contractor; or
 - c. where the delay is caused by actions or failure to act by Engineer.

Contractor shall not be entitled to an adjustment in contract time for delays within the control of Contractor. Delays resulting from and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

4-6 CHANGE ORDER

Work added to or subtracted from the contract, for which there is an item bid price, shall be covered by change order.

4-7 REMOVAL OF OBSTRUCTIONS

Obstructions not designated for removal by others, or set up under separate heading, shall be removed and disposed of by the Contractor at his own expense.

4-8 FINAL CLEAN UP

The Contractor shall clean up the dirt and debris in all of the adjacent streets, which have been caused by the construction, at least once a week or as requested by the City Engineer. All sidewalks, curbs, approaches, crosswalks, existing and new drain inlets, lawns, etc, shall be kept free of excess dirt and

rubbish. They shall be kept in a clean and neat condition. Before the final inspection of the project is requested, the Contractor shall complete the following items:

- (1) All right of way, adjacent property, adjacent streets and alleys and all areas used by the Contractor in connection with this project shall be cleared of all debris and excess material. The area(s) shall be left in a neat and presentable condition.
- (2) All paved areas shall be free of dirt and dust.
- (3) All concrete surfaces shall be left free of excess concrete, paving materials, liquid asphalt, dirt and dust. All expansion joints shall be trimmed flush with the concrete.
- (4) All old and new drain inlet bottoms and outlet pipes shall be left free of all dirt and debris. If water is used to clean streets the Contractor shall exercise care in preventing sand and silt from entering the storm drains, catch basins or sanitary sewer manholes. Any storm drain, catch basin or sanitary sewer which is affected by the construction shall be cleaned by the Contractor at his expense.
- (5) All sewer manhole bottoms shall be cleaned of all foreign matter. The covers for said manholes shall be free of any asphalt concrete material.

4-9 CLEANING UP

Contractor shall not allow the site of the Work to become littered with trash, debris, garbage or waste material, and shall maintain the site in a neat, orderly, safe and healthful condition until completion and acceptance of the Work. Before final inspection of the Work, Contractor shall clean the work site and all ground occupied by Contractor in connection with the Work of all rubbish, excess materials, false work, temporary structures and equipment. All parts of the Work shall be left in a neat and presentable condition. Contractor shall implement a program of proper cleaning and "housekeeping" practices, employee training and other measures as needed to consistently maintain a clean Work site and shall at all times take all measures necessary to protect work in place and materials and equipment stored on site from contamination by dust, dirt, debris or mold. Full compensation for cleaning up and protection of work, materials and equipment is included in the prices paid for the various Contract items of work, and no separate or additional payment shall be made for cleaning up and protection of work, materials and equipment.

4-10 ELIMINATED ITEMS

Notwithstanding any other provision of the Contract Documents, the Engineer may at any time, in writing, order eliminated in its entirety any item(s) of the Work if the Engineer determines, in the Engineer's sole discretion, that the item is unnecessary to the project or will be performed by the City's own personnel. Any elimination of Work shall not be a waiver of any of the conditions of the Contract nor invalidate any of the provisions thereof. Should any item of the Work be eliminated in its entirety, Contractor shall not receive any compensation for the eliminated item, except that payment shall be made to Contractor for actual costs incurred in connection with an eliminated Contract item if reasonably incurred prior to the date of notification in writing by the Engineer of the elimination. The payment by City for actual costs reasonably incurred by Contractor, if any, prior to elimination of an item as provided in this Section shall be computed in the same manner as if the work were to be paid by cost and percentage as provided in Section 4-4 of these Specifications. In addition, if any major item is eliminated in its entirety, the Engineer may

agree to pay Contractor for lost overhead resulting from such elimination, if any, as determined by the Engineer in the Engineer' s sole discretion.

If material acceptable to the City is ordered by Contractor for the eliminated item prior to the date of notification of the elimination by the Engineer, and if orders for that material cannot be canceled, the material shall be paid for at the actual cost to Contractor. In this case, the material paid for shall become the property of the City. If the material is returnable to the vendor and if the Engineer so directs, the material shall be returned and Contractor shall be paid for the actual cost of charges made by the vendor for returning the material.

5 CONTROL OF WORK

5-1 AUTHORITY OF CITY ENGINEER

The City Engineer shall decide all questions which may arise as to quality or acceptability of materials used and work performed and as to the manner of performance and rate of progress of the work, all questions which may arise regarding the interpretation of the plans and specifications, all questions concerning the acceptable fulfillment of the contract on the part of the Contractor, and all questions as to compensation. His decision shall be final and he shall have authority to enforce and make effective such decisions and orders which the Contractor fails to carry out promptly.

5-2 PLANS

The approved plans shall be supplemented by such working drawings that may be necessary to adequately control the work. All authorized alterations affecting the requirements and information given on the approved plans shall be in writing. No changes shall be made on any plan or drawing after the same has been approved by the City Engineer, except by his direction. Any shop or working drawings furnished by the Contractor shall be at his own expense and are subject to approval, unless approval is waived by the City Engineer. All such plans shall be in conformity with the approved plans, but, although approved by the City Engineer, the Contractor shall be responsible for accuracy of dimensions or details.

5-3 CONFORMITY WITH PLANS AND ALLOWABLE DEVIATIONS

Finished surfaces in all cases shall conform with the lines, grades, cross-sections, and dimensions shown on the approved plans, except those deviations required by the urgency of construction, which will in all cases be determined by the City Engineer and authorized in writing.

5-4 COORDINATION OF PLANS, SPECIFICATIONS AND SPECIAL PROVISIONS

These Standard Specifications, the Caltrans Specifications, the Standard Drawings, project plans, special provisions, contract change orders and all supplementary documents are essential parts of the contract, and a requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete work. Project plans shall govern over Standard Drawings; Standard Drawings and project plans shall govern over these Standard Specifications; these Standard Specifications shall govern over the Caltrans Specifications; the special provisions shall govern over these Standard Specifications, the Caltrans Specifications and the project plans.

Should it appear that the work to be done or any of the matters relative thereto are not sufficiently detailed or explained in these Specifications, the Special Provisions, or the plans, the Contractor shall apply to the City Engineer for further explanations as may be necessary and shall conform to them as part of the contract. In the event of any doubt or question arising respecting the true meaning of these Specifications, the Special Provisions or the plans, reference shall be made to the City Engineer, whose decision thereon shall be final. In the event of any discrepancy, between any drawing and the figures written thereon, the figures shall be taken as correct. Detail drawings shall prevail over general drawings.

5-5 INSPECTION

The City Engineer shall at all times have access to the work during its construction and shall be furnished with every reasonable facility for ascertaining that the stock and materials used and employed and the workmanship are in accordance with the requirements and intention of these specifications. All work done and all materials used shall be subject to inspection and approval by the City Engineer. Requests for

inspection must be made to the office of the City Engineer a minimum of 24 hours in advance of the time the inspection is desired.

Underground work shall not be backfilled or covered until the work has been inspected and approved by the City Engineer. Any work that is covered without a proper inspection being performed by the City Engineer shall be uncovered at the Contractor's expense, so that the inspection can be performed.

Materials proposed for use and not specified herein shall be submitted for approval by the City Engineer prior to ordering such material. Any non-specified material ordered by the Contractor without the approval of the City Engineer shall be rejected and the cost thereof shall be the responsibility of the Contractor.

The inspection of the work shall not relieve the Contractor of any of his obligations to fulfill his contract as prescribed. Defective work or unsuitable materials shall be removed and made good, notwithstanding that such defective work and materials have been previously overlooked by the City Engineer and accepted or estimated for payment. The correction of said defective work or unsuitable materials shall be at the sole expense of the Contractor. Projects in which Federal or State funds are involved shall at all times be subject to inspection by the agency involved.

5-6 REMOVAL OF DEFECTIVE OR UNAUTHORIZED WORK

All work that has been rejected shall be remedied or removed and replaced by the Contractor in an acceptable manner and no additional compensation will be allowed him for such removal or replacement. Any work done beyond the lines and grades shown on the plans or established by the City Engineer, or any extra work done without written authority will be considered as unauthorized and will not be paid for. Work so done may be ordered removed at the Contractor's expense. Upon failure on the part of the Contractor to comply with any order of the City Engineer made under the provisions of this article, the City Engineer shall have authority to cause defective work to be remedied or removed and replaced and unauthorized work to be removed and to deduct cost of same from any monies due or to become due the Contractor.

5-7 EQUIPMENT AND PLANT

Equipment not suitable to produce the quality and quantity of work required as determined by the City Engineer will not be permitted to operate on the project. Special attention is directed to Section 7-7 and 7-8 of these Specifications. Plants shall be designed and constructed in accordance with general practice for such equipment and shall be of sufficient capacity and character to insure sufficient material to complete the work in the time specified. The Contractor shall provide and maintain adequate and suitable plants and equipment to meet the above requirements and, when ordered by the City Engineer, shall remove unsuitable plants and equipment from the premises. All vehicles used to haul materials over existing highways shall be equipped with pneumatic tires.

5-8 FINAL INSPECTION

The City Engineer will not make the final inspection until all work provided and contemplated by the contract has been completed and final clean up performed. The contractor shall submit a written request to the City Engineer to request final inspection.

Final cleanup shall be performed in accordance with subsection 4-8 of these Standard Specifications and as directed by the City Engineer.

5-9 COOPERATION OF CONTRACTOR

After all necessary signatures by City, City will supply Contractor a copy of the Plans, Special Provisions, and the fully executed Agreement. City will also make available to Contractor at least five (5) copies of the Plans and Special Provisions for Contractor's use in prosecuting the Work. If Contractor requests additional copies of the Plans and/or Special Provisions, the City or its designated reprographics firm will supply such additional copies at Contractor's expense.

Contractor shall give the Work the constant attention necessary to facilitate the satisfactory progress thereof. Contractor shall cooperate with the Engineer, inspectors and with other contractors in every way possible. Contractor shall at all times have a competent Superintendent at the site of the Work and Contractor's Superintendent shall be fully authorized as Contractor's agent on the Work. Such Superintendent shall be capable of reading and understanding all of the Contract Documents. Unless otherwise approved by the Engineer, the Superintendent shall be an employee of Contractor who is responsible for providing continuous on-site supervision of the Work and shall be fully authorized to receive and follow any instruction given by the Engineer and to sign Change Orders on behalf of Contractor. Unless specifically called for by the Special Provisions, Contractor is not required to provide an office for use by the Engineer.

If requested by the Engineer, Contractor shall provide daily reports signed by Contractor's Superintendent indicating the location and description of operations and details of the equipment and labor used to perform the items of Work. Such details shall include the description of the items of Work, names and classifications of laborers, hours worked, description of equipment used, equipment numbers, hours equipment is in use, and hours equipment may be idle.

5-10 CONSTRUCTION STAKES

The Engineer will furnish Contractor with all lines, grades and measurements necessary for the proper prosecution and control of the Work unless stated otherwise in the Special Provisions. Contractor shall provide the Engineer with the City's standard Survey Request Form at least three (3) working days before construction stakes are required. The Engineer may reject any unreasonable or incomplete Survey Request Form and require Contractor to resubmit. Contractor shall have no claim for any costs, damages or extensions of time arising from any delay caused by Contractor's submittal of an unreasonable or incomplete Survey Request Form.

Such stakes and markings as the Engineer may set for either the City's or Contractor's guidance shall be preserved by Contractor. In the event that the stakes or marks placed by the Engineer are destroyed through carelessness or negligence on the part of Contractor or any Subcontractor and the destruction of these stakes or marks causes a delay in the Work, Contractor shall have no claim for damages or extensions of time. Additionally, the City reserves the right to charge Contractor or deduct from the progress payments the costs to the City for any re-staking and/or remarking required as a result of carelessness or negligence on the part of Contractor or any Subcontractor.

5-11 PERMANENT SURVEY MONUMENTS

Contractor is responsible for verifying that the arrangements have been made for preserving and/or perpetuating all permanent survey monuments that will be affected by the Work. Contractor is responsible for preserving all permanent survey monuments that are not proposed to be disturbed. Contractor shall provide a minimum of ten (10) working days' notice to Engineer prior to disturbance or removal of any

permanent survey monument, and shall coordinate with the Engineer to reset monuments or provide permanent witness monuments and file the required documentation with the County Surveyor pursuant to Business and Professions Code Section 8771.

5-12 RECORD DRAWINGS

Contractor shall maintain a neatly and accurately marked set of record drawings showing the final locations and layout of all facilities as-built. Drawings shall be kept current weekly, with all work instructions and Change Orders, accommodations, and construction adjustments. Drawings shall be subject to the inspection by the Engineer at all times, and progress payments, or portions thereof, may be withheld if drawings are not accurate and current. Prior to City's acceptance of the Work, Contractor shall deliver to the Engineer one (1) set of neatly marked record drawings, accurately showing all the information required above. If the Engineer does not approve the record drawings, Contractor shall revise and resubmit the record drawings as necessary to obtain the Engineer's approval. If Contractor fails to comply with the requirements of this section, the City may deduct and retain the cost of preparing the record drawings from the Contract.

5-13 REQUEST FOR MODIFICATION OF WORK

Should conditions occur during the progress of the Work of such nature as to make it impossible for Contractor to comply strictly with the terms of the Contract with respect to a portion of the Work, Contractor shall make written request to the Engineer for a modification of such portion of the Work, provided that such modification would not be detrimental to the Work or create any additional cost to the City. If the modification is acceptable to the Engineer, Contractor will be notified in writing that the modification may be made, consistent with any conditions specified by the Engineer. If such modification is not acceptable to the Engineer, Contractor shall determine some other method of performing such portion of the Work that is acceptable to Engineer.

Such approved modifications shall in no way affect or alter the application of any provision of the Contract to any portion of the Work for which no modification is approved by the Engineer.

5-14 PROVISIONS FOR EMERGENCIES

Whenever, in the opinion of the Engineer, Contractor has not taken sufficient precautions for the safety of the public or the protection of the Work or adjacent structures or property and immediate action is necessary in order to protect the public, any person or any property or property interest (hereafter referred to as "emergency work"), the Engineer, with or without notice to Contractor, may, but will not be obligated to, take such action and/or obtain or provide for such work and material as the Engineer may consider necessary and adequate to furnish such protection.

The City's cost to perform, obtain or provide for such action, work and material shall be paid by Contractor, and may be deducted by City from any payment due or to become due to Contractor.

The performance of emergency work under the direction of the Engineer shall in no way relieve Contractor from its responsibility or liability for any damages that may occur while or after any actions are or have been taken by the Engineer.

5-15 SUSPENSION OF WORK TO PROTECT HEALTH, SAFETY OR WELFARE OF PERSONS OR PROPERTY

In the event the Engineer determines in the Engineer's sole discretion that a situation exists where continuation of the Work would be illegal or endanger the health, safety or welfare of persons or property on or affected by the Work, the Engineer will have the right to order Contractor in writing to delay or suspend the Work in whole or in part for a period of time equal to the period of time while such situation exists. Any order given to Contractor to suspend or delay the Work shall identify the situation that makes such suspension or delay necessary.

Such order of the Engineer shall not otherwise modify or invalidate in any way any of the provisions of this Contract, and Contractor shall not be entitled to any damages or compensation from City on account of such delay or suspension.

5-16 MANUFACTURER'S DIRECTION

Manufactured articles, material, and equipment shall be applied, installed, connected, erected, adjusted, tested, used, cleaned, maintained, and conditioned as recommended by the manufacturer. Copies of the manufacturer's installation instructions and procedures shall be submitted, in accordance with Section 5-7 of these Specifications.

6 CONTROL OF MATERIALS

6-1 MATERIALS FURNISHED

The Contractor shall furnish all materials required to complete the work except such materials as may be designated in the Special Provisions to be furnished by the City.

Materials furnished shall be new, unless specified otherwise, and will satisfy the requirements herein and all specifications referenced by provisions within these Standard Specifications. The Contractor shall furnish, upon request of the City Engineer, an affidavit from the manufacturer or supplier to the effect that materials furnished shall conform to the latest revision of the AWWA Specifications, ASTM and Federal Specifications that pertain. All materials shall be installed in accordance with the manufacturer's recommendations, the Standard Drawings, the Standard Specifications and the Special Provisions that pertain. Materials for one specific project shall be from one manufacturer unless otherwise approved by the City Engineer. All materials shall be subject to inspection after delivery to the site and during installation of the work. Failure of the City Engineer to note faulty material shall not relieve the Contractor of the responsibility for removing or replacing any such material. The use of an alternative article or material which is of equal quality and of the required characteristics for the purpose intended will be permitted when approved in writing by the City Engineer.

The burden of proof as to the quality and suitability of alternatives shall be on the Contractor. The Contractor shall furnish all information necessary for the City Engineer to judge the quality and suitability of the alternative. The City Engineer shall be the sole judge as to quality and suitability of alternative material and articles.

Whenever the Standard Specifications permit the substitution of a similar or equivalent material or article, no tests or action relating to the approval of such substitute material will be made until the request for substitution is made in writing to the City Engineer. The written request shall be accompanied by data as to the equality of the proposed material. Such request shall be made in advance of construction to allow ample time to investigate the proposed substitution.

6-2 SAMPLES AND TESTS

Whenever a reference to a specification manual or test designation, either the American Association of State Highway Officials, the American Society for Testing and Materials, the State of California Manual of Tests or any other recognized national organization and the number or other 1/10/89 identification representing the year of adoption or latest revision is omitted, it shall mean the specification manual or test designation in effect on the day the "Notice To Proceed" is dated.

6-3 DEFECTIVE MATERIALS

All materials not conforming to these specifications shall be considered defective and all such materials, whether in place or not, shall be rejected and shall be immediately removed from the site of the work, unless otherwise permitted to remain by the City Engineer. Rejected material, the defects of which have been subsequently corrected, shall not be used until approval in writing has been obtained from the City Engineer. Upon failure of the Contractor to comply forthwith with any order of the City Engineer made under the provisions of this article, the City Engineer shall have the authority to remove and replace defective materials and to deduct the cost of same from any monies due or to become due the Contractor.

6-4 TRADE NAMES AND ALTERNATIVES

In these Specifications, whenever the trade name of a product or the name of a manufacturer appears, it shall be understood to specify the product so identified or its approved equal.

6-5 STORAGE OF MATERIALS AND EQUIPMENT

The Contractor shall at all times carefully and properly protect all materials of every description, both before and after being used in the work, and provide any enclosing or special protection from the weather deemed necessary by the City Engineer, without additional cost to the City. Partial payments will not relieve the Contractor of any of his responsibilities.

When any materials and/or equipment, including excess or unsuitable excavation are to be stored outside of the right-of-way, the Contractor shall first obtain permission in writing from the property owner on whose property the storage is to be made and shall file a copy of such permission with the City Engineer. Material and equipment thus stored shall be placed in a neat and uniform manner so as not to present an unsightly appearance and to the satisfaction of the City Engineer. Unless otherwise provided in the Special Provisions, the Contractor shall make his own arrangements for storage of equipment and materials and shall pay all charges involved. Full costs for disposing of such material and/or storage of equipment shall be included in the bid price for the particular item. No payment shall be made for overhaul.

6-6 RIGHTS IN AND USE OF MATERIALS FOUND ON THE WORK

The Contractor, with the approval of the City Engineer, may use in the proposed construction such stone, gravel, sand or other material suitable in the opinion of the City Engineer as may be found in the excavation and will be paid for the excavation of such materials at the corresponding contract unit price therefor, but he shall replace at his own expense with other suitable material, all of that portion of the material so removed and used which was contemplated for use in the embankments, backfills or otherwise.

No charge for materials so used will be made against the Contractor. The Contractor shall not excavate or remove any materials from within any right of way which is not included in the excavating sections as indicated by slope stakes or grade lines in the field without written authorization of the City Engineer.

7 LEGAL RELATIONS AND RESPONSIBILITY

7-1 LAWS TO BE OBSERVED

In all operations connected with the work on this contract, all ordinances of the City and all laws of the United States and the State of California, which shall be or become applicable to and control or limit in any way the actions of those engaged in any way as principal or agent, shall be respected and strictly complied with. The Contractor shall keep himself fully informed of all State, Federal Laws and City ordinances and regulations and revisions thereto, that in any way affect those engaged or employed in or on the work or in any way affecting the conduct of the work and of all orders or decrees of bodies of officials having jurisdiction or authority over the same. The contractor shall, at all times observe and comply with and cause any and all persons, firms or corporation employed by or under him to observe and comply with all such laws, ordinances and regulations, orders and decrees. The contractor shall, protect and indemnify the said City, and its officers, employees and agents against any claim or liability arising from or based on the violation of any such law, ordinance, regulations, order or decree whether by himself or his employees. If any discrepancy or inconsistency is discovered in the plans, drawings, specifications or contract for the work in relation to any such law, ordinance, regulation, order or decree, the Contractor shall forthwith report the same to the City Engineer in writing.

7-2 LABOR CODE REQUIREMENTS

Attention is directed to the following requirements of the Labor Code.

HOURS OF LABOR

The Contractor shall forfeit, as penalty to the City, fifty dollars (\$50.00) for each workman employed in the execution of the contract by him or by any subcontractor under him for each calendar day during which any workman is required or permitted to labor more than eight (8) hours in any one calendar day and 40 hours in any one calendar week in violation of the provisions of the Labor Code and in particular, Section 1810 to Section 1815, thereof inclusive, except that work performed by employees of contractors in excess of 8 hours per day and 40 hours per week, shall be permitted upon compensation for all hours worked in excess of 8 hours per day at not less than one and one-half times the basic rate of pay, as provided in said Section 1815.

PREVAILING WAGE

The Contractor shall comply with Labor Code Sections 1774 and 1775. In accordance with said Section 1775, the Contractor shall forfeit as a penalty to the City \$50.00 for each calendar day or portion thereof, for each worker paid less than the current prevailing rates as determined by the Director of Industrial Relations on file with the City Engineer for such work or craft in which such worker is employed for any work done under the contract by him or by any subcontractor under him in violation of the provisions of the Labor Code and in particular, Labor Code Sections 1770 to 1780, inclusive. In addition to said penalty and pursuant to said Section 1775, the difference between such prevailing wage rates and the amount paid to each worker for each calendar day or portion thereof for which each worker was paid less than the prevailing wage rate shall be paid to each worker by the Contractor. Pursuant to the provisions of Section 1773 of the Labor Code of the State of California, the City of Turlock has obtained the General Prevailing Rate of Wages (which rate includes employer payments for health and welfare, pension, vacation, travel time, and subsistence pay as provided for in Section 1773.8 of said Code; apprenticeship or other training programs authorized by Section 3093 of said Code, and similar purposes) applicable to the work to be done, for straight time, overtime, Saturday, Sunday and holiday work. The holiday rate listed shall be

applicable to all holidays recognized in the collective bargaining agreement of the particular craft, classification or type of workmen concerned. These wage rates are set forth in the Department of Transportation publication entitled "General Prevailing Wage Rates", which is a part of this contract.

Pursuant to Section 1773.2 of the Labor Code, General Prevailing Wage Rates set forth in the Department of Transportation publication entitled, "General Prevailing Wage Rates" shall be posted by the Contractor at a prominent place at the site of the work. The prevailing wage rate to be posted at the job site shall be furnished by the City.

The City will not recognize any claim for additional compensation because of the payment by the Contractor of any wage rate in excess of the prevailing wage rate set forth in the contract. The possibility of wage increases is one of the elements to be considered by the Contractor in determining his bid, and will not under any circumstances be considered as the basis of a claim against the City on the contract.

PAYROLL RECORDS

The Contractor's attention is directed to the provisions of Labor Code Section 1776, a portion of which is quoted below. Regulations implementing said Section 1776 are located in Sections 16016 through 16019 and Sections 16207.10 through 16207.19 of Title 8, California Administrative Code. The Contractor shall be responsible for compliance by his subcontractors.

1. Each Contractor and subcontractor shall keep an accurate payroll record, showing the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee employed by him in connection with the public work.
2. The payroll records enumerated under subdivision 1. shall be certified and shall be available for inspection at all reasonable hours at the principle office of the Contractor on the following basis:
 - (a) A certified copy of an employee's payroll record shall be available for inspection or furnished to such employee or his authorized representative on request.
 - (b) A certified copy of all payroll records enumerated in subdivision 1. shall be made available for inspection or furnished upon request to a representative of the City, the Division of Labor Standards Enforcement and the Division of Apprenticeship Standards of the Department of Industrial Relations.
 - (c) A certified copy of all payroll records enumerated in subdivision 1. shall be made available upon request to the public for inspection or copies thereof made; provided however, that a request by the public shall be made through either the City, the Division of Apprenticeship Standards, or the Division of Labor Standards Enforcement. The public shall not be given access to such records at the principal office of the Contractor.
3. Each Contractor shall file a certified copy of the records enumerated in subdivision 1. with the entity that requested such records within 10 days after receipt of a written request.
4. Any copy of records made available for inspection as copies and furnished upon request to the public as enumerated in subdivision 2. shall be marked or obliterated in such a manner as to prevent disclosure of an individual's name, address and social security number. The name and address of the Contractor awarded the contract or performing the contract shall not be marked or obliterated.
5. The Contractor shall inform the City of the location of the records enumerated in subdivision 1., including the street address, city and county and shall within 5 working days, provide a notice of a change of location and address.
6. In the event of non-compliance with the requirements of this section, the Contractor shall have 10 days in which to comply subsequent to receipt of written notice specifying in what respects such Contractor must comply with this section. Should non-compliance still be evident after such 10 day period, the

Contractor shall, as a penalty to the City, forfeit Twenty-Five Dollars (\$25) for each calendar day, or portion thereof, for each worker until strict compliance is effectuated. Upon the request of the Division of Labor Standards Enforcement or the Division of Apprenticeship Standards, such penalties shall be withheld from progress payments when due.

The penalties specified in subdivision (f) of Labor Code 1776 for non-compliance with the provisions of said Section 1776 may be deducted from any moneys due or which may become due to the Contractor.

LABOR NON-DISCRIMINATION

Attention is directed to Section 1735 of the Labor Code: No discrimination shall be made in the employment of persons upon public works projects, because of the race, religious creed, color, national origin, ancestry, physical handicap, medical condition, marital status, or sex of such persons, except as provided in Section 1420, and every Contractor for public works projects violating this section is subject to all the penalties imposed for a violation of this chapter.

APPRENTICES

In accordance with the provisions of Section 1777.5 of the Labor Code and in accordance with the regulations of the California Apprenticeship Council, properly indentured apprentices may be employed in the prosecution of the work.

It shall be the responsibility of the prime Contractor to insure that he and all subcontractors on the project comply with the apprenticeship regulations set forth in Section 1777.5 of the Labor Code. Upon failure of the prime Contractor or any of his subcontractors to pay monies into a fund as required by said section, the City may withhold the necessary amounts from payments due the prime Contractor and remit said amounts to the appropriate fund on behalf of the defaulting prime Contractor or subcontractor.

Information relative to number of apprentices, identification, wages, hours of employment and standards of working conditions shall be obtained from the Director of the Department of Industrial Relations, who is the Administrative Officer of the California Apprenticeship Council.

7-3 FAIR LABOR STANDARDS ACT

The attention of bidders is invited to the fact that the City has been advised by the Wage and Hour division, U.S. Department of Labor, that Contractors engaged in public construction work are required to meet the provisions of the Fair Labor Standards Act of 1938 and as amended (52 Stat. 1060).

7-4 REGISTRATION OF CONTRACTORS

Before submitting bids, Contractors shall be licensed in accordance with Chapter 9 of Division 3 of Business and Professions Code, Chapter 37 of Statutes of 1939 as amended.

7-5 PERMITS AND LICENSES

The Contractor shall procure all permits and licenses, pay all charges and fees and give all notices necessary and incidental to the due and lawful prosecution of the work. All work performed within the public right of way shall be accomplished under an Encroachment Permit issued by the City Engineer.

7-6 PATENTS

All fees or claims for any patented invention, article or arrangement that may be used upon or in any manner connected with the doing of the herein proposed work or any part thereof shall be included in the

price bid for doing the work herein proposed, and the Contractor and his sureties shall protect and hold any and all departments of the City, together with all its officers and employees, harmless against any and all suits and claims brought or made by the holder of any invention, patent, copyright or trademark or growing out of any alleged infringement or any invention, patent, copyright or trademark, and before final payment is made on account of the contract, the Contractor shall furnish acceptable proof to the City Engineer of a proper release from all such fees or claims.

7-7 PUBLIC CONVENIENCE

The Contractor shall at his own expense install signs, lights, flares, barricades, delineators and other facilities in order to expedite the passage of public traffic through or around the work and shall take all other necessary precautions to prevent damage to life or property.

The Contractor shall maintain full access to houses, private garages and other property by carefully constructed compact and unyielding entrances kept in good repair and in conformance with the Americans with Disabilities Act (ADA). Where necessary, plank bridges with beveled edges and equipped with hand or guard rails are to be maintained for safe traffic of pedestrians and vehicles. When entering or leaving roadways carrying public traffic, the Contractor's equipment, whether empty or loaded, shall in all cases yield to public traffic. Personal vehicles of the Contractor's employees shall not be parked on the traveled way at any time including any section closed to public traffic.

The Contractor shall provide the City with the names and phone numbers of at least three persons to be contacted in case of an emergency situation. In the event the Contractor fails to provide for the public safety promptly as provided for in these provisions, the City may provide whatever facilities are necessary and charge the Contractor a fee for the work involved.

All existing traffic control or informational signs, which because of this work must be moved, are to be relocated and installed at locations as directed by the City Engineer. This work shall be considered incidental to other items of work and no additional compensation will be entitled thereto. Any damage occurring to the signs during stockpiling will be the responsibility of the Contractor.

The Contractor shall provide unobstructed access, at all times during the course of construction, to all mailboxes, fire hydrants, water valves, manholes and drainage structures, and other public service structures that may be required for emergency use.

7-8 PRESERVATION OF PROPERTY

Due care shall be exercised to avoid injury or damage to existing improvements or facilities, utility facilities, adjacent property, and roadside trees, shrubs and other plants that are to remain in place.

Roadside trees, shrubs and other plants that are not to be removed and pole lines, fences, signs, markers and monuments, buildings and structures, conduits, pipelines under or above ground, sewer and water lines, sprinkler systems above or below ground, all roadway facilities, and any other improvements or facilities within or adjacent to the right-of-way shall be protected from injury or damage, and if ordered by the City Engineer, the Contractor shall provide and install suitable safeguards, approved by the City Engineer, to protect such objects from injury or damage. If such objects are injured or damaged by reason of the Contractor's operations they shall be replaced or restored at the Contractor's expense. The facilities shall be replaced or restored to a condition as good or better as when the Contractor entered the work, or as good as required by the specifications accompanying the contract, if any such objects are a part of the

work being performed under the contract. The City Engineer may make or cause to be made such temporary repairs as necessary to restore to service any damaged facility. The cost of such repairs shall be borne by the Contractor and may be deducted from any moneys due or to become due to the Contractor under the contract.

The Contractor shall furnish, maintain and use such dust-laying equipment as may be necessary to protect adjacent property from damage caused by dust from any of the operations of the Contractor and he shall be liable for any damage caused by said dust due to negligence in the use of said dust-controlling equipment. Failure on the part of the Contractor to control dust from his operations shall be cause for stopping said work until dust is controlled and any expense caused by such delay shall be borne by the Contractor.

The fact that any underground facility is not shown upon the plans shall not relieve the Contractor of his responsibility under Section 2-4 of these Specifications. It shall be the Contractor's responsibility, pursuant thereto, to ascertain the location of such underground improvements or facilities which may be subject to damage by reason of his operations.

7-9 RESPONSIBILITY FOR DAMAGE

Except as otherwise provided until the formal acceptance of the work by the City, the Contractor shall have the charge and care thereof and shall bear the risk of injury or damage to any part thereof from any cause whatever, whether arising from the execution or non-execution of the work. The Contractor shall rebuild, restore, repair and make good all injuries or damages to any portion of the work occasioned by any of the above caused before its acceptance and shall bear the expense thereof except for such injuries or damages as are directly or proximately caused by the Federal Government or the public enemy. In case of suspension of the work, it will not in any way relieve the Contractor of his responsibility in the protection of materials and the work.

7-10 DISPOSAL OF MATERIALS OUTSIDE THE RIGHT OF WAY

If the Contractor elects to dispose of materials at locations other than those where arrangements have been made by the City, or, if material is to be disposed of and the City has not made arrangements for disposal of such material, the Contractor shall make his own arrangements for disposing of materials outside the city right of way and he shall pay all costs involved. Arrangements shall include, but not be limited to, entering into agreements with property owners and obtaining necessary permits, licenses and environmental clearances. Before disposing of any material outside the city right of way, the Contractor shall furnish to the City Engineer satisfactory evidence that he has entered into agreements with the property owners of the site involved and has obtained said permits, licenses and clearances.

When any material is to be disposed of outside the city right of way, and the City has not made arrangements for disposal of such material, the Contractor shall first obtain written authorization from the property owner on whose property the disposal is to be made and he shall file with the City Engineer said authorization or a certified copy thereof together with a written release from the property owner absolving the City from any and all responsibility in connection with the disposal of material on said property, and before any material is disposed of on said property, the Contractor shall obtain written permission from the City Engineer to dispose of the material at the location designated in said authorization.

When material is disposed of as above provided and the location is visible from a roadway, the Contractor shall dispose of the material in a neat and uniform manner to the satisfaction of the City Engineer.

Where the City has made arrangements with owners of land in the vicinity of a project for the disposal of materials on an owner's property, such arrangements are made solely for the purpose of providing all bidders an equal opportunity to dispose of said materials on such property. Bidders or Contractors may, upon written request, inspect the documents evidencing such arrangements between property owners and the City. The Contractor may, if he so elects, exercise any rights that have been obtained, which may be exercised by a Contractor under such arrangements, subject to and upon the conditions hereinafter set forth.

Such arrangements are not a part of the contract and it is expressly understood and agreed that the City assumes no responsibility to the bidder or Contractor whatsoever in respect to the arrangements made with the property owner to dispose of materials thereon and that the Contractor shall assume all risks in connection with the use of such property, the terms upon which such use shall be made, and there is no warranty or guaranty, either express or implied, as to the quantity or types of materials that can be disposed of on such property.

In those instances in which the City has compiled "Materials Information" as referred to in Section 2-4, "Examination of Plans, Specifications, Contract, and Site of Work," said compilation will include the documents setting forth the arrangement made with some of the property owners for the disposal of material and/or storage of equipment on such owner's properties. The inclusion of such documents therein shall not in any respect operate as a waiver of any of the provisions in this Section 7-10 concerning said documents.

The bidder or Contractor is cautioned to make such independent investigation and examination, as he deems necessary to satisfy himself as to the quantity and types of materials, which may be disposed of on such property and the rights, duties and obligations acquired or undertaken under such arrangement with the property owner.

Notwithstanding that the Contractor may elect to dispose of materials on any such property owner's property, no material may be disposed of on such property unless the Contractor has first either:

- (1) Executed a document that will guarantee to hold such owner harmless from all claims for injury to persons or damage to property resulting from the Contractor's operations on the property owner's premises and also agree to conform to all other provisions set forth in the arrangement made between the City and the property owner. Said document will be prepared by the City Engineer for execution by the Contractor, or
- (2) Entered into an agreement with the owner of the disposal site on any terms mutually agreeable to the owner and the Contractor; provided that the Contractor shall furnish to the City Engineer a release, in a form satisfactory to the City Engineer, executed by the owner, relieving the City of any and all obligations under the City's arrangement with the owner.

If the Contractor elects to dispose of material under (1), the use of such site shall be subject to the terms, conditions and limitations of the arrangement made between the property owner and the City and the Contractor shall pay such charges as are provided for in the arrangement made by the City with the property owner, and deductions will be made from any moneys due or that may become due the Contractor under the contract sufficient to cover the charges for such material disposed of and/or equipment stored.

If the Contractor elects to dispose of material under (2), he shall pay such charges as are provided for in the agreement between the owner and the Contractor and deductions will not be made from any moneys due or that may become due the Contractor under the contract to cover such charges.

Before acceptance of the contract, the City Engineer may require the Contractor to submit written evidence that the owner of the disposal site is satisfied that the Contractor has satisfactorily complied with the provisions of either - (1), the arrangement between the City and the owner, or (2), the agreement between the owner and the Contractor, as the case may be.

Full compensation for all costs involved in disposing of materials as specified in this Section 7-10, including all costs of hauling, shall be considered as included in the price paid for the contract item of work involving such materials and/or equipment and no additional compensation will be allowed therefor.

7-11 COOPERATION BETWEEN CONTRACTORS

Where two or more Contractors are employed on related or adjacent work, each shall conduct his operations in such a manner as not to cause any unnecessary delay or hindrance to the other. Each Contractor shall be responsible to the other for any damage to work or injury to person or property or for loss caused by failure to complete the work within the time specified for completion.

7-12 PROPERTY RIGHTS IN MATERIALS

Nothing in the contract shall be construed as vesting in the Contractor any right of property in the materials used in the work after they have been attached or affixed to the work or soil but the same shall be and remain the property of the City.

7-13 FIRE PROTECTION

The Contractor shall provide access to all fire hydrants located along the line of this work. Such access shall meet the approval of the City Fire Department and should it be necessary to close a portion of a street for a limited time, said street shall not be closed until the Contractor has the approval of said Fire Department, and he has also notified the Police Department of such closure. Fire and Police Departments shall be notified when a street is opened after it has been closed.

See Section 15-28 for the use of hydrants for construction purposes.

7-14 UTILITIES

The Contractor shall notify the Underground Service Alert (USA) at 1-800-227-2600 a minimum of three (3) working days prior to starting any excavation within the City limits. All participating members, including the City and TID, will be notified by USA of the location, date, time and description of the proposed work.

Any existing underground facilities will then be located and marked in the field by the appropriate USA member organization. Requests for field meetings shall be included in the initial call to USA. All excavation shall be in compliance with Section 1540(a) (1) of the Construction Safety Orders (Title 8, California Administrative Code Section 1540).

The City shall be responsible for the timely removal, relocation, or protection of any mainline or trunk utility facilities not identified on the plans and specifications and not identified by the process set forth above. The City shall pay all costs of locating and repairing damage to such utility facilities not due to the

failure of the Contractor to exercise reasonable care. No liquidated damages shall be issued against Contractor for delay in completion of the project caused by failure of City or public utility to provide for removal or relocation of such utility facilities.

Attention is directed to subsection 8-1.10, "Utility and Non-Highway Facilities," and Section 15, "Existing Highway Facilities," of the Caltrans Specifications and these Standard Specifications.

Although certain underground and overhead facilities appear on the plans, they are for information purposes only and no guarantee is made of the accuracy of their locations. The Contractor shall be solely responsible for any damage to existing utilities and for contacting the utility companies.

7-15 STATE SAFETY ORDERS AND LAWS

The Contractor shall obey and enforce all safety orders, rules and regulations of the Division of Industrial Safety of the State of California, which are applicable to the work and shall comply with all applicable Federal, State and local laws, ordinances, codes and regulations.

8 PROSECUTION AND PROCESS

8-1 SUBCONTRACTING

The Contractor shall be wholly responsible for the work and shall give his personal attention to the fulfillment of the contract.

Subcontractors will not be recognized as such and all persons engaged in the work shall be considered as employees of the Contractor and their work shall be subject to all the provisions of the contract and these Specifications. Should a subcontractor fail to prosecute the work in compliance with these Specifications he maybe upon written request to the Contractor by the City Engineer, removed and shall not again be employed on the work. No subcontractor except whose submitted with the proposal will be permitted to perform any part of the work unless permitted in writing from the City Engineer.

8-2 ASSIGNMENT

The performance of the contract shall not be assigned except upon written consent of the City Council. Consent will not be given to any proposed assignment which would relieve the Contractor or his surety of their responsibilities under the contract.

8-3 PROGRESS OF THE WORK

After the execution of the contract, the Contractor shall within the specified time designated, begin the work and shall diligently prosecute the work to completion within the time limit set forth in the Agreement.

8-4 CHARACTER OF WORKMEN

The Contractor shall neither permit nor suffer the introduction of the use of any intoxicating beverage or substance upon or about the work or upon any ground occupied by him in the prosecution of the work.

If any subcontractor or person employed by the Contractor fails or refuses to comply with the directions of the City Engineer or conducts himself in a disorderly, unsafe, improper or incompetent manner, he shall be immediately discharged upon request in writing of the City Engineer. Such person shall not again be employed on the work.

8-5 TEMPORARY SUSPENSION OF WORK

When conditions at the site of the proposed work are considered by the City Engineer to be unsatisfactory for the prosecution of the work, the Contractor may be ordered in writing to suspend a part or all of the work until reasonable conditions for its prosecution exist. When such suspension is not due in the opinion of the City Engineer to the fault or negligence of the Contractor, the time allowed for completion of such suspended work will be extended by a period of time equal to that lost due to the delay occasioned by the ordered suspension.

8-6 TIME OF COMPLETION AND LIQUIDATED DAMAGES

The Contractor shall complete the work called for under the contract in all parts and requirements within the number of working days specified in the Special Provisions and Agreement. It is agreed by the parties to the contract that in case all the work called for under the contract in all parts and requirements is not completed within the number of working days as set forth in the Special Provisions, damage will be sustained by such delay and that it will be most difficult or impossible to make an accurate assessment of the

amount of such damages; it is, therefore, agreed that the Contractor will pay to the City the sum of Two Hundred Fifty dollars (\$250.00) per day for each and every day's delay in finishing the work in excess of the number of working days prescribed, and the Contractor agrees to pay said liquidated damages as herein provided, and in case the same are not paid, agrees that the City may deduct the amount thereof from any monies due or that may become due under the contract. It is further agreed that in case the work called for under the contract is not completed in all its parts and requirements within the number of working days specified, the City Engineer shall have the right to increase the number of working days or not, as may seem best to serve the interest of the City, and if he decides to increase the said number of working days, he shall further have the right to charge to the contract and deduct from the final payment for the work, all or any part of, as he may deem proper, the actual cost of engineering, inspection, superintendence, and other overhead expenses which are directly chargeable to the contract, except that cost of final surveys and preparation of final estimate shall not be included in such charges. The Contractor shall not be assessed with liquidated damages nor the cost of engineering and inspection during any delay beyond the time named for completion of the work caused by the acts of God or a public enemy, acts of the City or State, fire, floods, epidemics, strikes, quarantine restrictions and freight embargoes or delays of subcontractors due to such causes, provided the Contractor notifies the City Engineer in writing of the cause of the delay within ten (10) days from the beginning of such delay.

The Contractor shall not be assessed liquidated damages for delay in completion of the work or project when such delay is caused solely by the failure of City or the owner of a private or public utility to provide for the removal or relocation of existing utility facilities when the existence of such utility facilities substantially prevents or hinders completion of the project or work.

8-7 TERMINATION OF OR DEFAULT ON CONTRACT

All conditions of the contract are considered material and failure to comply with any of said conditions on the part of the Contractor shall be considered a breach of contract. Should the Contractor neglect or fail to perform any of the conditions of the contract, the City Engineer shall have the right whether any alternative right is provided or not to declare the contract terminated.

The issuance of a written notice by the City Engineer stating that the contract is terminated and the service of a copy of said notice upon the Contractor shall be deemed a complete termination upon the contract. Upon the contract being so terminated, the Contractor shall forfeit all sums due under the contract and both he and his sureties shall be liable upon his bond for all expenses and damages caused the City by reason of his failure to complete the contract.

If the Contractor fails to begin the work as required by the contract, or if at any time he refuses, neglects or fails in the judgment of the City Engineer to have available on the work a sufficient amount of suitable materials, adequate equipment and sufficient competent workmen to insure completion of the work within the specified time, or if the Contractor fails to perform the work in good faith in an acceptable manner in accordance with the specifications, or if he refuses, neglects or fails for any reason whatsoever to observe any of the conditions and covenants of the contract, or if he abandons the work, the City Engineer may give the Contractor written notice specifying the default and requiring its correction. Should the Contractor for three days after receipt of such notice of default fail to proceed in accordance therewith to remedy such default, he shall, when so ordered in writing by the City Engineer, discontinue or not begin the work or any designated part of the work and any or all payments due or that may become due to the Contractor may be withheld by the City until the completion of all the work included in the contract.

After service on the Contractor of such order to desist from the work or part thereof, the City Engineer may take possession of the work or such designated part thereof, and may use any or all of the Contractor's plant, tools, equipment, materials or other property on the work, none of which shall be removed by the Contractor so long as they may be required for the work, and the City Engineer may by contract or otherwise provide the superintendence, workmen, materials, appliances and equipment necessary for the completion of and may complete the work or such designated part thereof.

The whole of the expense so incurred for the completion of the work or part thereof, together with all damages, liquidated or otherwise, sustained or to be sustained by the City shall be deducted from the fund or appropriation set aside for the purpose of the contract and shall be charged to the Contractor as if paid to him. In case the amount of such expenses and damages shall exceed the sum which would have been payable under the contract if completed entirely by the Contractor, the amount of such excess shall be paid to the City by the Contractor and both he and his sureties shall be liable to the City therefor; and in case the amount of such expenses and damages shall be less than the sum which would have been payable under the contract if completed entirely by the Contractor, he shall be entitled to the amount of the difference subject to all the terms of the contract.

The Contractor shall continue to prosecute to completion all the work from which he has not as above provided been ordered to desist, and he shall cooperate with and in no ways hinder or interfere with the forces employed by the City or contract or otherwise to do any designated part of the work as above specified.

Upon completion of all the work included under the contract, the Contractor shall be entitled to the return of all of his materials which have not been used in the work of his plant, tools, equipment and other property, provided, however, that he shall have no claim on account of usual and ordinary depreciation loss, wear and tear.

8-8 WAR CLAUSES IN MUNICIPAL CONTRACT

If, because of war or other declared national emergency, the Federal or State Government restricts, regulates, or controls the procurement and allocation of labor or materials or both, and if solely because of said restrictions, regulations, or controls, the Contractor is through no fault of his own unable to perform the agreement or the work is thereby suspended or delayed, any of the following steps may be taken:

(1) The City may, pursuant to resolution of the Council, grant the Contractor additional time for the performance of the agreement sufficient to compensate in time for said delay or suspension. To qualify for such extension of time, the Contractor, within ten (10) days of his discovering such inability to perform, shall notify the City Engineer in writing thereof and give specific reasons therefore; the City Engineer shall thereupon have Sixty (60) days within which to endeavor to procure such needed materials or labor as is specified in the agreement or permit substitutes or provide for changes in the work in accordance with other provisions of the agreement. Substituted materials or changes in the work or both shall be ordered in writing by the City Engineer and the concurrence of the Council shall not be necessary. All reasonable expenses of such procurement incurred by the City Engineer shall be defrayed by the Contractor, or

(2) If such necessary materials or labor cannot be procured through legitimate channels within sixty (60) days after the filing of the aforesaid notice, either party may, upon thirty (30) days written notice to the other, terminate the agreement. In such event, the Contractor shall be compensated for all work executed upon the unit price bid in proportion to the amount of the work completed. Materials on the

ground in process of fabrication or en route upon the date of notice of termination specially ordered for the project and which cannot be utilized by the Contractor shall be compensated for by the City at cost, including freight, provided that the Contractor shall take all steps possible to minimize this obligation, or

(3) The City Council, by resolution, may suspend the agreement until the cause of inability to perform is removed but for a period not to exceed Sixty (60) days. If the contract is not canceled and the ability of the Contractor to perform continues without fault on his part beyond the time during which the contract may have been suspended as hereinabove provided, the City Council may further suspend the agreement or either party hereto may without incurring any liability elect to declare the agreement terminated upon the ground of impossibility of performance. In the event the City declares the agreement terminated, such declaration shall be authorized by the Council by resolution and the Contractor shall be notified in writing thereof within five (5) days after the adoption of such resolution. Upon such termination the Contractor shall be entitled to proportionate compensation at the contract unit prices for such portion of the contract as may have been performed, or

(4) The City may terminate the agreement in which case the Contractor shall be entitled to proportionate compensation at the contract unit prices for such portion of the agreement as may have been performed. Such termination shall be authorized by resolution of the Council. Notice thereof shall be forthwith given in writing to the Contractor, and the agreement shall be terminated on receipt by the Contractor of such notice.

In the event of the termination provided in this sub-paragraph (4), none of the covenants, conditions, or provisions hereof shall prevail and the City shall be liable to the Contractor only for the proportionate compensation last herein mentioned.

8-9 LEGAL ADDRESS OF CONTRACTOR

The address given in the bid or proposal is hereby designated as the legal address of the Contractor. However, such address may be changed at any time by notice in writing, delivered to the City Clerk or City Engineer.

Delivery to such legal address or deposit in the post office in a postpaid wrapper directed to the Contractor at the above address of any drawing, notice, letter or other communication shall be deemed to be a legal and sufficient service thereof upon the Contractor.

8-10 RIGHT OF WAY

The City has sufficient right of way for construction of projects as shown on the contract plans. The Contractor shall make his own arrangements at no cost to the City for acquiring additional right of way to facilitate construction work or for use as a storage yard.

9 MEASUREMENT AND PAYMENT

9-1 MEASUREMENT

All work completed under the contract other than work included under a lump sum bid price shall be measured by the City Engineer according to United States Standard Measures. A lump sum price shall be paid on all lump sum items and this price shall include all work under said item. No extra payment shall be made for parts of lump sum items, although a method for measuring certain quantities included in said lump sum item maybe provided in the Special Provisions. Extra work and force account work are covered in Section 4 of the Specifications.

9-2 PROGRESS PAYMENT

Once each month on the date specified by the City Engineer, the Contractor shall submit an estimate, in writing to the City Engineer, of the total amount of work done and the acceptable materials furnished and delivered by the Contractor on the ground and not used to the time of such estimate and the value thereof. The City shall retain five percent (5%) of such estimated value of the work done and five percent (5%) of the value of the materials so estimated to have been furnished and delivered and unused, as aforesaid, as security for the fulfillment of the contract by the Contractor and shall pay monthly to the Contractor while carrying on the work, the balance not retained, as aforesaid, after deducting therefrom all previous payments and all sums to be kept or retained under the provisions of the contract. No such estimate or payment shall be required to be made when in the judgment of the City Engineer the work is not proceeding in accordance with the provisions of the contract, or when in his judgment the total value of the work done since the last estimate amounts to less than Three Hundred Dollars (\$300.00). No such estimate or payment shall be construed to be acceptance of any defective work or improper materials. Progress estimates shall be signed by an authorized representative of the Contractor and shall be made in the form of itemized invoices and shall be submitted together with the data set forth hereinafter.

A recapitulation showing balance due current month as follows:

INVOICE SUBMITTAL

For Progress Payment No. ____
 For Period From: __/__/__ to __/__/__
 From: _____ For Project:____
 Contractor Name _____ Project Title____
 Address _____ Project No.____
 City, State, Zip _____
 Phone _____

			A		B	C = (C + D)	D	E = (B x A)	F = (D x A)
Item No.	Item Description	Unit	Unit Price	Bid Quantity	Total Quantity to Date	Total Quantity to Date Last Invoice	Quantity This Payment	Total Amount to Date	Amount This Payment
xx	xx	xx	xx	xx	xx	xx	xx	xx	xx
Change Orders									

xx	xx	xx	xx	xx	xx	xx	xx	xx	xx
Subtotal								xx	xx
Less Retention (10%)								<xx>	<xx>
Total								xx	xx

Signature: _____
Contractor

Signature: _____
City Inspector

9-3 FINAL PAYMENT

Upon completion of the contract and final inspection and acceptance, the City Engineer, shall prepare a final estimate of quantities and the value of such work, and the City shall pay to the Contractor the entire sum so found to be due after deducting therefrom all previous payments and all amounts to be kept and all amounts to be retained under the provisions of the contract. All prior progress estimates and payments shall be subject to correction in the final estimate and payment. Final payment shall be processed within thirty-five (35) to sixty (60) days after the Notice of Completion has been recorded in compliance with the Code of Civil Procedure of the State of California. It is mutually agreed between the parties to the contract that no certificate given or payments made under the contract, except the final certificate and payment, shall be conclusive evidence of the satisfactory performance of the contract. The Contractor further agrees that the payment of the final amount due under the contract and the adjustment and payment for any work done in accordance with any alteration of the same shall release the City and its officers and employees from any and all claims or liability on account of the work performed under the contract or alterations thereof. The final payment shall be conclusive and binding against both parties to the contract on all questions relating to the performance of the contract and the amount of work done thereunder and compensation therefor, except in case of gross error.

9-4 GUARANTY

The Contractor and his bonds shall guarantee the work in general for one year after completion and acceptance by the City. The Contractor shall be held responsible for and must correct or repair any defects arising or discovered in any part of his work within this one year period after the Notice of Completion has been recorded by the City and acceptance of the work by the City. The Contractor shall not be required to perform any further work thereon beyond the said one year, except upon such items as may be reserved specifically in the plans and specifications or in the formal written acceptance.

9-5 FUNDS WITHHELD

At the request and expense of the Contractor, pursuant to Section 22300 of the Public Contract Code, securities equivalent to any funds withheld from progress payments made under this contract may be deposited with the City of Turlock, or into an escrow account as described in 2300.

9-6 PAYMENT FOR NON-BID ITEMS

The Contractor shall accept under the various bid items included in the proposal as full payment for furnishing all labor, materials, tools, equipment and incidentals necessary; for completing the work associated with each item and the sum of such items shall be accepted as payment for performing all work contemplated and embraced under the contract. Payment for all work specified herein for which there is no separate bid item shall be considered as included in the various bid items and no additional compensation will be made therefor.

9-7 WEIGHMASTER'S CERTIFICATE

A public weighmaster's certificate of weight and measure prepared by a recognized authority of accuracy, as prescribed by the California Business and Professions Code, Division 5, Chapter 7, indicating the quantity of material applied shall be supplied to the City Engineer by the Contractor.

9-8 RESOLUTION OF CLAIMS

Any demand by the Contractor for a time extension, payment of money or damages arising from work done by, or on behalf of, the Contractor, payment of which is not otherwise expressly provided for or the claimant is not otherwise entitled to or an amount, the payment of which is disputed by City, shall be subject to the provisions of Public Contract 20104.2 if the amount involved is less than \$375,000 and the City has not elected to resolve the matter pursuant to Public Contract Code 10240, et seq.

10 DUST CONTROL

10-1 CLEANUP AND DUST CONTROL

Dust control shall be the responsibility of the Contractor. However, the City Engineer may perform emergency dust control and the cost thereof shall be deducted from the Contractor's cash bond as outlined in section 11-8.604 of the Turlock Municipal Code, or deducted from any monies due or that will become due on City projects.

The Contractor's attention is directed to section 11-8.804 of the Turlock Municipal Code for additional requirements for dust control.

10-2 WATER

On City awarded contracts, the Contractor shall be allowed to use City water for his operations and no charges by the City shall be made. The use of water and the location of the source shall be coordinated with the Municipal Services Department by calling (209)668-5590.

All water trucks shall have an appropriate air gap and/or a backflow device approved by AWWA.

11 TRAFFIC SAFETY

11-1 GENERAL

The Contractor shall plan all work within the public right-of-way so as to keep pedestrian and vehicular traffic obstruction, congestion, and delays to a minimum and to ensure the safety of the work, workers, and traveling public at all times. The areas of proposed work shall be visited by the Contractor before starting the project to study traffic conditions, access to private property, business activities, physical features, etc. The extent, location, and time of the job shall be considered in determining the correct method of traffic control.

All temporary traffic control plans, devices, and procedures shall comply with the latest version of the California Manual on Uniform Traffic Control Devices (CA MUTCD).

11-2 TEMPORARY TRAFFIC CONTROL PLAN

The needs and control of all road users, to include motorists, bicyclists, and pedestrians, as well as persons with disabilities in accordance with the Americans with Disabilities Act of 2010 (ADA), through a temporary traffic control zone shall be an essential part of any Temporary Traffic Control Plan (TTCP). The term “traffic” is used throughout this section to refer generally to all of these road users.

The Contractor shall submit a TTCP to the Engineer for review and acceptance for all construction projects that stop, delay, or affect access to portions of the public right-of-way to traffic for any length of time during any portion of the project, except when a TTCP has been incorporated as part of the project plans and specifications, in which case the Contractor shall follow the provided TTCP. The TTCP shall identify the general area of work, the areas of closure (if applicable), the placement location of all traffic control devices, the distances between advance warning devices, any applicable detour and associated signage, and the proposed dates and working hours for when the TTCP shall be in effect. The TTCP shall also describe how members of the general public, as well as those of adjacent homes/businesses, will be notified of the work.

The TTCP shall be approved by the Engineer prior to the commencement of work in accordance with the CA MUTCD.

A proposed TTCP shall be submitted by the Contractor no less than ten (10) working days prior to the start of work. If any portion of the work will involve major lane closures or a significant traffic impact, a TTCP shall be submitted to the Engineer no less than fifteen (15) working days prior to the start of work. A major lane closure is defined as a closure that by itself, or in combination with concurrent projects occurring nearby, is anticipated to cause sustained work zone impacts greater than what is considered tolerable based on sound engineering judgment. A significant traffic impact is defined as: an activity that affects a disproportionately large percentage of the traveling public for an extended period of time; an activity that directly affects access to or from a festival, parade, or other special event; a delay of twenty (20) minutes or more to a majority of traffic attempting to travel through a work area and are stopped, slowed, or re-routed as a result of the traffic control measures in place.

11-3 TRAFFIC CONTROL DEVICES

Traffic control devices shall be defined as all signs, signals, markings, and other devices used to regulate, warn, or guide road users, placed on, over, or adjacent to a street, pedestrian facility, bikeway, or other public right-of-way of the City. The Contractor shall only use official traffic control devices approved for use by the CA MUTCD and the Engineer as part of a TTCP. The Contractor shall furnish such flaggers as required by the TTCP or as necessary to give adequate warning to traffic or to the public of any unique conditions to be encountered.

All traffic control devices shall be placed prior to the commencement of work and shall remain in place for the duration of work. The Contractor shall remove all traffic control devices within twenty-four (24) hours of the completion of all work, unless otherwise directed by the Engineer.

If the Contractor fails to provide adequate traffic control, the City may provide it and charge the contractor for the actual costs associated with this portion of work.

11-4 BARRICADES AND BARRIERS

Barricades may be used within the roadway, with or without attached signs, for the purpose of identifying a construction zone and informing the traveling public of a change in roadway conditions. The only barricades approved for use are Type I, II, and III barricades as identified in the CA MUTCD.

Barricades attached to advance warning signs shall be placed along the right-edge of the roadway facing oncoming traffic. Barricades used to identify the start of a road closure shall be Type III barricades, unless precast concrete barrier rails are used instead.

Barricades shall not be used to delineate traffic; only approved channelizers and pavement markings shall delineate traffic (see Section 11-7 of these Standards).

Barricades or barriers in place outside of daylight hours shall comply with Section 11-6 of these Standards.

11-5 WARNING SIGNS

Warning signs shall have a black legend and border with an orange background, except as provided in the CA MUTCD. The minimum size of said signs is based on the posted speed limit and shall comply with the CA MUTCD. All signs used at night shall maintain retroreflectivity at or above the minimum levels provided in the CA MUTCD or be otherwise externally illuminated.

Warning signs placed in the roadway should maintain a minimum of 12" between the bottom of the sign and surface beneath it. Warning signs placed to the right edge of the roadway, behind the edge of pavement, vertical curb, or sidewalk, shall be mounted at a height of at least 7 ft. from the bottom of the sign to the surface beneath it.

Signs shall be placed so that they can be clearly seen by the traveling public. Warning signs may be attached to barricades or high-level warning devices (flag tree). Warning signs that will remain in place for the duration of a project lasting more than ten (10) working days may be installed on 4-inch by 4-inch wood post set in the ground.

11-6 WARNING LIGHTS

Warning lights shall be provided to indicate an obstruction or restriction during periods of low visibility and be attached to each barricade in the roadway during the night, except for those barricades used exclusively to prohibit parking. Warning lights shall be electric lanterns, electric markers, or flashers with the ability

to be fastened to signs, barricades, and high-level warning devices. Warning lights shall comply with CA MUTCD §6F.83.

11-7 DELINEATORS

Delineators or tubular markers should be used to supplement other traffic control devices and should be used for lane tapers, dividers, and channelizers. Delineators shall be of a material that will withstand impact from a striking or passing vehicle without appreciable damage to the delineator or the striking vehicle, See 7-1.04A(6). Every delineator shall contain a reflective surface approximately 2-4 ft. above the surface grade. Delineators used along the left edge of a one-way road or used to separate opposing lanes of traffic shall be yellow or have a reflective surface that is yellow. Delineators used to divide lanes or on the right edge of the roadway shall be white or have a reflective surface that is white.

The maximum spacing between delineators shall be determined by taking the posted speed limit and dividing it by two (2). Nothing in this section shall prevent a Contractor from placing delineators closer together than what is specified in this section.

Under no circumstances will delineators be used as, or in place of, barricades.

11-8 FLAGGERS

Under certain circumstances flaggers will be needed, in addition to the required traffic control devices, to protect the work area, workers and traveling public. When flaggers are required, the cost thereof shall be borne entirely by the Contractor. Flaggers shall only be used when such discretionary capability is required and not as a substitute for other warning devices.

When flaggers are required, they shall wear high visibility safety apparel that meets the Performance Class 2 (for daytime operations) or Class 3 (for nighttime operations) requirements of the ANSI/ISEA 107-2004 publication entitled, "American National Standard for High-Visibility Apparel and Headwear." The safety apparel should be comprised of a retroreflective background material that is orange, yellow, white, silver, yellow-green, or a fluorescent version of these colors. Flaggers shall also be trained in the proper fundamentals of flagging moving traffic before being assigned as flaggers, in accordance with the CA MUTCD and the California Code of Regulations Title 8, Division 1, Chapter 4, Subchapter 4, Article 11, Section 1599 - Flaggers. Flaggers shall comply with flagging procedures identified in the CA MUTCD

Appropriate signs indicating the presence of flaggers shall be placed at distances established in the TTCP.

The use of flaggers will be required in all cases where one lane is to be used for two directions of traffic.

11-9 STREET CLOSURES

The Contractor will not be allowed to entirely close a public street without the written approval of the Engineer. It is the City's expectation to maintain use of public streets for as long as possible, to include preference for the use of lane reductions or shoulder closures over the use of complete street closures. If approved, the details and conditions of the closure will be outlined in the TTCP. The Contractor shall be responsible for notifying the residents or businesses adjacent to the closure area or otherwise directly affected by the closure. The City shall notify regional police, fire, ambulance, transit, utility companies, and other affected public agencies. The method and procedure used to close a public street shall be subject to the approval of the Engineer.

11-10 REDUCED SPEED LIMITS

Reduced speed limits shall only be used for specific portions of the work area where site conditions or work zone features would present a risk to workers or the traveling public for the posted speed limit to prevail. A reduced speed limit, also known as a construction speed zone, may be established at the request of the Contractor or by the direction of the Engineer. If approved, the Engineer shall document the reason for the speed reduction in writing, in accordance with California Vehicle Code (CVC) §627.

A reduced speed limit zone shall only be legally established when approved in writing by the Engineer and after speed limit reduction signs have been placed along the roadway as directed by the Engineer or approved TTCP. Where traffic obstructions exist only during the hours of construction, the speed zone signs shall be covered during non-working hours, in accordance with CVC §21367. At no time shall a speed limit be reduced by more than 10 mph from the posted speed limit, as this increased disparity between speeds can lead to an increase in accidents. At no time shall a speed limit be reduced to less than 25 mph, in accordance with CVC §22362. Speed limit reduction signs shall be removed following the completion of construction or after a change in conditions for which they were initially installed.

11-11 TEMPORARY MARKINGS

Temporary markings shall be used to identify the location of striping details that were present prior to construction, or intended for installation after construction, when the location of the markings are necessary for public safety. Markings deemed critical enough to warrant temporary markings are crosswalks, stop bars, lane lines separating adjacent traffic, and lane lines separating opposing traffic, as well as other markings as specified by the Engineer.

11-12 TRAFFIC SIGNAL MODIFICATIONS

Traffic signal modifications, such as extended timing, prohibition of certain movements, or conversion of a fully-actuating signal to all-way flash mode, may be requested by the Contractor or required by the Engineer when in the opinion of the Engineer the change is necessary to support the TTCP or otherwise necessary for worker or traffic safety. The Contractor shall include signal modification requests as part of the submitted TTCP.

11-13 ADVANCE NOTIFICATION OF WORK

Advance warning signs, which are intended to alert the roadway user of upcoming construction activities, must be in place in advance of all work zones along streets with a functional classification of arterial or expressway. These advance warning signs shall include, at a minimum: the name of the street that is affected, the dates of the proposed activities, and the type of impact (i.e. closure, delay, etc.). Such signs shall be placed and maintained by the Contractor for the duration of work and shall be in place no less than seven (7) calendar days prior to the start of work. There shall be at least one sign in place for each direction of traffic. Nothing in this section shall preclude the Engineer from requiring such signs along streets with different classifications, nor shall it preclude the Contractor from proposing to use such signs in areas not required by the Engineer.

This requirement may be satisfied through the use of electronic message boards or through the use of a printed message on metal signs with text no less than 5" in height and signs measuring no less than 48" wide and 60" high. If electronic message boards are used, multiple pages of text are permitted, but no message shall span more than three pages (screens). If metal signs are used each sign shall be mounted to a Type III barricade and placed along the right-edge of the roadway.

In the event of a change to the proposed work, such as a change in dates, the Contractor shall ensure that the advance warning signs are modified accordingly and that new signs are in place no less than (3) calendar days prior to the start of work.

11-14 ADVERSE CONDITIONS

Any proposed construction to be performed at night will be subject to prior approval by the Engineer. The Contractor shall notify the Engineer in writing at least five (5) working days prior to the proposed night time operation.

During adverse weather conditions the Engineer may require the Contractor to cease operations, so as to not endanger the work, workers, or traveling public. This order shall remain in effect until removed by the Engineer.

The Engineer shall have the discretion to require additional traffic control devices to be placed for the protection of the work area, the workers, and the traveling public, if in his opinion the work zone warrants it in the interests of traffic safety. The cost of all traffic control devices shall be the responsibility of the Contractor.

12 STREETS

12-1 GENERAL

Street improvements in the public right-of-way shall be constructed in accordance with the Project Plans, the Standard Drawings, these Standard Specifications and Caltrans Specifications,.

12-2 CLEARING AND GRUBBING

Clearing and grubbing shall be performed in accordance with Section 16, "Clearing and Grubbing" of the Caltrans Specifications.

12-3 EARTHWORK

Earthwork shall be performed in accordance with Section 19 of the Caltrans Specifications.

All embankment or fill material shall be placed and compacted in accordance with subsection 19-6, "Embankment Construction" of the Caltrans Specifications. The original ground shall be stripped of vegetation and the top 6 inches of original ground shall be compacted to 95% relative compaction before the fill is placed.

12-4 SUBGRADE

Subgrade to receive base, sub-base or asphalt concrete shall have the vegetation removed and shall be bladed or disced to a depth of 6 inches. All rocks, hard pan or other unsuitable solid material over 2½ inches in dimension shall be removed from the job site.

The material that has been bladed or disced shall be thoroughly mixed, watered and rolled to a relative compaction of 95%. The surface of the completed subgrade shall not vary more than 0.05 feet above or below the planned grade at any point. No aggregate sub-base, base or asphalt concrete shall be placed on the subgrade until it has been approved by the Engineer.

Compaction tests of the subgrade will not be administered until the Contractor has properly notified the Engineer of the need for the compaction tests. The Engineer will specify the locations that the compaction tests will be performed. The Contractor will be responsible for any expenses incurred if a re-test is necessary to check areas of failure encountered during the original subgrade compaction test. Relative compaction shall be tested in accordance with California Test Methods No. 216 and 231, or ASTM D1557 and D2992, as directed by the Engineer.

12-5 AGGREGATE SUBBASE AND BASE MATERIAL

Aggregate sub-base and base material shall consist of mineral aggregate, which has been spread and compacted on a prepared subgrade. This shall be to the established lines and grades shown on the plans, Standard Drawings or as specified herein.

Aggregate sub-base material shall be Class 2, in conformance with Section 25 of the Caltrans Specifications. Aggregate base material shall be Class 2, in conformance with Section 26 of the Caltrans Specifications.

Aggregate sub-base and base material shall be delivered to the roadbed as uniform mixtures and each layer shall be spread in one operation. Segregation shall be avoided and the material shall be free of pockets of coarse or fine material. At the time of spreading, the aggregate sub-base or base shall be of uniform moisture and have a moisture content at or above optimum, but not more than 2% above optimum unless stated otherwise in the soils report, which will enable the aggregate to obtain the required compaction.

The base material may be spread and compacted in one layer when the specified thickness is 0.50 feet or less. Where the required thickness is more than 0.50 feet, the base material shall be spread and compacted in two or more layers of equal thickness with the maximum compacted thickness of any one layer not to exceed 0.50 feet. The use of motor graders will be permitted to spread and shape the base materials.

Rolling shall always commence along the edge of the area to be compacted and advanced toward the center. The relative compaction of each layer of base material shall not be less than 95%.

The surface of the finished aggregate sub-base or base course shall not vary more than 0.05 feet above or below the planned grade.

12-6 HOT MIX ASPHALT

Hot mix asphalt (HMA) shall conform to the provisions in Section 39, "Hot Mix Asphalt," of the Caltrans Standard Specifications. Unless stated in the project specifications otherwise, the construction process shall be method; the aggregate gradation shall be ½"; the HMA type shall be type A and the binder shall be PG 70-10. Contractor shall tack coat all surfaces to receive HMA and shall conform to the Caltrans Standard Specifications Section 39, "Hot Mix Asphalt."

12-7 PRIME COAT

A prime coat of liquid asphalt may be required when in the opinion of the Engineer, conditions exist that warrant a prime coat. When required, a prime coat shall be applied to an area to be newly surfaced. When a prime coat is applied it shall conform to the requirements of Section 39 of the Caltrans Specifications and these Standard Specifications. The liquid asphalt shall conform to the requirements of Section 93 of the Caltrans Specifications and these Standard Specifications.

The grade of liquid asphalt shall be as shown on the plans and as directed by the Engineer. Prime coat shall be applied at the approximate total rate of 0.25 gallons per square yard of surface covered and as determined by the Engineer.

12-8 PAINT BINDER (TACK COAT)

A paint binder (tack coat) utilizing an asphaltic emulsion shall be applied to all vertical surfaces of existing pavement, curbs, gutters, and construction joints, to existing pavement to be surfaced, and other surfaces as necessary which are to receive asphalt concrete.

The asphaltic emulsion shall be type SS1h or RS1 as specified by the Engineer. Paint binder (tack coat) shall be applied in one application at a rate of 0.02 gallons to 0.10 gallons per square yard of surface covered and as determined by the Engineer. The surfaces that are to receive the tack coat shall be free of water, foreign material and dirt.

The paint binder shall conform to the requirements of subsection 39-1.09C of the Caltrans Specifications and these Standard Specifications. The asphaltic emulsion shall conform to the requirements of Section 94 of the Caltrans Specifications.

12-9 SEAL COAT

When shown on the plans or as directed by the Engineer a seal coat of asphaltic emulsion and screenings shall be applied in accordance with the requirements of Section 37 of the Caltrans Specifications.

12-10 PLACEMENT

Hot Mix Asphalt shall be deposited, distributed, spread and finished in accordance with the requirements of Section 39 of the Caltrans Specifications.

12-11 MISCELLANEOUS REQUIREMENTS

The finish surface shall be true to grade and cross section. The surface shall not vary from the edge of a 10-foot straight edge more than 1/8 inch. If the 1/8 inch tolerance is not met, the surface of the pavement shall be brought to the true grade and cross section by removing the asphalt concrete by an approved method, in the area to be repaired, to provide a minimum of 1.5 inches of new material. No feather paving will be allowed in making the above-mentioned repairs.

The beds of trucks used to transport hot mix asphalt may be coated with a light film of distillate or light oil before loading.

All asphalt concrete for the finish course on any one-day's run shall be the product of one plant unless otherwise specifically permitted by the Engineer.

When the approval to commence paving has been given by the Engineer and the atmospheric temperature at the asphalt plant is below the required 50°F, the Contractor shall be required to cover the asphalt concrete with tarpaulins to prevent loss of heat. The tarpaulins shall cover the entire load and be firmly secured.

12-12 ADJUSTING MANHOLE FRAMES, MONUMENTS AND VALVE BOXES

All sewer and storm drain manhole frames, monument boxes and water boxes will be brought to the finish asphalt grade after the completion of the final course of asphalt. Adjustments will be in accordance with the Standard Drawings.

During the adjustment, the Contractor will exercise caution to prevent debris from falling into manholes, monuments and valve boxes. Any debris that falls into such devices shall be removed immediately.

When the manholes and water valves in the existing streets have been brought to finish grade and the concrete collar has initially set, a temporary asphalt patch shall be placed for the safety of the traveling public. The temporary asphalt patch shall be maintained by the Contractor until the permanent asphalt concrete is placed. Re-paving around the frames and boxes shall be the responsibility of the Contractor.

12-13 GEOMETRIC STREET DESIGN

HORIZONTAL CURVES

Minimum horizontal curve radii for the centerline of a street shall be 300 feet.

STREET INTERSECTION ANGLES

Street intersections shall be as near right angles as practical. In no case shall the angle of intersection be less than 70 degrees.

ADJACENT INTERSECTION OFFSETS

The offset between adjacent intersections shall not be less than 250 feet, or as approved by the Engineer.

CUL-DE-SAC LENGTH

The maximum cul-de-sac length shall be 600 feet from the centerline of the cross street to the radius point of the cul-de-sac bulb, or as approved by the Engineer.

12-14 SAW CUTTING EXISTING PAVED STREETS

When placing hot mix asphalt adjacent to existing paved streets, the pavement at the edge of the existing structural section shall be vertically cut in a neat straight line by sawing. This shall be done to the limits shown on the plans and as directed by the Engineer. Sawing shall be done with an approved saw capable of cutting a minimum of 1½ inches in depth. It is the Contractor's responsibility to provide a clean, smooth, vertical surface for the depth of the proposed structural section. The sawing shall be done to the exact lines snapped with a chalk line. Any damage occurring to the saw cut after the cut has taken place will be corrected to the satisfaction of the Engineer at the Contractor's expense.

When saw cutting is paid for as a separate pay item, saw cutting shall be paid for per linear foot. No separate compensation will be allowed for variances in vertical depth of the saw cut due to diverse structural sections encountered.

12-15 SLURRY SEAL

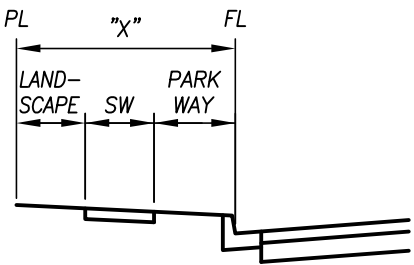
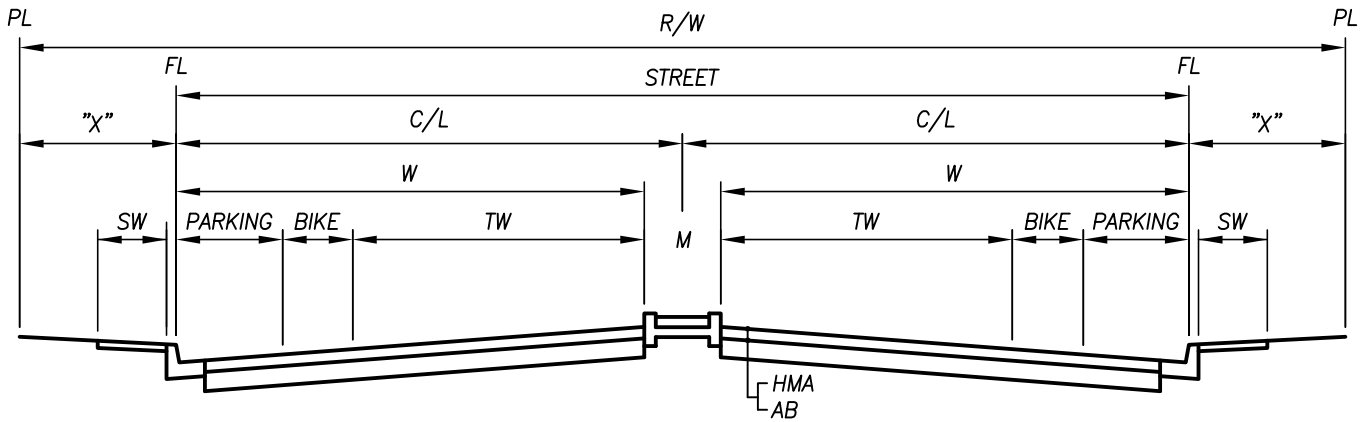
The aggregate for slurry seal shall be Type II gradation as specified in Section 37-3.02 Materials of the Caltrans Standard Specifications. All material shall be free from vegetable matter, caked lumps, and oversized particles.

RESIDENTIAL STREET SECTIONS

DESIGNATION	R/W	STREET	C/L	"X"	W	M	TW	BIKE	PARK-ING	PARK WAY	SW	LAND-SCAPE	HMA* (IN.)	AB* (IN.)
LOCAL W/ PARKWAY	56'	34'	17'	11'	N/A	N/A	10'	N/A	7'	6'	5'	N/A	3	6
COLLECTOR	72'	50'	25'	11'	N/A	N/A	12'	5'	8'	6'	5'	N/A	4	6
MINOR ARTERIAL (2 LANES)	102'	84'	42'	15'	28'	16'	12'	8'	N/A	6'	5'	4'	5	6
ARTERIAL (4 LANES)	126'	96'	48'	15'	40'	16'	24'	8'	8'	6'	5'	4'	5	6
EXPRESSWAY (4 LANES)	116'	84'	42'	15'	34'	16'	24'	10'	N/A	6'	5'	4'	5	6
EXPRESSWAY (6 LANES)	140'	126'	54'	15'	46'	16'	36'	10'	N/A	6'	5'	4'	5	6

COMMERCIAL – INDUSTRIAL STREET SECTIONS



DESIGNATION	R/W	STREET	C/L	"X"	W	M	TW	BIKE	PARK-ING	PARK WAY	SW	LAND-SCAPE	HMA* (IN.)	AB* (IN.)
LOCAL (CURB ADJACENT)	56'	40'	20'	8'	N/A	N/A	12'	N/A	8'	N/A	8'	N/A	3	6
COLLECTOR	72'	50'	25'	11'	N/A	N/A	12'	5'	8'	6'	5'	N/A	4	6
INDUSTRIAL	76'	60'	30'	8'	N/A	N/A	16'	6'	8'	N/A	8'	N/A	6	6
MINOR ARTERIAL (2 LANES)	102'	84'	42'	15'	28'	16'	12'	8'	N/A	N/A	8'	7'	5	6
ARTERIAL (4 LANES)	126'	96'	48'	15'	40'	16'	24'	8'	8'	N/A	8'	7'	5	6
EXPRESSWAY (4 LANES)	116'	84'	42'	15'	34'	16'	24'	10'	N/A	N/A	8'	7'	5	6
EXPRESSWAY (6 LANES)	140'	126'	54'	15'	46'	16'	36'	10'	N/A	N/A	8'	7'	5	6

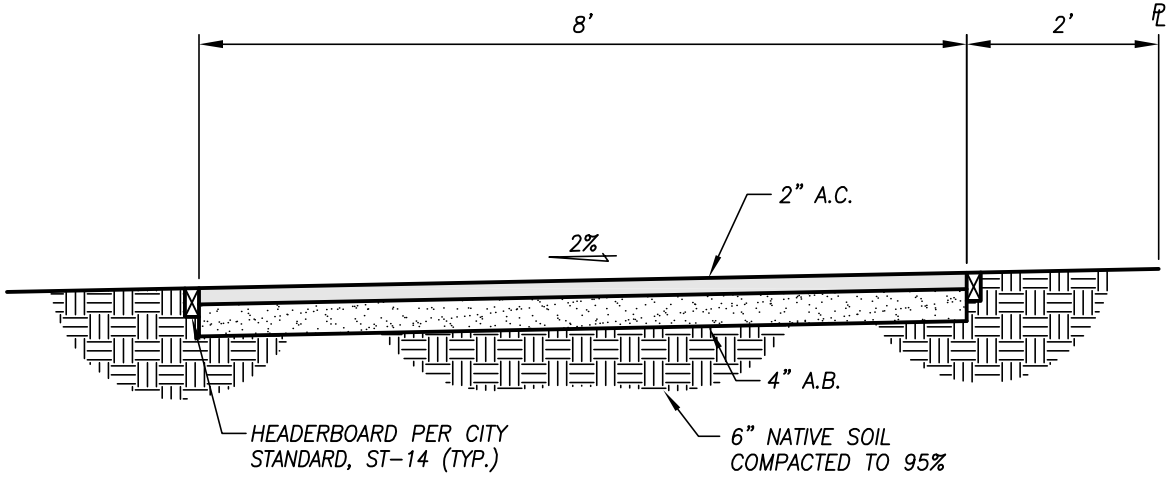


IN INFILL AREAS, WHERE EXISTING RIGHTS-OF-WAY MAY NOT CONFORM TO THE ROADWAY STANDARDS SET FORTH IN THE GENERAL PLAN, BUT WHERE IMPROVEMENTS ARE NECESSARY, REASONABLE DEVIATIONS FROM ROADWAY STANDARDS MAY BE ALLOWED BY THE CITY ENGINEER

* OR AS REQUIRED BY THE CITY ENGINEER, R-VALUE AND T.I. STUDIES MAY BE REQUIRED TO DESIGN THE APPROPRIATE PAVEMENT SECTION.

STANDARD STREET SECTIONS

	DRAWN BY: JSH	CITY OF TURLOCK	DRAWING NO. ST-1
	CHECK BY: NBB		APPROVED BY: 
	SCALE: NONE	CITY ENGINEER – MICHAEL G. PITCOCK – RCE 52694	



STANDARD BIKE PATH

CITY OF TURLOCK



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

APPROVED BY:

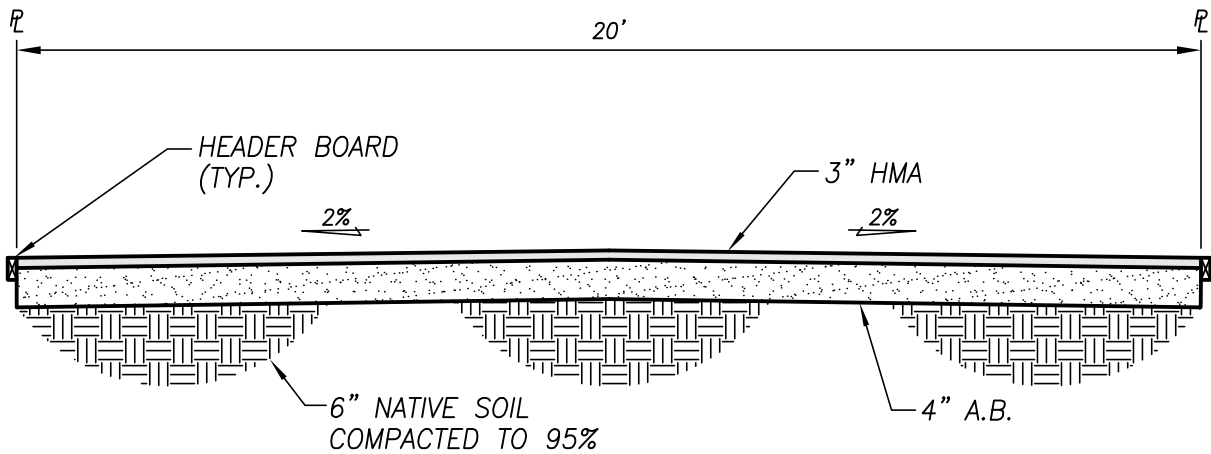
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

ST-2

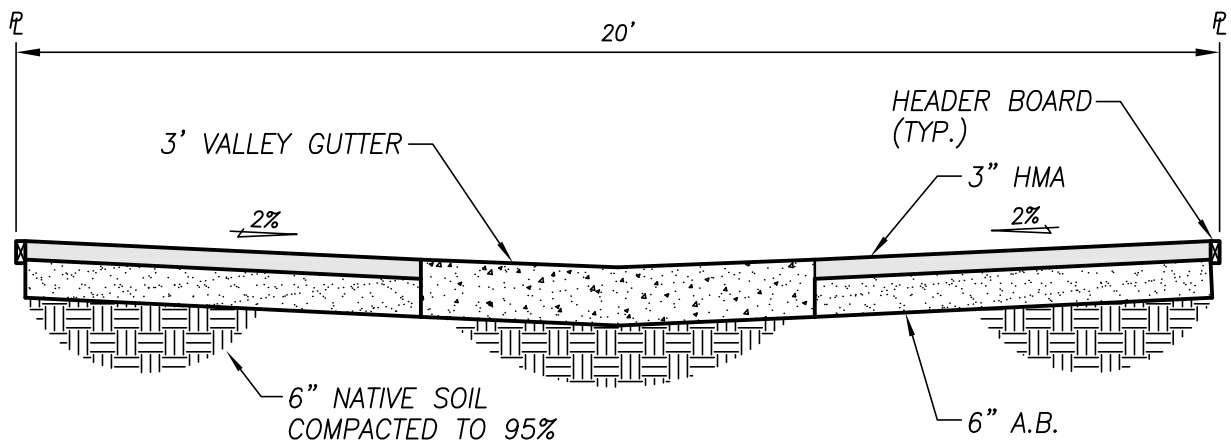
COUNCIL APPROVAL

DEC, 2015



RESIDENTIAL SECTION

1. VALLEY GUTTER MAY BE REQUIRED BY CITY ENGINEER.



COMMERCIAL SECTION

NOTES:

1. FOR HEADER BOARD DETAIL SEE STANDARD DETAIL ST-6
2. FOR VALLEY GUTTER DETAIL SEE STANDARD DETAIL C-1
3. GRADES AND DRAINAGE SHALL BE APPROVED BY THE CITY ENGINEER

ALLEY CROSS-SECTION



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

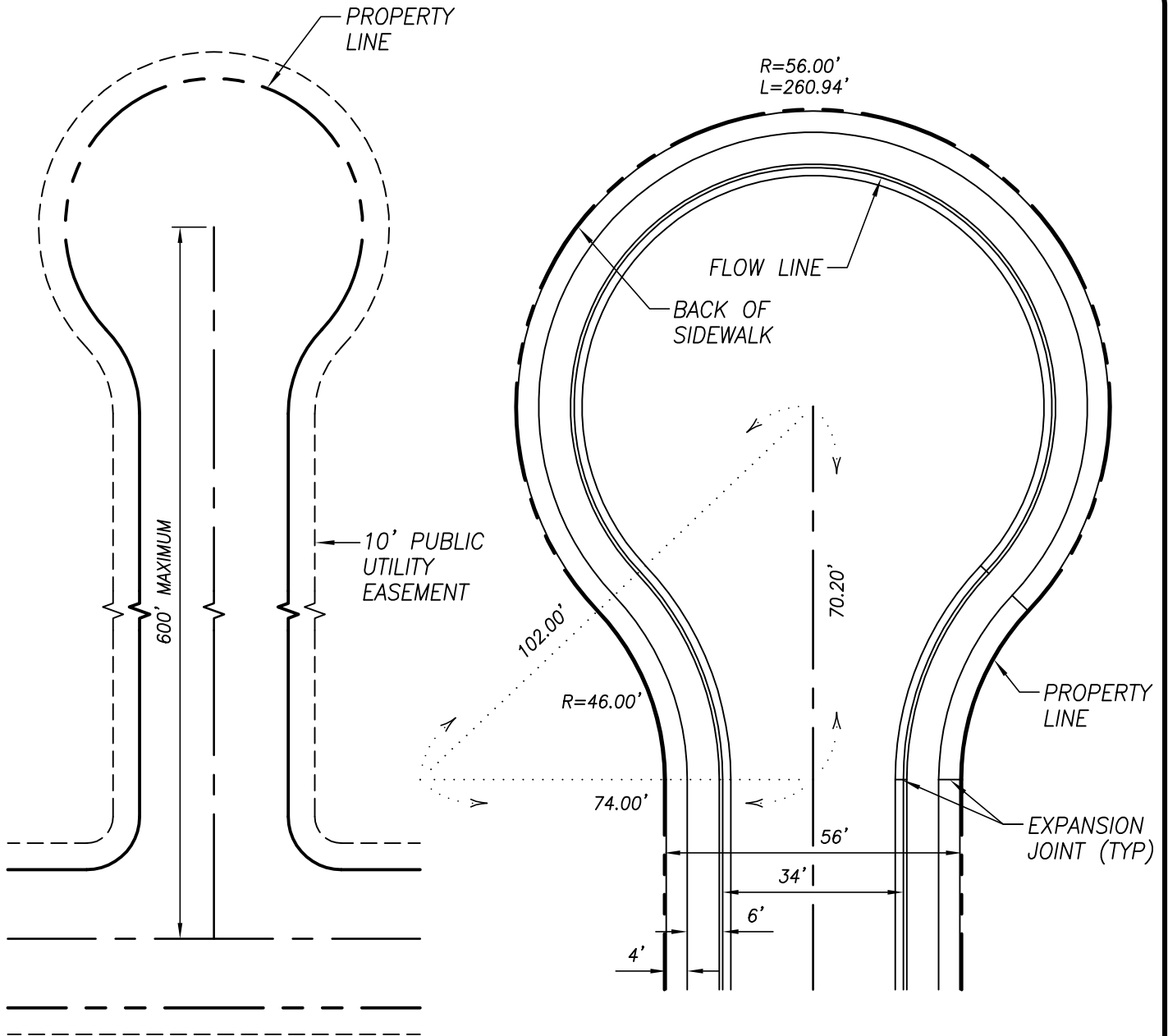
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

ST-3

COUNCIL APPROVAL

DEC, 2015



NOTES:

1. CURVE DATA IS MEASURED AT THE PROPERTY LINE.
2. THE CURB, GUTTER AND SIDEWALK SHALL HAVE 1/2" MINIMUM WIDTH EXPANSION JOINTS WITH PRE-MOLDED FILLER MATERIAL CONFORMING TO ASTM DESIGNATION D1751 INSTALLED AT ALL POINTS OF CURVATURE
3. RADIUS FOR LARGER STREETS SHALL BE AS APPROVED BY CITY ENGINEER.
4. SIDEWALK MAY BE ADJACENT TO THE CURB AND GUTTER WITH THE APPROVAL OF THE CITY ENGINEER.

STANDARD CUL-DE-SAC

CITY OF TURLOCK



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

APPROVED BY:

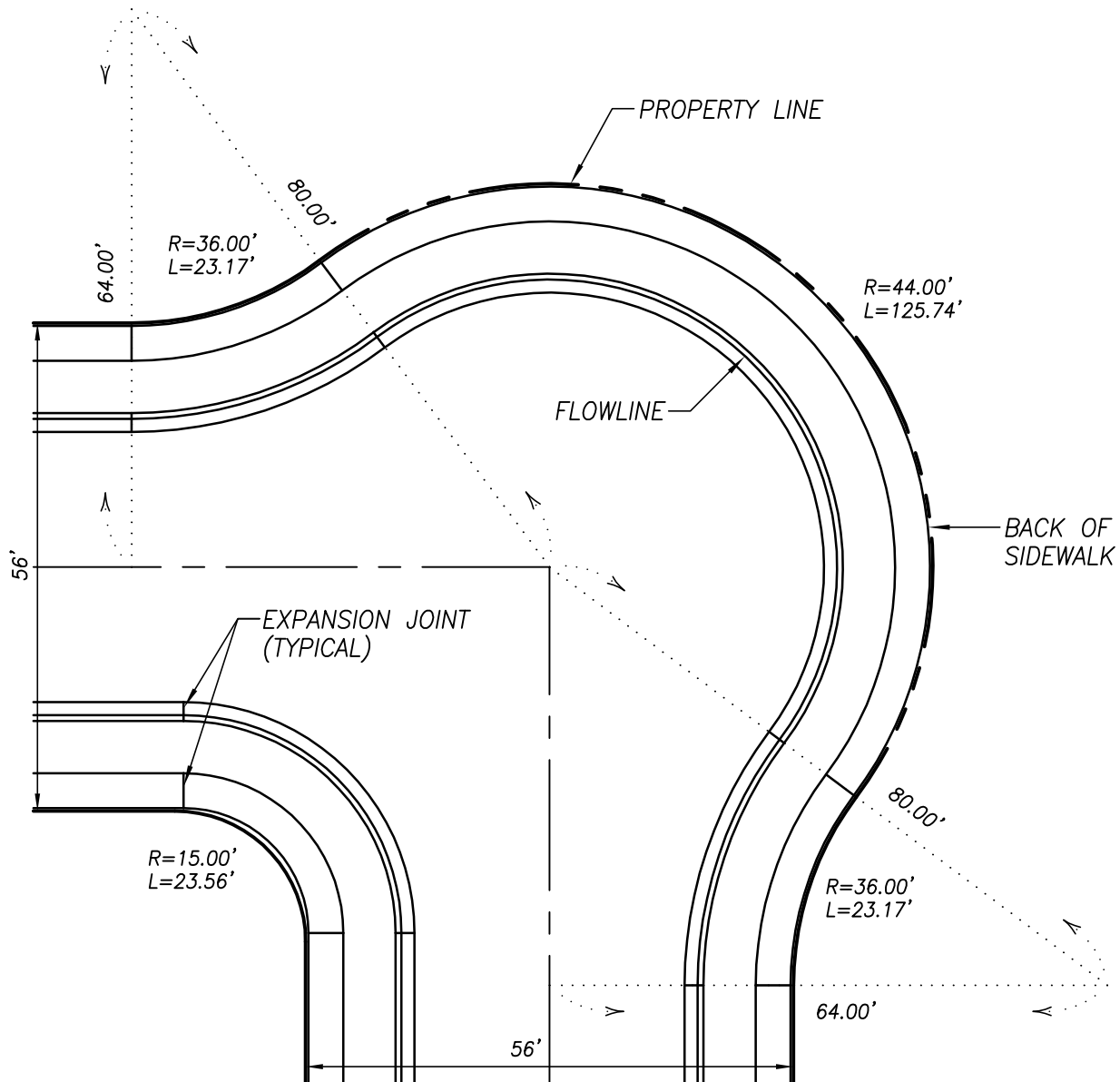
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

ST-4

COUNCIL APPROVAL

DEC, 2015



NOTES:

1. CURVE DATA IS MEASURED AT THE PROPERTY LINE.
2. THE CURB, GUTTER AND SIDEWALK SHALL HAVE 1/2" MINIMUM WIDTH EXPANSION JOINTS WITH PRE-MOLDED FILLER MATERIAL CONFORMING TO ASTM DESIGNATION D1751 INSTALLED AT ALL POINTS OF CURVATURE
3. RADII AT THE CURB RETURN SHALL BE 15' MINIMUM MEASURED AT THE PROPERTY LINE, LARGER RADII MAY BE USED WITH APPROVAL OF THE CITY ENGINEER.

STANDARD KNUCKLE

CITY OF TURLOCK



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

APPROVED BY:

CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

ST-5

COUNCIL APPROVAL

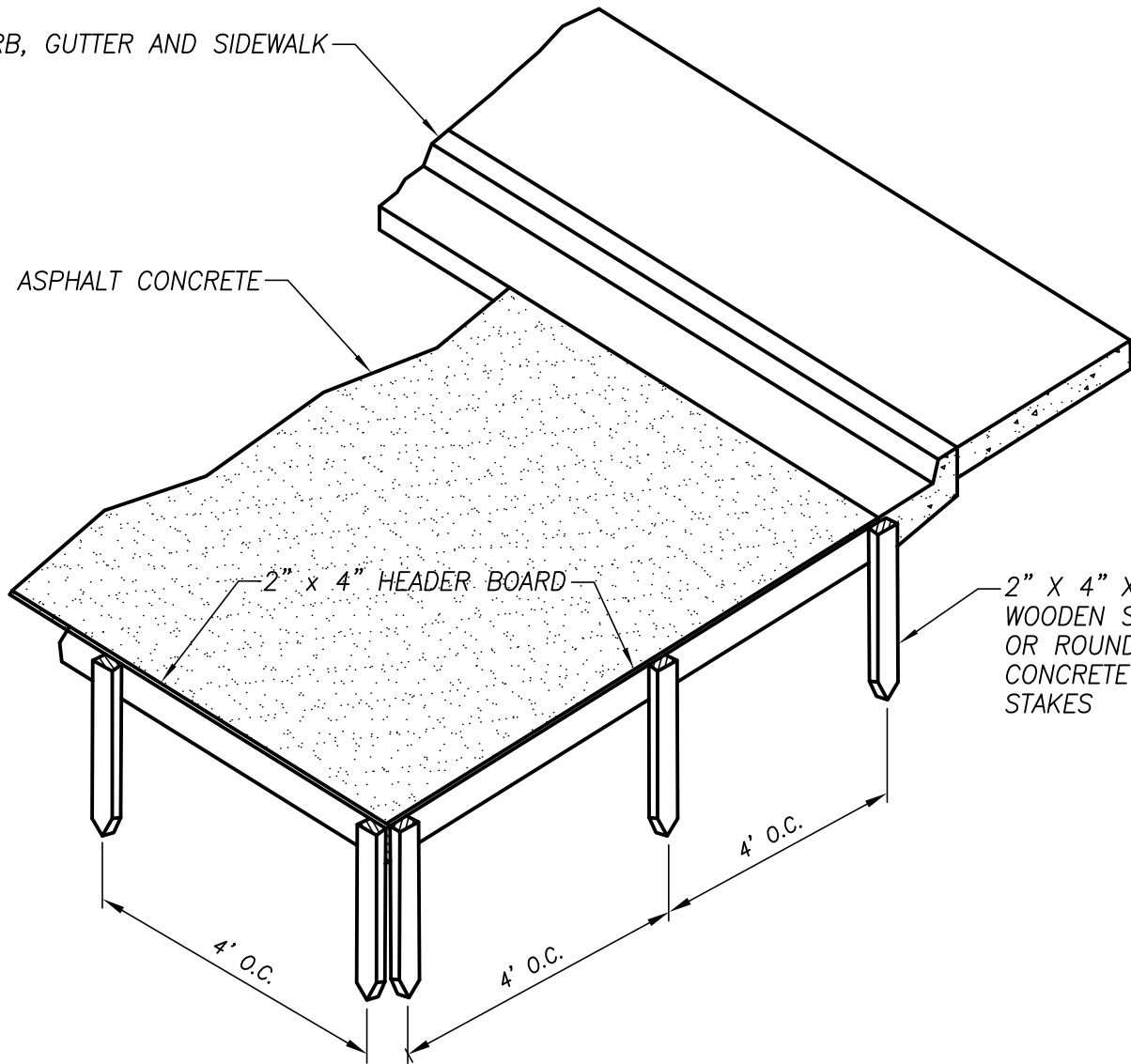
DEC, 2015

CURB, GUTTER AND SIDEWALK

ASPHALT CONCRETE

2" x 4" HEADER BOARD

2" X 4" X 18"
WOODEN STAKES
OR ROUND METAL
CONCRETE FORM
STAKES



NOTES:

1. HEADER BOARD SHALL BE INSTALLED AT EDGES OF PAVEMENT EXCEPT WHERE JOINING EXISTING PAVEMENT.
2. HEADER BOARD TO BE INSTALLED TO FINISHED GRADE AND BACK FILLED PRIOR TO PAVING OPERATIONS.
3. HEADER BOARD SHALL BE PRESSURE-TREATED DOUGLAS FIR OR REDWOOD.
4. 2" x 4" x 18" STAKES SHALL BE REDWOOD OR PRESSURE-TREATED DOUGLAS FIR.

HEADER BOARD

CITY OF TURLOCK



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

APPROVED BY:

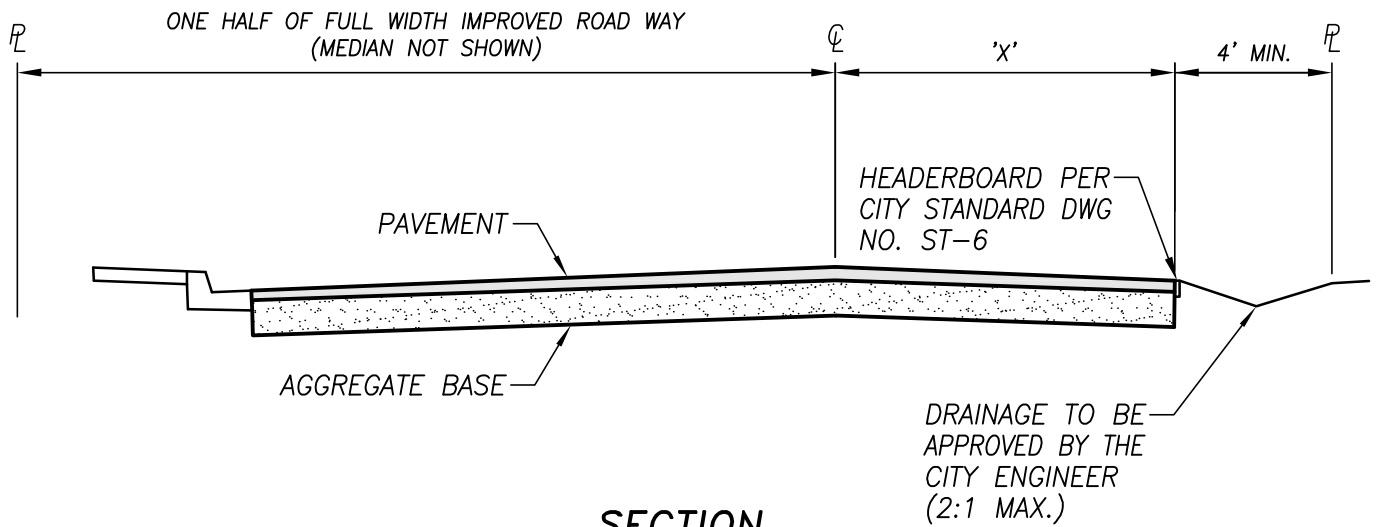
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

ST-6

COUNCIL APPROVAL

DEC, 2015



NOTE:

THE PART WIDTH STREET IS ONLY PERMITTED ON A FRONTAGE WHERE THE DEVELOPER DOES NOT HAVE OWNERSHIP OR CONTROL OF THE RIGHT-OF-WAY FOR A FULL WIDTH STREET IMPROVEMENT.

STREET	'X'
LOCAL	12'
COLLECTOR	14'
ARTERIAL / EXPRESSWAY	16'

PART-WIDTH STREET



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

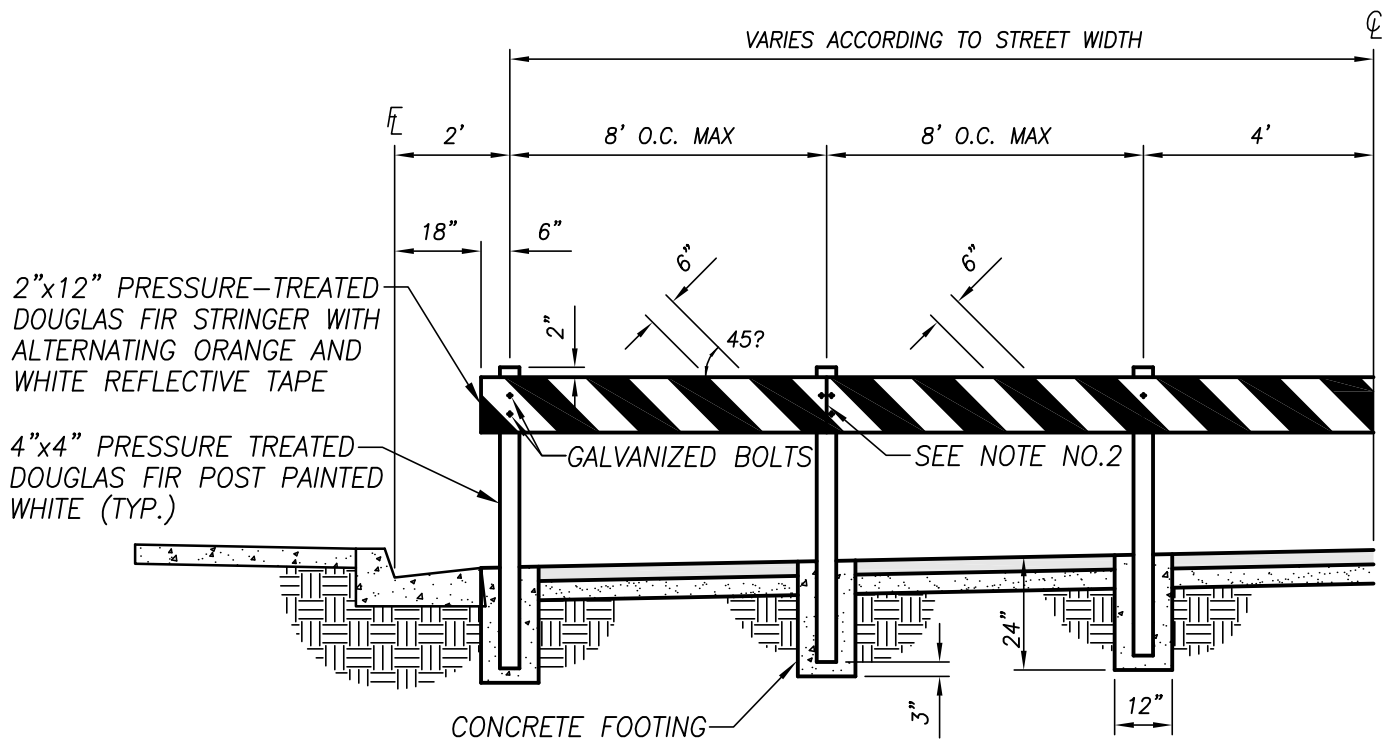
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

ST-7

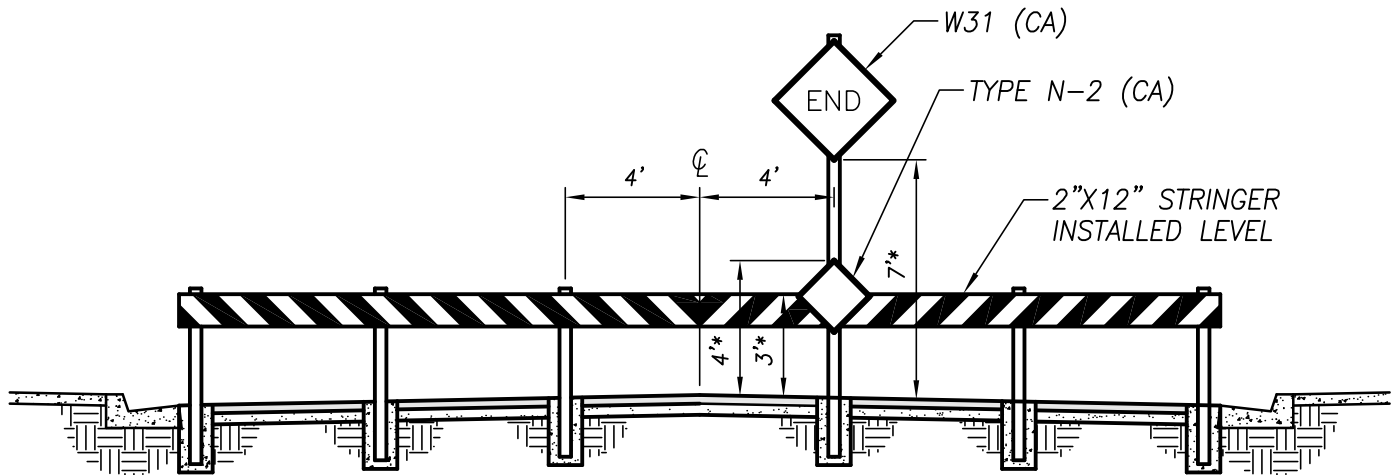
COUNCIL APPROVAL

DEC, 2015



NOTES:

1. STRINGER SHALL BE ATTACHED TO EACH POST WITH (2) 1/2"Ø GALVANIZED BOLTS WITH WASHERS, BOTH SIDES
2. STRINGER SHALL BE SPLICED AT A POST PER NOTE NO. 1, BOTH ENDS OF SPLICE



* DENOTES DIMENSION MEASURED FROM THE PAVEMENT CROWN

DEAD END STREET BARRICADES

CITY OF TURLOCK



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

APPROVED BY:

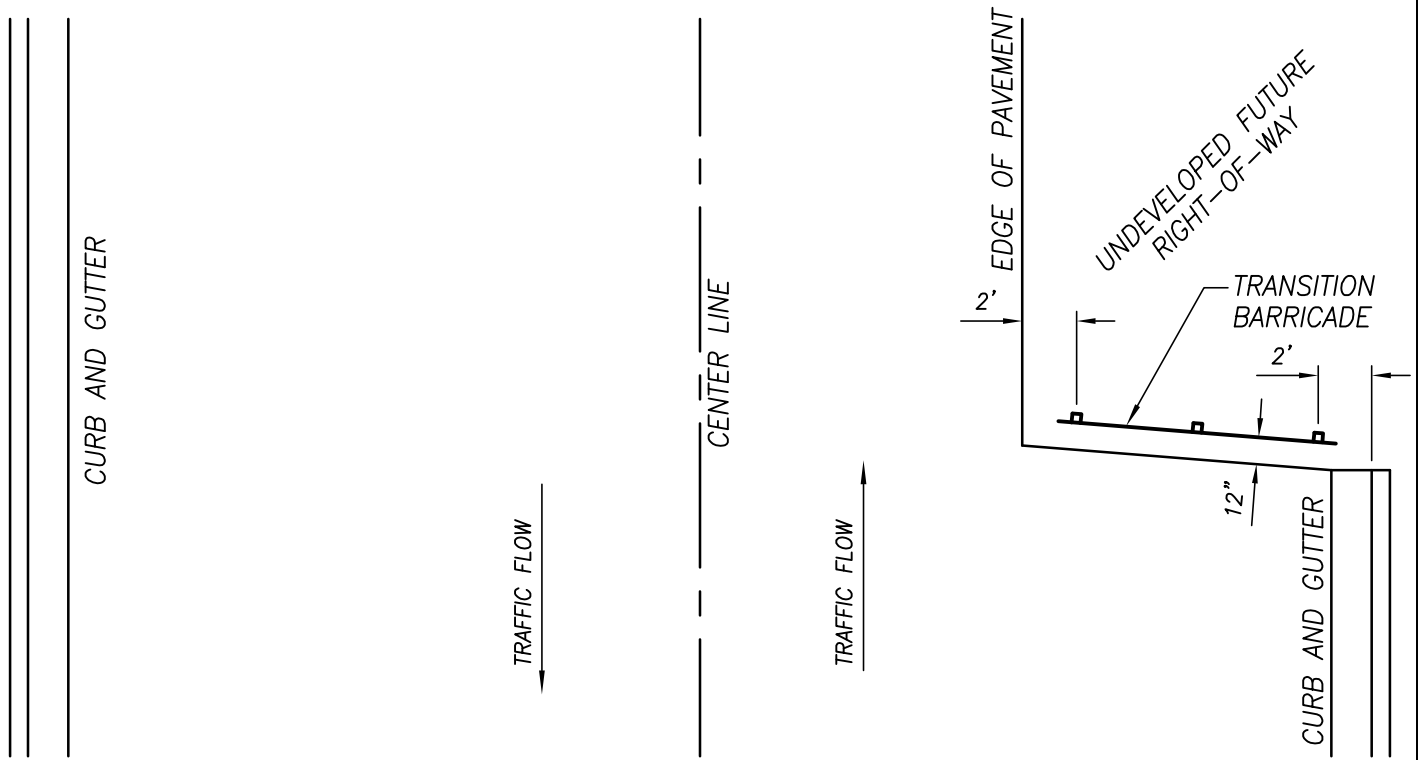
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

ST-8

COUNCIL APPROVAL

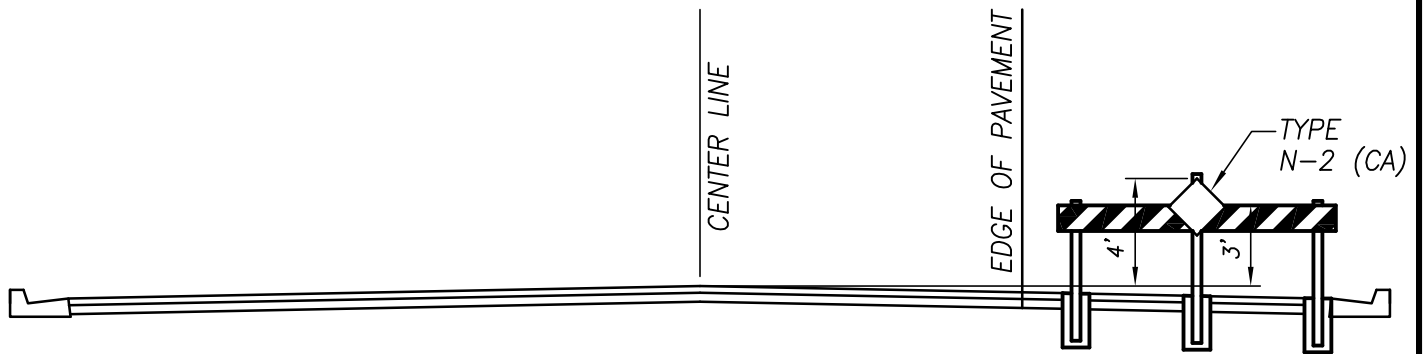
DEC, 2015



PLAN

NOTES:

1. ALTERNATE LOCATION SHALL BE AS APPROVED BY THE CITY ENGINEER
2. FOR BARRICADE CONSTRUCTION DETAILS, SEE ST-8



PROFILE

PARTIAL STREET BARRICADE



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

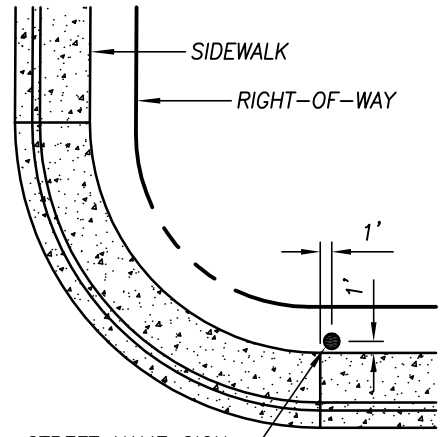
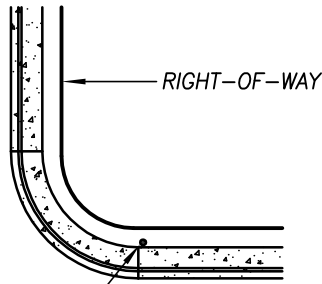
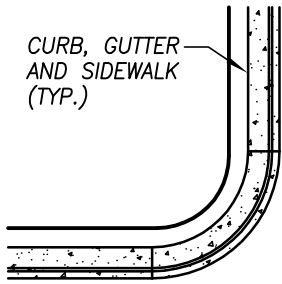
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

ST-9

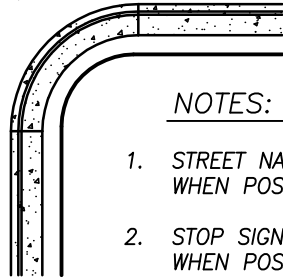
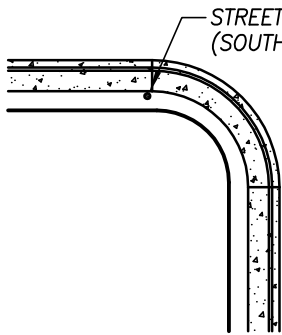
COUNCIL APPROVAL

DEC, 2015



STREET NAME SIGN (NORTHEAST CORNER)

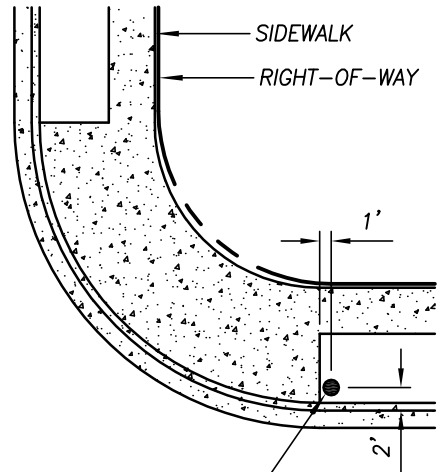
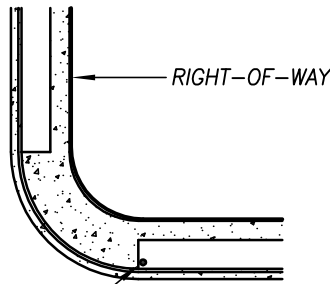
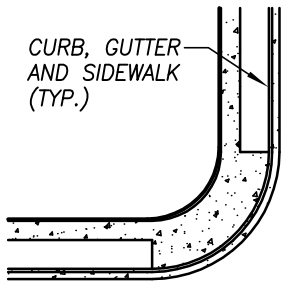
STREET NAME SIGN (SOUTHWEST CORNER)



NOTES:

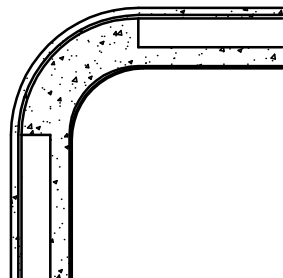
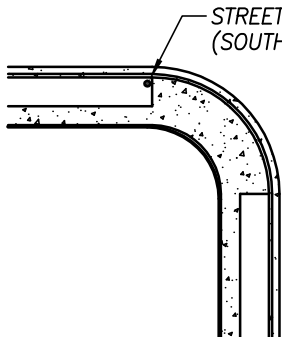
1. STREET NAME SIGNS SHALL BE MOUNTED ON ELECTROLIERS WHEN POSSIBLE
2. STOP SIGN SHALL BE MOUNTED UNDER STREET NAME SIGNS WHEN POSSIBLE TO MINIMIZE THE NUMBER OF SIGN POSTS

MONOLITHIC SIDEWALK



STREET NAME SIGN (NORTHEAST CORNER)

STREET NAME SIGN (SOUTHWEST CORNER)



SEPARATED SIDEWALK

STOP AND/OR STREET NAME SIGN LOCATION



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

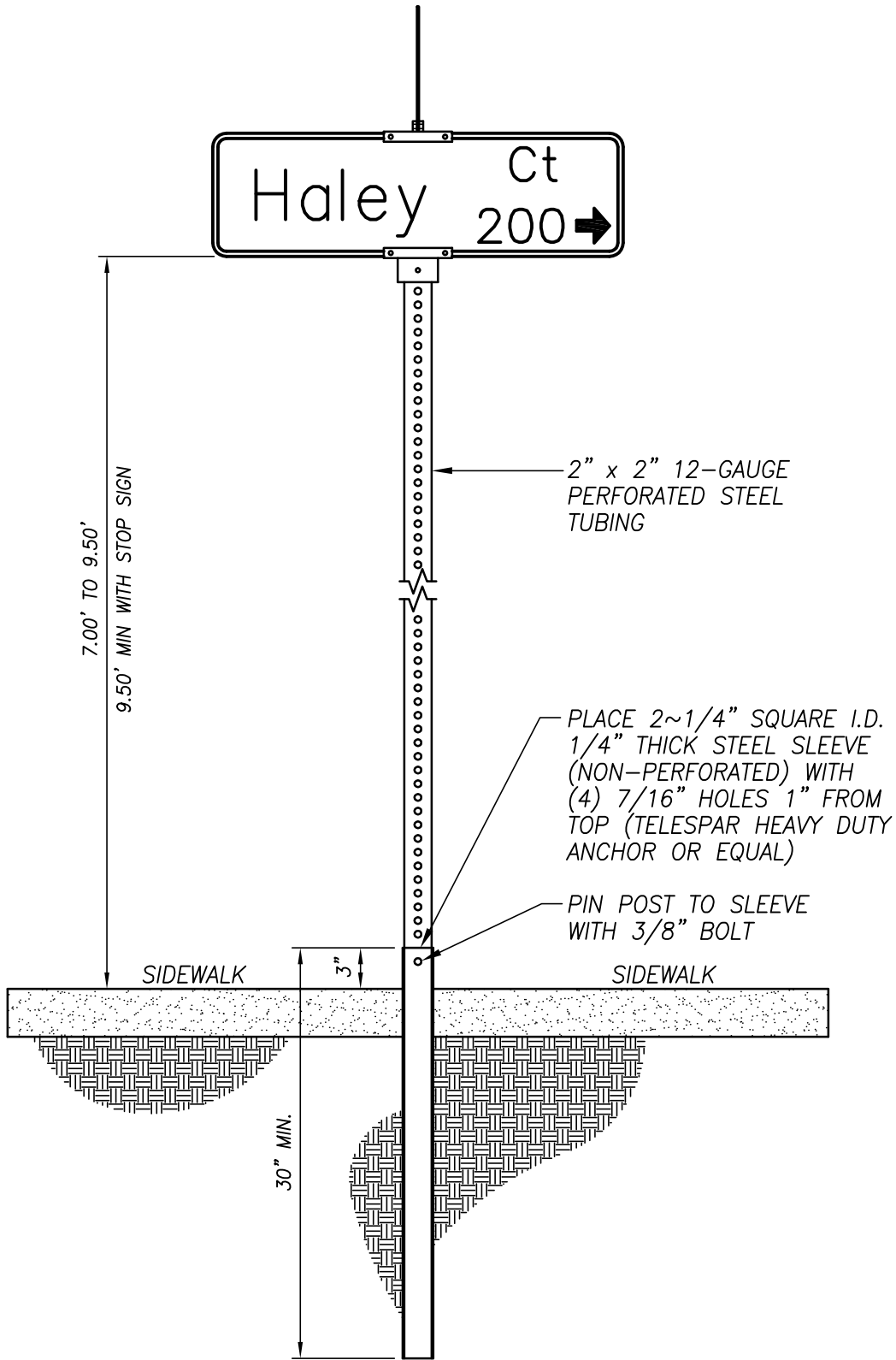
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

ST-10

COUNCIL APPROVAL

DEC, 2015



SIGN POST

CITY OF TURLOCK



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

APPROVED BY:

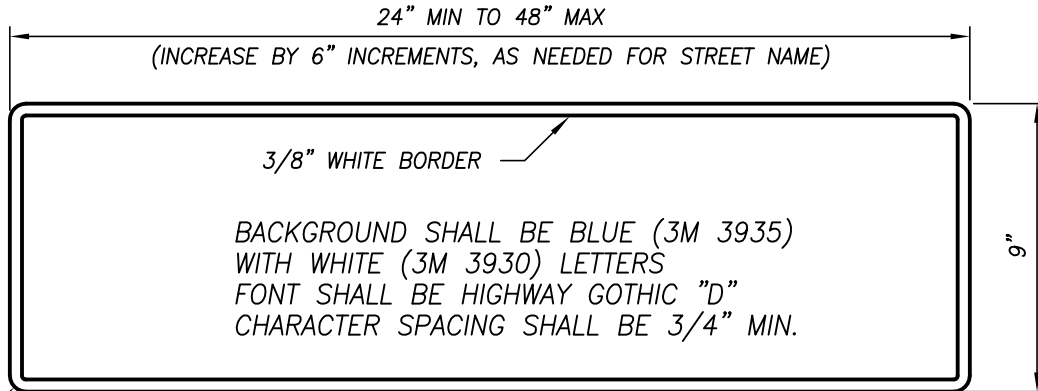
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

ST-11

COUNCIL APPROVAL

DEC, 2015



R=1/2" (TYP)



SIGN BLADE AND FONT SIZE SHALL BE DETERMINED USING TABLE 2D-2 OF THE CURRENT EDITION OF THE CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.)

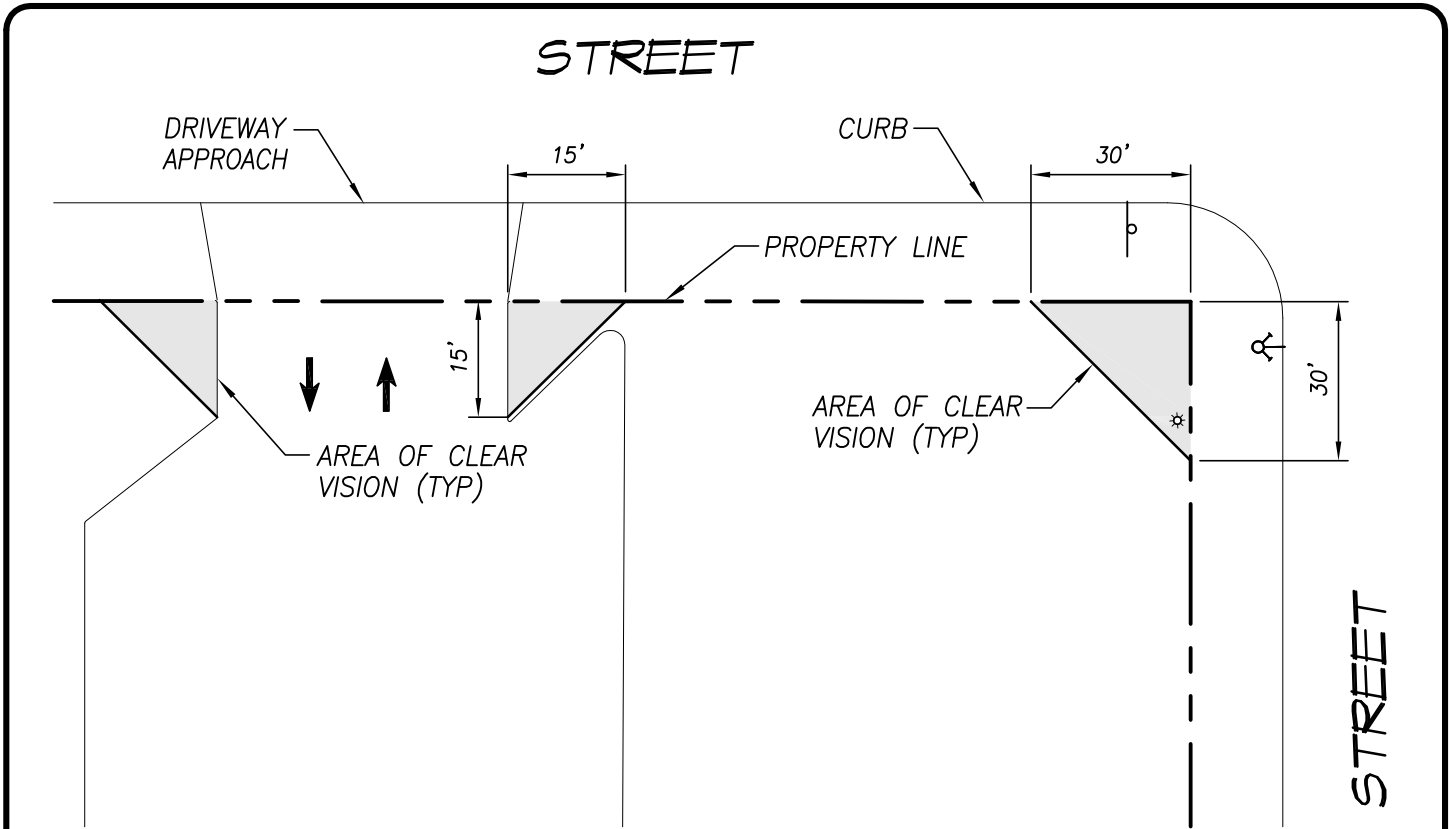
BLADE LENGTH SHALL BE THE SHORTEST LENGTH POSSIBLE

NOTES:

1. STREET NAME SIGN SHALL BE SECURED TO THE BRACKETS WITH (2) TAMPER RESISTANT SET SCREWS, ZUMAR PART NO. VCB194 OR APPROVED EQUAL
2. CANTILEVER ARM BRACKET FOR ATTACHING TO AN ELECTROLIER:
 24" TO 30" BLADE – ZUMAR PART NO. 140EWB000 OR APPROVED EQUAL
 36" TO 48" BLADE – ZUMAR PART NO. 240EWB000 OR APPROVED EQUAL
3. 90° SIGN-TO-SIGN MOUNTING BRACKET:
 ZUMAR PART NO. 808F90X FOR 24" AND 30" BLADE LENGTHS
 ZUMAR PART NO. 812F90X FOR 36" AND 48" BLADE LENGTHS
 OR APPROVED EQUAL
4. UNIVERSAL POLE CAP:
 ZUMAR PART NO. 512UNF200 FOR 24" AND 30" BLADE LENGTHS
 ZUMAR PART NO. 120UNF200 FOR 36" AND 48" BLADE LENGTHS
 OR APPROVED EQUAL
5. STREET NAME SIGN SHALL BE DOUBLE SIDED, 0.080" ALUMINUM
6. SIGNS SHALL BE PLACED PER CITY STANDARD DRAWING ST-18

STREET NAME SIGN

	DRAWN BY: JSH	CITY OF TURLOCK APPROVED BY: 	DRAWING NO. ST-12
	CHECK BY: NBB		COUNCIL APPROVAL DEC, 2015
	SCALE: NONE	CITY ENGINEER – MICHAEL G. PITCOCK – RCE 52694	




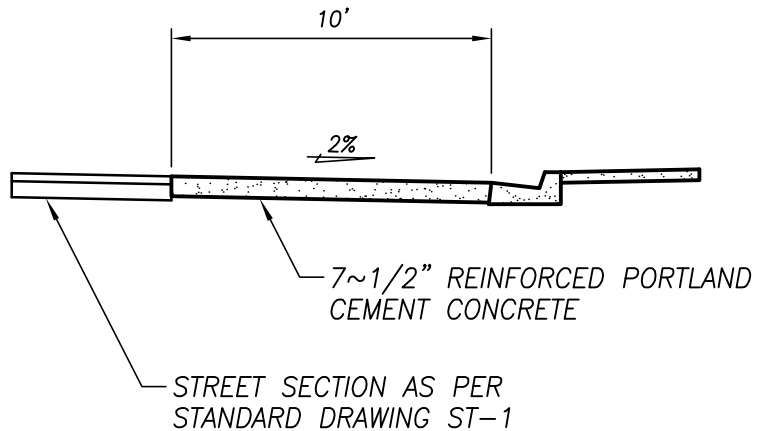
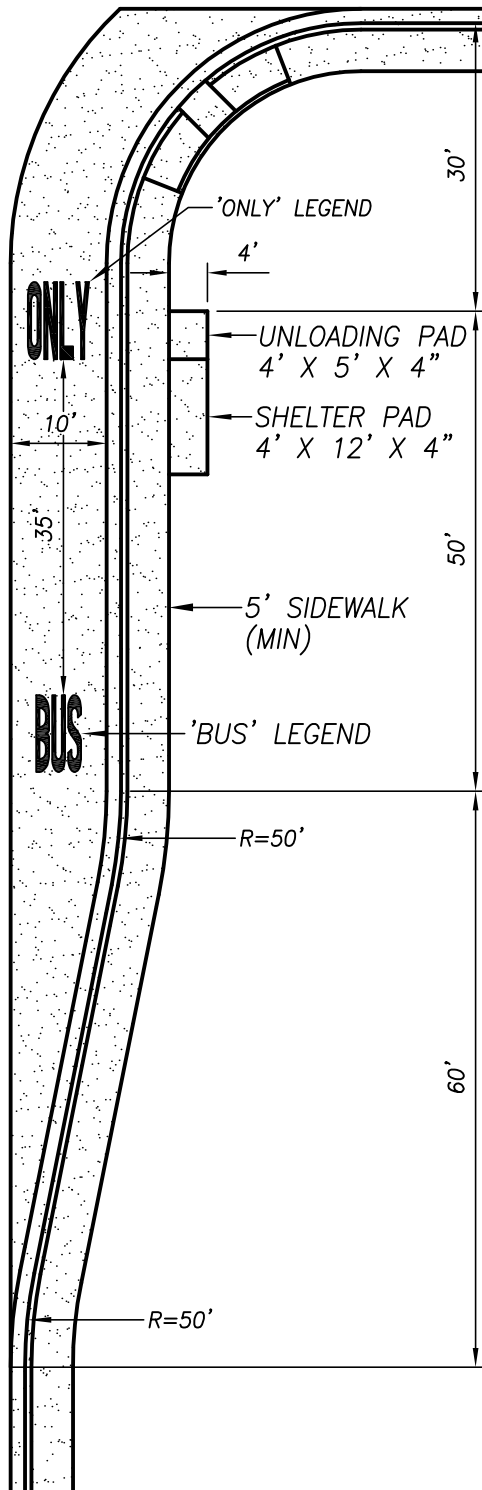
DRIVEWAY AND CORNER VISIBILITY

STREET CORNERS AND DRIVEWAYS CONNECTING WITH PUBLIC STREET SHALL BE MAINTAINED AS AREA OF UNRESTRICTED VISIBILITY ("CLEAR VISION ZONES") AS FOLLOWS:

1. FOR STREET CORNERS: AT THE INTERSECTION OF 2 STREETS, THERE SHALL BE A CLEAR VISION AREA BETWEEN 3 FEET AND 8' FEET IN HEIGHT MEASURED FROM THE TOP OF THE STREET CURB. WITHIN THIS CLEAR VISION AREA, NO FENCE, LANDSCAPING OR OTHER OBJECT SHALL BE ERECTED, PLANTED, OR ALLOWED TO GROW AND CAUSE A VISUAL OBSTRUCTION. THE CLEAR VISION AREA SHALL BE MEASURED 30' FEET FROM THE INTERSECTION OF THE STREET RIGHT-OF-WAY MEASURED ALONG BOTH OF THE RIGHT-OF-WAY LINES OF 2 INTERSECTING MINOR STREETS. UTILITY POLES AND ONE TREE MAY ENCROACH INTO THE CLEAR VISION AREA AS LONG AS THERE ARE NO TREE BRANCHES LOWER THAN 8' FEET AND THE UTILITY POLE OR TREE TRUNK DOES NOT CONSTITUTE A VISUAL HAZARD AS DETERMINED BY THE CITY ENGINEER
2. FOR DRIVEWAYS: THE CLEAR VISION AREA FOR DRIVEWAYS LINE 15' FEET FROM THE INTERSECTION OF THE EDGE OF DRIVEWAY AND THE PROPERTY LINE MEASURED ALONG BOTH THE DRIVEWAY AND THE PROPERTY LINE
3. OTHER AREAS MAY REQUIRE UNRESTRICTED VISIBILITY AS DETERMINED BY THE CITY ENGINEER

DRIVEWAY AND CORNER VISIBILITY

	DRAWN BY: JSH	CITY OF TURLOCK APPROVED BY: <i>M. Pitcock</i> CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694	DRAWING NO. ST-13
	CHECK BY: NBB		COUNCIL APPROVAL DEC, 2015
	SCALE: NONE		



NOTES:

1. CONSTRUCT SHELTER PAD ONLY WHEN THE SIDEWALK WIDTH IS LESS THAN 8 FEET
2. SHELTERS SHALL PROVIDE A 48" X 30" CLEAR FLOOR AREA
3. SEE STANDARD DRAWING C-8 FOR DOWELING, REINFORCEMENT AND AGGREGATE BASE DETAILS
4. TURN OUT PAD SHALL BE CONSTRUCTED SEPARATE FROM CURB AND GUTTER AND SHALL BE DOWELED TO THE GUTTER, 3 FEET ON CENTER

NEARSIDE BUS TURNOUT

CITY OF TURLOCK



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

APPROVED BY:

CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

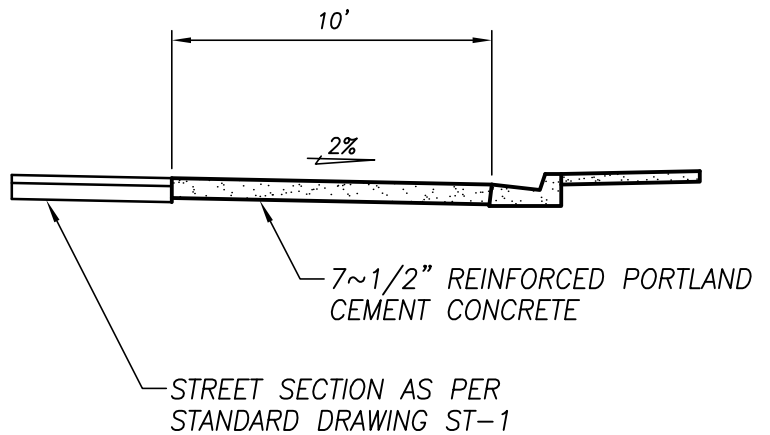
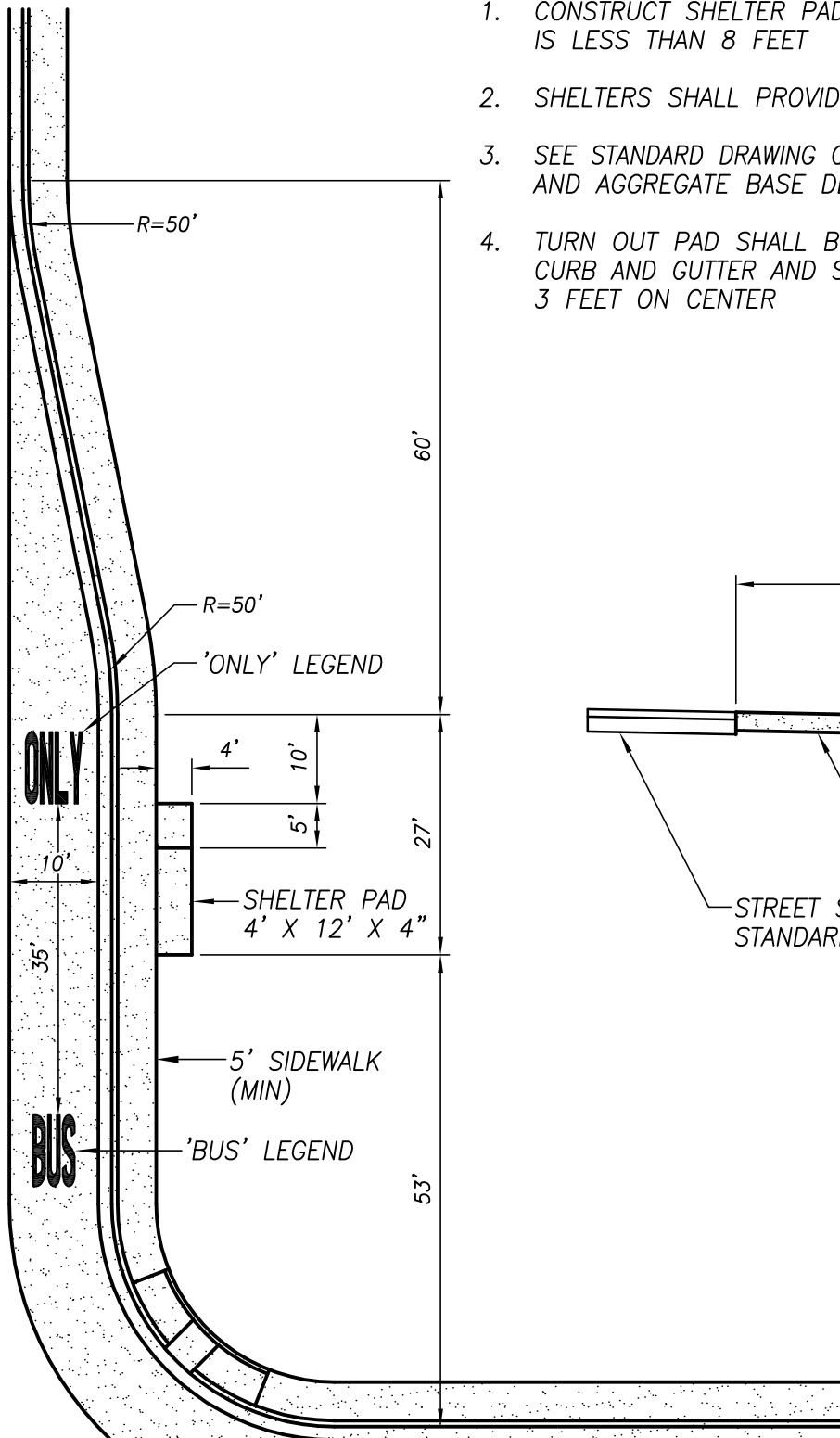
ST-14

COUNCIL APPROVAL

DEC, 2015

NOTES:

1. CONSTRUCT SHELTER PAD ONLY WHEN THE SIDEWALK WIDTH IS LESS THAN 8 FEET
2. SHELTERS SHALL PROVIDE A 48"X 30" CLEAR FLOOR AREA
3. SEE STANDARD DRAWING C-8 FOR DOWELING, REINFORCEMENT AND AGGREGATE BASE DETAILS
4. TURN OUT PAD SHALL BE CONSTRUCTED SEPARATE FROM CURB AND GUTTER AND SHALL BE DOWELED TO THE GUTTER, 3 FEET ON CENTER



FARSIDE BUS TURNOUT

CITY OF TURLOCK



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

APPROVED BY:

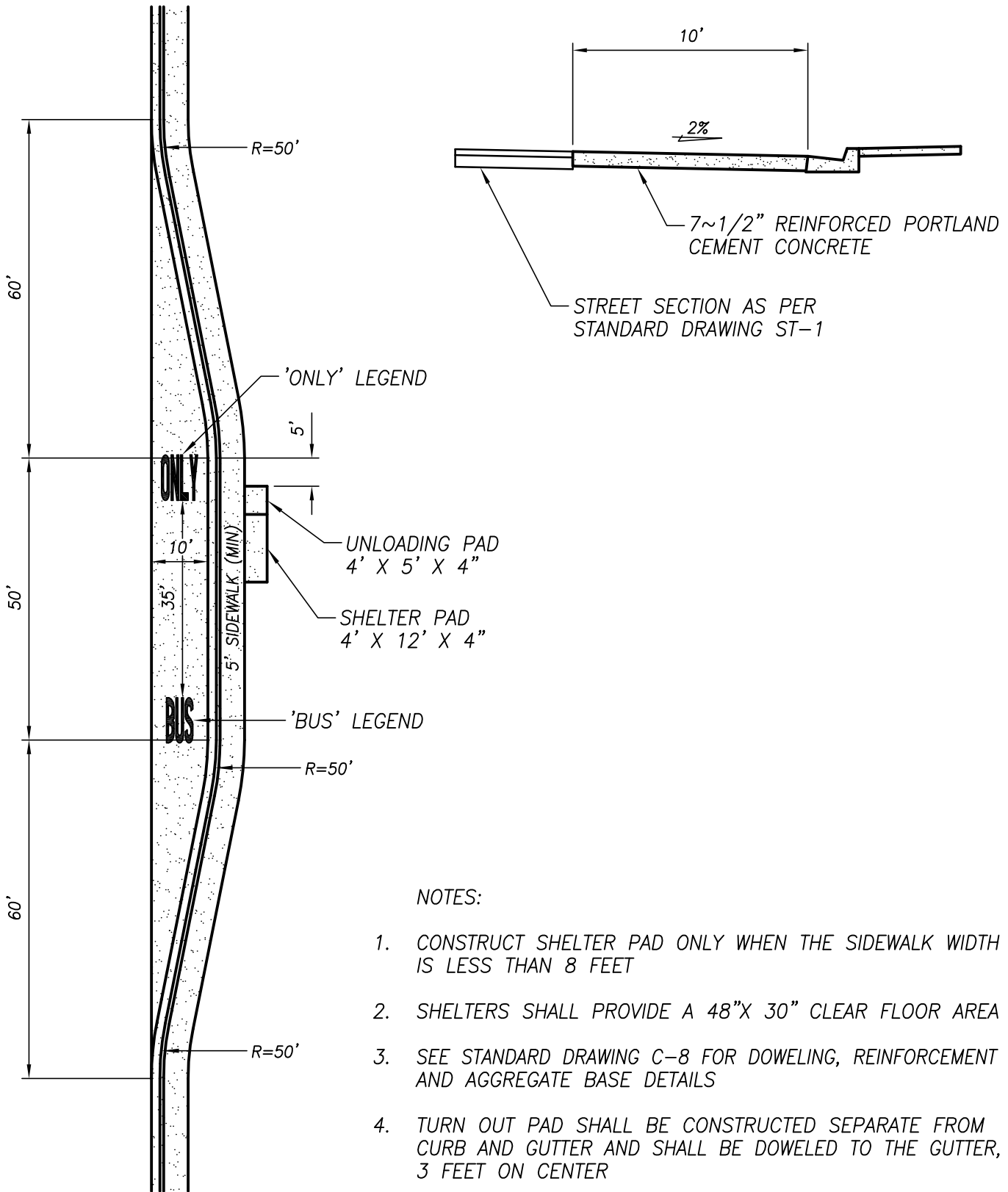
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

ST-15

COUNCIL APPROVAL

DEC, 2015



NOTES:

1. CONSTRUCT SHELTER PAD ONLY WHEN THE SIDEWALK WIDTH IS LESS THAN 8 FEET
2. SHELTERS SHALL PROVIDE A 48" X 30" CLEAR FLOOR AREA
3. SEE STANDARD DRAWING C-8 FOR DOWELING, REINFORCEMENT AND AGGREGATE BASE DETAILS
4. TURN OUT PAD SHALL BE CONSTRUCTED SEPARATE FROM CURB AND GUTTER AND SHALL BE DOWELED TO THE GUTTER, 3 FEET ON CENTER

MID BLOCK BUS TURNOUT



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

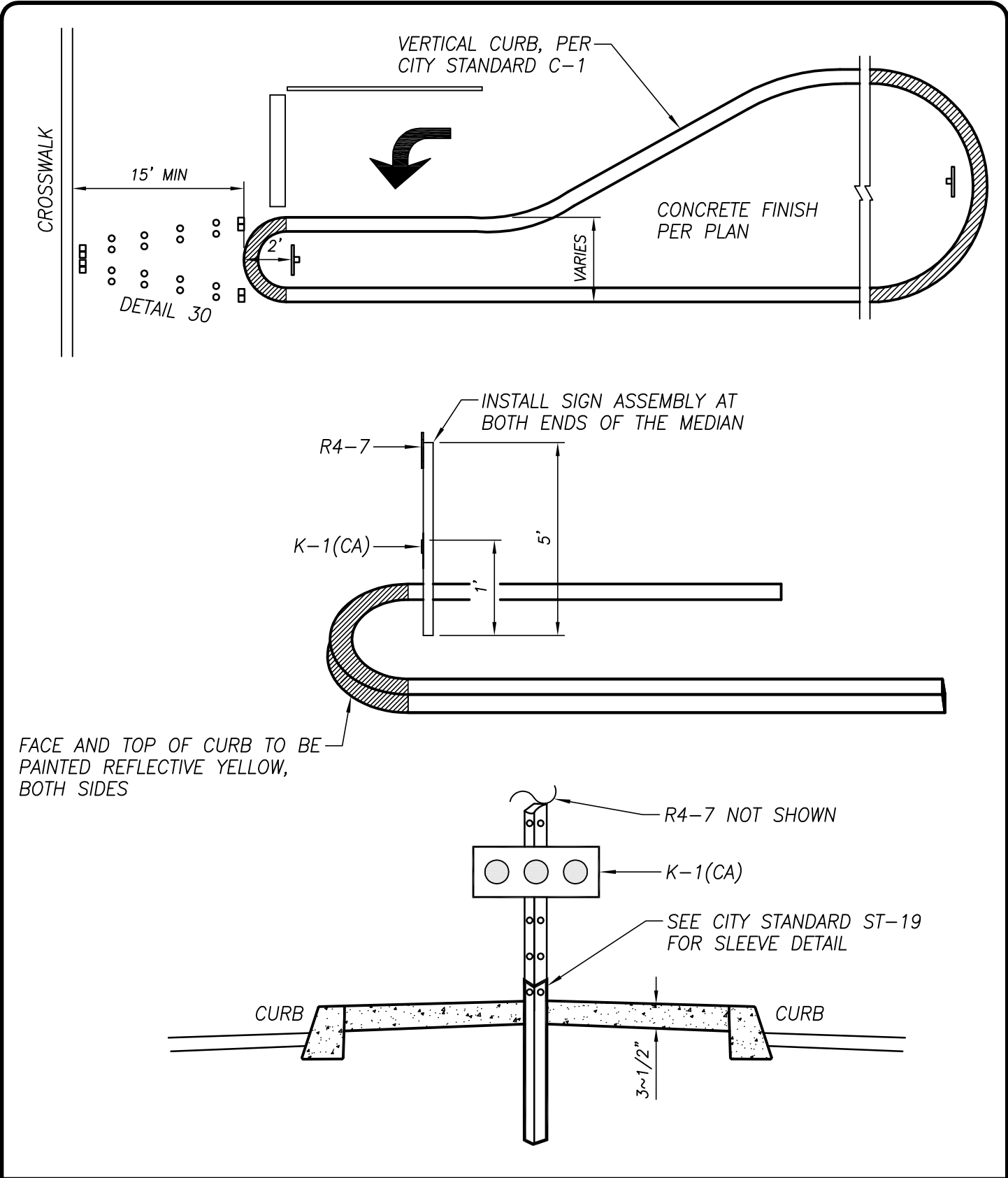
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

ST-16

COUNCIL APPROVAL

DEC, 2015



STANDARD MEDIAN NOSE

CITY OF TURLOCK

DRAWING NO.

ST-17



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

APPROVED BY:



CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

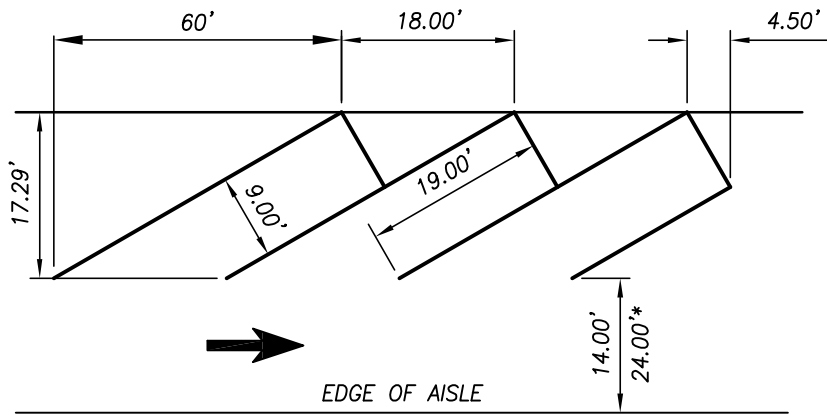
COUNCIL APPROVAL

DEC, 2015

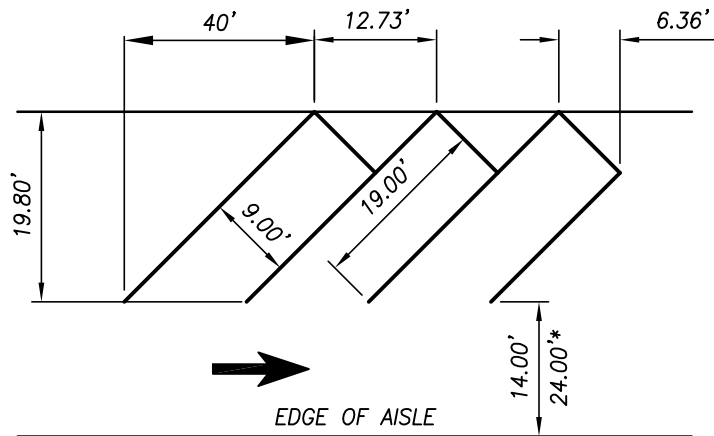
1. INSTALL 6" BY 6" BY 36" MIN. CONCRETE WHEEL STOPS WITH (2) #6x18" REBAR WHERE NECESSARY TO PREVENT PARKED CARS FROM ENCROACHING OVER SIDEWALKS, ADJOINING PROPERTIES, CITY RIGHT-OF-WAY, LANDSCAPING, OR OBSTRUCTIONS. WHEEL STOPS ARE NOT NEEDED WHERE THE SIDEWALK IS BEHIND VERTICAL CURB AND SIX FEET OR MORE IN WIDTH.
2. PARKING LOT DESIGN AND LAYOUT SHALL COMPLY WITH THE TURLOCK ZONING REGULATIONS, CONTACT THE DEVELOPMENT SERVICES DEPARTMENT, PLANNING DIVISION.
3. COMPACT STALL SPACES SHALL BE 8'x16' AND MARKED "COMPACT." PLANNING DIVISION SHALL DETERMINE MAXIMUM NUMBER OF COMPACT SPACES ALLOWED.
4. DRIVE AISLE WIDTH FOR DESIGNATED FIRE LANES SHALL BE 20 FEET MIN., AND AS DICTATED BY THE CURRENT EDITION OF THE CALIFORNIA FIRE CODE.
5. ACCESSIBLE PARKING STALLS, PAVEMENT MARKINGS AND SIGNS SHALL BE INSTALLED PER THE REQUIREMENTS OF THE LATEST EDITION OF THE CALIFORNIA BUILDING CODE.
6. ONE IN SIX ACCESSIBLE PARKING STALLS SHALL BE DESIGNATED "VAN ACCESSIBLE" AND SHALL BE SERVED WITH AN 8 FOOT WIDE LOADING AREA.
7. PAVEMENT STRIPING AND MARKINGS IN THE CITY OF TURLOCK RIGHT-OF-WAY SHALL BE THERMOPLASTIC IN ACCORDANCE WITH SECTION 84 OF THE STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS.

PARKING STALL LAYOUT NOTES

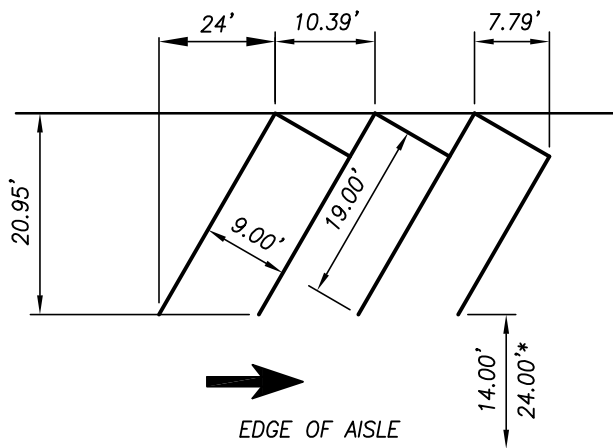
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	CHECK BY: NBB	APPROVED BY: 	COUNCIL APPROVAL
	SCALE: NONE	CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694	DEC, 2015



30° PARKING



45° PARKING



60° PARKING

* MINIMUM AISLE WIDTH FOR TWO-WAY TRAFFIC

ANGLED PARKING STALL LAYOUT



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

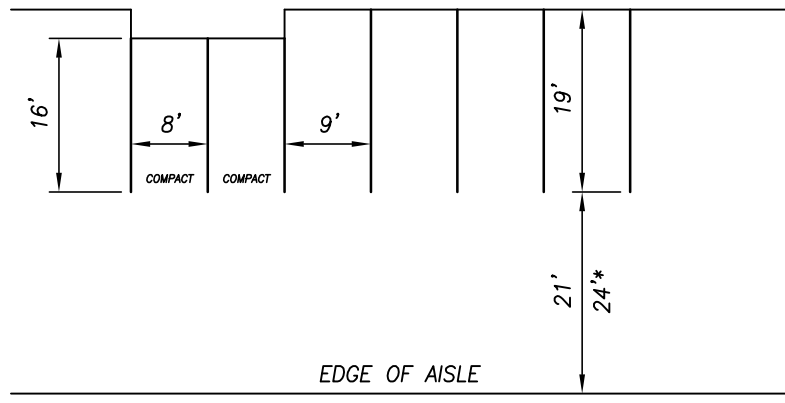
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

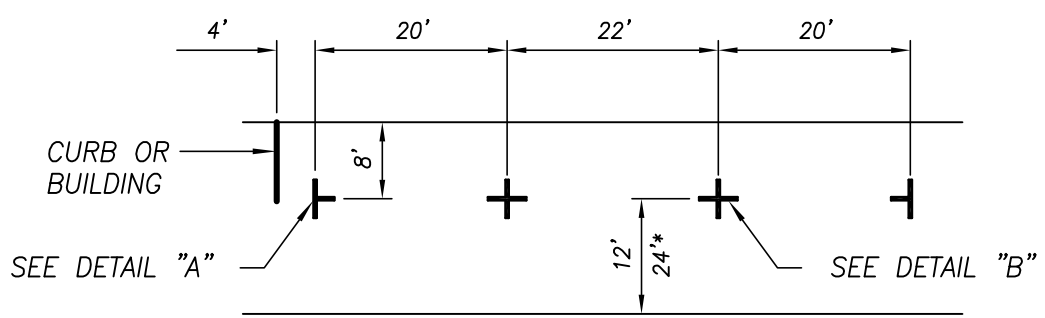
ST-19

COUNCIL APPROVAL

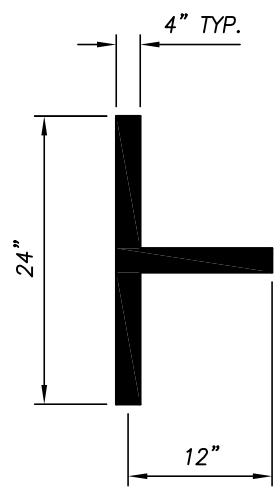
DEC, 2015



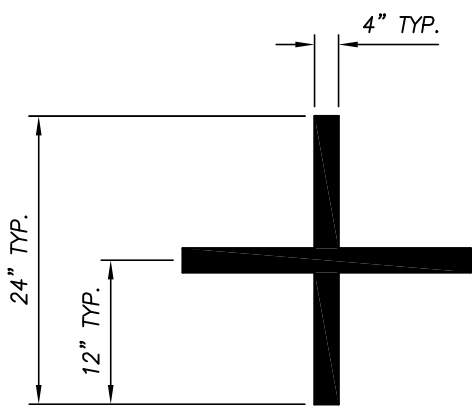
PERPENDICULAR PARKING



PARALLEL PARKING



DETAIL "A"



DETAIL "B"

* MINIMUM AISLE WIDTH FOR TWO-WAY TRAFFIC

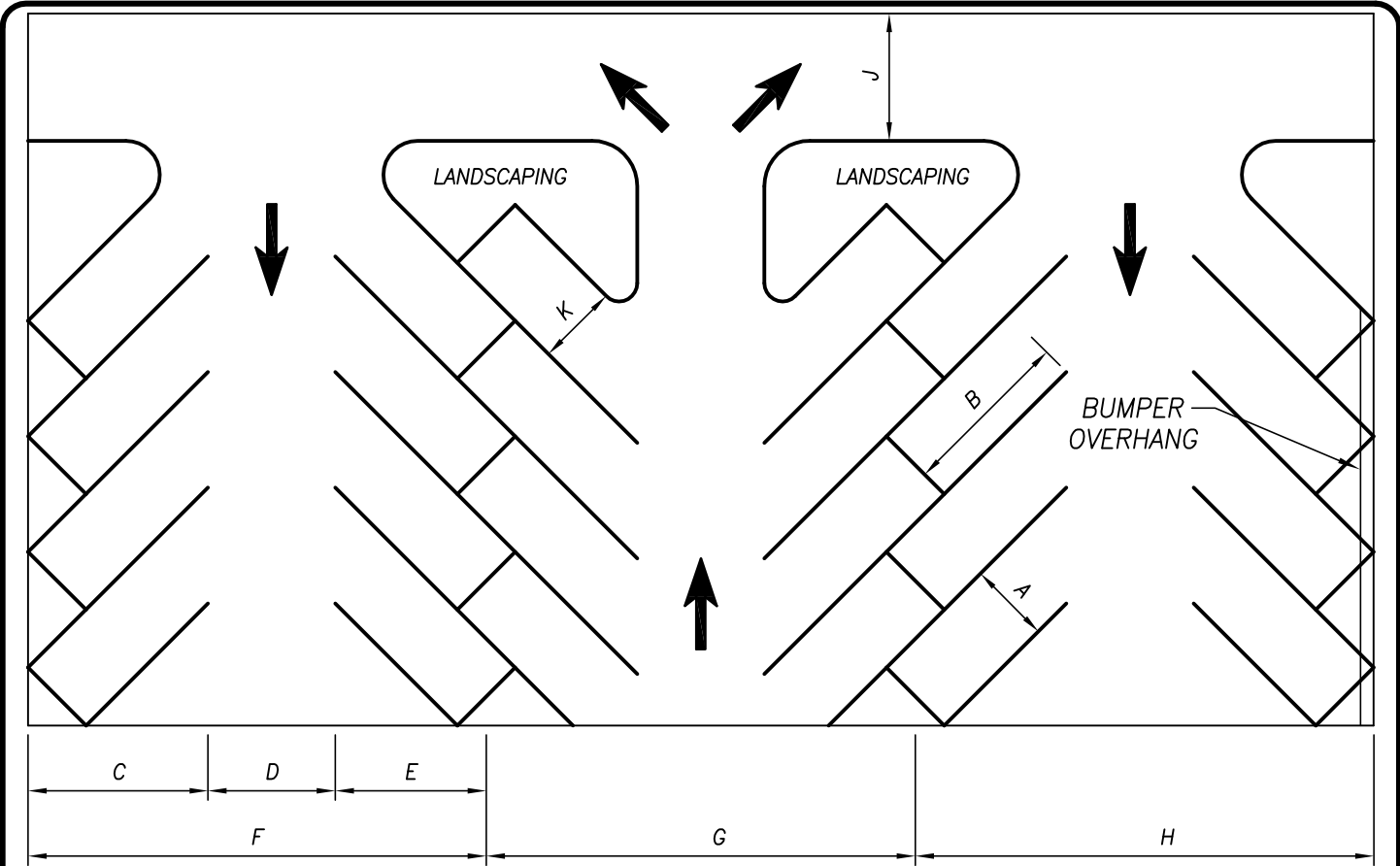
PARKING STALL LAYOUT



DRAWN BY: JSH
 CHECK BY: NBB
 SCALE: NONE

CITY OF TURLOCK
 APPROVED BY: *[Signature]*
 CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.
ST-20
 COUNCIL APPROVAL
DEC, 2015




PARKING LAYOUT DIMENSIONS FOR 9' STALLS AT VARIOUS ANGLES

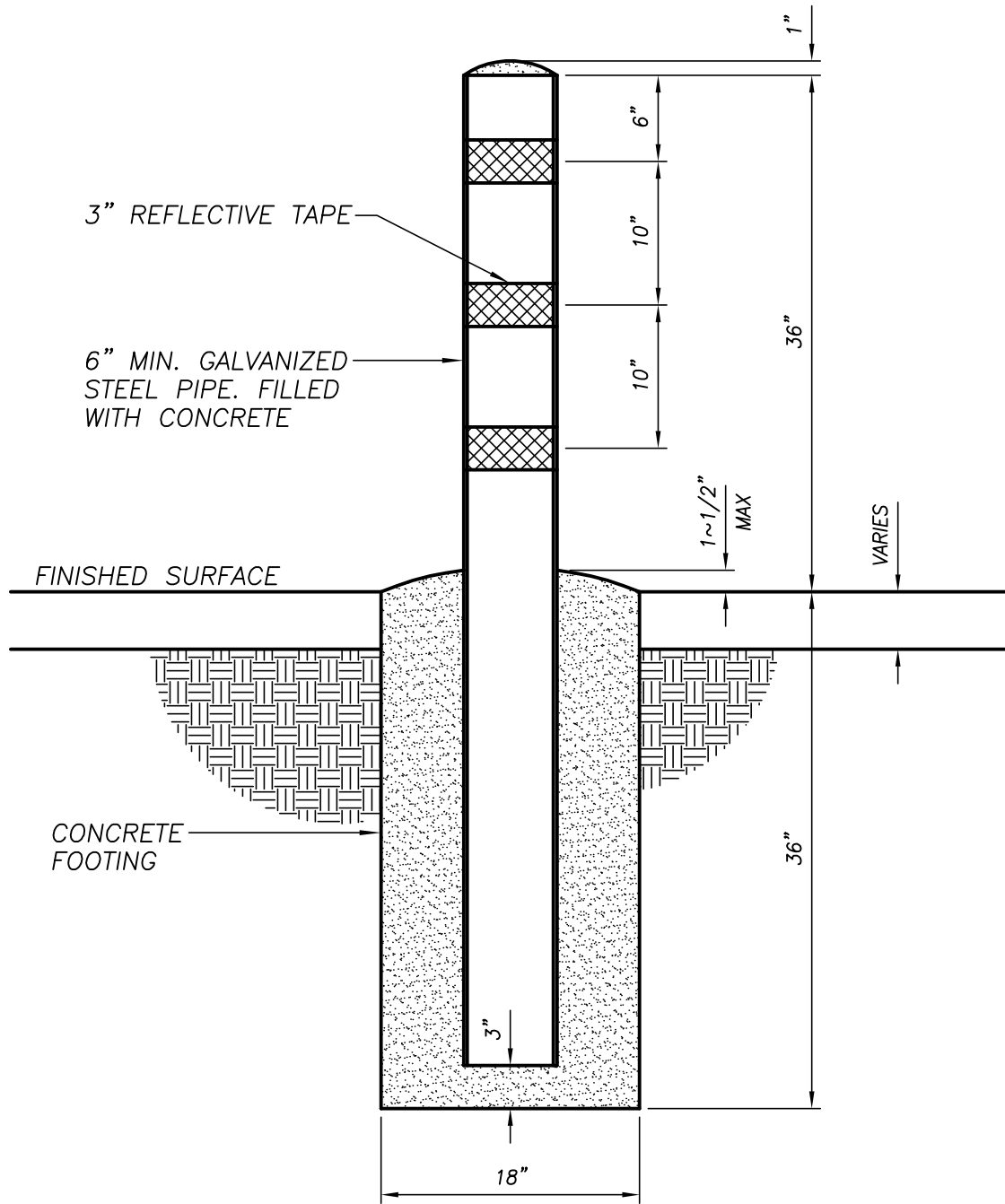
DIMENSION		30°	45°	60°	90°
A	STALL WIDTH PARALLEL TO AISLE	9.00'	9.00'	9.00'	9.00'
B	STALL LENGTH OF LINE	19.00'	19.00'	19.00'	19.00'
C	STALL DEPTH TO WALL	17.29'	19.80'	20.95'	19.00'
D	AISLE WIDTH (BETWEEN STALL LINES)	14.00'	14.00'	16.00'	24.00'
E	STALL DEPTH, INTERLOCK	13.40'	16.62'	18.70'	19.00'
F	MODULE, WALL TO INTERLOCK	44.69'	50.42'	53.66'	58.00'
G	MODULE, INTERLOCKING	40.79'	47.23'	51.41'	58.00'
H	MODULE, INTERLOCK TO CURB FACE	43.69'	49.00'	51.93'	58.00'
	BUMPER OVERHANG	1.00'	1.41'	1.73'	1.50'
J	CROSS AISLE (ONE-WAY)*	14.00'	14.00'	14.00'	20.00'
K	STALL WIDTH ADJACENT TO LANDSCAPING	10.00'	10.00'	10.00'	10.00'

*FOR TWO-WAY TRAFFIC FLOW, INCREASE TO 24 FEET.

SEE ADDITIONAL NOTES ON DRAWING ST-18

PARKING LAYOUT DIMENSIONS

	DRAWN BY: JSH	CITY OF TURLOCK APPROVED BY:  CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694	DRAWING NO. ST-21
	CHECK BY: NBB		COUNCIL APPROVAL DEC, 2015
	SCALE: NONE		



1. BOLLARDS SHALL BE PAINTED FEDERAL SAFETY YELLOW, UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.
2. DECORATIVE BOLLARDS MAY BE SUBSTITUTED WITH PRIOR WRITTEN APPROVAL OF THE CITY ENGINEER
3. DECORATIVE BOLLARDS SHALL BE INSTALLED PER THE MANUFACTURERS RECOMMENDATIONS.

FIXED BOLLARD DETAIL



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

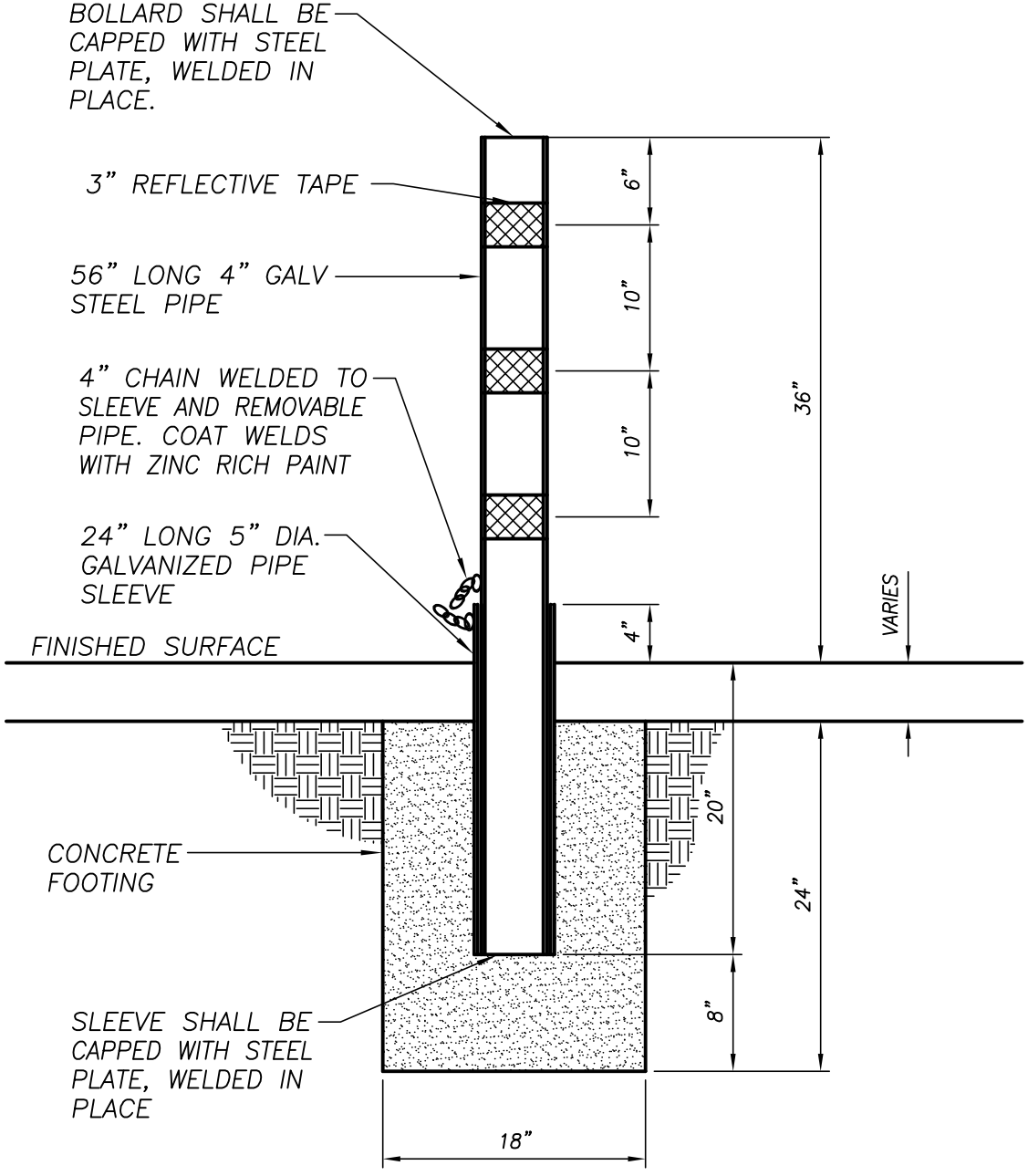
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

ST-22

COUNCIL APPROVAL

DEC, 2015



SEE DRAWING ST-31 FOR BOLLARD NOTES

REMOVABLE BOLLARD DETAIL



DRAWN BY: JSH
 CHECK BY: NBB
 SCALE: NONE

CITY OF TURLOCK
 APPROVED BY:
Michael G. Pitcock
 CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.
ST-23
 COUNCIL APPROVAL
DEC, 2015

13 CONCRETE CONSTRUCTION

13-1 GENERAL

Structures covered by these Specifications shall be constructed of 1½ inch maximum concrete aggregate and PCC mix design in accordance with Section 90 of the Caltrans Specifications, unless otherwise shown on the plans or directed by the Engineer. All concrete work shall be in accordance with the appropriate section of the Caltrans Specifications, current California American Disabilities Act, and the items as set forth herein.

13-2 LINE AND GRADE

Concrete work shall not be performed without line and grade supplied by the Engineer or a private engineer. Grades and alignment supplied by a private engineer shall be based upon construction drawings approved by the Engineer.

13-3 SUBGRADE

The subgrade shall be constructed true to grade and cross section, and shall be thoroughly watered and compacted prior to placement of the concrete. The subgrade shall have a relative compaction of 95% or more for a depth of 6 inches. Compaction shall be determined by the latest provisions of test method California 216 and 231. The subgrade shall be tested for compliance when and if deemed necessary by the Engineer. A state approved herbicide shall be applied to all subgrade under concrete structures, when in the opinion of the Engineer, it is deemed necessary.

13-4 FORMS

All forms shall comply with Sections 51 and 73 of the Caltrans Specifications. Wood forms shall be finished lumber, 2-inch nominal thickness on straight work and 1-inch nominal thickness on curves. Forms for curb returns and other short curves shall extend a minimum of 4 feet beyond the return to assure a smooth transition to tangent. All forms shall extend the full depth of the structure.

All forms shall be thoroughly cleaned each time they are used and coated with form oil. The form oil shall prevent the concrete from sticking to the form and shall leave no film to be absorbed by the concrete.

Front face forms shall not be removed while the concrete is sufficiently plastic to slump. Side forms shall not be removed less than 12 hours after the concrete has been placed. Under no circumstances shall warped or rough forms be used.

13-5 MATERIALS

All concrete to be used for concrete structures covered by these specifications shall be ready-mix from an approved central ready-mix plant. The Contractor shall furnish the Engineer with a bonded weigh-master's certificate for each load, which specifies the weight and proportions of the concrete ingredients delivered.

Admixtures in concrete may only be used when approved by the Engineer and shall be in accordance with subsection 90-1.02E of the Caltrans Specifications.

Reinforcement shall be placed to the shape and dimensions shown on the plans and as specified in the special provisions. All reinforcement shall conform to Section 52 of the Caltrans Specifications.

Expansion joint material shall be ½ inch to 2 inch thick and shall be in one piece, shaped to the true cross section. It shall cover the entire section and shall be installed true to line and grade. Expansion joint

material shall be placed at the locations shown on the Standard Drawings. Excess filler material shall be trimmed off to the specified dimension in a neat and workmanlike manner. Expansion joint material shall conform to the specifications of ASTM Designation D1751.

When an epoxy is required in the specifications or as directed by the Engineer, it shall be Duraweld-C as manufactured by the W.R. Grace Company, or an approved equal.

When directed by the Engineer, all newly placed concrete shall have a white-pigmented curing compound applied on the finish surface. Pigmented curing compound shall be Type I in accordance with Section 90 of the Caltrans Specifications. The curing compound shall be applied to the concrete following the surface finishing operation and immediately before the moisture sheen disappears from the surface. In the event drying or cracking of the surface begins prior to placing the curing compound, water shall be applied with an atomizing nozzle and shall continue until application of the curing compound begins. The curing compound shall not be applied on freestanding water under any circumstances. The sealing of joints in concrete shall be in accordance with subsection 51-2.02 of the Caltrans Specifications and as directed by the Engineer.

13-6 CONSTRUCTION PROCEDURES

Concrete shall be placed and compacted in forms without segregation. All concrete shall be placed while fresh and before it has taken its initial set. Retamping any partially hardened concrete with additional water will not be permitted.

The forms and subgrade shall be thoroughly moistened with water immediately prior to placing concrete. After placing, the concrete shall be consolidated sufficiently to produce a dense mass, struck off, compacted until a layer of mortar has been brought to the surface and floated. Final finishing operations shall not proceed until all bleed water has evaporated from the surface. Sprinkling of dry cement to absorb excessive surface moisture will not be allowed.

All exposed corners shall be rounded with an approved edging tool to obtain the desired cross section as shown on the Standard Drawings.

A "scoring" tool, which will leave a groove not less than ¼ inch deep with rounded corners, shall be used for marking sidewalk rectangles, back of curb lines on monolithic curb and sidewalk, etc..

Weakened plane joints shall be installed at each edge and the centerline of driveways and at 10 foot intervals in curbs, gutters and sidewalks, unless otherwise specified by the Engineer. These weakened plane joints shall be constructed between a depth of 1 inch to 2 inches, and shall be formed by means of special scoring tools or by cut plates conforming to the true cross section of the structure. The width of the joints shall not exceed ½ inch and shall remain open.

The Contractor shall protect all completed work from damage. Special emphasis shall be placed on protecting the edge of the gutter from being damaged or gouged during subsequent street grading and paving operations. The Contractor shall keep all equipment off new or existing sidewalks. Repairs shall be made by removing and replacing the entire unit between scoring lines or joints. All discolored concrete shall be cleaned to the satisfaction of the Engineer. Repairs and cleaning of the concrete shall be at the expense of the Contractor.

After curing, backfill shall be placed adjacent to the new concrete structure and existing grade unless otherwise directed by the Engineer. The completed concrete work shall be protected from damage until accepted and all excess material (dirt, tree roots, concrete, etc.) shall be removed from the site.

The slump of all concrete specified herein shall not exceed 4 inches when forms are used and 3½ inches when forms are not used. Concrete shall not be placed on frozen or ice coated ground or subgrade. Concrete shall also not be placed on ice coated forms, reinforcing steel, conduits or any material which concrete will be placed against. Under rainy conditions, placing of concrete shall be stopped before the quantity of surface water is sufficient to damage surface mortar or cause a flow or wash of the concrete surface.

All concrete shall be maintained at a temperature of not less than 40°F for 72 hours after placing.

13-7 CONCRETE CURB, GUTTER AND SIDEWALKS

All construction of curb, gutters and sidewalks shall conform to Section 73 of the Caltrans Specifications, the Standard Drawings and these Standard Specifications.

The surface of all concrete shall be finished with a steel trowel to a dense, hard, smooth finish, followed by a light broom finish. Addition of water to the surface to facilitate brooming will not be permitted under any circumstances. The finish surface shall not vary more than ¼ inch from a 10 foot straight-edge laid along the surface of the curb, gutter and sidewalk. The finish surface shall be free of all blemishes.

Dimensions of all concrete for this work shall be as shown on the Standard Drawings and as directed by the Engineer.

13-8 DRIVEWAYS

A driveway breakdown and approach shall be installed at all locations shown on the plans and for all driveways constructed. All dimensions shall be as shown on the Standard Drawings.

Troweling, floating, finishing, and variances shall conform to the requirements of this specification for sidewalks.

When it is necessary to relocate a driveway, the existing driveway shall be removed and replaced with standard curb, gutter and sidewalk.

13-9 CURB RAMP

Unless otherwise directed by the Engineer, curb ramps shall be constructed at all corners of an intersection and where crosswalks are located at mid-block or "tee" intersections. Dimensions are as shown on the Standard Drawings.

13-10 DETECTABLE WARNING SURFACE

Surface shall be 3'x4', cast-in-place, prefabricated detectable warning surface, composed of a vitrified polymer including aluminum oxide ("armor-tile" or approved equal). Color to be safety yellow. Truncated domes to be "in-line", parallel to curbing, with a height of 0.2 inches, base diameter of 0.9 inches, and top diameter of 0.45 inches, spaced 1.66 inches O.C. (2.35 inches O.C. on the diagonal). The field surface and top of domes to have a dotted texture for slip resistance. Density of dots in field area shall be a minimum of 30 per square inch. Detectable warning surface shall be placed at all of curb ramps. The detectable warning surface shall extend the entire opening of the curb ramp.

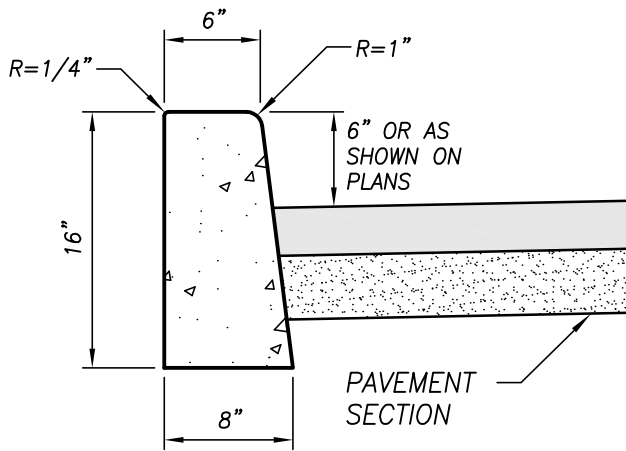
13-11 MISCELLANEOUS REQUIREMENTS

When proposed concrete construction is adjacent to existing concrete structures and does not match for line, grade or both, the existing structure shall be removed to a point 3 feet beyond the limit of the proposed new concrete. The purpose of this 3 foot section is to allow for line and grade adjustments between the proposed concrete and the existing concrete. This 3 foot section shall have an expansion joint along the side adjacent to the new concrete to facilitate the future removal of the 3 foot transition section.

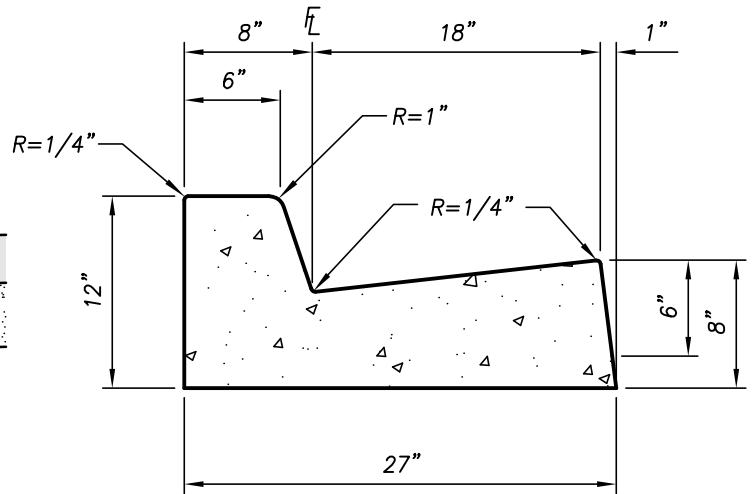
When the plans provide for reconstruction of existing concrete structures, the existing section shall be removed in its entirety to the nearest cold joint, expansion joint or weakened plane, if the said joint or plane is within 4 feet of the limits of work. Should said joint or plane not be within 4 feet, then the existing section shall be saw cut to a depth of 1½ inches and the entire section to be reconstructed shall be removed. The saw cut shall be located so as to be compatible with existing sidewalk lines. If the old work is damaged beyond this line while removing the old concrete, a new line shall be cut beyond the line of damage. The damaged concrete shall be removed and replaced at the Contractor's expense.

When a driveway approach is to be constructed where no curb breakdown exists, the curb, gutter and sidewalk (if existing) shall be removed in its entirety to the nearest cold joint, expansion joint or weakened plane, if said joint or plane is within 3 feet of the end of the driveway breakdown. Should said joint or plane not be within 3 feet, the curb, gutter and sidewalk shall be cut with a concrete saw across its full section. Both a driveway breakdown and approach must be installed.

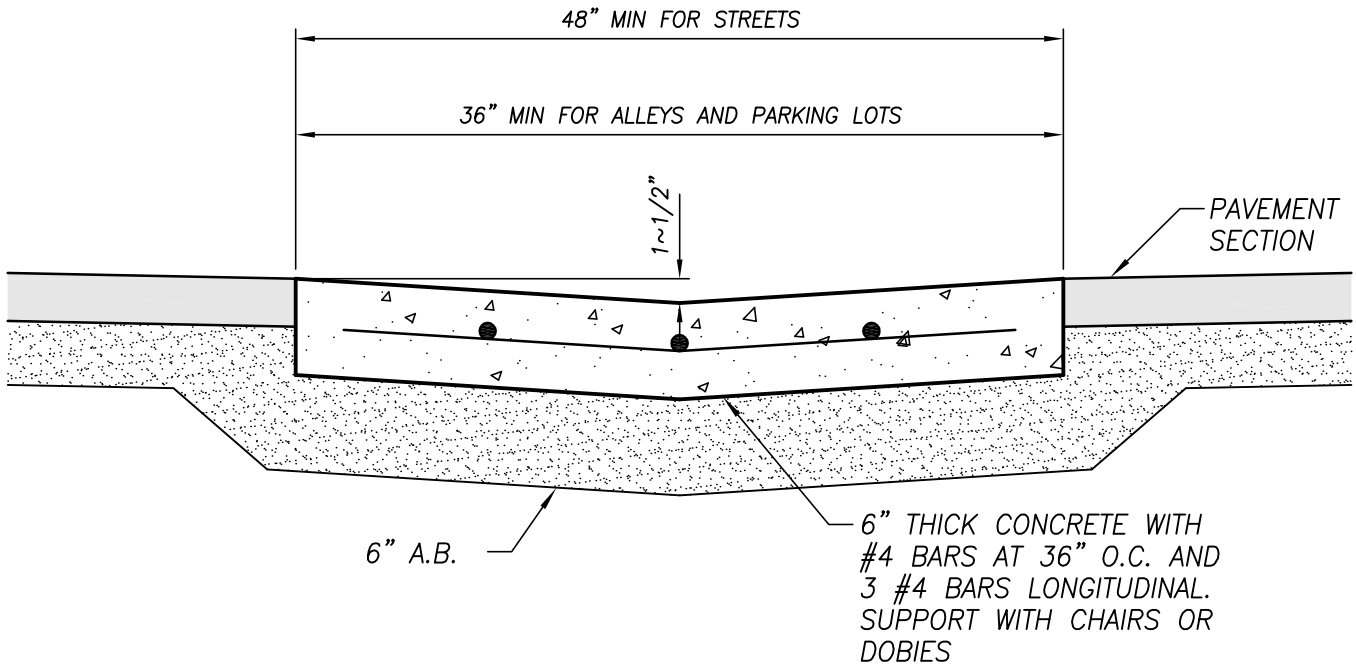
All structures and boxes to remain in the concrete shall be set to finish grade prior to placing concrete.



VERTICAL CURB



CURB AND GUTTER



VALLEY GUTTER

NOTES:

1. INSTALL WEAKENED PLANE JOINT AT 10' INTERVALS
2. GUTTER FLOW LINES SHALL BE WATER TESTED FOR FLOW
3. FLOW LINE OF GUTTERS SHALL SLOPE AT 0.20% MIN, UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER

CURB AND GUTTERS



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

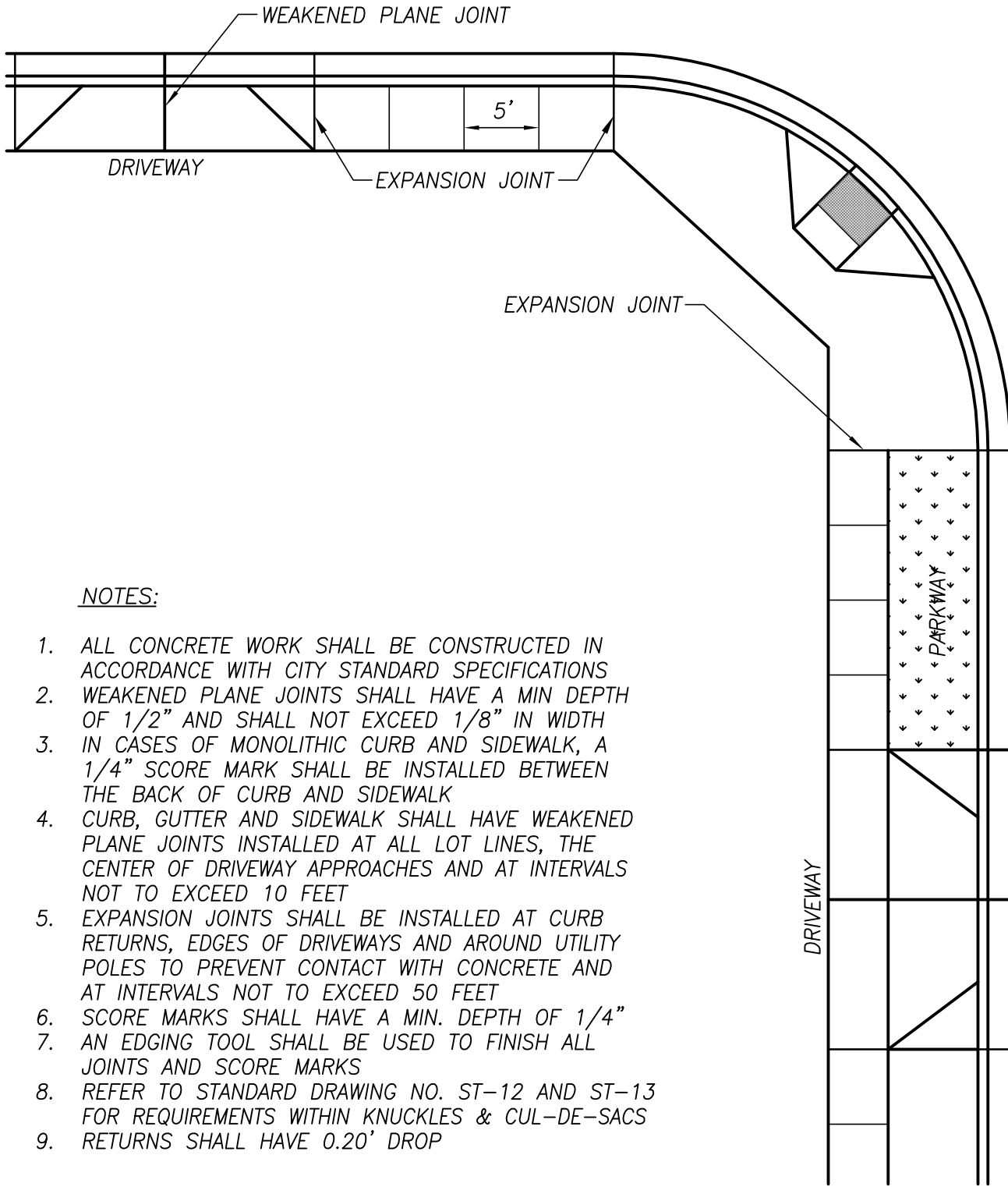
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

C-1

COUNCIL APPROVAL

DEC, 2015

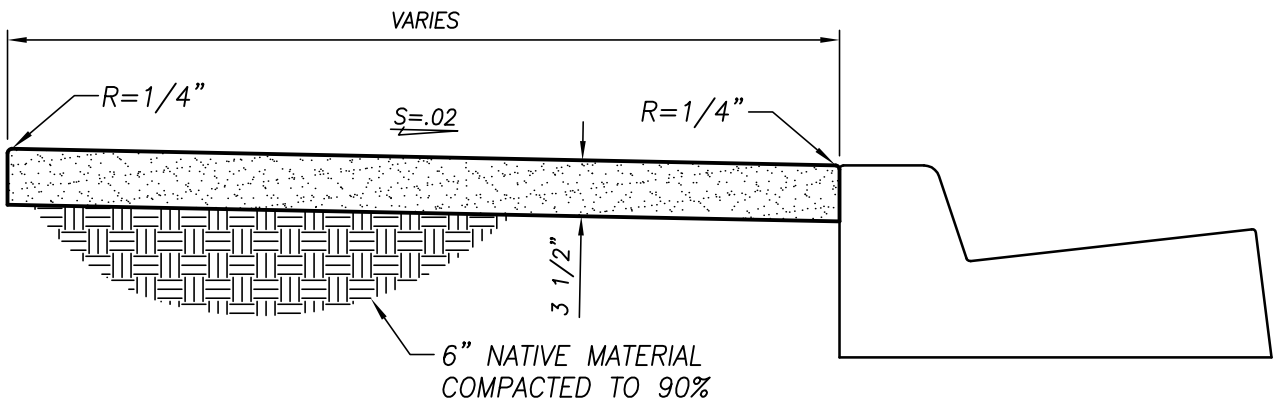


NOTES:

1. ALL CONCRETE WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY STANDARD SPECIFICATIONS
2. WEAKENED PLANE JOINTS SHALL HAVE A MIN DEPTH OF 1/2" AND SHALL NOT EXCEED 1/8" IN WIDTH
3. IN CASES OF MONOLITHIC CURB AND SIDEWALK, A 1/4" SCORE MARK SHALL BE INSTALLED BETWEEN THE BACK OF CURB AND SIDEWALK
4. CURB, GUTTER AND SIDEWALK SHALL HAVE WEAKENED PLANE JOINTS INSTALLED AT ALL LOT LINES, THE CENTER OF DRIVEWAY APPROACHES AND AT INTERVALS NOT TO EXCEED 10 FEET
5. EXPANSION JOINTS SHALL BE INSTALLED AT CURB RETURNS, EDGES OF DRIVEWAYS AND AROUND UTILITY POLES TO PREVENT CONTACT WITH CONCRETE AND AT INTERVALS NOT TO EXCEED 50 FEET
6. SCORE MARKS SHALL HAVE A MIN. DEPTH OF 1/4"
7. AN EDGING TOOL SHALL BE USED TO FINISH ALL JOINTS AND SCORE MARKS
8. REFER TO STANDARD DRAWING NO. ST-12 AND ST-13 FOR REQUIREMENTS WITHIN KNUCKLES & CUL-DE-SACS
9. RETURNS SHALL HAVE 0.20' DROP

CURB, GUTTER AND SIDEWALK PATTERN

	DRAWN BY: JSH	<p align="center">CITY OF TURLOCK</p> <p>APPROVED BY:</p> 	DRAWING NO.
	CHECK BY: NBB		C-2
	SCALE: NONE	CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694	COUNCIL APPROVAL DEC, 2015



NOTES:

1. ALL CONCRETE WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY STANDARD SPECIFICATIONS
2. SEE ST-1 FOR ADDITIONAL INFORMATION REGARDING SIDEWALK LOCATION
3. SEE C-2 FOR LOCATIONS OF JOINTS AND SCORE MARKS
4. PROVIDE MIN 48" OF CLEARANCE AROUND OBSTRUCTIONS. SEE C-4.

RESIDENTIAL AND COMMERCIAL SIDEWALK



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

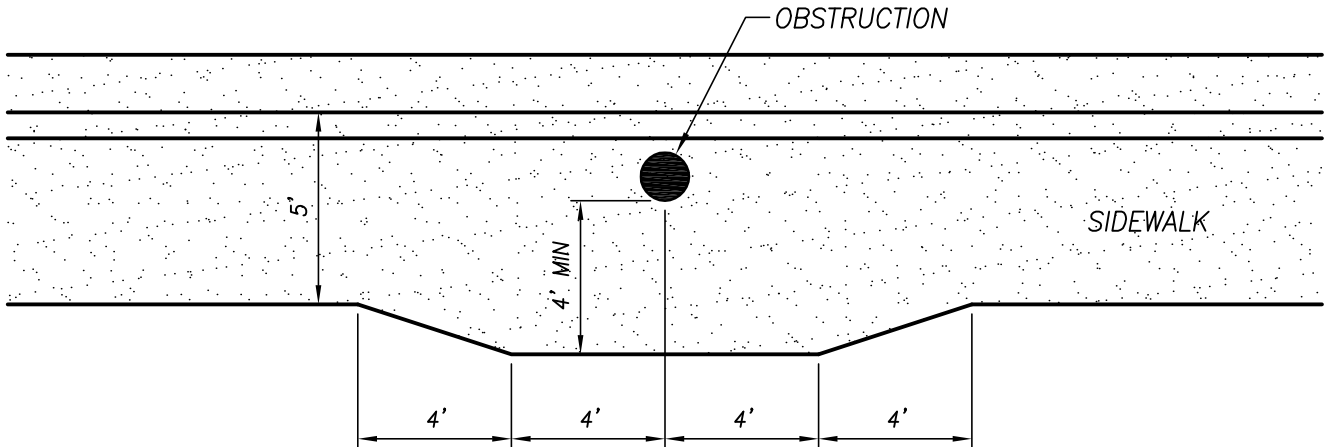
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

C-3

COUNCIL APPROVAL

DEC, 2015



SIDEWALK OBSTRUCTION TRANSITION



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

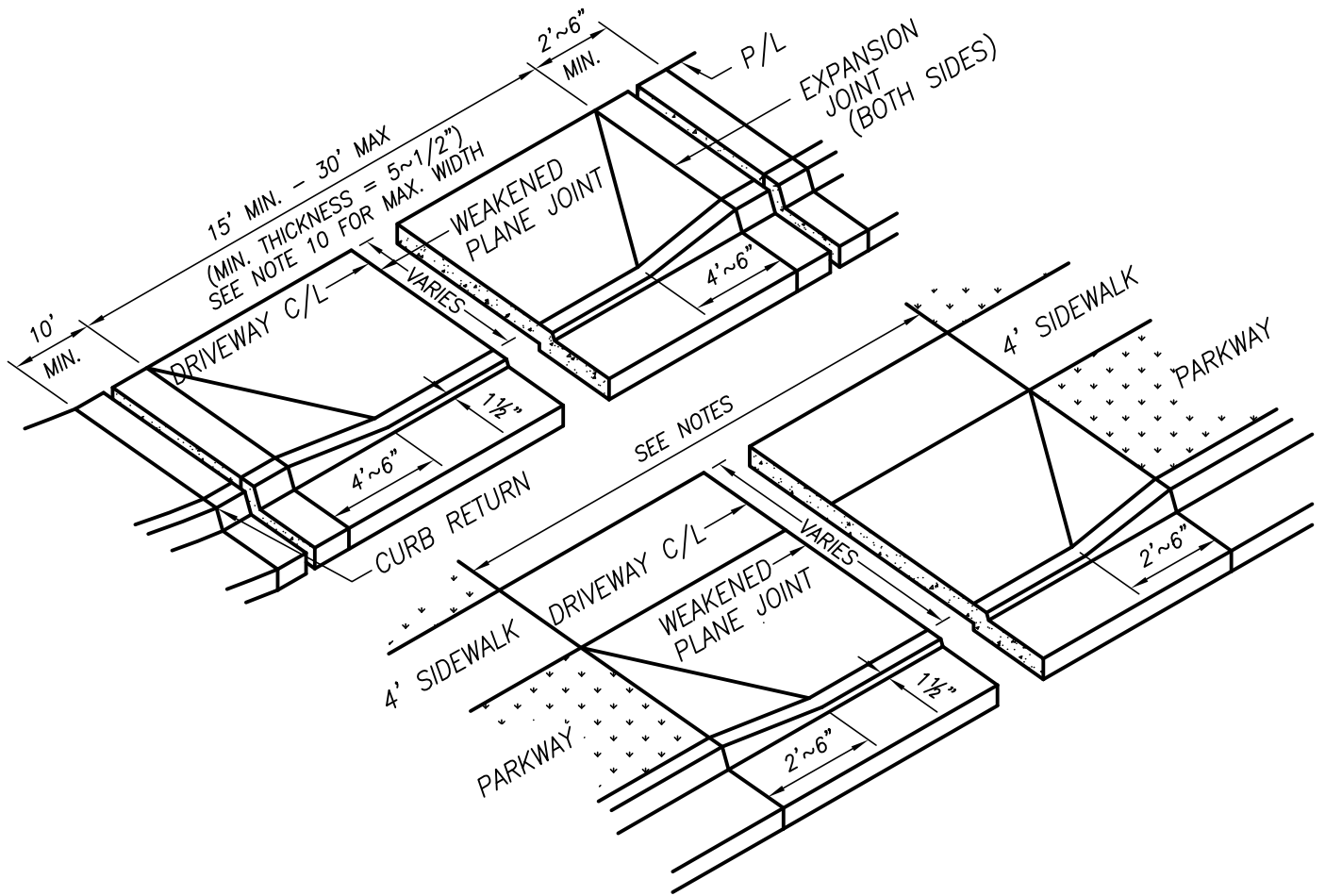
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

C-4

COUNCIL APPROVAL

DEC, 2015



NOTES:

1. SUB-GRADE COMPACTION SHALL BE 95%
2. CONCRETE SURFACE SHALL BE TROWELED SMOOTH & HAIR BROOMED
3. CONCRETE CURING SHALL BE PER CURRENT CALTRANS SPECIFICATIONS
4. GUTTER FLOW LINE SHALL BE WATER TESTED FOR FLOW
5. DRIVEWAY BREAKDOWN LIP SHALL BE 1~1/2"
6. PROVIDE A WEAKENED PLANE JOINT OF 1~1/2" MINIMUM DEPTH AND 1/8"
7. MAXIMUM WIDTH IN THE MIDDLE OF THE DRIVEWAY APPROACH AND GUTTER ON MONOLITHIC CURB, GUTTER AND SIDEWALK INSTALL EXPANSION JOINTS AT EDGES OF DRIVEWAY
8. MAXIMUM DRIVEWAY WIDTHS ARE AS FOLLOWS:
TWO DOOR GARAGE IS 25 FEET
THREE CAR GARAGE IS 30 FEET, PROVIDING THE THE DRIVEWAY WIDTH DOES NOT EXCEED 40% OF TOTAL LOT FRONTAGE
9. CURB, GUTTER AND DRIVEWAY SHALL BE POURED MONOLITHICALLY

RESIDENTIAL DRIVEWAY APPROACH



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

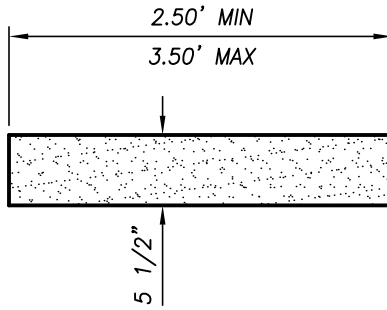
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

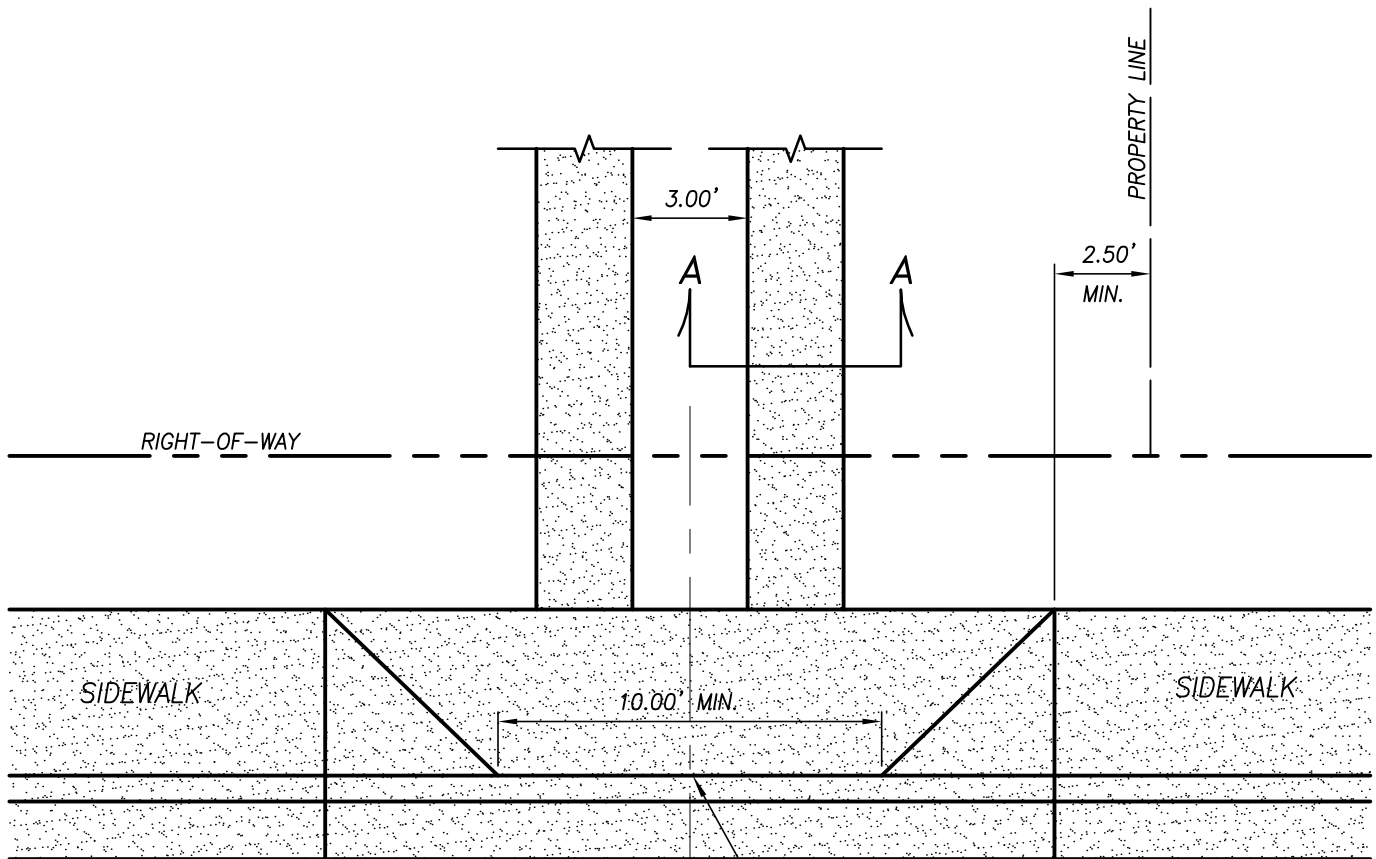
C-5

COUNCIL APPROVAL

DEC, 2015



SECTION A-A




RESIDENTIAL DRIVEWAY APPROACH
PER CITY OF TURLOCK STANDARDS
DRAWING NO. C-5

NOTES:

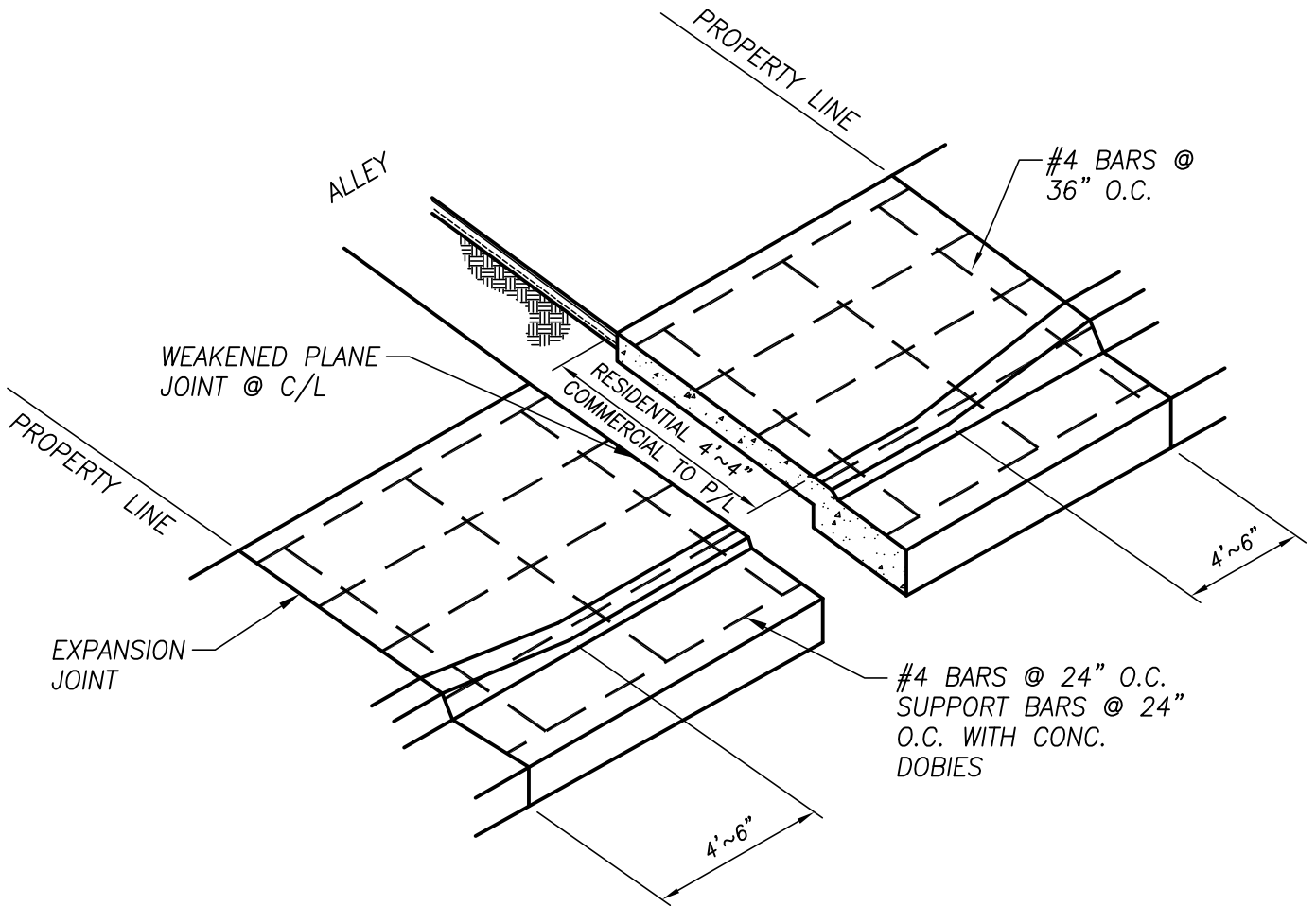
1. RIBBONS MAY BE CONSTRUCTED OF ALTERNATE IMPERVIOUS TRAFFIC RATED MATERIAL, WITH WRITTEN APPROVAL OF THE CITY ENGINEER

RIBBON DRIVEWAY DETAIL



DRAWN BY: JSH	CITY OF TURLOCK APPROVED BY:  CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694
CHECK BY: NBB	
SCALE: NONE	

DRAWING NO. C-6
COUNCIL APPROVAL DEC, 2015



NOTES:

1. COMMERCIAL ALLEYS SHALL HAVE A SLOPE OF 1% MIN. AND A CROSS SLOPE OF 2% MAX.
2. ALL ALLEY APPROACHES SHALL HAVE A MINIMUM THICKNESS OF 7~1/2".
3. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS.
4. GUTTER FLOW LINE & VALLEY GUTTER SHALL BE WATER TESTED FOR FLOW.
5. FINISH GRADE AT BACK OF DRIVEWAY SHALL MATCH ALLEY PAVEMENT.
6. WEAKENED PLANE JOINT SHALL BE 1~1/2" MIN. DEPTH AND 1/8" MAX. WIDTH.

ALLEY APPROACH

CITY OF TURLOCK



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

APPROVED BY:

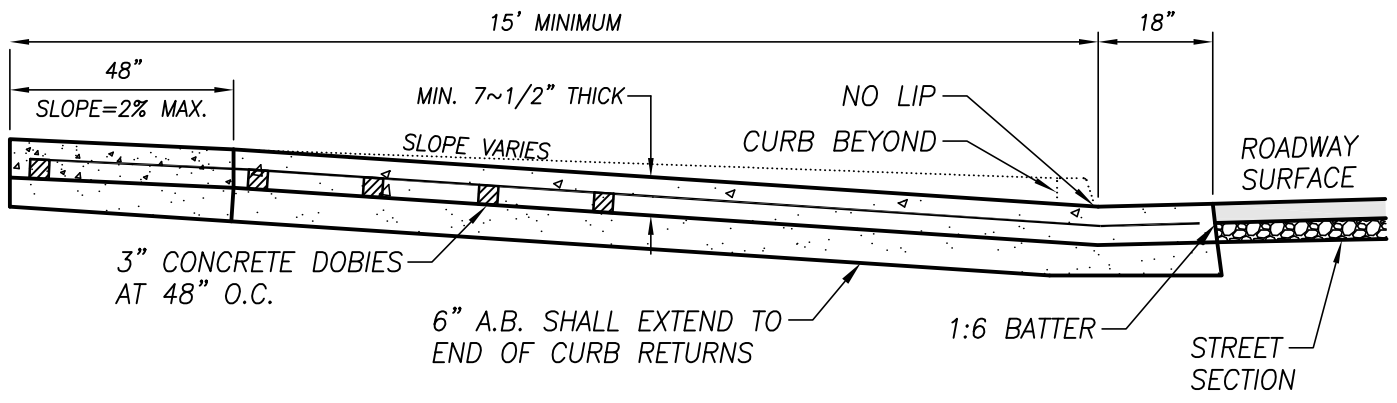
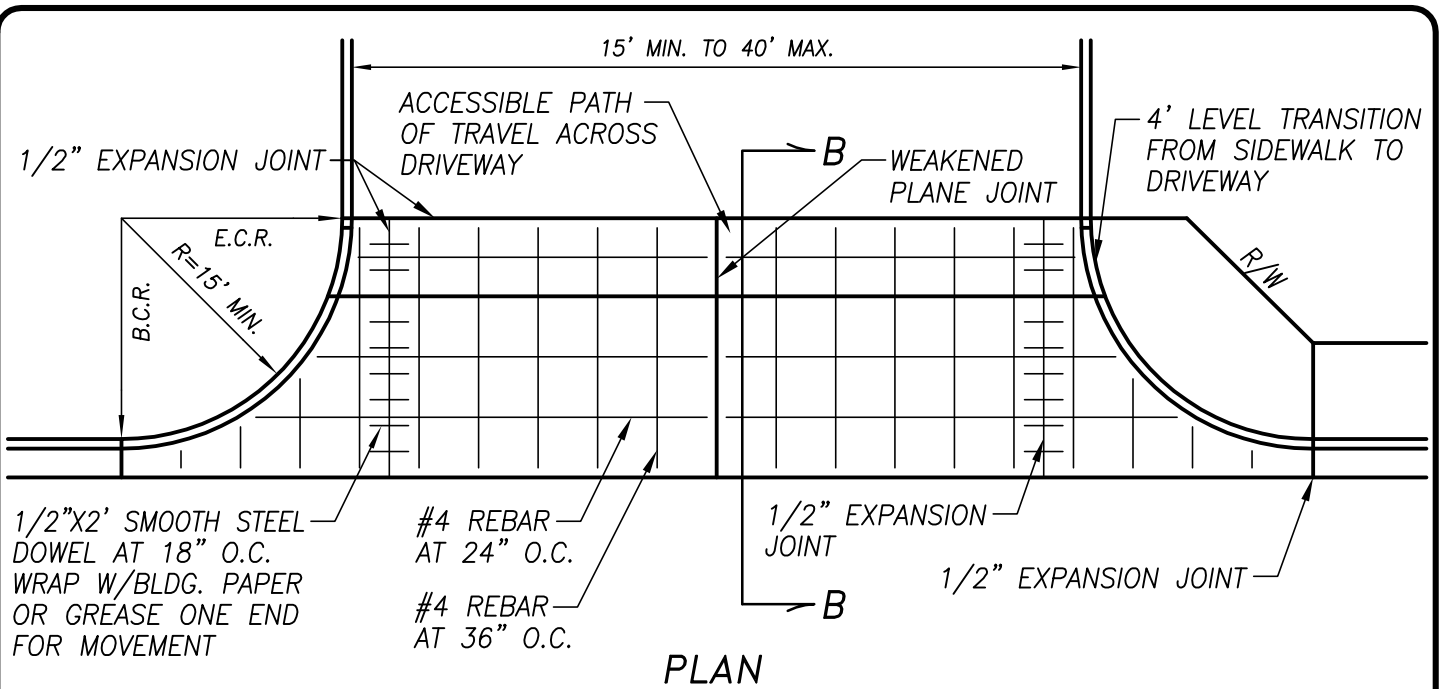
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

C-7

COUNCIL APPROVAL

DEC, 2015



NOTES:

1. SUB-GRADE COMPACTION SHALL BE 95%
2. CONCRETE SURFACE SHALL BE TROWELED SMOOTH & HAIR BROOMED
3. CONCRETE CURING SHALL BE PER CURRENT CALTRANS SPECIFICATIONS
4. GUTTER FLOW LINE SHALL BE WATER TESTED FOR FLOW
5. PROVIDE A WEAKENED PLANE JOINT OF 1~1/2" MINIMUM DEPTH AND 1/8" MAXIMUM WIDTH IN THE MIDDLE OF THE DRIVEWAY APPROACH AND GUTTER
6. MULTI FAMILY UNITS SHALL USE THIS APPROACH
7. 150' MIN. FROM D/W CENTERLINE TO CURB RETURN
8. DRIVEWAYS OVER 40' WIDE MUST BE APPROVED BY THE CITY ENGINEER
9. UP TO 1~1/2" GUTTER LIP MAY BE PROJECTED THROUGH DRIVEWAY WITH CITY ENGINEER'S APPROVAL

COMMERCIAL/INDUSTRIAL DRIVEWAY APPROACH



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

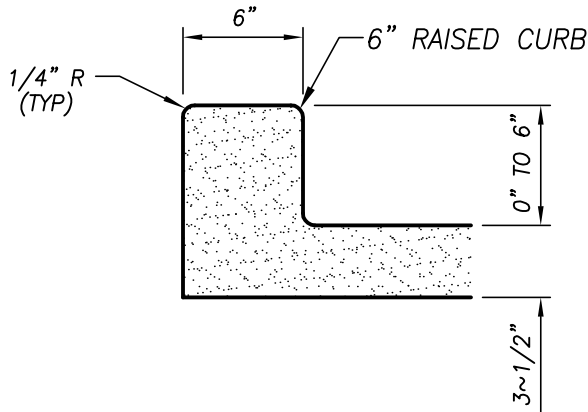
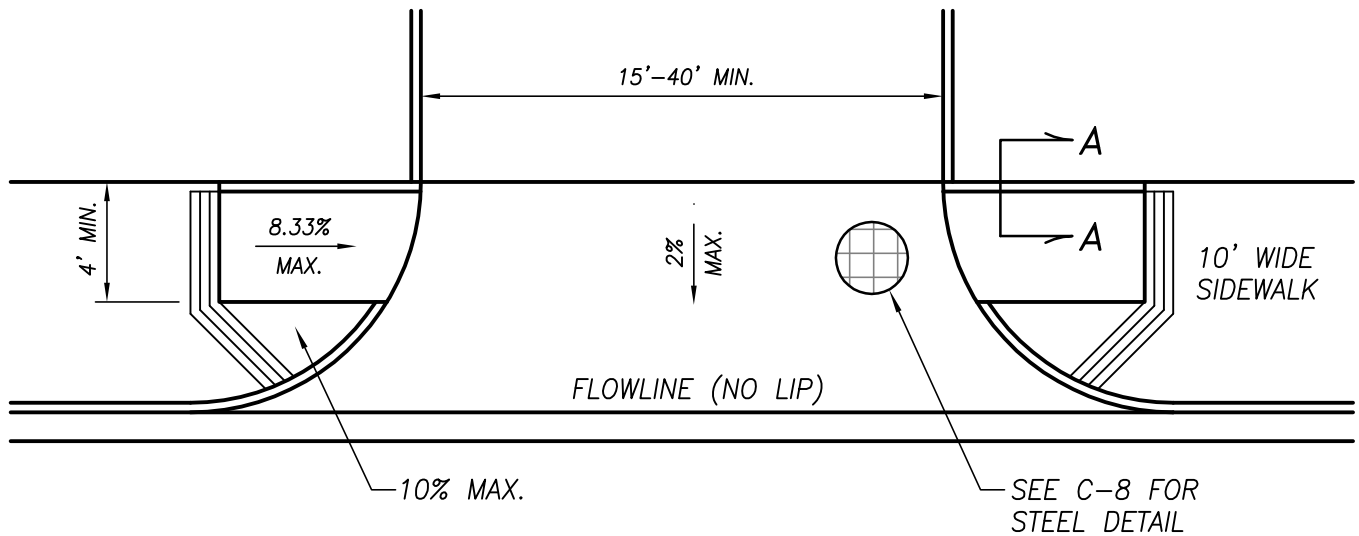
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

C-8

COUNCIL APPROVAL

DEC, 2015




SECTION A-A

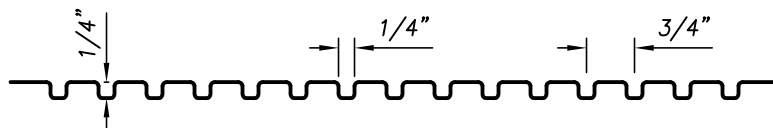
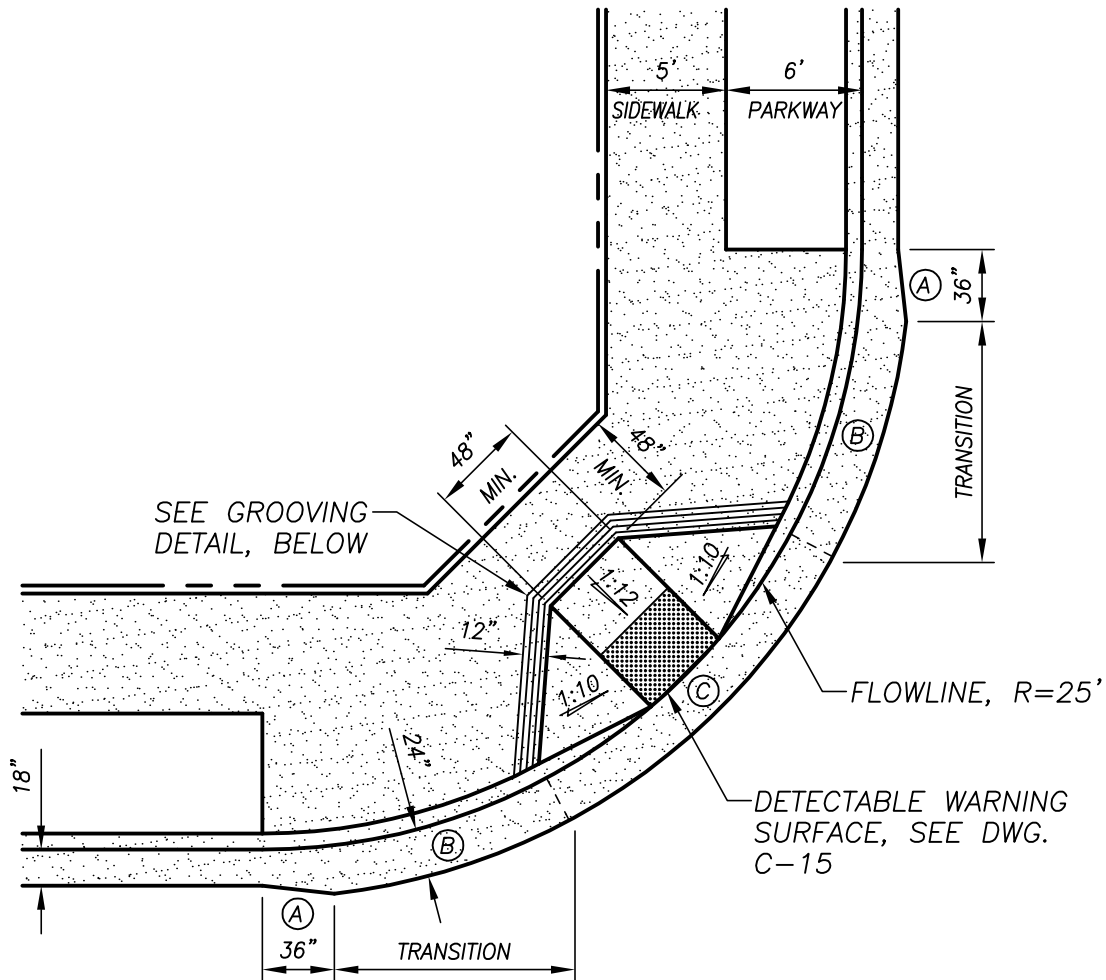
NOTES:

1. THE APPROACH SHALL HAVE COLD JOINTS AT THE PROPERTY LINE AND AT EACH END. A WEAKENED PLANE JOINT IS REQUIRED AT THE END OF THE APPROACH
2. THE APPROACH SHALL BE 7~1/2" THICK
3. WIDTHS GREATER THAN 40' MUST BE APPROVED BY THE CITY ENGINEER
4. INTERMEDIATE WEAKENED PLANE JOINTS IN ACCORDANCE WITH SECTION 13-1.06, CONSTRUCTION PROCEDURES OF STANDARD SPECIFICATIONS
5. UP TO 1~1/2" GUTTER LIP MAY BE PROJECTED THROUGH DRIVEWAY WITH CITY ENGINEER'S APPROVAL

COMMERCIAL/INDUSTRIAL DRIVEWAY APPROACH



DRAWN BY: JSH	CITY OF TURLOCK	DRAWING NO. C-9
CHECK BY: NBB	APPROVED BY: 	COUNCIL APPROVAL
SCALE: NONE	CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694	DEC, 2015



GROOVING DETAIL

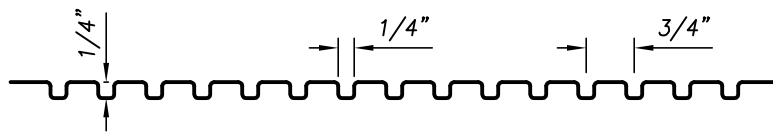
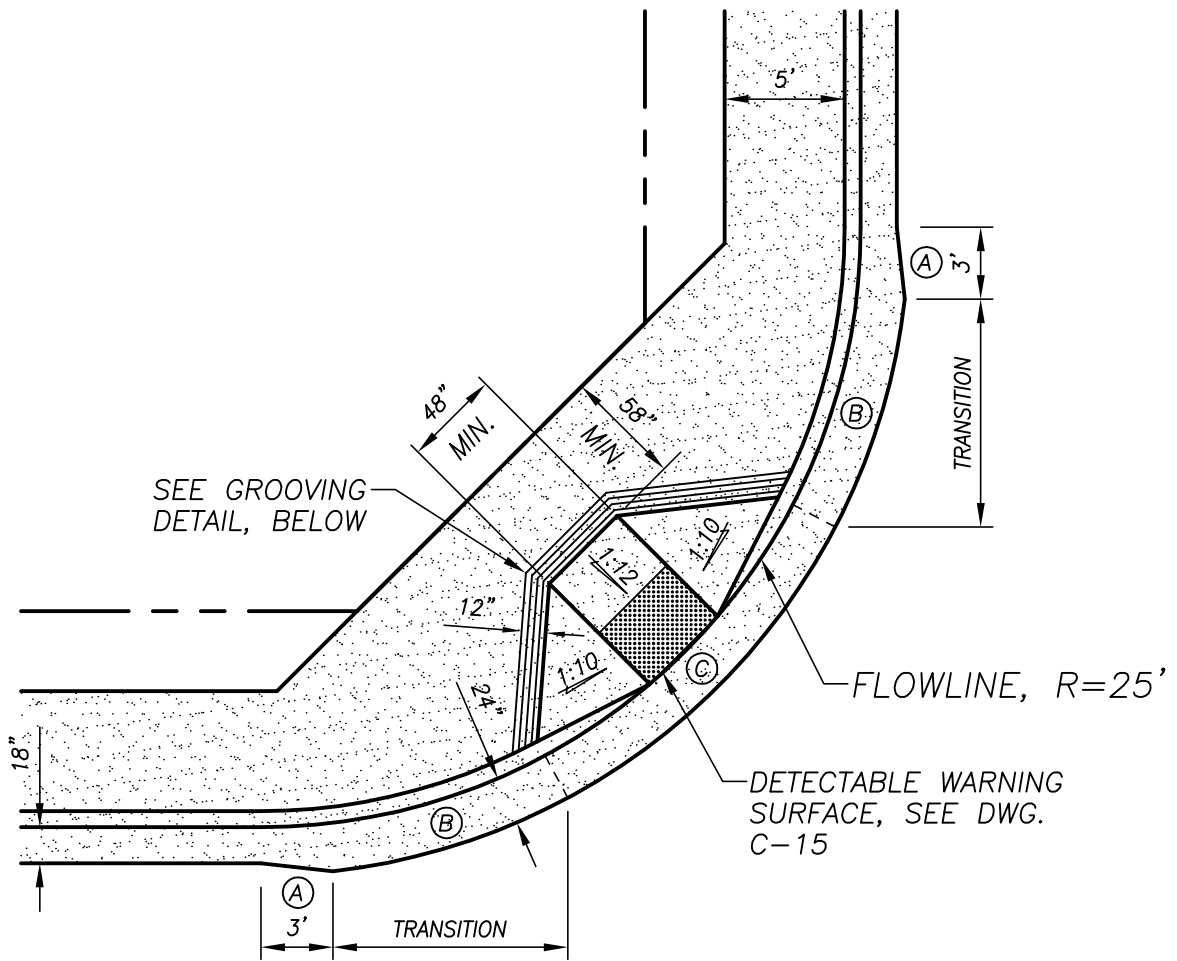
- Ⓐ CONCRETE LIP SHALL EXTEND FROM 18" TO 24" WITHIN THE FIRST 3 FEET OF THE RADIUS POINT. LIP OF GUTTER SHALL BE 2" HIGHER THAN FLOWLINE
- Ⓑ CONCRETE LIP SHALL MAINTAIN 24" FROM FLOWLINE. CONCRETE LIP SHALL TRANSITION FROM 2" TO 1" ABOVE FLOWLINE. TRANSITION SHALL BE COMPLETED BY START OF FLARED SIDES (WINGS)
- Ⓒ CONCRETE LIP SHALL MAINTAIN 24" FROM FLOWLINE AND 1" ABOVE FLOWLINE. MAXIMUM ALLOWABLE SLOPE IS 5%

CURB RETURN PEDESTRIAN RAMP



DRAWN BY: JSH CHECK BY: NBB SCALE: NONE	CITY OF TURLOCK APPROVED BY: CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694
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DRAWING NO. C-10
COUNCIL APPROVAL DEC, 2015




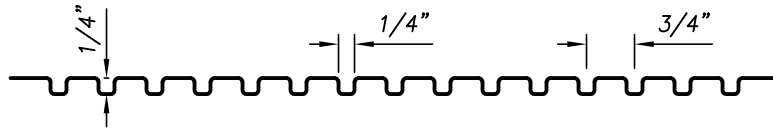
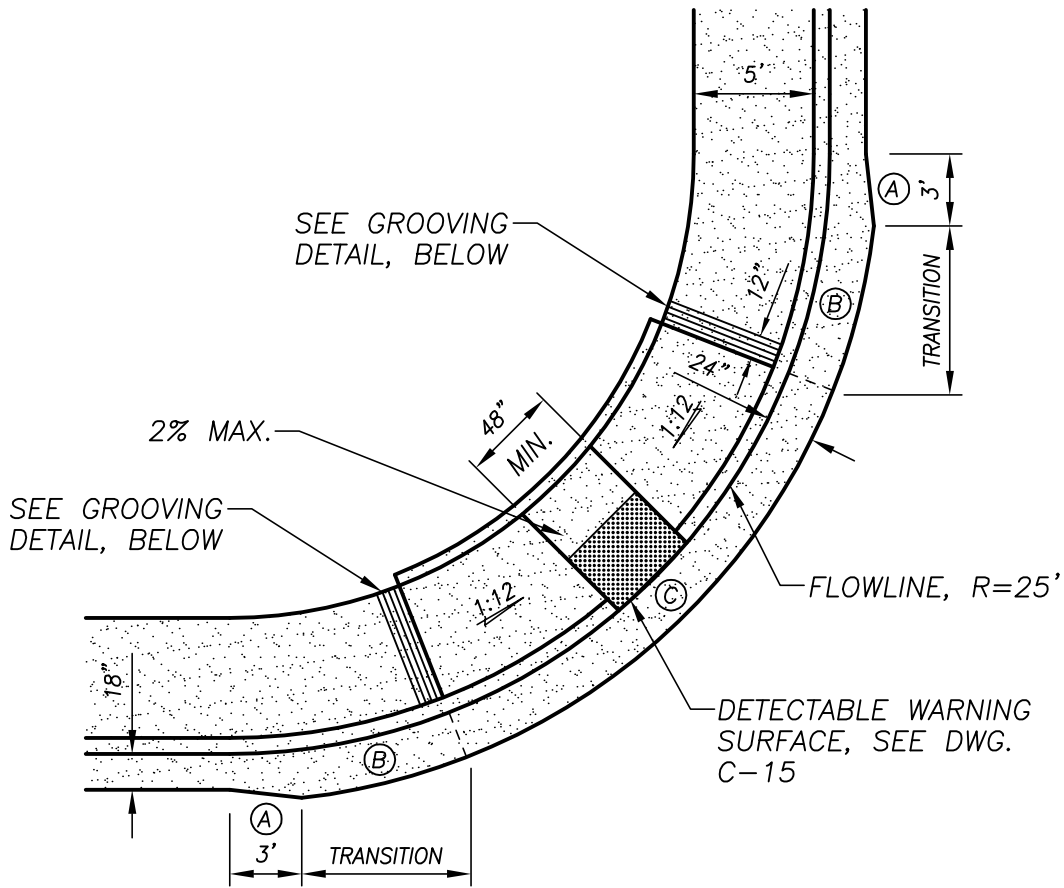
GROOVING DETAIL

- Ⓐ CONCRETE LIP SHALL EXTEND FROM 18" TO 24" WITHIN THE FIRST 3 FEET OF THE RADIUS POINT. LIP OF GUTTER SHALL BE 2" HIGHER THAN FLOWLINE
- Ⓑ CONCRETE LIP SHALL MAINTAIN 24" FROM FLOWLINE. CONCRETE LIP SHALL TRANSITION FROM 2" TO 1" ABOVE FLOWLINE. TRANSITION SHALL BE COMPLETED BY START OF FLARED SIDES (WINGS)
- Ⓒ CONCRETE LIP SHALL MAINTAIN 24" FROM FLOWLINE AND 1" ABOVE FLOWLINE. MAXIMUM ALLOWABLE SLOPE IS 5%

CURB RETURN PEDESTRIAN RAMP



DRAWN BY: JSH	CITY OF TURLOCK	DRAWING NO. C-11
CHECK BY: NBB	APPROVED BY: 	COUNCIL APPROVAL
SCALE: NONE	CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694	DEC, 2015



GROOVING DETAIL

- Ⓐ CONCRETE LIP SHALL EXTEND FROM 18" TO 24" WITHIN THE FIRST 3 FEET OF THE RADIUS POINT. LIP OF GUTTER SHALL BE 2" HIGHER THAN FLOWLINE
- Ⓑ CONCRETE LIP SHALL MAINTAIN 24" FROM FLOWLINE. CONCRETE LIP SHALL TRANSITION FROM 2" TO 1" ABOVE FLOWLINE. TRANSITION SHALL BE COMPLETED BY START OF FLARED SIDES (WINGS)
- Ⓒ CONCRETE LIP SHALL MAINTAIN 24" FROM FLOWLINE AND 1" ABOVE FLOWLINE. MAXIMUM ALLOWABLE SLOPE IS 5%

CURB RETURN PEDESTRIAN RAMP



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

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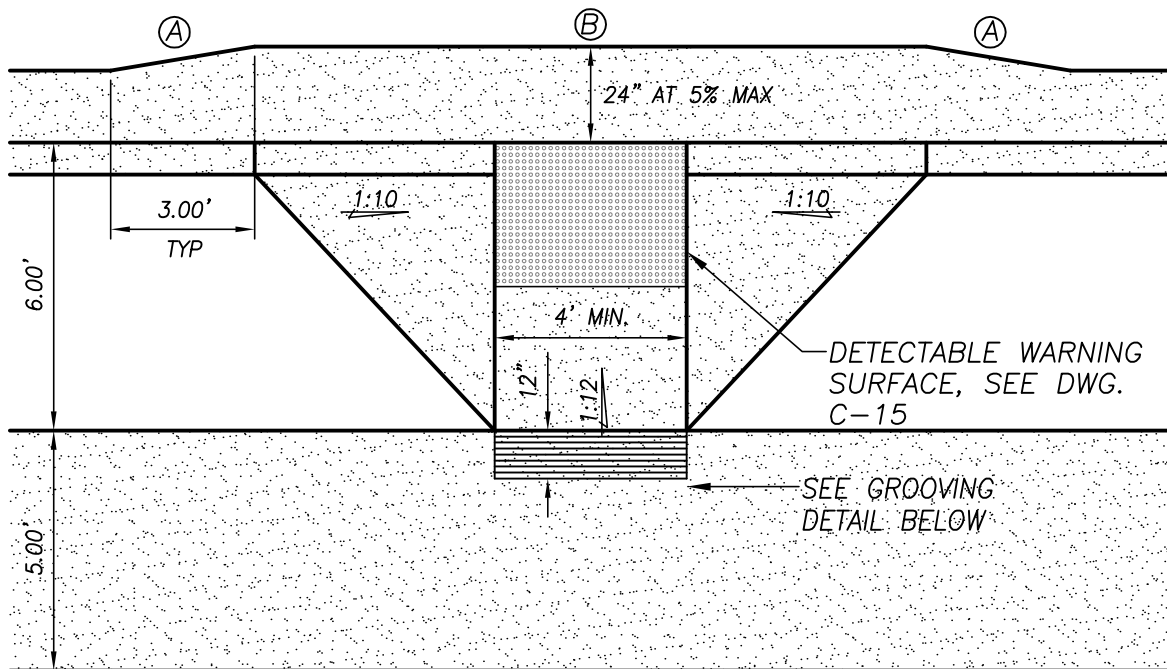
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

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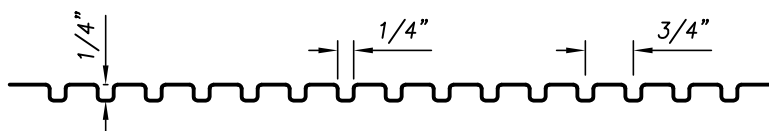
C-12

COUNCIL APPROVAL

DEC, 2015



NOTE: SLOPES GIVEN ARE THE MAXIMUM ALLOWED



GROOVING DETAIL

- Ⓐ CONCRETE LIP SHALL TRANSITION FROM 18" TO 24" WITHIN 3 FEET OF THE FLARED SIDE. LIP OF GUTTER SHALL TRANSITION FROM 2" TO 1" ABOVE FLOWLINE.
- Ⓑ CONCRETE LIP SHALL MAINTAIN 24" FROM FLOWLINE AND 1" ABOVE FLOWLINE. MAXIMUM ALLOWABLE SLOPE IS 5%

MID-BLOCK PEDESTRIAN RAMP ~ SEPARATED SIDEWALK



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

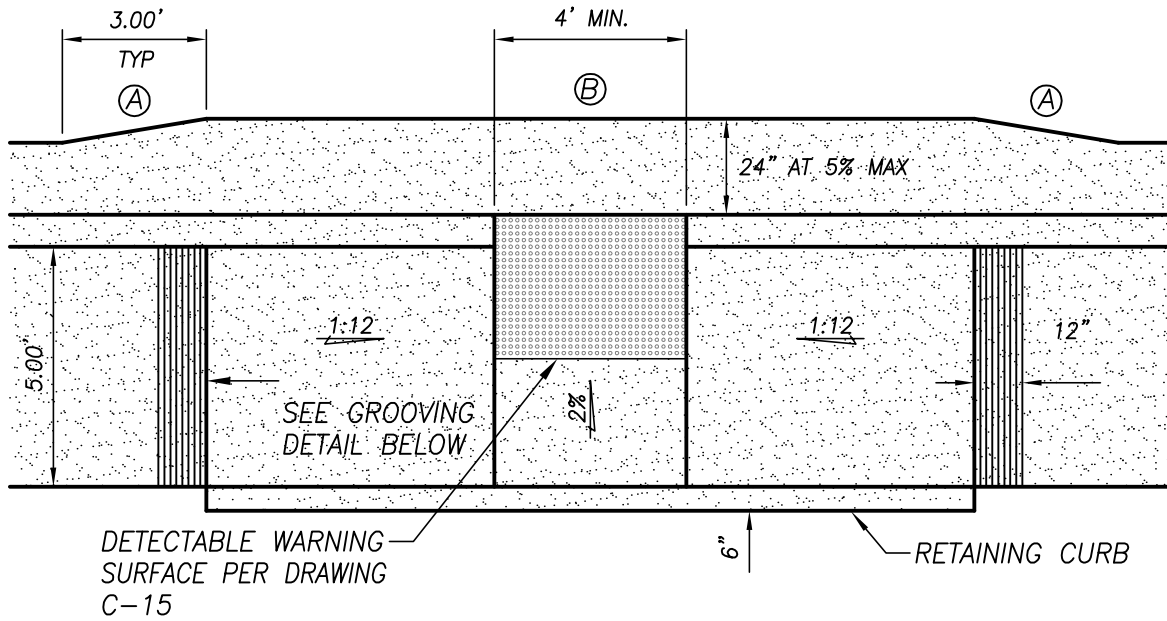
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

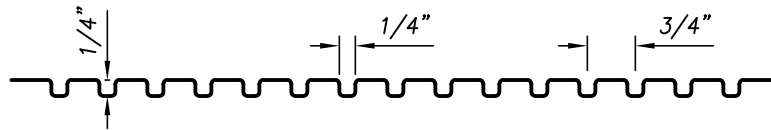
C-13

COUNCIL APPROVAL

DEC, 2015



NOTE: SLOPES GIVEN ARE THE MAXIMUM ALLOWED



GROOVING DETAIL

- Ⓐ CONCRETE LIP SHALL TRANSITION FROM 18" TO 24" WITHIN 3 FEET OF THE TOP OF THE RAMP. LIP OF GUTTER SHALL TRANSITION FROM 2" TO 1" ABOVE FLOWLINE.
- Ⓑ CONCRETE LIP SHALL MAINTAIN 24" FROM FLOWLINE AND 1" ABOVE FLOWLINE. MAXIMUM ALLOWABLE SLOPE IS 5%

MID-BLOCK PEDESTRIAN RAMP ~ CURB ADJACENT



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SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

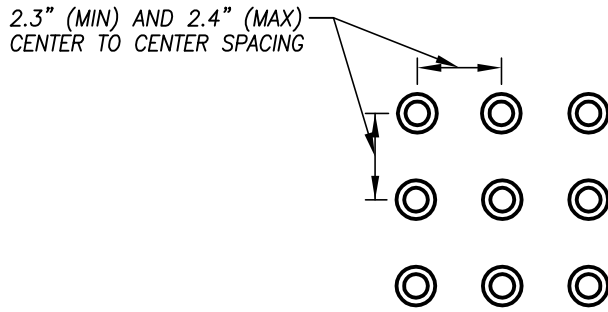
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

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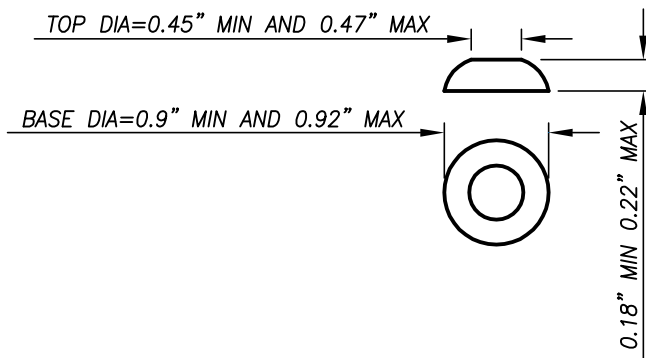
C-14

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DEC, 2015



RAISED TRUNCATED DOME
PATTERN (IN-LINE)



RAISED TRUNCATED DOME


DETECTABLE WARNING SURFACE

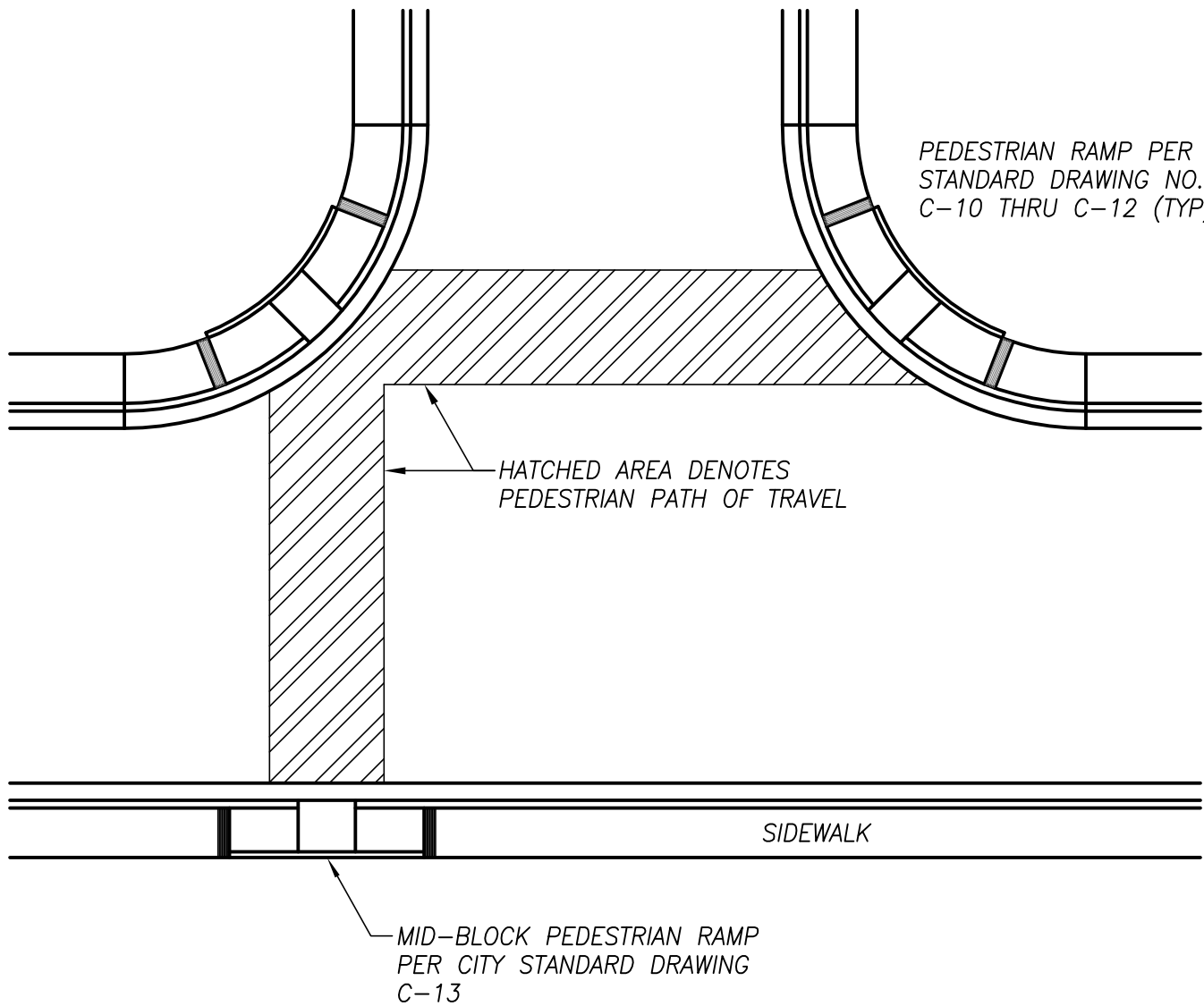
NOTES:

1. CAST-IN-PLACE PREFABRICATED DETECTABLE WARNING SURFACE SHALL BE COMPOSED OF A VITRIFIED POLYMER INCLUDING ALUMINUM OXIDE ("ARMOR-TILE" OR APPROVED EQUAL). COLOR SHALL BE SAFETY YELLOW. FIELD SURFACE AND TOP OF DOMES TO HAVE A SLIP RESISTANCE SURFACE.
2. CURB RAMPS SHALL HAVE A DETECTABLE WARNING SURFACE THAT EXTENDS THE FULL WIDTH AND 3'-0" DEPTH OF THE RAMP. A 4'-0" WIDE DETECTABLE WARNING SURFACE MAY BE USED ON A 4'-2" WIDE CURB RAMP. DETECTABLE WARNING SURFACES SHALL CONFORM TO THE REQUIREMENTS IN THE STANDARD SPECIFICATIONS.

DETECTABLE WARNING SURFACE



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CHECK BY: NBB	APPROVED BY: 	COUNCIL APPROVAL
SCALE: NONE	CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694	DEC, 2015



NOTE:
MID-BLOCK PEDESTRIAN RAMP MAY BE INSTALLED
AT EITHER SIDE OF THE INTERSECTION.

MID-BLOCK PEDESTRIAN RAMP AT INTERSECTION



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CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

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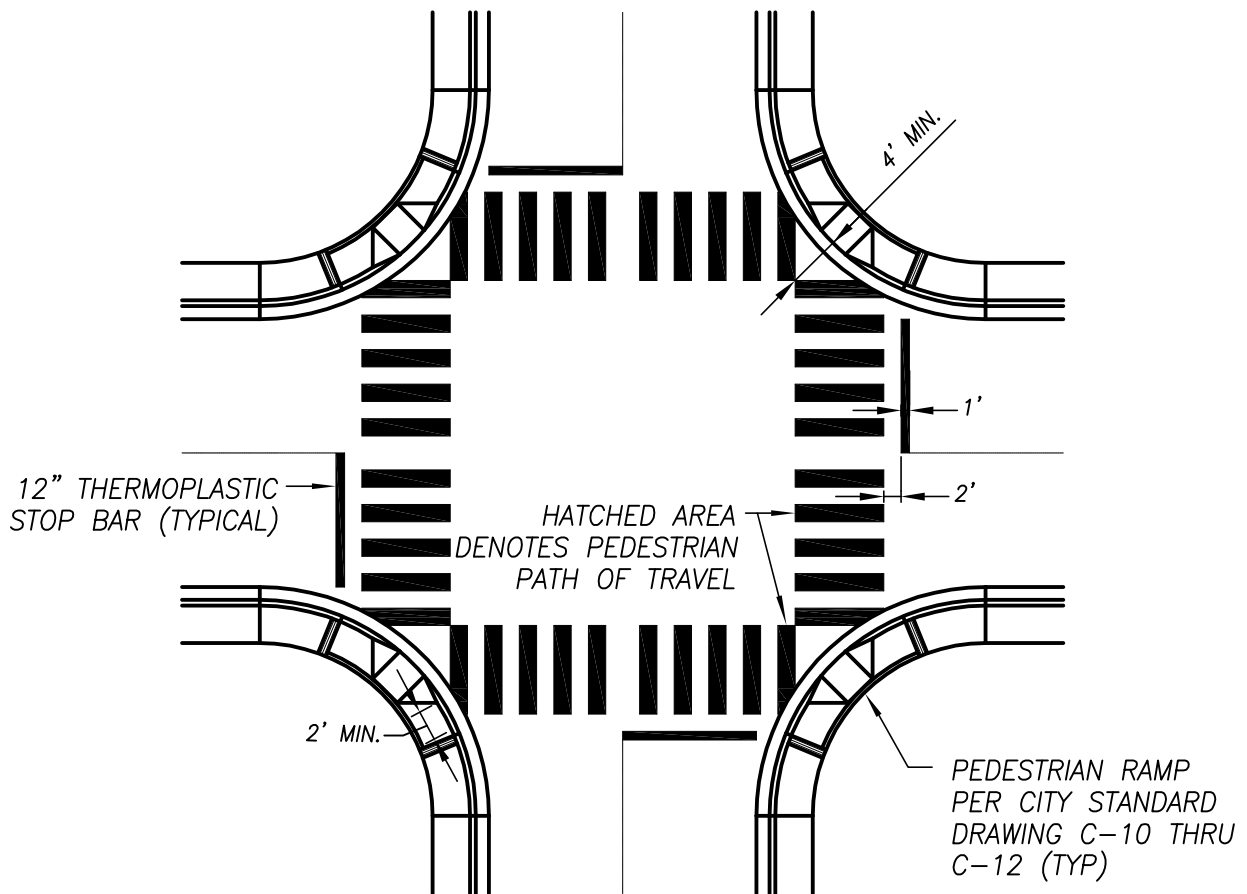
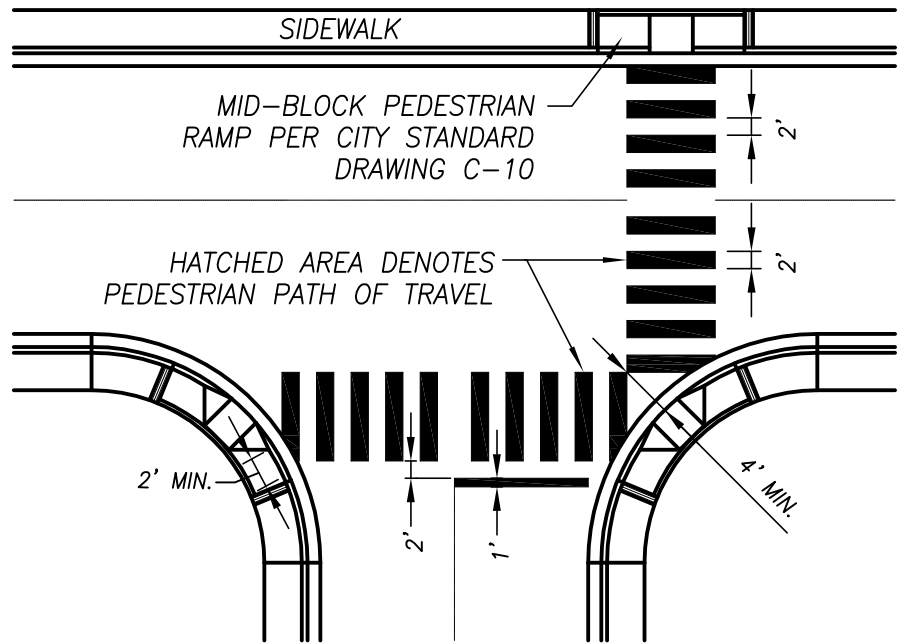
C-16

COUNCIL APPROVAL

DEC, 2015

NOTES:

1. CROSS WALK SHALL BE THERMOPLASTIC MATERIAL.
2. EACH BAND OF THERMOPLASTIC MATERIAL SHALL BE 2' WIDE.
3. EACH GAP SHALL BE 2' WIDE, SHRINK MIDDLE GAP IF NECESSARY.
4. 4' MINIMUM CLEAR SPACE FROM FLOWLINE TO CLOSEST EDGE OF THERMOPLASTIC.
5. THERMOPLASTIC BAR SHALL START 2' FROM BEGINNING OF WING FOR ACCESS RAMP.



CROSS WALK LAYOUT

CITY OF TURLOCK



DRAWN BY: AZ

CHECK BY: NBB

SCALE: NONE

APPROVED BY:

CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

C-17

COUNCIL APPROVAL

DEC, 2015

CITY OF TURLOCK



STANDARD SPECIFICATIONS AND DRAWINGS

2016

ERRATA 1

EFFECTIVE DATE MAY 1, 2019

CITY OF TURLOCK
DEVELOPMENT SERVICES
ENGINEERING DIVISION

156 S. BROADWAY SUITE 150
TURLOCK, CA 95380-5454
(209)668-5520



2016 STANDARD SPECIFICATIONS AND DRAWINGS - ERRATA 1

The purpose of this errata is to modify the approved Standard Specifications and Drawings. Errata 1 shall be in effect as of May 1, 2019. The use of previous standard specifications and drawings are limited to vesting rights.

ERRATA

Revise the 2016 Standard Specifications and Drawings as follows:

Chapter 14 – Trenching, replace the entire section with the following attached “Section 14 – Trenching and Excavations”

Drawings T-1 & T-2, replace drawings T-1 & T-2 with the following attached “T-1 – T-6”

14 TRENCHING AND EXCAVATIONS

14-1 TRENCHING

These Specifications shall apply to all trenching and excavations within the City right-of-way, alleyways and all City Easements. All trenching and excavations shall be made in accordance with the Subchapter 4 Construction Safety Orders Article 6 Excavations issued by the Division of Industrial Safety of the Department of Industrial Relations of the State of California. Adequate provisions shall be made for the protection of the traveling public on all public roads affected by said trenches and excavations.

The Contractor shall perform all trenching and excavations necessary or required to construct all manholes, pipelines, utility services, investigation work and appurtenances as specified by the Engineer and as shown on the approved plans. Trenching and excavations shall include the removal of all materials, whatever nature may be encountered. Trenching and excavations shall be performed by open trench, unless specified otherwise, following neat parallel lines, centered on the trench or excavation. Clearance on either side of the pipe between the bell end, at spring line, and the wall of the trench shall be no more than eight (8) inches and no less than six (6) inches, unless specified otherwise.

Where trenching and/or excavation necessitate(s) removing pavement surfaces, the pavement at the edge of the proposed trench and/or excavation shall be saw cut in a neat straight line. Special attention is directed to Section 12-14, "Saw Cutting Existing Structural Section", of these specifications. This shall be done to the limits shown on specified City Standard Drawings, approved plans, or as directed by the Engineer. Saw cutting shall be performed with an approved apparatus capable of cutting to no less than the full depth of the in situ pavement material. Saw cutting shall be straight along the exact markings snapped with a chalk line. Any damage to saw cut edge(s) after the cut has been made shall be corrected to the satisfaction of the Engineer at the Contractor's expense.

When utilities are to be placed crossing under existing frontage improvements (i.e. curb and gutter, sidewalk, driveway approaches, etc.), the improvements shall be removed to existing expansion joints and/or weakened plan joints. Thereafter, excavation for the installation of the utility may begin - special attention is directed to Section 14-2, "Backfill", of these specifications. After the trench or excavation has been backfilled to grade, frontage improvements shall be reconstructed per the City Standards.

Saw cutting shall be performed with an approved apparatus capable of cutting to no less than the full depth of the in situ pavement material. Curb and gutters shall have ½ -inch diameter, 6-inch long steel dowels installed at least 3 inches into the existing concrete. One dowel shall be placed in the curb and two in the gutter section at each saw cut joint.

Excess subgrade material, concrete and broken pavement shall become the property of the Contractor and shall be properly disposed of outside of the right-of-way. The exact location will be determined by the Contractor and will be approved by the Engineer. There shall be no direct payment for removing excess excavated material from the job site, but shall be considered incidental to other contract items.

14-2 BACKFILL

After the pipe has been properly laid and inspected, backfill material shall be placed around the pipe at a depth of 12 inches above the top of the pipe and shall be thoroughly compacted to final density of at least 90% relative compaction. This shall be done in such a manner as to not injure or disturb the pipe. All excavation within the existing street roadbed shall be backfilled and compacted until the relative compaction is not less than 95%. Backfill material shall be placed in layers not to exceed 8 inches in depth

and moistened as necessary before compaction. Each layer shall be thoroughly tamped, rolled or otherwise compacted and brought to grade. Backfill in trenches between the back of the curb and property lines shall be thoroughly consolidated to a final density of at least 90% relative compaction. Compaction of backfill material by ponding or jetting will not be permitted. Field density may be determined by any method accepted by the Engineer.

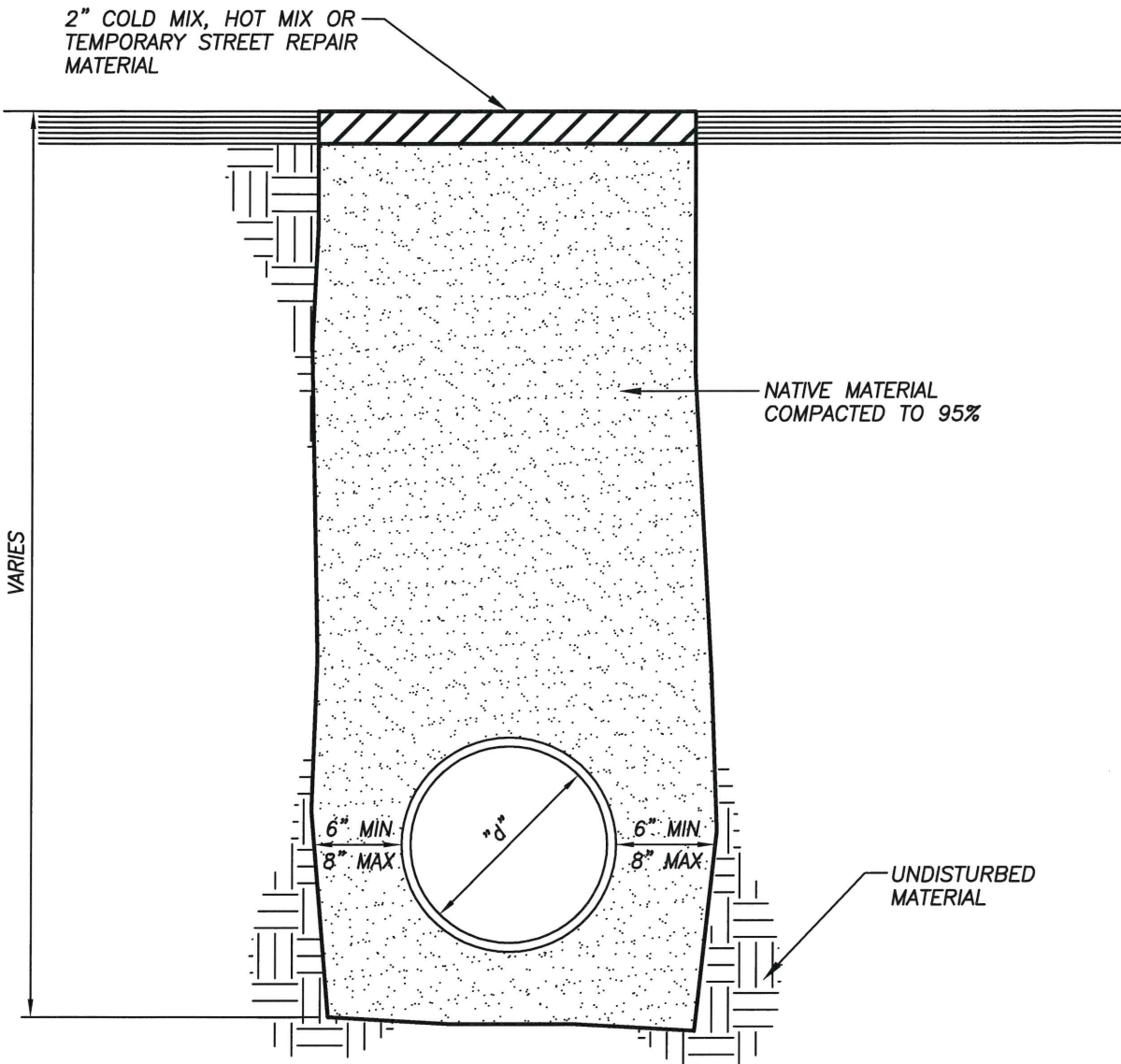
14-3 LIMITS OF CONSTRUCTION

Excavations made within the limits of the traveled way shall be backfilled before leaving the work site at the end of the work day. Under no circumstances will the Contractor be allowed to leave a trench open overnight unless otherwise specified by the Engineer.

All work of excavating and backfilling in a public street shall be performed as quickly as possible. Not more than 600 linear feet of trench shall be opened ahead of any pipeline or conduit installation taking place in a street or alley except upon written permission by the Engineer. However, trenches may be open for a distance of not more than 1,200 linear feet in areas where public traffic is not affected by the trenches.

14-4 TRENCH REPAVING



Immediately after the trench has been backfilled, all street crossings shall be surfaced with temporary surfacing of 1½ inches of coldmix, in accordance with Standard Drawings. Such surfacing shall remain in place and be maintained by the Contractor until the permanent surfacing is placed. Aggregate base rock shall be placed to a compacted thickness of not less than 6 inches. Permanent paving (5 inches minimum) shall be placed within 14 days of when the initial trench cut has been made. Time extensions may be authorized by the Engineer due to unforeseen conditions and/or inclement weather. The Contractor shall submit a written request for the extension to the Engineer prior to the elapsing of the 14 day period.



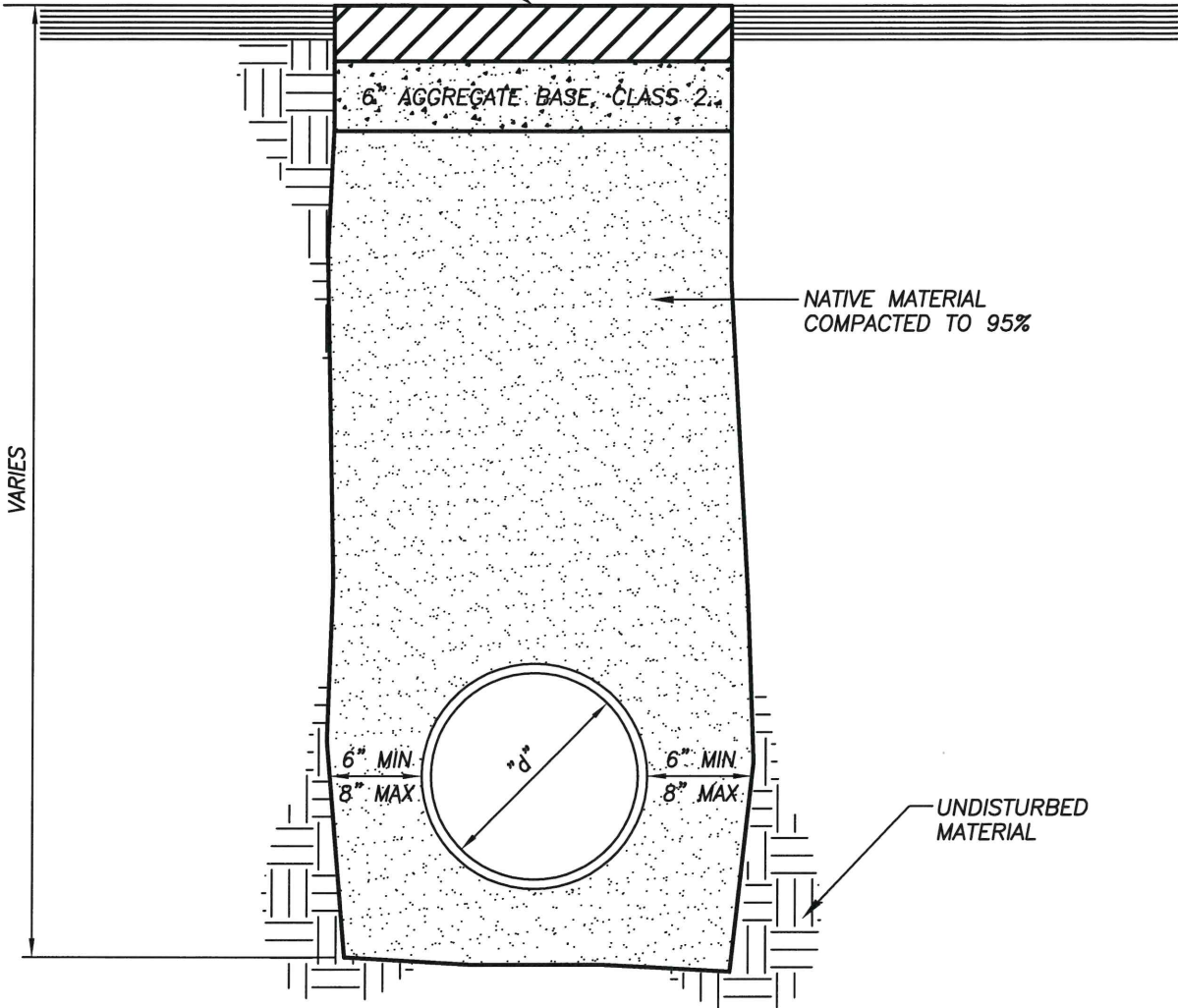
NOTES:

1. COMPACTION TESTS SHALL BE APPROVED BY THE CITY BEFORE PAVING.
2. TRENCHES 5 FEET OR MORE IN DEPTH SHALL BE SHORED.
3. MAXIMUM LIFT THICKNESS FOR BEDDING AND BACKFILL SHALL BE 12" BEFORE COMPACTION.
4. TRENCHES WHICH ARE LESS THAN 30" IN DEPTH OR LESS THAN 18" IN WIDTH SHALL BE BACKFILLED WITH TWO SACK CEMENT SLURRY.
5. ALL STEPS OF TRENCHING SHALL BE REPEATED WHEN REPAIRING A SECTION OF PIPE.

3 STEP TRENCH REPAIR ~ STEP 1

	DRAWN BY: JSH	CITY OF TURLOCK APPROVED BY:  INTERIM CITY ENGINEER - NATHAN B. BRAY - RCE 76642	DRAWING NO. T-1
	CHECK BY: NBB		COUNCIL APPROVAL FEB, 2019
	SCALE: NONE		


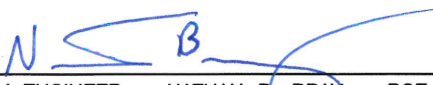
HOT MIX ASPHALT 1" GREATER THAN EXISTING A.C. BUT NOT LESS THAN 5", FINAL LIFT SHALL BE 3"

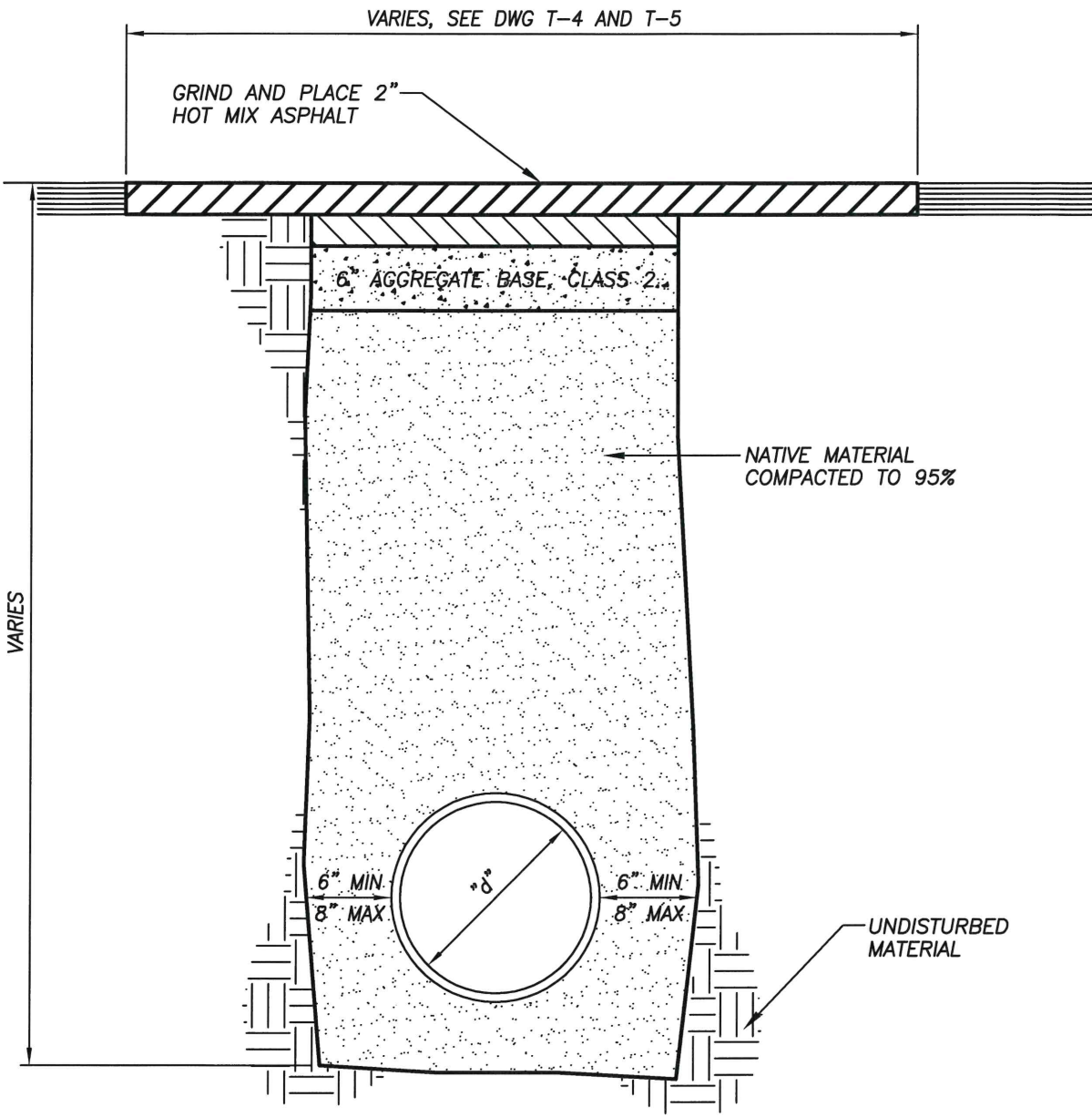


NOTES:

1. STEP 1 MAY BE OMITTED IF STEP 2 IS PERFORMED SAME DAY AS TRENCH EXCAVATION
2. COMPACTION TESTS SHALL BE APPROVED BY THE CITY BEFORE PAVING.
3. TRENCHES 5 FEET OR MORE IN DEPTH SHALL BE SHORED.
4. MAXIMUM LIFT THICKNESS FOR BEDDING AND BACKFILL SHALL BE 12" BEFORE COMPACTION.
5. TRENCHES WHICH ARE LESS THAN 30" IN DEPTH OR LESS THAN 18" IN WIDTH SHALL BE BACKFILLED WITH TWO SACK CEMENT SLURRY.
6. ALL STEPS OF TRENCHING SHALL BE REPEATED WHEN REPAIRING A SECTION OF PIPE.
7. HMA SHALL BE PG 64-10, TYPE A

3 STEP TRENCH REPAIR ~ STEP 2


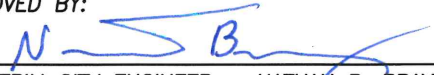
	DRAWN BY: JSH	CITY OF TURLOCK APPROVED BY:  INTERIM CITY ENGINEER - NATHAN B. BRAY - RCE 76642	DRAWING NO. T-2
	CHECK BY: NBB		COUNCIL APPROVAL FEB, 2019
	SCALE: NONE		

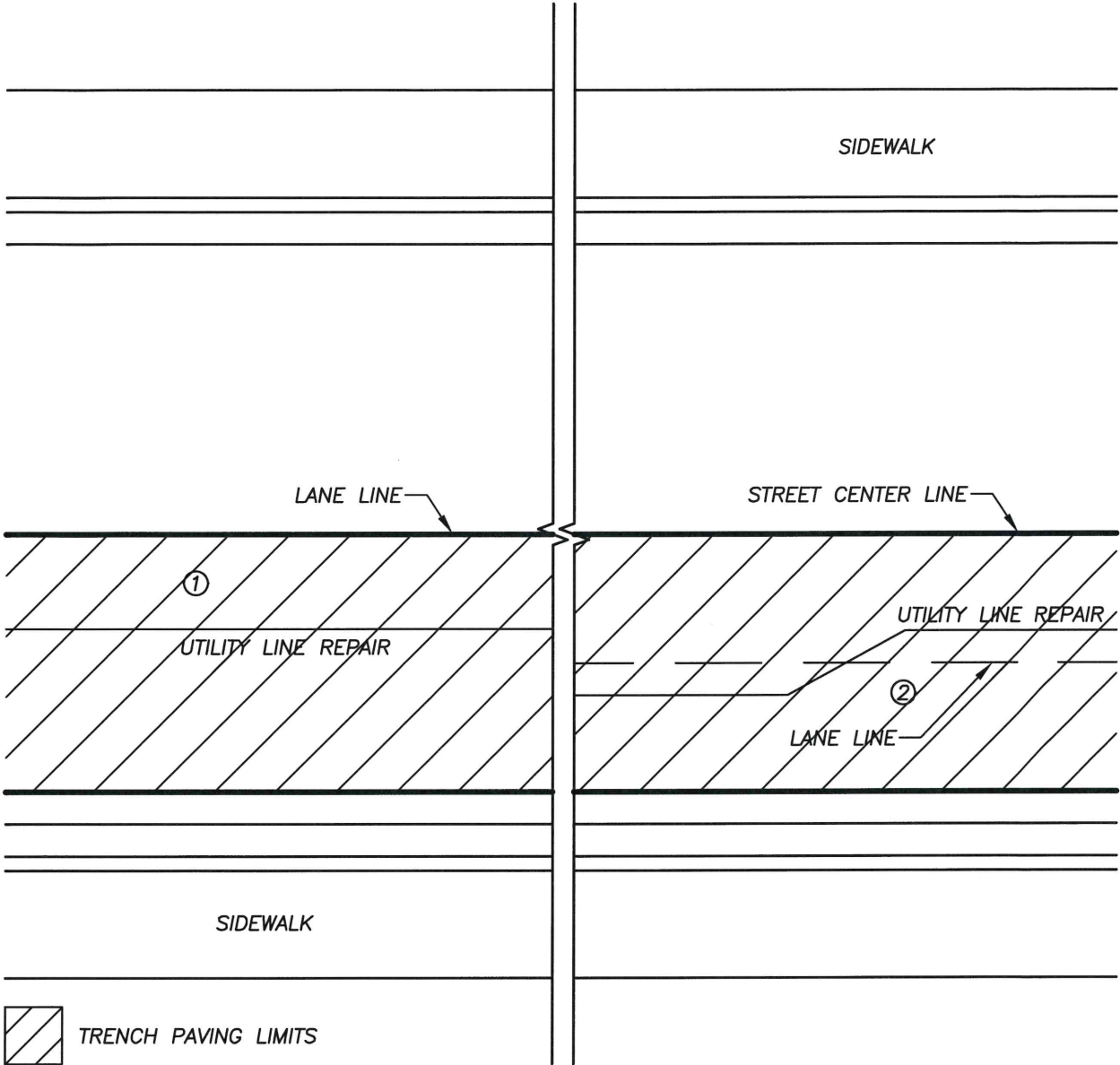


NOTES:

1. COMPACTION TESTS SHALL BE APPROVED BY THE CITY BEFORE PAVING.
2. TRENCHES 5 FEET OR MORE IN DEPTH SHALL BE SHORED.
3. MAXIMUM LIFT THICKNESS FOR BEDDING AND BACKFILL SHALL BE 12" BEFORE COMPACTION.
4. TRENCHES WHICH ARE LESS THAN 30" IN DEPTH OR LESS THAN 18" IN WIDTH SHALL BE BACKFILLED WITH TWO SACK CEMENT SLURRY.
5. ALL STEPS OF TRENCHING SHALL BE REPEATED WHEN REPAIRING A SECTION OF PIPE.

3 STEP TRENCH REPAIR ~ STEP 3


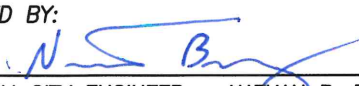
 <p>CITY OF TURLOCK INC. 1908</p>	DRAWN BY: JSH	<p>CITY OF TURLOCK</p> <p>APPROVED BY:</p>  <p>INTERIM CITY ENGINEER - NATHAN B. BRAY - RCE 76642</p>	DRAWING NO. T-3
	CHECK BY: NBB		COUNCIL APPROVAL
	SCALE: NONE		FEB, 2019

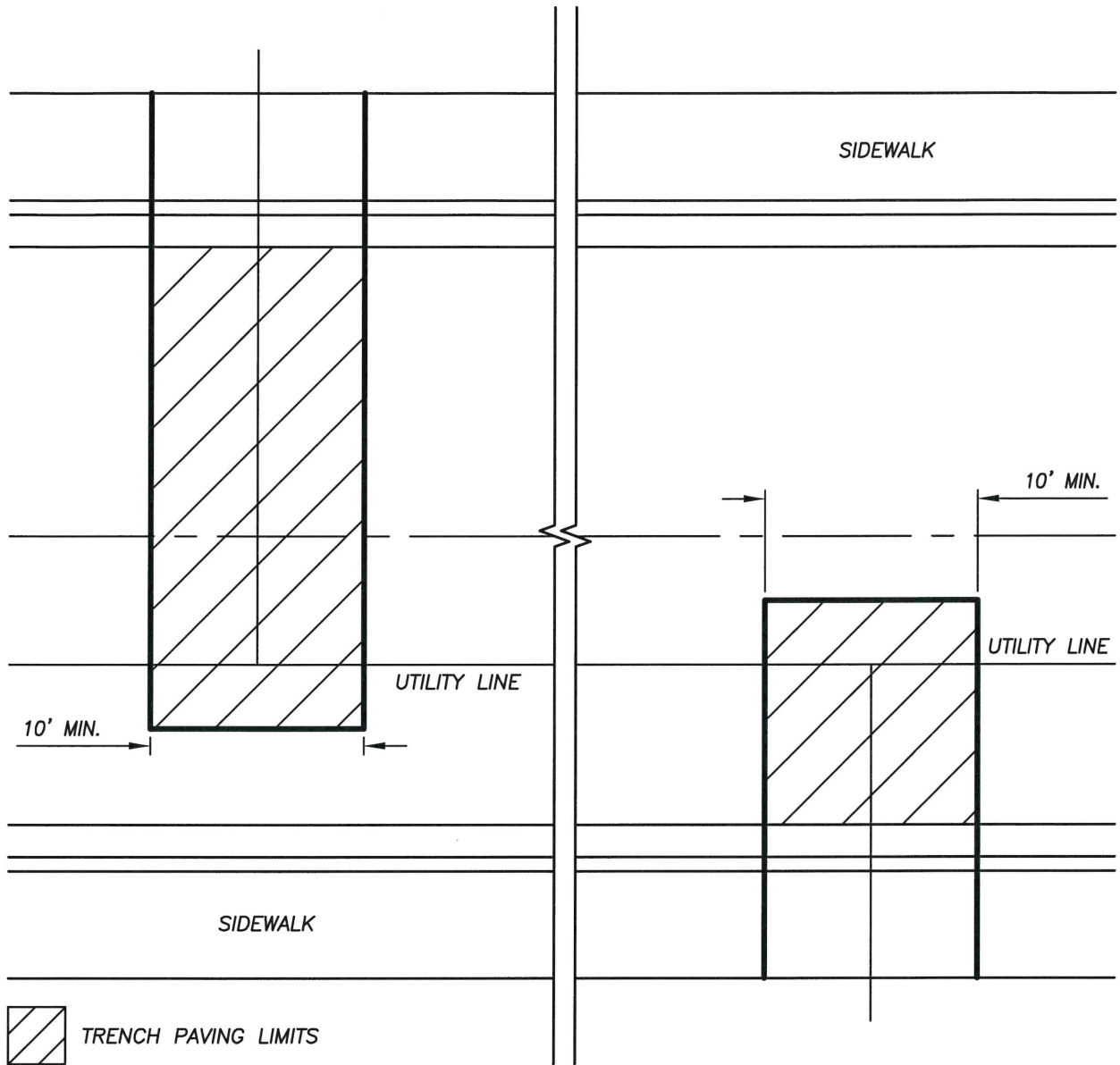


NOTES:

1. GRINDING AND FINAL PAVING WIDTH SHALL BE TO THE EXTENT OF AFFECTED LANE LINES, 12' MIN.
2. IF TRENCH CROSSES LANE LINES, GRINDING AND FINAL PAVING WIDTH SHALL BE TO THE EXTENT OF ALL AFFECTED LANE LINES FOR ENTIRE LENGTH OF TRENCH

LONGITUDINAL TRENCH PATCH LIMITS

	DRAWN BY: JSH	CITY OF TURLOCK APPROVED BY:  INTERIM CITY ENGINEER - NATHAN B. BRAY - RCE 76642	DRAWING NO. T-4
	CHECK BY: NBB		COUNCIL APPROVAL FEB, 2019
	SCALE: NONE		



NOTES:

1. GRINDING AND PAVING WIDTH SHALL BE 10' MIN.
2. ALL CUTS SHALL BE SQUARE AND PERPENDICULAR TO THE TRAVEL LANE

PERPENDICULAR TRENCH PATCH LIMITS



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

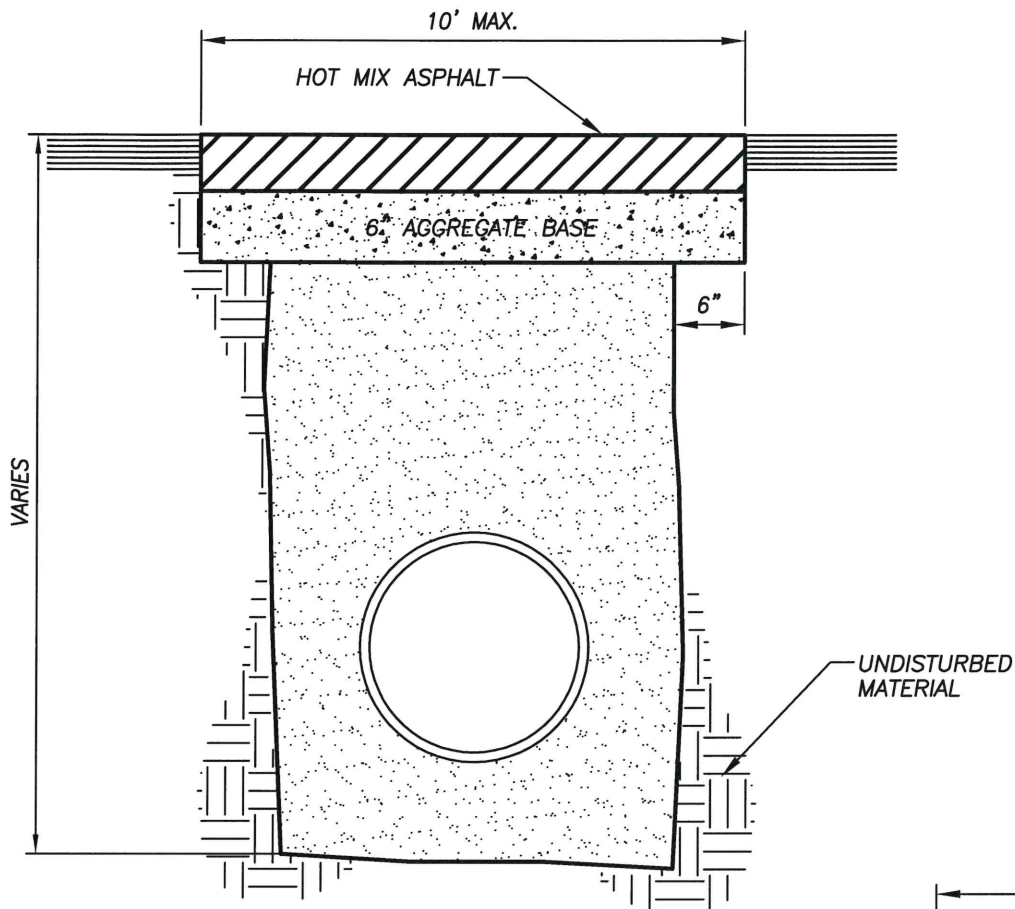
INTERIM CITY ENGINEER - NATHAN B. BRAY - RCE 76642

DRAWING NO.

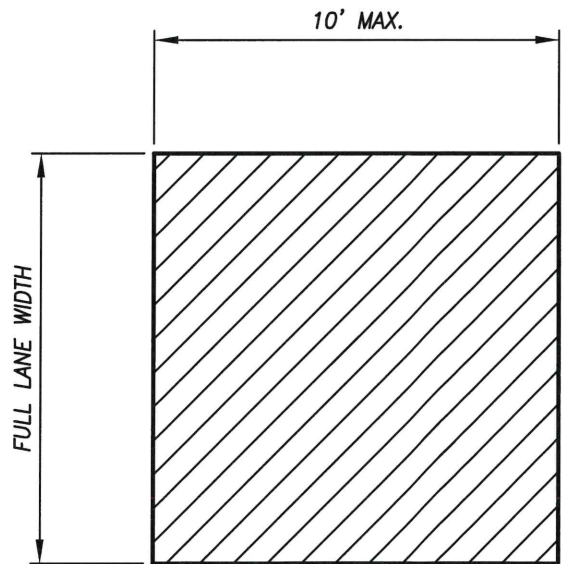
T-5

COUNCIL APPROVAL

FEB, 2019



PROFILE



PLAN

NOTES:

1. HMA SHALL BE 1" GREATER THAN EXISTING, 5" MIN.
2. LIFT THICKNESS SHALL BE 2" TO 3"
3. HMA SHALL BE PG 64-10, TYPE A
4. FINAL LIFT SHALL BE COMPACTED WITH A VIBRATORY ROLLER

BELL HOLE PATCH

CITY OF TURLOCK



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

APPROVED BY:

Nathan B. Bray
 INTERIM CITY ENGINEER - NATHAN B. BRAY - RCE 76642

DRAWING NO.

T-6

COUNCIL APPROVAL

FEB, 2019

15 WATER SYSTEMS

15-1 DESCRIPTION

This work shall consist of furnishing and installing pressure water pipes, valves, fittings, fire hydrants, backflow assemblies, meters, thrust blocks, service lines, and valve boxes in accordance with the Standard Plans and these Standard Specifications.

15-2 MATERIALS

All materials incorporated into the work shall conform to these Standard Specifications and the Standard Drawings. All pipe and plumbing fixtures shall comply with AB 1953. Any material proposed to be equal shall be submitted to the Engineer at least 15 working days prior to its proposed installation. The submittal shall include a sample of the material and complete data necessary for evaluation for equivalence.

15-3 POLYVINYL-CHLORIDE PIPE

PVC pipe shall conform to AWWA C900 or C905 for all pipes, except diameters larger than 12 inches shall be C905. All pipes shall be Class 150 or 200 for use in municipal water systems and fire protection lines. Rubber rings shall conform to manufacturer's recommendation. All mains shall include copper tracer wire, #12 in size. The tracer wire shall be connected to all valves and fittings as shown in the Standard Drawings.

15-4 GATE VALVES

Gate Valves shall meet or exceed the current AWWA Standard C509 and shall be resilient seat or wedge with non-rising stem. The following valves are approved for use by the City of Turlock: Mueller R/S, Clow R/W, Waterous Series 500 R/S, Kennedy Ken-Seal R/S, Stockham R/W, MandH R/S or American AVK R/S, American Flow Series 500. All valves shall be epoxy lined. Line valves shall be no more than 500 feet apart.

For 12 inch and larger, valves shall be butterfly valve. M & H 450 for 12 inch and M & H 4500 for 14 inch through 24 inch, or approved equal.

All integral working parts shall be in accordance with the current AWWA Specifications C509.

Valve ends shall be mechanical joint, flanged or a combination thereof in accordance with the current AWWA C509 unless otherwise specified.

When used in conjunction with a tapping sleeve, gate valves shall have a flange for attaching to the tapping sleeve. The tapping sleeve shall be Romac Series SST, all stainless steel or an approved equal. The outlet of the valve shall be provided with a mechanical joint compatible with a CL-12 Mueller Drilling Machine.

15-5 FITTINGS

Ductile iron fittings including tees, crosses, caps, etc. shall be flange, mechanical joint or a combination thereof. Mechanical joint couplings shall conform to ANSI A21.10 (AWWA C110). AWWA C153 (Compact Fittings) are an acceptable alternative. All couplings shall be cement mortar lined in accordance with AWWA C104, and shall be furnished with rubber ring seal joints designed to be used with Class 150 or 200 PVC Pipe, C900 or C905.

15-6 VALVE BOXES

Each valve shall be protected by the use of a valve box set to grade. The lid shall be marked "WATER". The valve box shall be installed in accordance with the Standard Drawings and these Standard Specifications.

15-7 BACKFLOW ASSEMBLIES

All backflow assemblies shall be purchased as factory pre-assembled units. Only those devices approved by U.S.C. Foundation for Cross-Connection Control are acceptable to the City. DC/DA must be a type designed for use in fire systems.

Locking Knox F.D.C. caps are required on new installations. Locking Knox F.D.C. caps may be required on existing F.D.C.'s by the Fire Chief. Two 2½ inch male plugs with swivel guards (all stainless steel) with a bright stainless finish, Knox part number 3041.

On ¾ inch through 2 inch backflow assemblies, all above ground riser pipe shall be galvanized steel. Also, a galvanized union shall be installed on both risers between the top of the riser pipe and the ground.

15-8 FIRE HYDRANTS

Fire hydrants shall conform to the requirements of the Standard Drawings. All hydrants shall be configured with one 4½ inch outlet and one 2½ inch outlet. The bury, valve, valve box, tee, thrust block, and piping shall be installed in accordance with the Standard Drawings, and these Standard Specifications. The hydrant bury shall be mechanical joint, or tyton joint. Fire hydrants shall be of a Rich #950, James Jones J-3740 or J-4040, Mueller A481F, Clow 850, or City approved equal. All Hydrants shall be Federal Safety Yellow in color.

15-9 THRUST BLOCKS

Thrust blocks shall be constructed in accordance with the details shown in the Standard Drawings. Concrete shall be minor concrete in accordance with Section 90 of Caltrans Specifications. Crosses shall be blocked in place and then cradled with concrete in lieu of a thrust block.

15-10 INTERRUPTION OF SERVICE

No valve, other control or existing system shall be operated for any purpose by the Contractor. The City or an authorized City representative will operate all valves, hydrants, blow-offs, and curb stops. City crews will notify customers when service will be interrupted.

15-11 SERVICE LINES

Service lines shall be installed in accordance with the Standard Drawings and these Standard Specifications. All services shall include tracer wire, #12 in size, and shall be connected to the main line tracer wire as well as to the corporation and curb stops. A letter "W" 3 inches in height shall be stamped on curb face over service line. Service line materials shall conform to the following requirements:

¾ Inch and 1 Inch Services

Ultra high molecular weight (UHMW) Polyethylene, SIDR-7 (IPS), 160 psi rating.

1½ Inch to 2 Inch Services

Ultra high molecular weight (UHMW) Polyethylene, SDR-9 (CTS), 160 psi rating.

4 Inch and Larger Services

Same material as mains.

15-12 CURB STOP FOR ¾ INCH AND 1 INCH WATER SERV. WITH METER BOX

For ¾ inch water services, the curb stop shall be as outlined in the Standard Drawings. For a 1 inch water service the curb stop shall be as outlined in the Standard Drawings. The meter box shall be a Christy B-16. Lids shall be Christy FL16D unless otherwise specified.

15-13 CORP. STOP FOR ¾ INCH AND 1 INCH WATER SERVICE

For a ¾ inch and 1 inch water service, the corp. stop shall be as outlined in the Standard Drawings.

15-14 CURB STOP FOR 1½ INCH AND 2 INCH WATER SERV. WITH BOX

For 1½ inch and 2 inch water services the curb stop shall be as outlined in the Standard Drawings. The meter box shall be a Christy B-36 with a Christy FL36D lid.

15-15 CORP. STOP FOR 1½ INCH AND 2 INCH WATER SERVICE

For 1½ inch and 2 inch water services, the corp. stop shall be as outlined in the Standard Drawings.

15-16 METER BOX AND LID

Meter boxes shall be reinforced concrete and meter box lids shall be non-reinforced polymer concrete. Traffic rated lids shall not be metal or contain metallic reinforcement. Meter boxes shall be sufficiently large to allow for a minimum of 4 inches at extreme ends of the meter and strainer assembly and the same clearance on sides. All boxes located in traffic areas must be approved by the Engineer prior to installation.

15-17 WATER METERS

Water meters shall be installed on all new construction or when required by the Turlock Municipal Code or in special circumstances as specified by the Engineer. The meters, for ¾ inch through 2 inch water services, shall have a bronze main case. Turbine meters may be used only by permission of the Engineer.

All registers must be hermetically sealed, shall be in US Gallons and should be magnetically coupled. Meter Strainers shall be used in conjunction with all meters 3 inches and larger, and on all turbine meters 2 inches and larger.

All meters approved for use in the City of Turlock must be straight-reading and meet the current AWWA C700 standards for cold water meters. All meters shall utilize positive displacement technology and incorporate absolute encoders (AMCO C700 or approved equal). The meter shall have a resolution of 10 gallons or less.

Each meter shall be accompanied by an ITRON 200W P single read endpoint. Each ITRON shall be supported with a ½ inch PVC pipe inserted into the native soil a minimum of 6 inches as to support the end. In addition, the following requirements must be met:

All services must be installed with a private gate valve on the downstream side of the meter, or meter idler, for customer use. For ¾ inch and 1 inch services, the private gate valve shall be a Straight Compression Globe Meter Valve by Ford, Catalog Number SG13-332, and SG13-444, respectively. For 1½ inch and 2 inch services, the private gate valve shall be a Red and White gate valve, Catalog Number 206 or approved equal.

On ¾ inch meters, straight ¾ inch meters shall be installed and not ¾ inch by inch.

All ¾ inch thru 2 inch displacement type meters shall meet current AWWA C700 standards.

All 2 inch thru 8 inch turbine type meters shall meet current AWWA C701 standards.

All 2 inch thru 8 inch compound type meters shall meet current AWWA C702 standards plus the bypass meter must be removable without disruption of the main water flow.

Fire Line shall be Rockwell, Neptune Protectus II or approved equal.

15-18 REPAIR OF WATER SERVICES AND WATER MAINS

When increasing or decreasing line size, such as connecting to existing water mains; a mechanical joint by mechanical joint ductile iron reducer shall be used. Repairs must be made by using Ford or Jones Pac-joint type couplings or an approved equal. The milled end of C900 pipe shall be removed when connecting to a mechanical joint fitting.

15-19 CONNECTIONS TO AND TAPPING OF EXISTING MAINS

All tapping or connection to existing mains shall be done by the City. The City will furnish, if desired, and install all necessary parts and valves. It shall be the Contractor's responsibility to contact the Engineer at least ten days before any proposed tapping or connection to an existing main. The Contractor shall provide a deposit with the City to cover the cost of the City's work.

All connections to city water mains larger than 2 inches, for new subdivisions or for other new main line installation, will be required to have a temporary tap through an approved double-check back flow assembly, to be furnished and installed at the time of connection by the City. After the new main line has been tested and disinfected to the satisfaction of the Engineer, the City will remove the temporary double-check back flow device, and make the permanent tie-in. The Contractor will be responsible for contacting U.S.A., excavation and back fill for the tie-in, and all traffic safety.

15-20 JACKING

Any jacking, boring, pushing, or other operations proposed to install water system facilities without open cut excavation shall require approval of the Engineer.

15-21 PIPE LAYING

Unless otherwise specified by the Engineer, all pipes shall be laid with the bells facing the direction of laying and shall be laid in accurate conformity with the prescribed lines and grades. Each length shall be jointed to the preceding section as hereinafter specified; and after said jointing procedure has commenced, there shall be no movement of the pipe whatsoever in subsequent operations. Each pipe shall have a firm bearing for its full length in the trench, except at bell holes and field joints. Only approved lubricants shall be used as an aid to mating bells and spigots. The reference line on the spigot end should be flush with the end of the bell. Whenever necessary to deflect the pipe from a straight line either in the vertical or horizontal plane to avoid obstructions, or where long radius curves are permitted, the degree of deflection at joints shall be approved by the Engineer. The deflection shall be accomplished by using short C900 pieces and compatible C900 repair couplings with stop or using offsets as shown in the Standard Drawings.

When the pipe is laid, it shall be as free as possible of all foreign matter. If, in the opinion of the Engineer, the pipe contains dirt that will not be removed during the flushing operation, the interior of the pipe shall be cleaned and swabbed, as necessary, with an antibacterial solution as approved by the Engineer.

Every precaution shall be taken to protect the pipe against the entrance of foreign material before the pipe is placed in the trench. At the close of the day's operations, or whenever workmen are absent from the job

site, the last section of pipe shall be plugged, capped or otherwise tightly closed to prevent the entry of foreign matter of any nature.

All trenches shall be of sufficient depth to provide a minimum cover of 36 inches, measured from the top of the pipe to the finish grade. Greater depths of cover shall be provided when so shown on the plans or directed by the Engineer. All mains with less than 36 inches of cover shall be ductile iron or pressure Class 200, C900 with approval of Engineer.

15-22 CHLORINATION AND ISOLATION OF NEW MAINS

All new water and fire lines shall be completely isolated from any existing main until it has been tested and disinfected to the satisfaction of the Engineer. Nothing in this standard shall preclude the City of Turlock from requiring additional testing or disinfection techniques as determined by the Engineer.

The Contractor shall chlorinate the proposed water line in accordance with the provisions in current AWWA Standard C601. However, the tablet method will not be allowed where water or foreign material has entered the pipe or when the first test has failed.

A sufficient amount of chlorine shall be introduced into the main so as to obtain at least 50 ppm of chlorine in all parts of the system being tested, when the line is filled with water. Prior to flushing, a residual test shall be taken at locations as specified by the Engineer. The residual shall have a minimum 10 ppm of chlorine.

The City will collect all water samples to conduct bacteriological tests on new main line installation. All main line installation must pass the bacteriologic test performed by the City of Turlock before the new main line is accepted and introduced to the utility system. The first test will be provided by the city at no charge to the Contractor. In the event that the water samples do not pass the first time, the Contractor will be required to pay for any and all follow-up bacteriological tests. No independent water samples will be accepted in lieu of the City's bacteriological testing. However, any additional tests required will be charged to the Contractor.

New mains may be filled from existing mains only by a temporary tap and through an approved double-check backflow assembly. If additional piping is needed before the double-check assembly the contractor will be responsible for disinfecting that piping and passing a bacteriological test. At the end of the contact period, the mains shall be flushed to the satisfaction of the Engineer. All flushing water shall be de-chlorinated and discharged into the storm drainage system or other approved location. Under no circumstances will the Contractor be allowed to discharge the flushing water into the sanitary sewer system. Under no circumstances will water be allowed to accumulate on public right-of-way or easements, or in any manner, as to create a potential hazard to existing public improvements or any that are under construction.

15-23 DISINFECTING - TABLET

If this method is utilized to disinfect the mains at least 72 hours shall be allowed for the tablets to fully dissolve before a sample is taken. The number of tablets and their placement shall be as directed by the Engineer. The Contractor shall fill the mains slowly to insure that the tablets stay in place.

15-24 DISINFECTING - LIQUID

This method will be utilized when the Contractor is required to re-chlorinate the mains. When this method is used on a main, disinfectant is introduced into the line until a residual is detected at all services and blow-offs.

Under no circumstances will gaseous chlorine be allowed to be used for this test method.

15-25 LEAKAGE TEST

All water mains, service, fittings, and all appurtenances shall be subject to a hydrostatic pressure test and a water loss hydrostatic test. Tests on all mains and services shall be performed and accepted only in the presence of the Engineer.

Hydrostatic Pressure Test

The Hydrostatic Pressure Test shall consist of maintaining a test pressure of 50 psi for a period of one hour. Any pressure drops will be recorded. Upon successfully completing the 50 psi Hydrostatic Pressure Test, the pressure shall be dropped to 0 psi and then increased to 200 psi and maintained at said 200 psi for a period of two hours. The test pressure shall not be allowed to drop more than 10 psi over the two hour test period.

Water Loss Hydrostatic Test

If a pressure drop occurs in the Hydrostatic Pressure Test, the pressure will then be raised to 50 psi by pumping and the quantity of water pumped into the line accurately measured. The amount of allowable water loss shall be calculated on the basis of 15 gallons per inch of diameter per mile of length per 24 hours. If the water loss test fails, the Contractor will be required to find the leak, make all necessary repairs, and repeat the test until a satisfactory test is achieved. The Contractor shall furnish, install, and remove all apparatus necessary for performing the above mentioned tests. The cost of performing said tests shall be borne by the Contractor.

15-26 FIRE LINES

Fire lines installed for the purpose of on-site fire hydrants or fire sprinkler systems shall be fitted with an approved double check detector assembly with F.D.C. installed in the Public Utility Easement whenever possible. This installation shall conform to the requirements shown in the Standard Drawings. There will be no taps allowed off of a fire line without the approval of the Engineer.

15-27 CROSS-CONNECTION CONTROL AND BACKFLOW PREVENTION

These shall be provided by the developers when in the opinion of the Engineer, a cross-connection or a potential health hazard exists. Protection of the City's water system from these conditions shall be provided by a backflow prevention assembly approved by the Engineer. The type required and its installation shall conform to the "Manual of Cross-Connection Control and Hydraulic Research", by the University of Southern California. Information regarding the above may be obtained from the City.

15-28 USE OF HYDRANTS FOR CONSTRUCTION PURPOSES

Use of hydrants for any purpose is strictly prohibited unless prior permission has been obtained from the City. All use of construction water requires a permit be obtained and fees paid. A water meter will be installed for use charges. All vehicles obtaining water shall be fitted with an air-gap type filler. Hydrants are to be operated using a hydrant spanner wrench only.

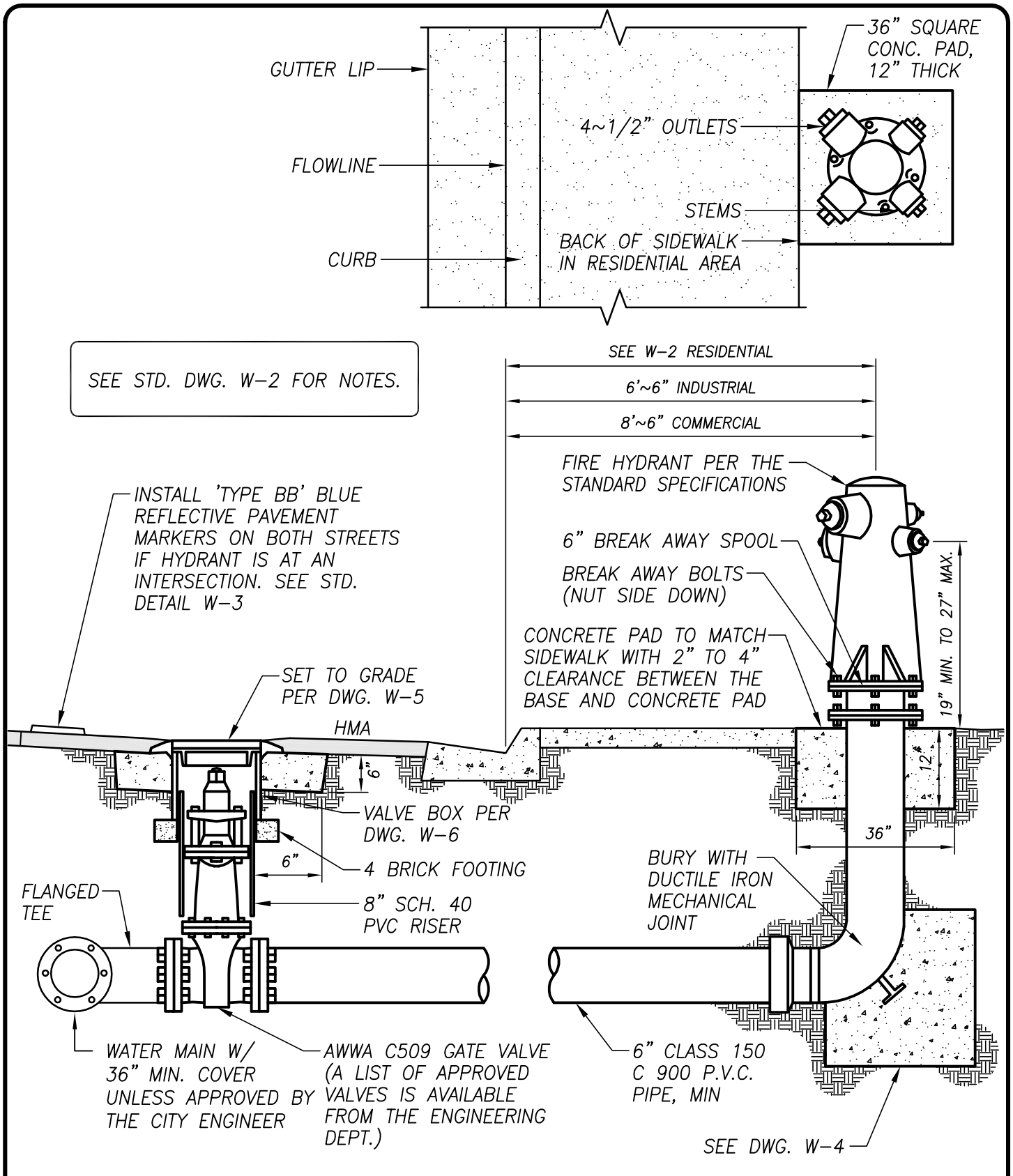
Only under special conditions deemed beneficial by the City shall a direct discharge from the 4½ inch hydrant port be allowed. This use shall only be allowed under the direct supervision of the Municipal Services Department. All construction water will be metered and charged at a metered rate.

15-29 WELL DESTRUCTION

To insure the proper closure of private residential wells and to protect the City's water resources, the City of Turlock will close all such private residential wells. The private residential well closure service is free of charge. To request a well closure, contact Municipal Services Department.

15-30 BACKFLOW THERMAL PROTECTION

Approved polar blankets and approved enclosures shall be provided by the Contractor on all backflow devices 2 inches in diameter and smaller. Approved polar blankets shall be provided by the Contractor and are required for backflow devices larger than 2 inches in diameter. Polar blankets shall not be required for DCDA devices.



FIRE HYDRANT ASSEMBLY

CITY OF TURLOCK



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

APPROVED BY:

CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

W-1

COUNCIL APPROVAL

DEC, 2015

NOTES:

1. IN INDUSTRIAL AREAS, FIRE HYDRANTS SHALL BE LOCATED SIX FEET – SIX INCHES BEHIND FLOW LINE. WHERE PARKWAYS ARE EXISTING OR PROPOSED, HYDRANT SHALL BE 24 INCHES BEHIND FLOW LINE.
2. IN COMMERCIAL AREAS, WHERE 8 FEET TO 10 FEET OF SIDEWALK ARE EXISTING OR PROPOSED, FIRE HYDRANTS SHALL BE LOCATED EIGHT FEET – SIX INCHES BEHIND FLOW LINE. AT EXISTING OR PROPOSED FIVE FEET OR SIX FEET OF SIDEWALK SEE NOTE 1.
3. FIRE HYDRANTS SHALL BE LOCATED
 - A. AT STREET CORNERS WHENEVER POSSIBLE
 - B. IN RESIDENTIAL ZONED AREAS, NO MORE THAN 500 FEET APART AND NO MORE THAN 300 FEET FROM DEAD-END STREETS.
 - C. FOR ALL OTHER ZONES:
 1. NO MORE THAN 300 FEET APART AND NO MORE THAN 300 FEET FROM DEAD-END STREETS.
 2. IF ON-SITE HYDRANTS OR APPROVED FIRE SPRINKLER SYSTEMS ARE INSTALLED, (AS APPROVED BY THE FIRE DEPARTMENT), THE SPACING SHALL BE NO MORE THAN 500 FEET APART AND NO MORE THAN 250 FEET FROM DEAD-END STREETS.
 - D. OTHER LOCATIONS DEEMED NECESSARY BY THE CITY ENGINEER TO PROVIDE ADEQUATE FIRE PROTECTION TO THE PROPERTY.
 - E. ON ARTERIAL, EXPRESSWAY OR DIVIDED COLLECTOR STREETS, AS DESIGNATED IN THE GENERAL PLAN, SPECIFIC AND MASTER PLANS, THE HYDRANT SPACING SHALL BE APPLICABLE TO EACH SIDE OF THE STREETS.
 - F. MINIMUM 36” CLEARANCE AROUND ALL FIRE HYDRANTS TO INCLUDE ALL DRIVEWAYS.

FIRE HYDRANT LOCATIONS



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

CITY ENGINEER – MICHAEL G. PITCOCK – RCE 52694

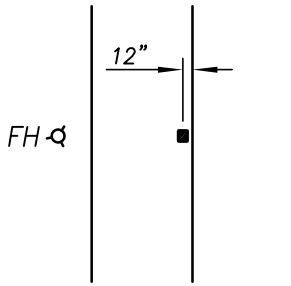
DRAWING NO.

W-2

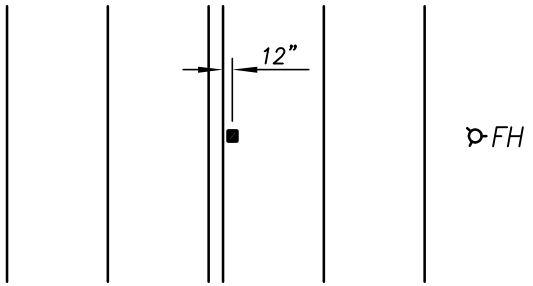
COUNCIL APPROVAL

DEC, 2015

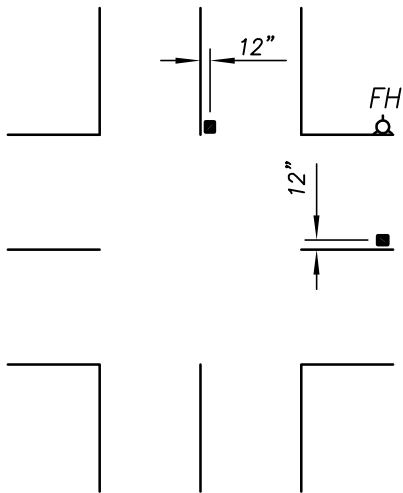
TWO LANE STREET



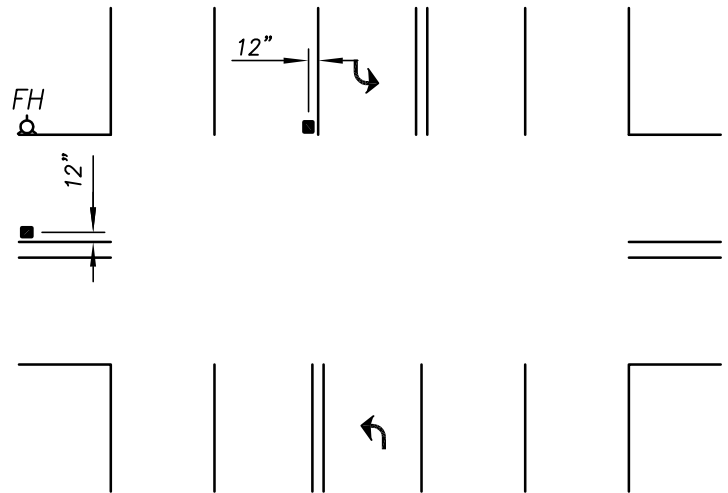
MULTI LANE STREET



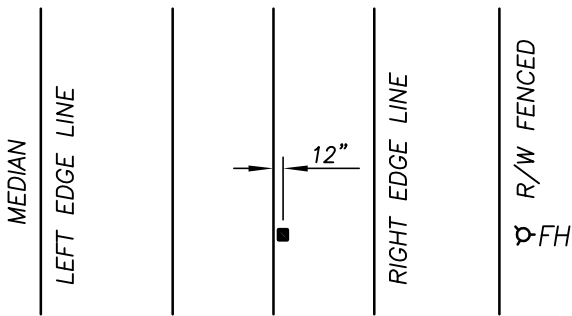
TWO LANE STREET AT INTERSECTION



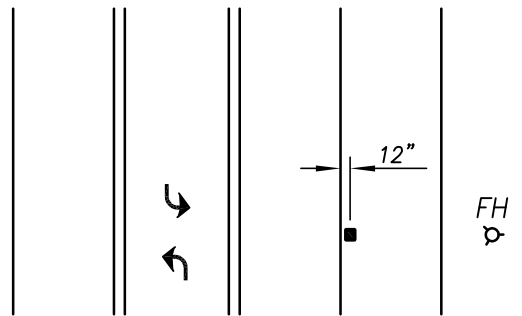
FOUR LANE STREET WITH TURN LANE AT INTERSECTION



EXPRESSWAYS



MULTI-LANE STREET WITH TURN LANE



LEGEND

- FH ◊ FIRE HYDRANT
- BLUE PAVEMENT MARKER (TYPE BB)

FIRE HYDRANT PAVEMENT MARKER LOCATION



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

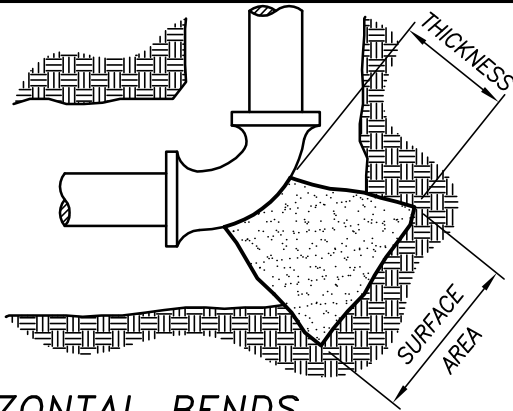
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

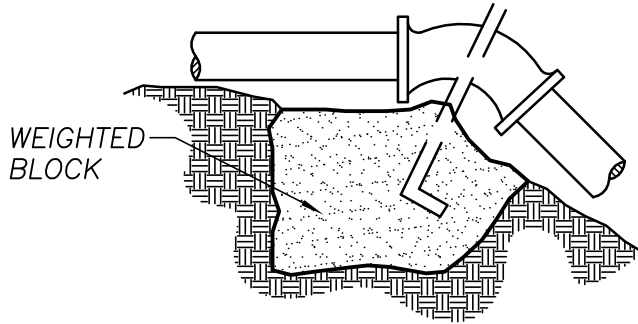
W-3

COUNCIL APPROVAL

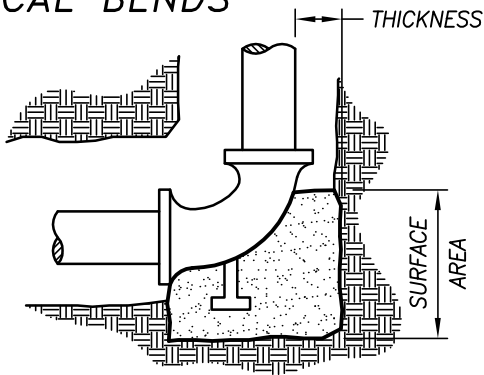
DEC, 2015



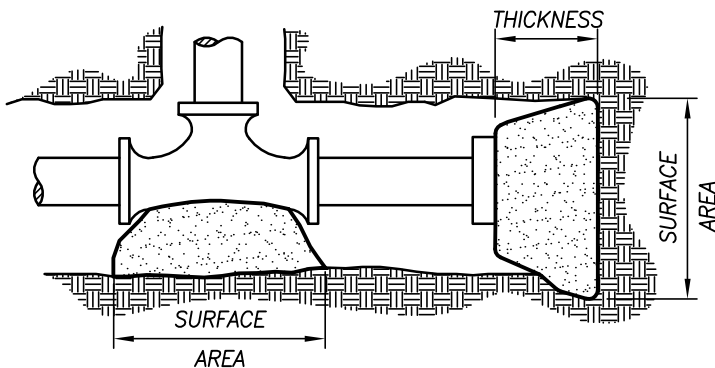
HORIZONTAL BENDS



VERTICAL BENDS



HYDRANT BURYS



TEES & DEAD-ENDS

THRUST BLOCK SIZE

PIPE DIAMETER (INCHES)	HORIZONTAL BEND		WEIGHT AT VERTICAL BENDS (LBS.)
	SURFACE AREA (S.F.)	THICKNESS (INCHES)	
22° BENDS			
6 OR LESS	2	8	1,700
8	3	12	3,000
10	3.5	12	4,600
12	4	14	6,600
14	5	18	9,000
16	6	18	11,800
45° BENDS			
6 OR LESS	4	12	3,200
8	5	14	5,800
10	6	18	9,000
12	7	18	13,000
14	8	24	17,000
16	11.5	24	23,200
90° BENDS			
6 OR LESS	6	12	6,000
8	8	15	10,700
10	10	18	16,700
12	12	18	24,000
14	18	24	32,600
16	21	24	42,700
TEES & DEAD-ENDS			
6 OR LESS	3	12	—
8	4	15	—
10	6	18	—
12	8.5	18	—
14	11.5	24	—
16	16	24	—

NOTES:

- ALL MECHANICAL FITTINGS AND VALVES SHALL BE WRAPPED IN PLASTIC AND PROTECTED FROM CONCRETE.
- THE CITY ENGINEER WILL CONSIDER REDUCTION OF THRUST BLOCK SURFACE AREA UPON SUBMITTAL OF APPROVED SOIL RESISTANT TEST RESULTS GREATER THAN 2,000 LBS/SQ. FT.
- IF LINES CONFLICT WITH CONC. KICKER, THEN GRIP RINGS ONLY SHALL BE USED. IN OTHER SITUATIONS, GRIP RINGS MAY BE UTILIZED AT THE DISCRETION OF THE CITY ENGINEER.

THRUST BLOCKS



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

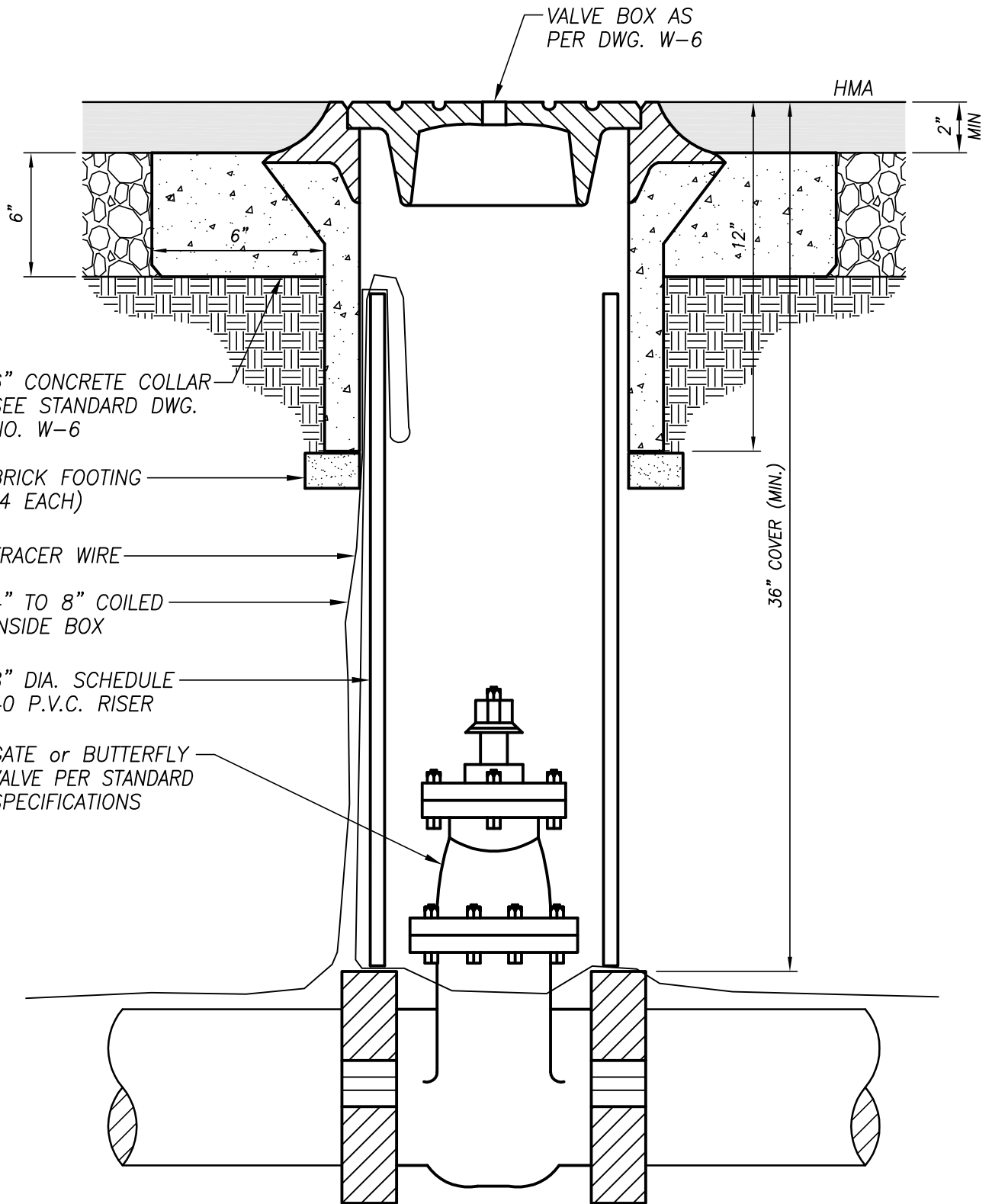
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

W-4

COUNCIL APPROVAL

DEC, 2015



LINE VALVE

CITY OF TURLOCK



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

APPROVED BY:

M. Pitcock

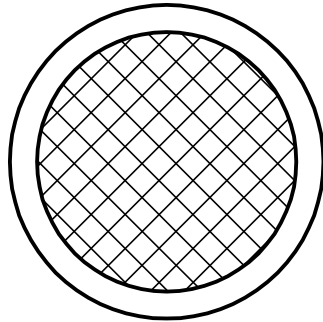
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

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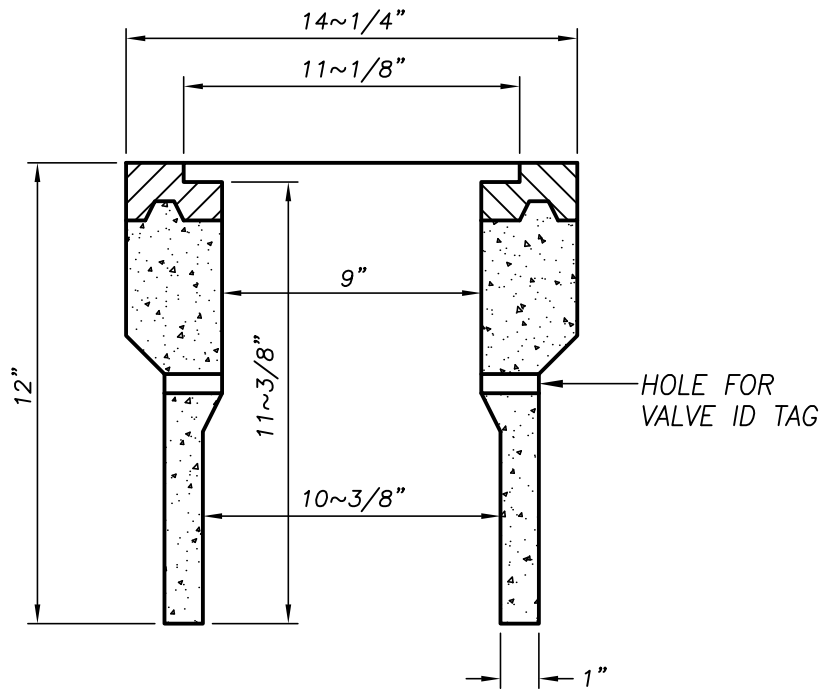
W-5

COUNCIL APPROVAL

DEC, 2015



CHRISTY NO. C276 CAST IRON TRAFFIC COVER MARKED "WATER", SET TO FINISH GRADE



CHRISTY NO. G-5 BODY

WATER VALVE BOX

CITY OF TURLOCK

DRAWING NO.

W-6



DRAWN BY: JSH

CHECK BY: NBB

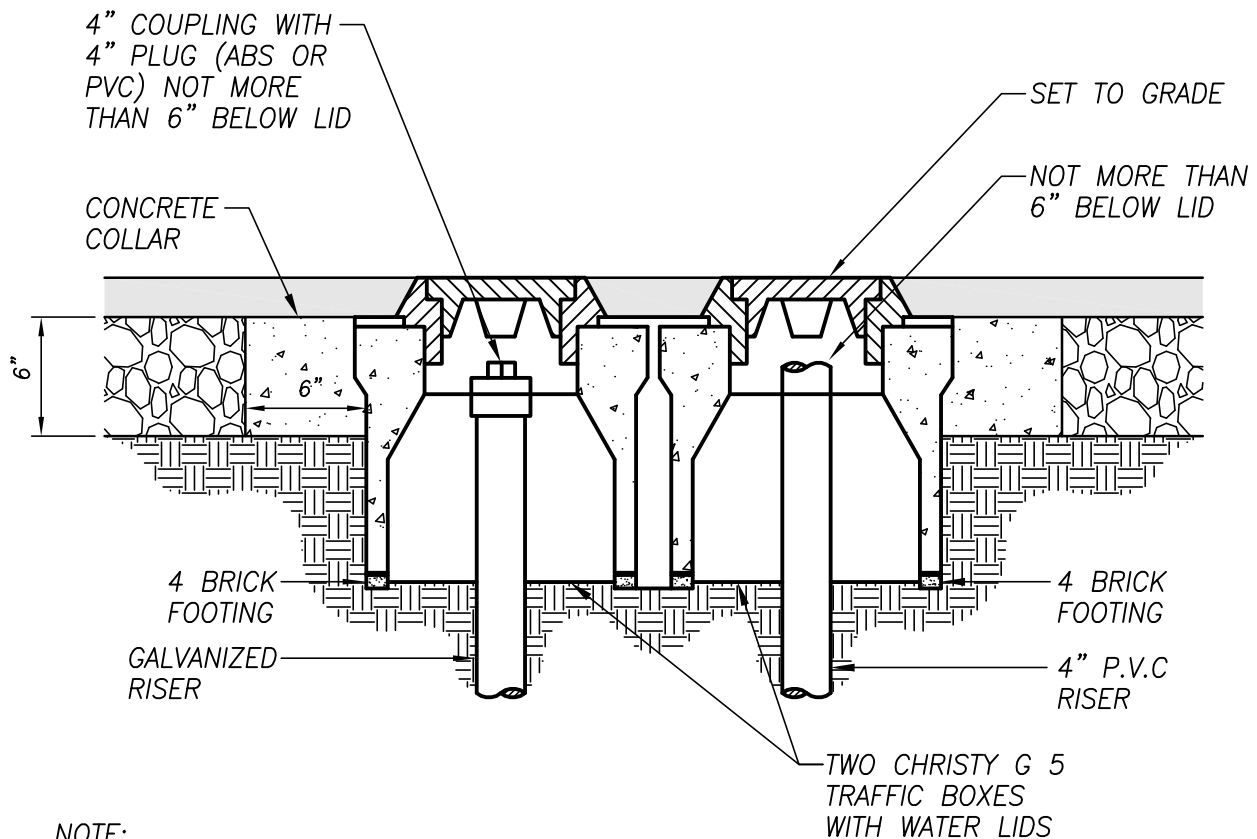
SCALE: NONE

APPROVED BY:

CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

COUNCIL APPROVAL

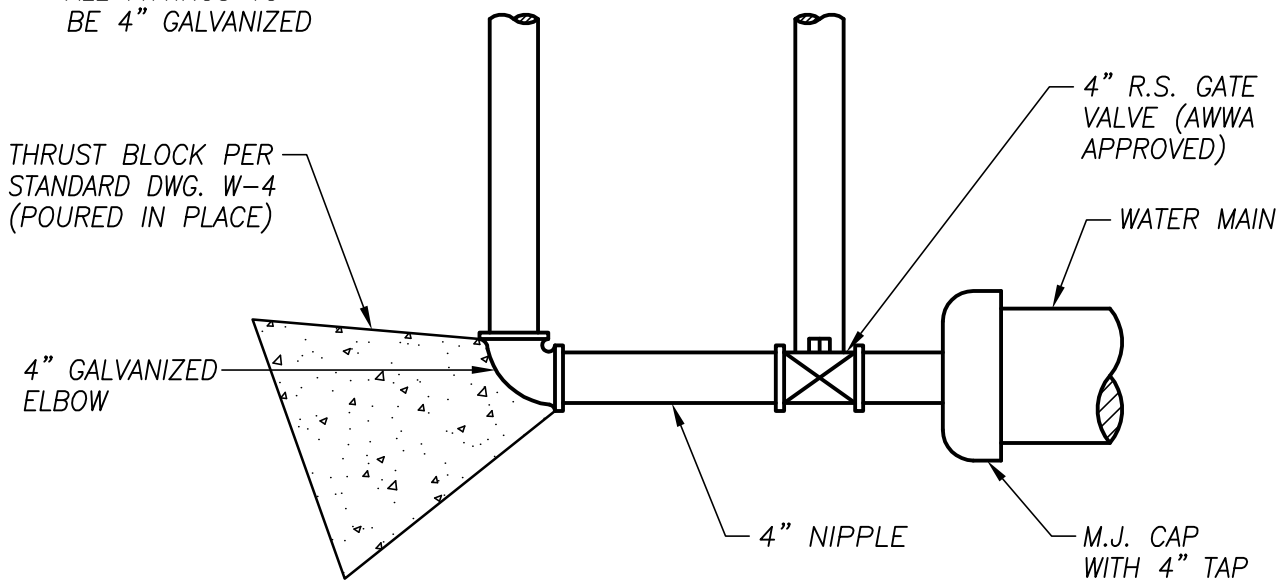
DEC, 2015



NOTE:

ALL FITTINGS TO BE 4" GALVANIZED

THRUST BLOCK PER STANDARD DWG. W-4 (POURED IN PLACE)



4" WATER BLOW-OFF

CITY OF TURLOCK



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

APPROVED BY:

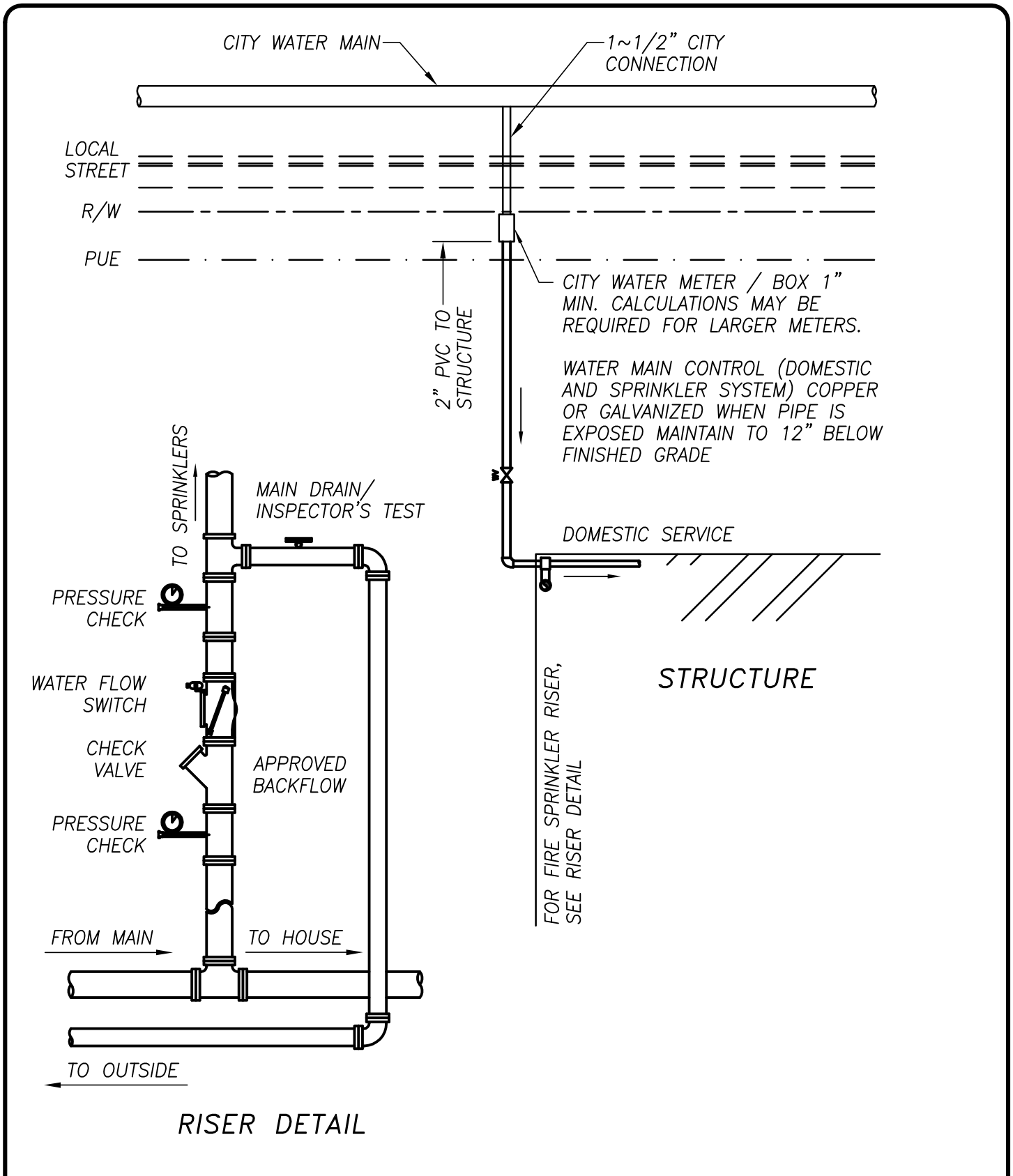
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

W-7

COUNCIL APPROVAL

DEC, 2015



FIRE SPRINKLER SUPPLY FOR SINGLE OR TWO FAMILY DWELLING



DRAWN BY: JSH
 CHECK BY: NBB
 SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

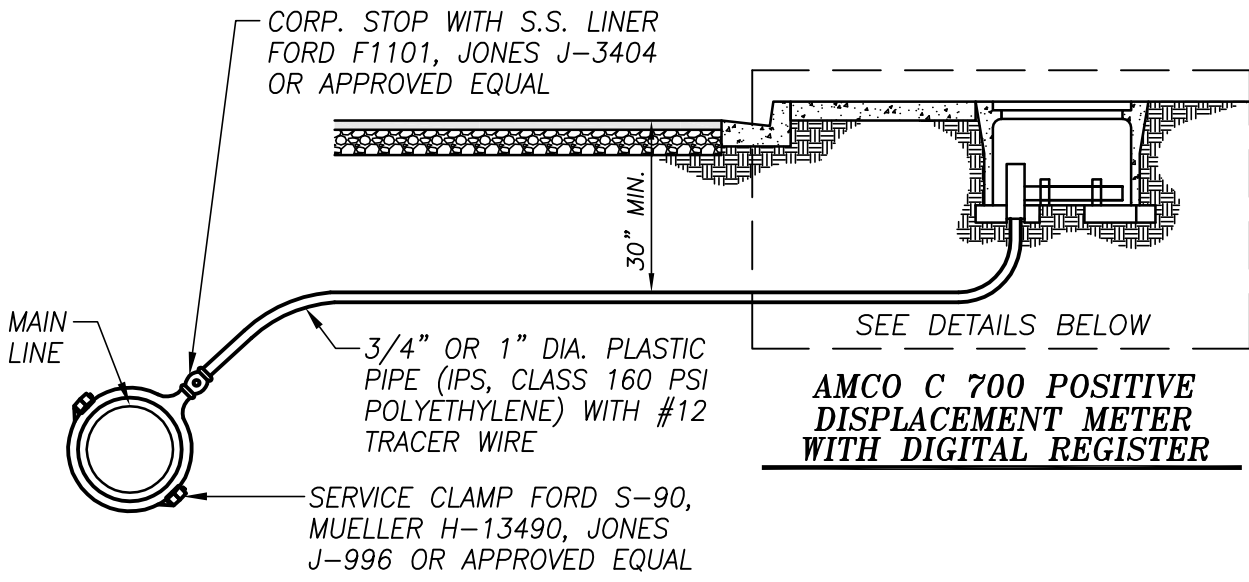
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

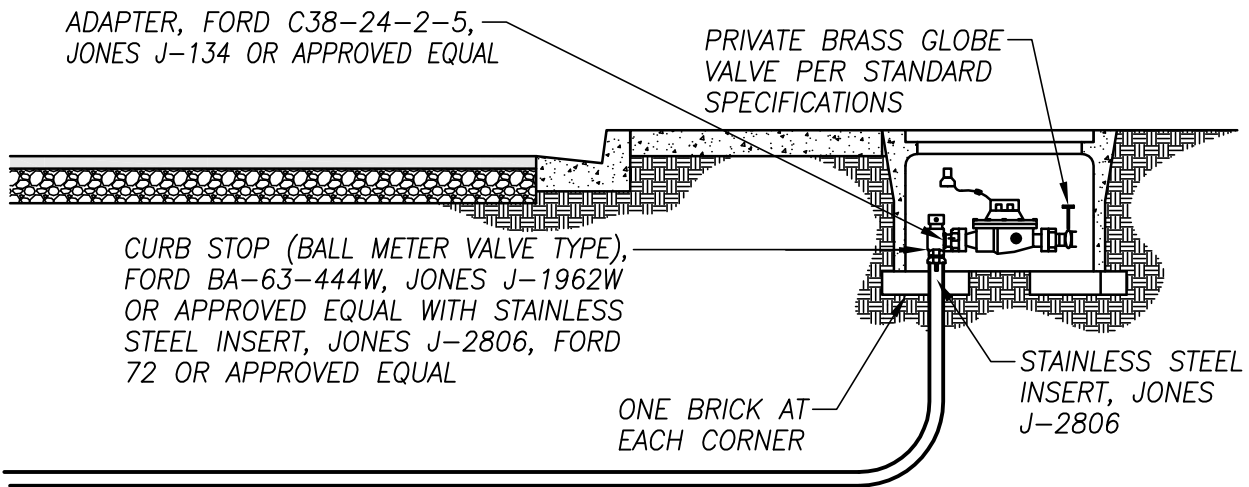
W-8

COUNCIL APPROVAL

DEC, 2015



AMCO C 700 POSITIVE DISPLACEMENT METER WITH DIGITAL REGISTER



NOTES:

1. ALL BOX COVERS SHALL BE SET TO GRADE AND SHALL NOT BE SITUATED IN DRIVEWAYS.
2. METER STOP SHALL VARY BETWEEN 6" AND 10" FROM BOTTOM OF LID.
3. POLYETHYLENE PLASTIC OR PLOYMER CONCRETE VALVE BOX AND LID SHALL BE USED.
4. A "W", 3" HIGH, SHALL BE STAMPED OR CHISELED ON THE CURB FACE OVER SERVICE LINES.
5. PLACE A #12 TRACER WIRE IN THE SERVICE TRENCH TO MAKE CONDUCTIVE CONTACT WITH THE CORPORATION AND CURB (METER) STOP.

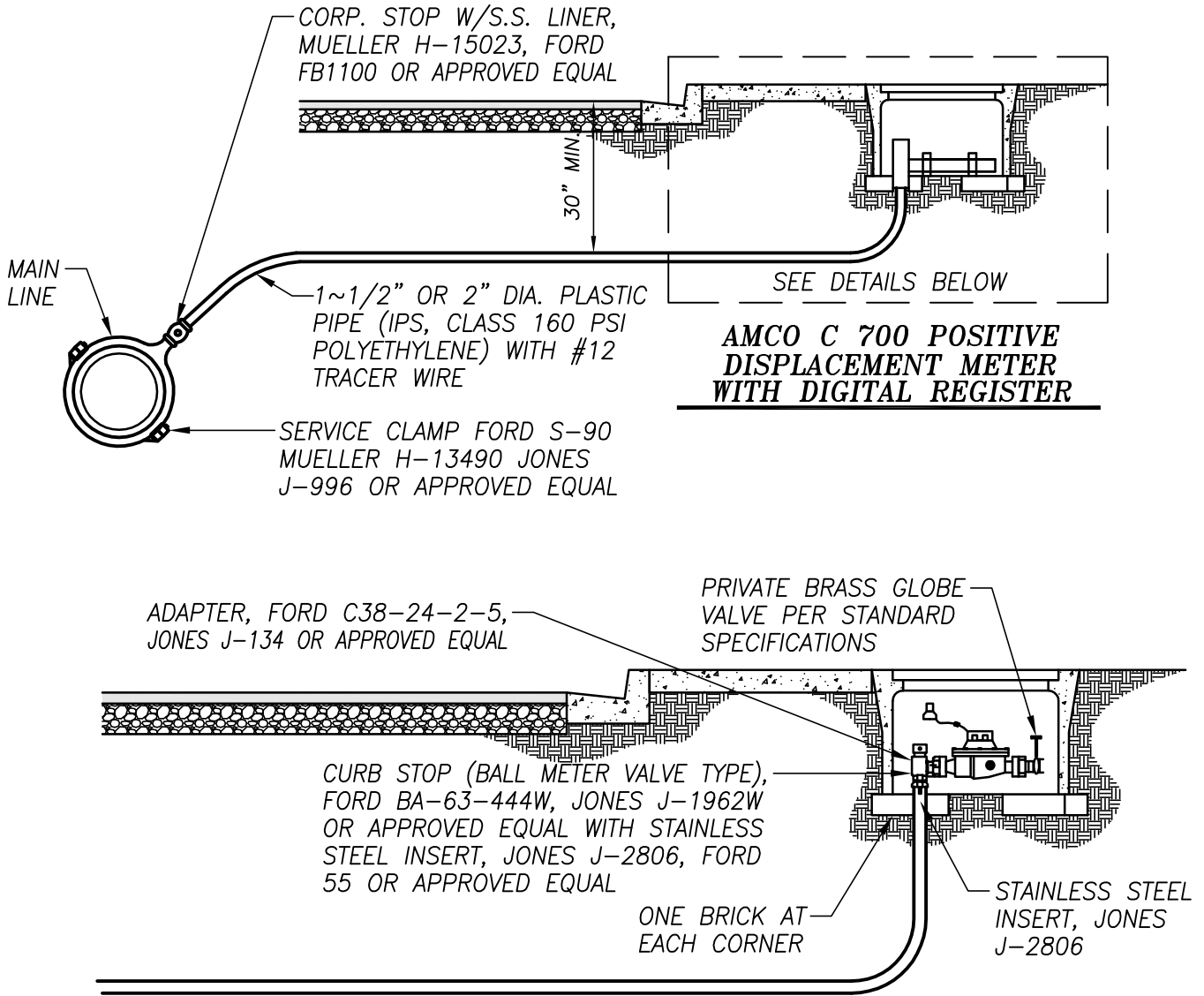
3/4" OR 1" PLASTIC WATER SERVICE CONNECTION



DRAWN BY: JSH
CHECK BY: NBB
SCALE: NONE

CITY OF TURLOCK
APPROVED BY: *[Signature]*
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.
W-9
COUNCIL APPROVAL
DEC, 2015



**AMCO C 700 POSITIVE
DISPLACEMENT METER
WITH DIGITAL REGISTER**

*BFA 43-777W

NOTES:

1. ALL BOX COVERS SHALL BE SET TO GRADE AND SHALL NOT BE SITUATED IN DRIVEWAYS.
2. METER STOP SHALL VARY BETWEEN 6" AND 10" FROM BOTTOM OF LID.
3. POLYETHYLENE PLASTIC OR PLOYMER CONCRETE VALVE BOX AND LID SHALL BE USED.
4. A 'W', 3" HIGH, SHALL BE STAMPED OR CHISELED ON THE CURB FACE OVER SERVICE LINES.
5. PLACE A #12 TRACER WIRE IN THE SERVICE TRENCH TO MAKE CONDUCTIVE CONTACT WITH THE CORPORATION AND CURB (METER) STOP.

1~1/2" OR 2" PLASTIC WATER SERVICE CONNECTION



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

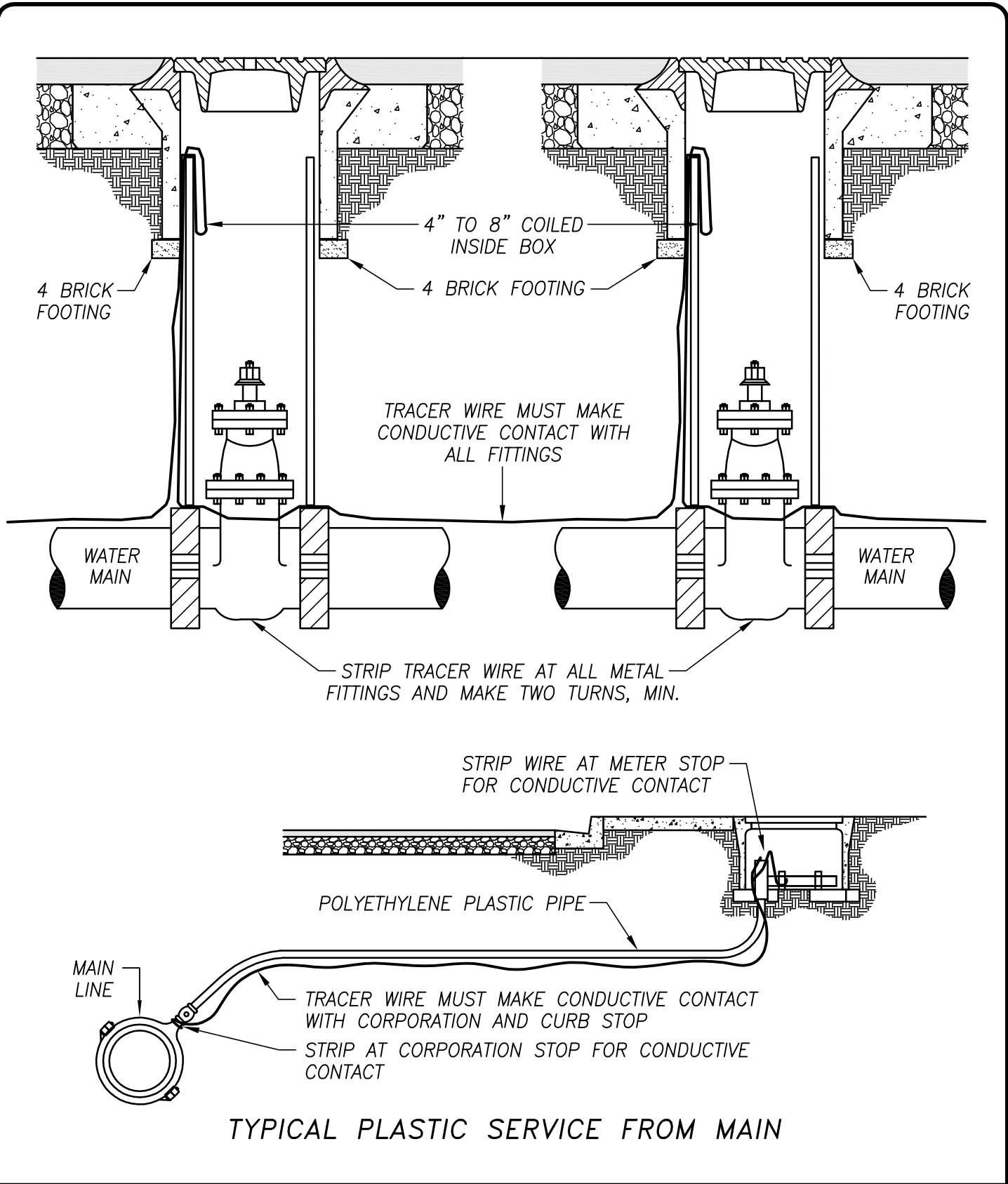
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

W-10

COUNCIL APPROVAL

DEC, 2015



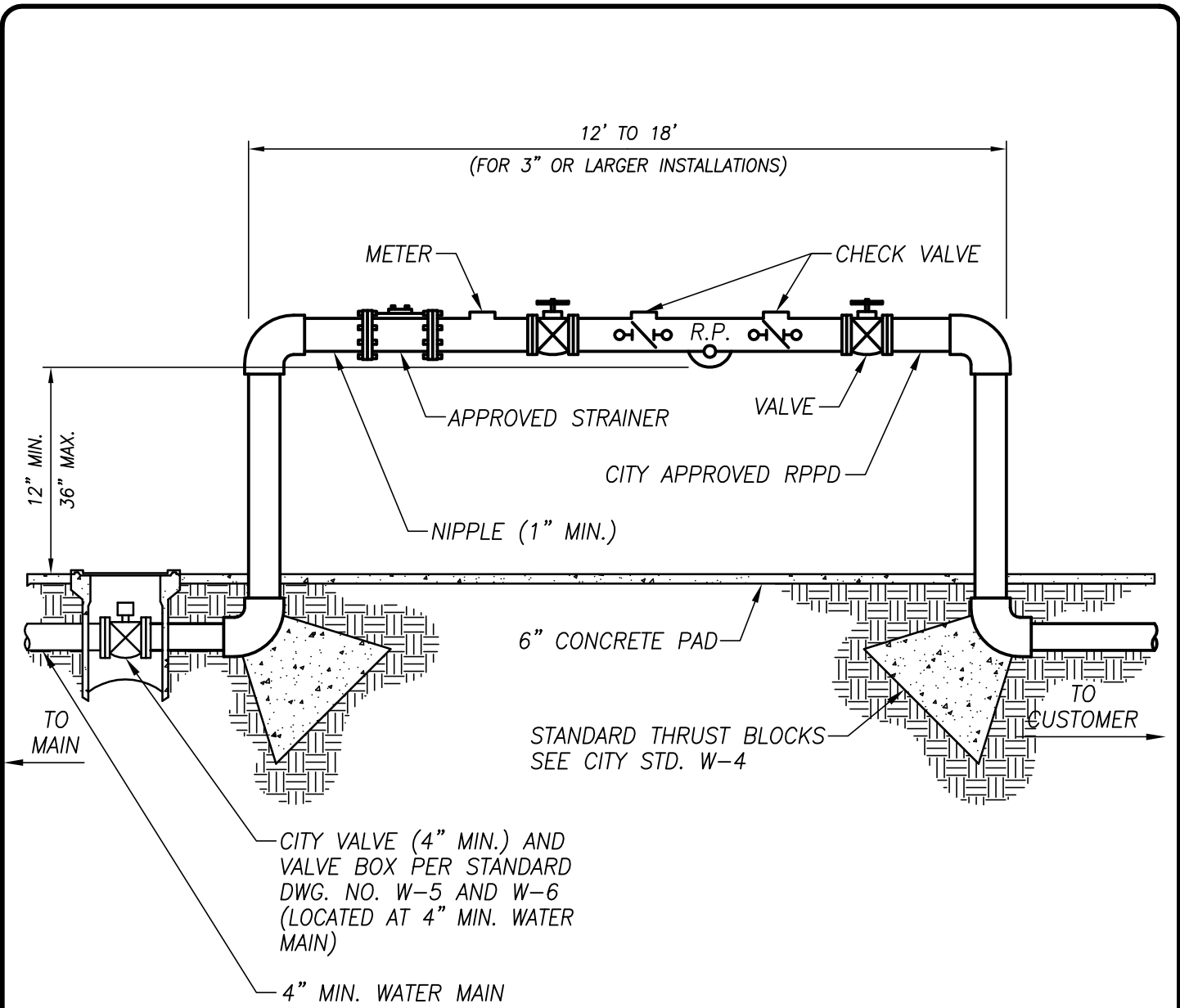
TYPICAL TRACER WIRE INSTALLATION



DRAWN BY: JSH
 CHECK BY: NBB
 SCALE: NONE

CITY OF TURLOCK
 APPROVED BY: *M. Pitcock*
 CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.
W-11
 COUNCIL APPROVAL
DEC, 2015



NOTES:

1. REFER TO MANUFACTURER'S CATALOG FOR CORRECT DIMENSIONS TO FIT SIZE OF SPECIFIED BACKFLOW.
2. COVER BACKFLOW ASSEMBLY WITH POLAR BLANKET TO PREVENT FREEZE DAMAGE.
3. DIMENSIONS OF CONCRETE PAD TO BE DETERMINED BY THE CITY ENGINEER FOR EACH INDIVIDUAL JOB.
4. AN APPROVED BACKFLOW PREVENTION ASSEMBLY SHALL BE INSTALLED ON EACH SERVICE LINE TO CUSTOMER'S WATER SYSTEM AT OR NEAR THE PROPERTY LINE AS PER TURLOCK MUNICIPAL CODE, SECTION 6-6.07.

STANDARD METER-BACKFLOW INSTALLATION



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

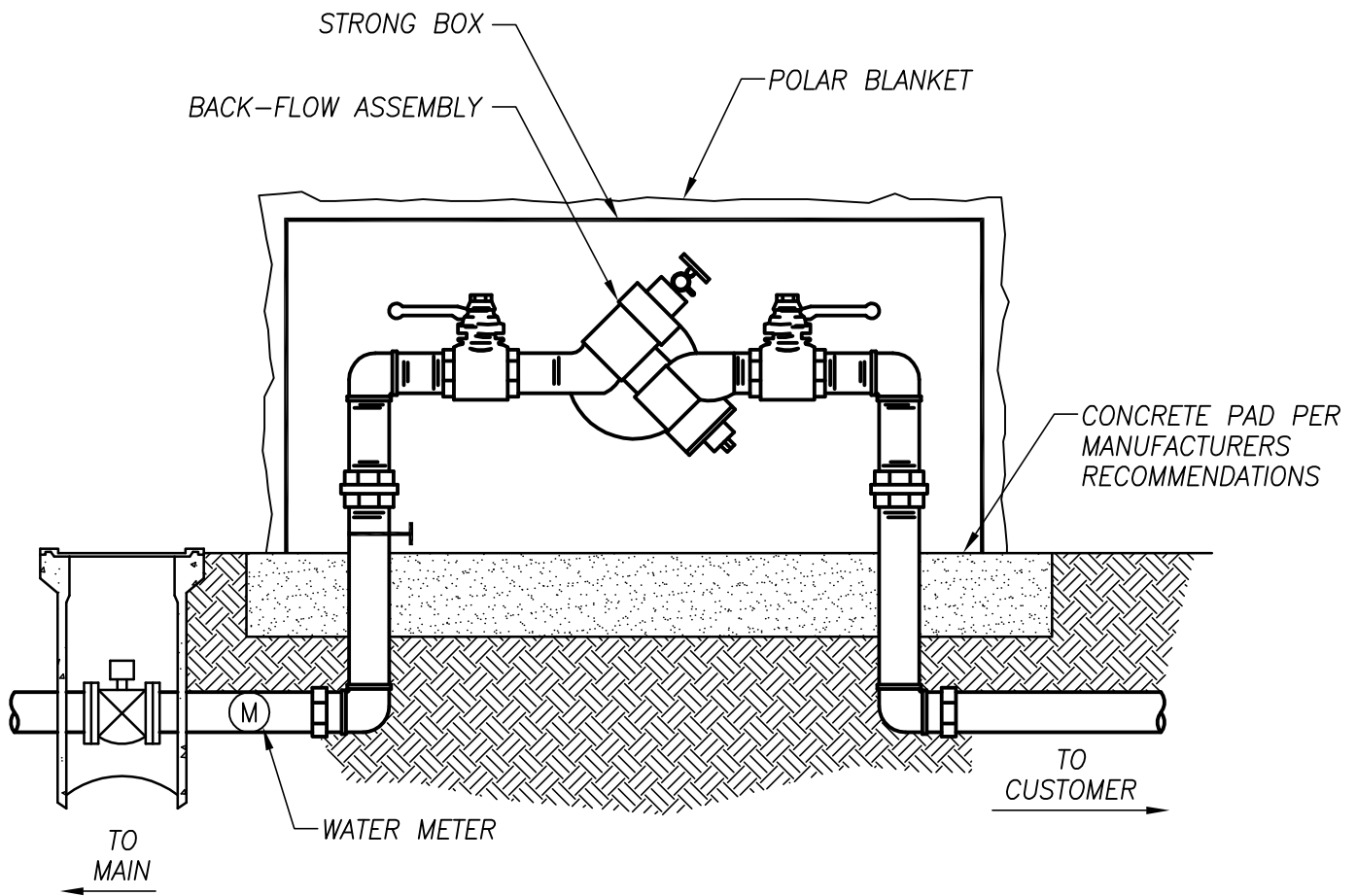
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

W-12

COUNCIL APPROVAL

DEC, 2015



NOTES:

1. FOR INSTALLATIONS LESS THAN 3"
2. EQUIPMENT TO BE INSTALLED AT A MINIMUM OF 24" FROM ANY STRUCTURES OR HARDSCAPING.
3. COVER BACKFLOW ASSEMBLY WITH POLAR BLANKET TO PREVENT FREEZE DAMAGE.
4. ENCLOSE ENTIRE BACKFLOW DEVICE WITH STRONG BOX BC-45-CR OR APPROVED EQUAL WHEN UNIT IS NEXT TO A STRUCTURE (I.E. WALL, BUILDING, ETC.) MOUNT TEST COCKS ON OPEN OR NON STRUCTURE SIDE.
5. ALL FITTINGS SHALL COMPLY WITH CALIFORNIA HEALTH AND SAFETY CODE, 116875 (NO LEAD BRASS)

BACKFLOW PREVENTER ASSEMBLY DETAIL



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

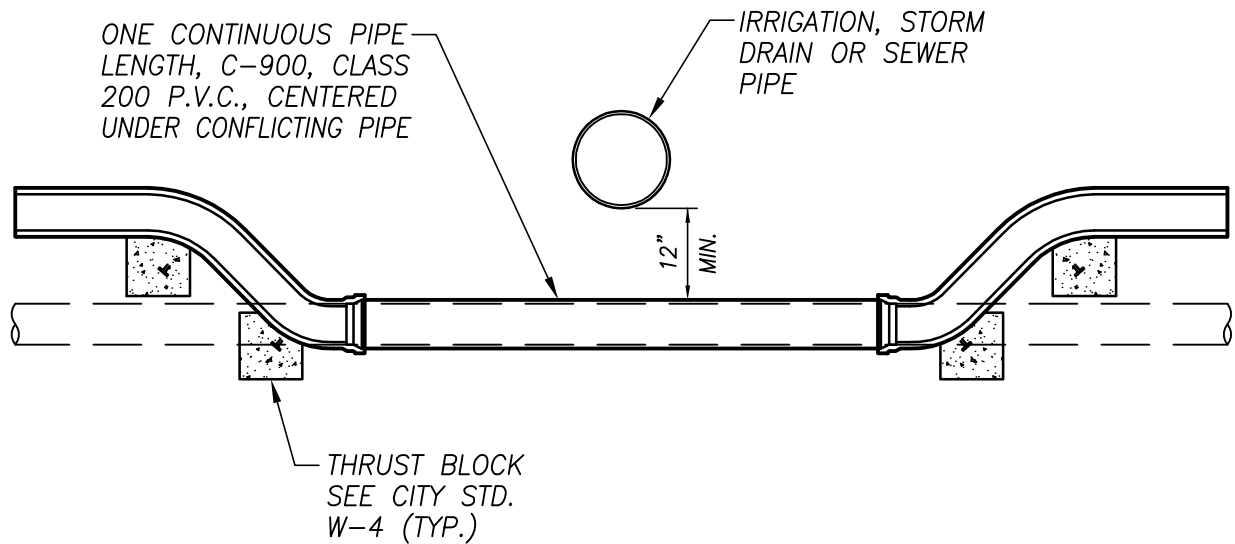
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

W-13

COUNCIL APPROVAL

DEC, 2015



NOTE:

45° FITTING SHALL BE SWEEPING TYPE WITH SMOOTH TURNS, OR A GRADUAL TRANSITION CAN BE USED INSTEAD OF SWEEPS.

STANDARD WATER UNDER CROSSING



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

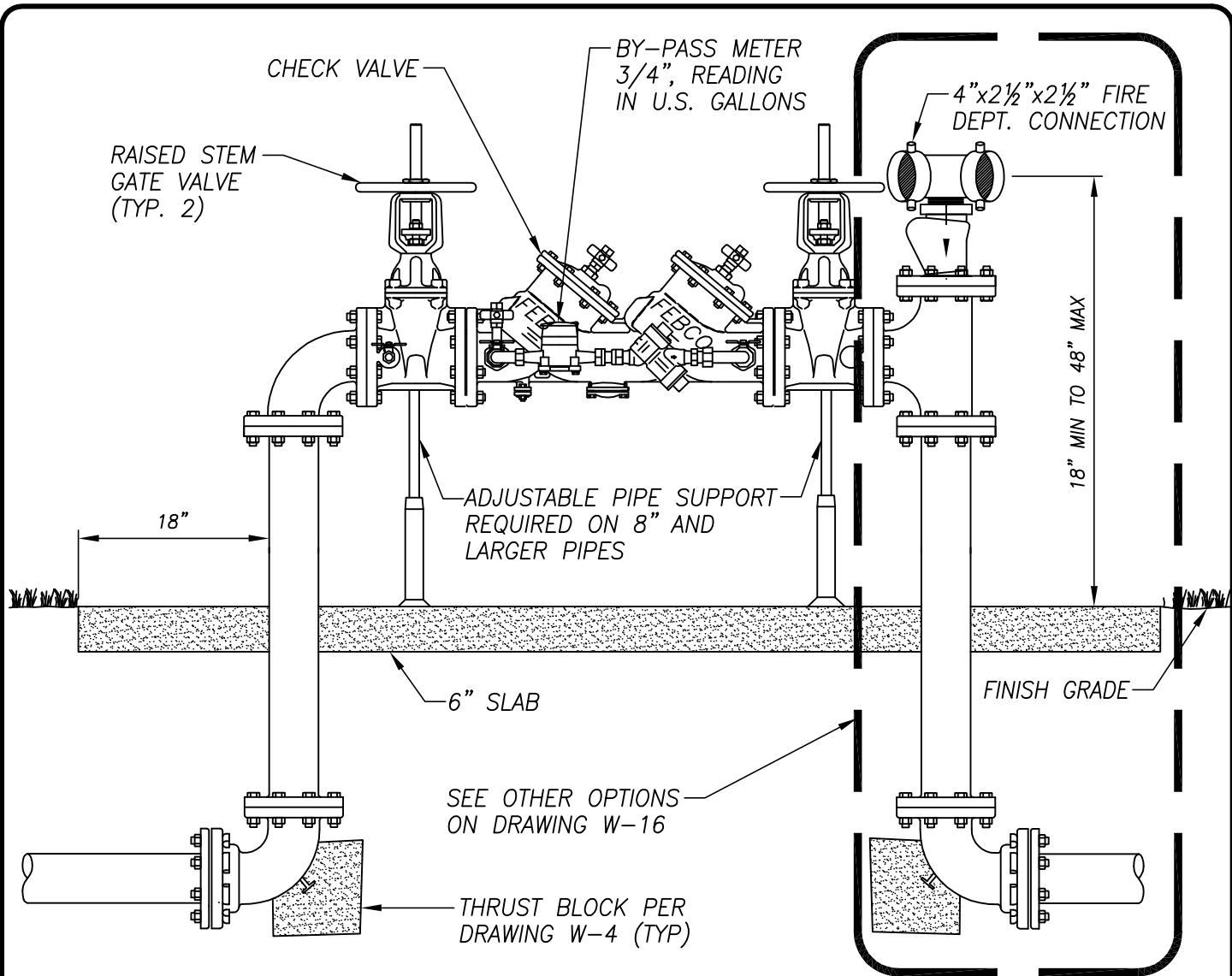
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

W-14

COUNCIL APPROVAL

DEC, 2015



NOTES:

1. METER AND VALVES SHALL MEET CITY AND A.W.W.A. STANDARDS.
2. BACKFLOW DEVICES SHALL BE A DOUBLE CHECK DETECTOR ASSEMBLY OR REDUCED PRESSURE DETECTOR ASSEMBLY, AS PER CITY ENGINEER.
3. MAINTAIN 18" CLEARANCE AROUND PERIMETER OF DEVICE.
4. FIRE HYDRANT SHALL NOT BE LOCATED BETWEEN F.D.C. AND BUILDING.
5. FIRE HYDRANT SHALL BE LOCATED WITHIN 75 FEET OF THE F.D.C.
6. THREE FEET CLEARANCE SHALL BE MAINTAINED AROUND F.D.C.
7. RPDA MAY BE REQUIRED WHERE THERE IS AN EXISTING OR POTENTIAL HEALTH HAZARD, AS DETERMINED BY THE CITY.
8. LOCKING KNOX F.D.C. CAPS ARE REQUIRED ON NEW INSTALLATIONS. LOCKING KNOX F.D.C. CAPS MAY BE REQUIRED ON EXISTING F.D.C.'S BY THE FIRE CHIEF. (2) 2~1/2" MALE PLUG WITH SWIVEL GUARD, ALL STAINLESS STEEL WITH BRIGHT STAINLESS FINISH, KNOX PART NUMBER 3041.

FIRE-LINE INSTALLATION

CITY OF TURLOCK



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

APPROVED BY:

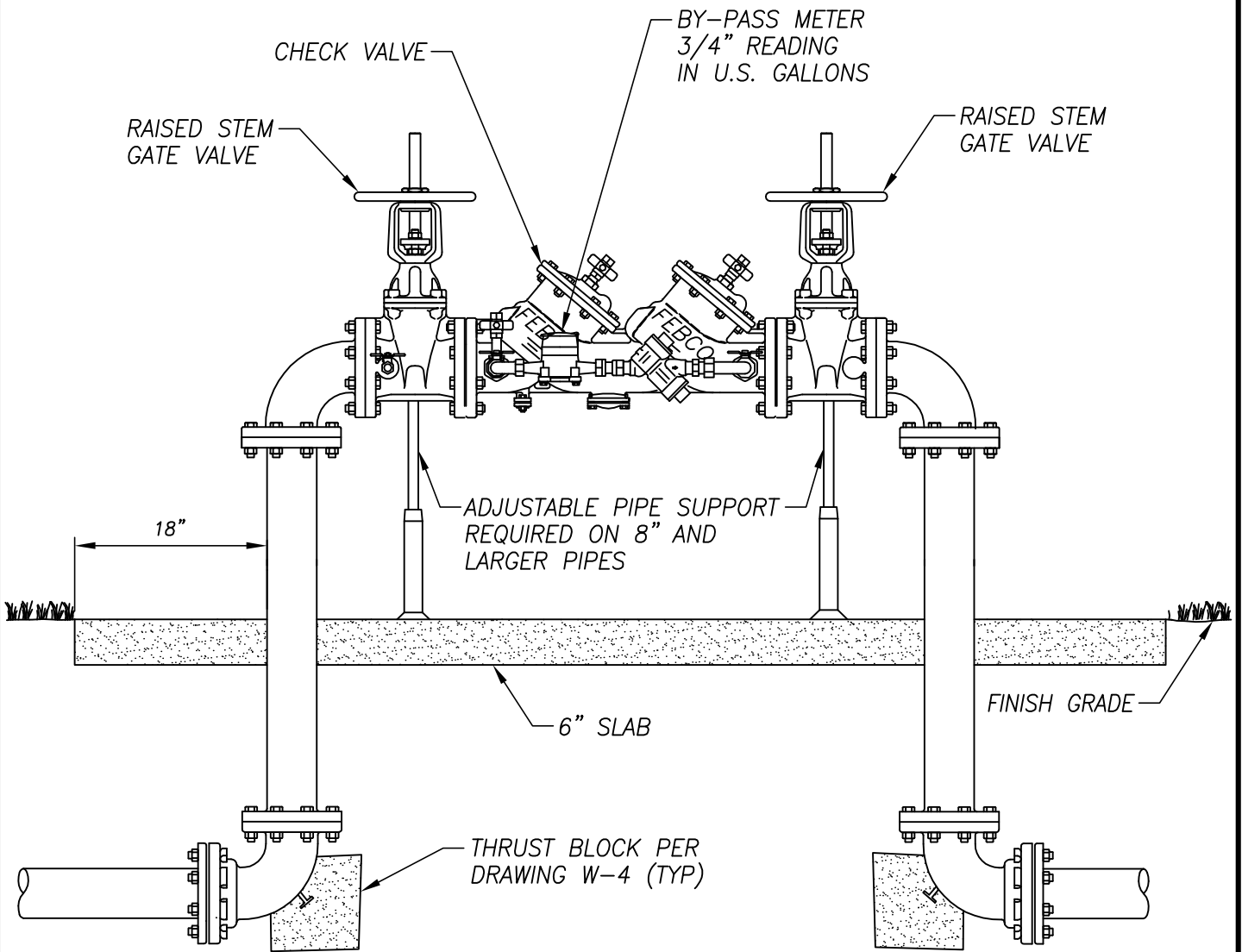
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

W-15

COUNCIL APPROVAL

DEC, 2015



NOTES:

1. METER AND VALVES SHALL MEET CITY AND A.W.W.A. STANDARDS.
2. BACKFLOW DEVICES SHALL BE A DOUBLE CHECK DETECTOR ASSEMBLY OR REDUCED PRESSURE DETECTOR ASSEMBLY, AS PER CITY ENGINEER.
3. MAINTAIN 18" CLEARANCE AROUND PERIMETER OF DEVICE.
4. FIRE HYDRANT SHALL NOT BE LOCATED BETWEEN F.D.C. AND BUILDING.
5. FIRE HYDRANT SHALL BE LOCATED 75 FEET FROM F.D.C. OR LESS.
6. THREE FEET CLEARANCE SHALL BE MAINTAINED AROUND F.D.C.
7. RPDA MAY BE REQUIRED WHERE THERE IS AN EXISTING OR POTENTIAL HEALTH HAZARD, AS DETERMINED BY THE CITY.
8. USE THIS DETAIL WHEN A FIRE HYDRANT IS DOWN STREAM OF THE F.D.C.
9. F.D.C. LOCATION TO BE APPROVED BY FIRE DEPT.

FIRE-LINE INSTALLATION WITHOUT F.D.C.



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

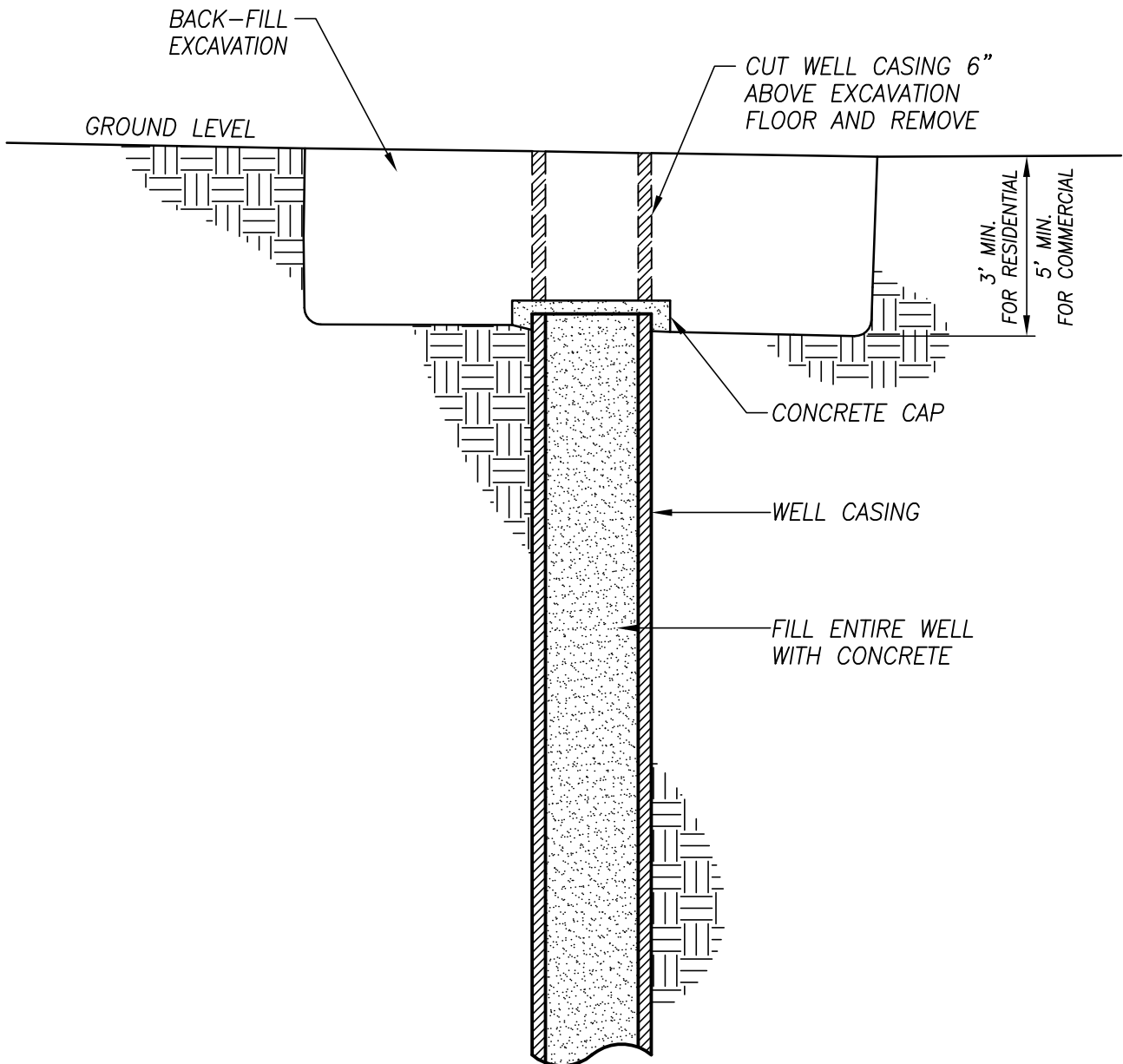
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

W-16

COUNCIL APPROVAL



DEC, 2015



NOTES:

1. ALL PRIVATE RESIDENTIAL WELLS WILL BE ABANDONED BY CITY OF TURLOCK CREWS, FREE OF CHARGE
2. ALL WORK TO BE INSPECTED AND APPROVED PRIOR TO WATER TURN ON
3. PLEASE CALL MUNICIPAL SERVICES AT (209) 668-5590 TO SCHEDULE ABANDONMENT
4. FOR WELLS DEEPER THAN 20 FEET, A TREMIE PIPE SHALL BE USED TO COMPLETELY FILL THE CASING WITH CONCRETE.

PRIVATE WELL ABANDONMENT

	DRAWN BY: JSH	<p align="center">CITY OF TURLOCK</p>	DRAWING NO. W-17
	CHECK BY: NBB		APPROVED BY: 
	SCALE: NONE	CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694	

16 WASTEWATER COLLECTION SYSTEM

16-1 DESCRIPTION

This work shall consist of furnishing and installing sewer pipe and appurtenances in accordance with the Standard Drawings and these Standard Specifications.

16-2 EXTRA STRENGTH VITRIFIED CLAY PIPE (E.S.V.C.P.)

Shall be bell and spigot extra strength vitrified clay pipe manufactured, tested, delivered, and inspected in accordance with the latest revision of ASTM Designation C700. The clay pipe shall be made with flexible, interlocking, resilient, mechanical compression joints (Wedgelock or equal) formed in the pipe at the factory and shall conform to the latest revision of ASTM Serial Designation C425.

16-3 DUCTILE IRON TYTON JOINT PIPE

Ductile iron pipe shall conform to the requirements for service class pipe, standards and dimensions, in accordance with ANSI/AWWA C151/A21.51. All joints to be hub and spigot Class 50.

16-4 C900 PVC PIPE (FORCE MAIN)

PVC pressure pipe, 4 inch to 12 inch, shall conform to AWWA Standard C900. Rubber rings shall conform to manufacturer's recommendation.

PVC pressure pipe, 14 inch to 30 inch, shall conform to AWWA Standard C905. Rubber rings shall conform to manufacturer's recommendation.

16-5 PVC SEWER PIPE - 4 INCH TO 15 INCH (GRAVITY)

PVC solid wall sewer pipe shall conform to ASTM Standard D3034-SDR26 Standard Specification for PVC Sewer Pipe and Fittings with rubber sealing ring meeting ASTM D-3212 "Joints for Drain and Sewer Pipes Using Flexible Elastomeric Seals", or an approved equal.

PVC solid wall sewer pipe 18 inch to 48 inch shall conform to ASTM Standard F679, P5115 Standard Specification for PVC large diameter plastic Gravity Sewer Pipe and Fittings with rubber sealing ring meeting ASTM D-3212 "Joints for Drain and Sewer Pipes using Flexible Elastomeric Seals", or an approved equal.

16-6 PIPE LAYING

Unless otherwise specified by the Engineer, all pipes shall be laid with the bells facing the direction of laying and shall be laid in accurate conformity with the prescribed lines and grades. Each length shall be jointed to the preceding section as hereinafter specified; and after said jointing procedure has commenced, there shall be no movement of the pipe whatsoever in subsequent operations. Each pipe shall have a firm bearing for its full length in the trench, except at bell holes and field joints. Only approved lubricants shall be used as an aid to mating bells and spigots. The reference line on the spigot end should be flush with the end of the bell.

Every precaution shall be taken to protect the pipe against the entrance of foreign material before the pipe is placed in the trench. At the close of the day's operations, or whenever workmen are absent from the job site, the last section of pipe shall be plugged, capped or otherwise tightly closed to prevent the entry of foreign matter of any nature.

All trenches shall be of sufficient depth to provide a minimum cover of 30 inches, measured from the top of the pipe to the finish grade, unless otherwise approved by the Engineer.

16-7 MINIMUM SLOPES AND GRADE DEVIATIONS

The minimum allowable slopes permitted on sewer lines shall be as follows:

PIPE DIAMETER (INCH)	MINIMUM SLOPE (ft/ft)
8	0.0024
10	0.0018
12	0.0015
15	0.0011
18	0.0009

The minimum size PVC permitted for City maintained sewer lines is 8 inch diameter. A larger line will not be allowed to dump into a smaller line without prior authorization of the Engineer (i.e. 8 inch will not be allowed to dump into a 6 inch).

16-8 USES OF PIPE

C900 Class 200, PVC shall be used when a sewer is within 50 feet of a domestic water well, or when crossing water lines or whenever deemed necessary because of lack of cover. (Note: Concrete slabs or cradles shall not be used around sewer lines.)

16-9 PRECAST MANHOLE SECTIONS

Precast manhole sections shall conform to size, shape and details shown on the Standard Plans. Pipe sections shall conform to current ASTM Specification C76, Class II, as amended to date. A minimum of one cage of reinforcing is required, the cross sectional area of which is equal to that specified for the inner cage of the above ASTM Specifications. Cement used in the precast sections shall be Type II or Type V. (ASTM Specification C478 may be used in lieu of C76).

Manholes shall be placed at every change in line direction (unless as specified in sub-section 16-1.22), at the end of dead end lines, at all street intersections, at lateral connections larger than 4 inches in diameter and no more than 500 feet apart unless otherwise specified.

16-10 STUB-OUTS

Stub-outs from manholes constructed for future use shall be installed to the property line or limits of construction to provide service to adjoining property or for future extensions. Stub-outs to private property shall require a manhole behind apron or sidewalk.

16-11 CUL-DE-SAC CONNECTIONS

Only one house service connection smaller than 6 inches shall be connected by means of installation into a cul-de-sac manhole. All other house connections shall be installed by means of a wye on the main line.

16-12 RISER RINGS

Riser rings shall be precast reinforced rings or if poured in-place risers are used, they shall meet the following height requirements:

PRECAST MANHOLES LESS THAN 36 INCHES IN HEIGHT

Riser ring shall not exceed 9 inches in height including manhole frame and cover.

PRECAST MANHOLES 37 INCHES TO 72 INCHES IN HEIGHT

Riser rings shall not exceed 12 inches in height including manhole frame and cover.

PRECAST MANHOLES OVER 72 INCHES IN HEIGHT

Riser rings shall not exceed 18 inches in height including manhole frame and cover. All measurements shall be taken from the top of the sewer main to the top of the manhole frame.

16-13 MANHOLE FRAMES AND COVERS

Manhole frames and covers shall be as outlined in the Standard Drawings. They shall conform accurately to the form and dimensions shown on the Standard Drawings. Castings must be of workmanlike finish, free from blow and sand holes or any defects of any kind, and shall be made from a superior quality of even-grained gray iron, and shall possess a tensile strength of not less than 38,000 pounds per square inch. Before leaving the foundry, they shall be thoroughly cleaned and coated by dipping in asphalt applied at a temperature of 300°F in such a manner as to provide a firm, durable, tenacious coating.

16-14 SERVICE CONNECTIONS - SMALLER THAN 10 INCH DIAMETER

Service connections made on existing mains smaller than 10 inches shall be made in accordance with the Standard Specifications. All house connection wyes shall be installed at the time of main line construction and shall be bell and spigot. In the case of a cul-de-sac, the manhole shall be installed as deep in the turn-around as possible. The lot directly in front may be connected directly into the manhole as specified in subsection 16-1.10 of these Standard Specifications. All 4 inch lateral connections shall be installed with a clean out at the property line directional to the City main. A G-5 Christy box shall be installed at all service cleanout locations. All connections greater than 4 inches shall require a manhole.

16-15 SERVICE CONNECTIONS - 10 INCH TO 15 INCH DIAMETER

Service connections made on existing sewer mains between 10 inches and 15 inches shall be with Inserta-Tee sewer pipe fittings manufactured by Fowler Mfg. Co. or an approved equal. All 4 inch lateral connections shall be installed with a clean out at the property line directional to the City main. A G-5 Christy box shall be installed at all service cleanout locations. All connections greater than 4 inches shall require a manhole.

16-16 SERVICE CONNECTIONS - 15 INCH AND LARGER IN DIAMETER

Service connections on existing mains with a diameter larger than 15 inches will not be permitted under any circumstances. A parallel line large enough to carry the volume of flow from the house connections in the affected project area shall be installed and all connections made to this line. This line shall not be smaller than 8 inches in diameter. All 4 inch lateral connections shall be installed with a clean-out at the property

line directional to the City main. A G-5 Christy box shall be installed at all service cleanout locations. All connections greater than 4 inches shall require a manhole.

16-17 CLEAN-OUTS

Clean-outs on mains shall be used only where a line comes to a dead end for a future extension and where the distance to the next downstream manhole is less than 100 feet.

16-18 CITY DRILLED PILOT HOLES

The tapped hole shall be made by the City by the pilot-hole cutter system. The City shall be notified at least 48 hours in advance of requested construction and all material shall be furnished by the Contractor or under a City agreement. All excavation and shoring of the trench shall be performed by the Contractor. A deposit, covering the cost of the City's involvement, shall be placed with the City prior to the work being performed. No parts will be supplied or loaned to the contractor.

16-19 MARKINGS

All services shall be marked on the face of the curb with a 3 inch letter "S" in wet concrete.

16-20 SEWER TERMINATION

All sewer mains shall terminate with a City standard manhole. For situations where there are less than three services, or the termination is only temporary, a lamphole may be used with the approval of the Engineer.

16-21 TRENCHING AND BACKFILL

The trenching and backfilling shall conform to the requirements of Section 14 of these Standard Specifications.

16-22 HORIZONTAL ALIGNMENT DESIGN

Sewer lines shall be straight lines from manhole to manhole, except as specified herein. For radius sewer lines, the minimum radius used shall be 300 feet. The minimum number of pipes to be used for twenty foot length pipes shall be eight. Construction of lines on a radius shall be inspected prior to any backfilling.

16-23 CLEANING AND FLUSHING OF NEW SEWER LINES

After all backfilling is completed and the structure frames and covers have been set, the Contractor shall clean and flush all sewer pipes. This shall be done in the presence of the Engineer and as described hereinafter.

16-24 PLACEMENT OF SAND TRAP

A temporary sand trap of a design approved by the Engineer shall be securely placed within the outlet of the next lower manhole of the section of sewer pipe to be cleaned and flushed. The sand trap shall catch all debris flushed downstream and prevent it from being carried into the sewer pipe below. All debris collected by the sand trap shall be carefully removed from the manhole.

16-25 INSTALLATION AND REMOVAL OF SAND TRAP

The Contractor shall not clean and flush any section of the sewer pipe until the sand trap has been installed and approved by the Engineer. Upon completion of the cleaning and flushing procedure, the Contractor shall not remove said sand trap without first receiving approval from the Engineer. Where sewers have been flushed without a sand trap, the Contractor shall be fully responsible for removing material and debris,

that are a result of the Contractor's operations, from the existing service lines. This shall be done to the satisfaction of the Engineer.

16-26 CLEANING AND FLUSHING 12 INCH OR SMALLER PIPE

To clean and flush sewer pipes 12 inches or less in diameter, the Contractor shall furnish and use a heavy rubber ball, manufactured for this purpose and approved by the Engineer. When inflated with air it should have an outside diameter equal to the interior diameter of the pipe to be cleaned. The ball should fit snugly into the sewer pipe with the final determination being made by the Engineer. The ball shall be placed in the uppermost structure of the line to be cleaned and then water shall be introduced into the structure in back of the ball. The ball shall pass through the pipe with only the pressure of the water behind it. The rate at which the ball is allowed to pass through the pipe shall be controlled by a rope attached to the ball at all times.

This procedure shall be conducted on each new section of pipe that has been installed. Care shall be exercised to feed the ball slow enough to allow all debris to be removed in a manner which is satisfactory to the Engineer. The work shall be done in such a manner as to prevent sewage from backing up into and flooding adjacent properties.

The mandrel test shall be required on all PVC pipe 8 inches or larger:

- 1) Be a rigid, non-adjustable, odd-numbering-leg (9 legs minimum) mandrel having an effective length not less than its nominal diameter.

Have a minimum diameter at any point along the full length as follows:

PIPE MATERIAL	NOMINAL SIZE (INCHES)	MINIMUM MANDREL DIAMETER (INCHES)	MINIMUM MADEREL PERCENTAGE
PVC-SDR26	4	3.62	5
PVC-SDR26	6	5.34	5
PVC-SDR26	8	7.11	5
PVC-SDR26	10	8.87	5
PVC-SDR26	12	10.55	5
PVC-SDR26	15	12.90	5

16-27 CLEANING AND FLUSHING PIPES LARGER THAN 12 INCHES

Sewer pipes over 12 inches in diameter may be cleaned by means other than the above described ball method, with the prior approval of the Engineer.

16-28 LEAKAGE TESTS FOR SEWER PIPES LARGER THAN 30 INCHES

Sewers larger than 30 inches in diameter will be tested for leakage by visual inspection by the Engineer. No leakage by infiltration shall be allowed.

16-29 LEAKAGE TESTS FOR SEWER PIPES 30 INCHES AND SMALLER

All sewers shall be tested for tightness when completed and ready for service by the Water Exfiltration Test. The method to perform said test follows: Each section of sewer shall be tested between successive manholes by closing the lower end of the sewer to be tested and the inlet sewer of the upper manhole with stoppers. The pipe and manhole shall be filled with water to a point 4 feet above the invert of the sewer at the center of the upper manhole; or if ground water is present, 4 feet above the average adjacent ground water level.

The allowable leakage will be computed by the formula:

$E = 0.0001 LD H$ for mortared joints.

$E = 0.00002 LD H$ for all other joints.

Where:

E = the allowable leakage in gallons per minute of sewer tested.

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

D = the internal diameter of the pipe in inches.

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

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.

16-30 LOW PRESSURE AIR TEST

This test shall be performed on all sanitary sewer and storm drain lines to demonstrate the integrity of the installed line, when so requested by the Engineer. The method to perform said test follows:

METHOD

Use the Time-Pressure Drop Method for all testing. The test procedures are described hereinafter:

1. Clean the sewer to be tested and remove all debris as noted previously.
2. Wet the sewer prior to testing, if desirable.
3. Plug all sewer outlets with suitable test plugs. Brace each plug securely.
4. Check the average height of the ground water over the sewer, because the pressure of ground water will affect the test. The height of the ground water table shall be determined just prior to testing. This shall be done by drilling exploratory holes or such other methods as approved by the Engineer. The Engineer will make the final determination in regards to the height to be used for the test. The test pressures required below shall be increased 0.433 psi for each foot of average water depth over the sewer.
5. Add air slowly to the section of sewer pipe being tested until the internal air pressure is raised to 4.0 psi greater than the average back pressure of any ground water that may submerge the pipe.

6. After the internal test pressure is reached, allow at least 2 minutes for the air temperature to stabilize. During this time add only the amount of air required to maintain the pressure in the pipe.
7. After the temperature stabilization period, disconnect the air supply.
8. Determine and record the time, in seconds, that is required for the internal air pressure to drop from 3.5 psi to 2.5 psi greater than the average back pressure of any ground water that may submerge the pipe.

ACCEPTANCE

The sewer shall be considered acceptable when tested as described, if the section under test does not lose air at a rate greater than (1) 0.0015 cfm per square foot of internal sewer surface, or (2) 2 cfm, whichever is greater. However, this will not be considered final acceptance. The Contractor's attention is directed to subsection 16-32 of these Standard Specifications for the requirements for final acceptance.

16-31 SUBSEQUENT FAILURE

Infiltration of ground water in an amount greater than 3.84 gallons per day per inch diameter per 100 feet, following a successful air test indicates an error in the original test or that a subsequent failure of the pipeline has occurred. The Contractor shall correct such failures at his sole expense if they occur within the warranty period.

16-32 MATERIALS REQUIRED

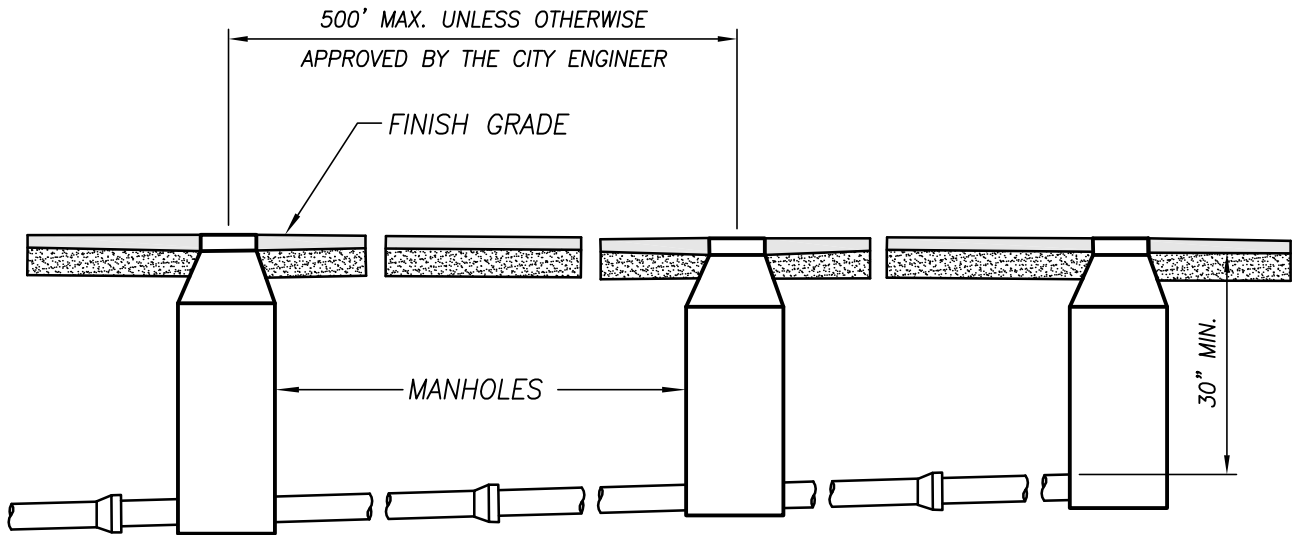
All tools, materials and appurtenances required for testing the sewers as specified shall be approved by the Engineer and furnished by the Contractor.

16-33 CLOSED CIRCUIT TV INSPECTION OF SEWER SYSTEMS

Prior to placing the final street surfacing, the City, at the developer's request and expense, will inspect all new sewer systems with a closed circuit television system. This will be done after the pipe has been installed true to the prescribed lines and grades, the trench backfilled and compacted, the manhole and clean-out covers set to proper grade, the roadway subgrade compacted, aggregate sub-bases and bases placed and compacted and the sewer system cleaned of all debris. The Developer shall make the necessary repairs or corrections at his sole expense so that the work is acceptable to the Engineer. All repairs are to be made with repair (shear) couplings. After the tests are completed, to the satisfaction of the Engineer, the Contractor may commence paving. After all offsite improvements are complete, re-testing will be done for final acceptance. The sewer system may also be inspected with said television system any time within the twelve month warranty period after filing the Notice of Completion.

16-34 GREASE AND SAND AND OIL INTERCEPTOR

When an interceptor is required, it shall conform to the requirements of Standard Drawings.





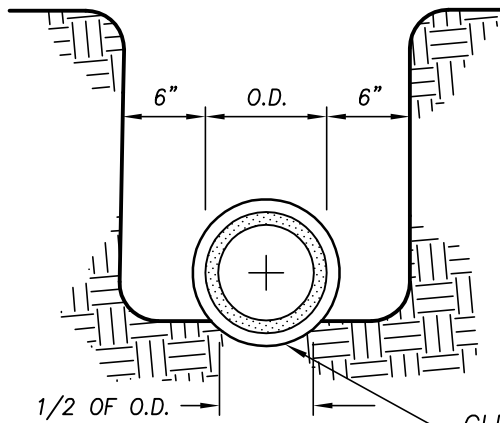
PIPE SIZE	MIN. SLOPE
8" DIA.	0.0024
10" DIA.	0.0018
12" DIA.	0.0015
15" DIA.	0.0011
18" DIA.	0.0009
>18" DIA.	PROVIDE CALCS

NOTES:

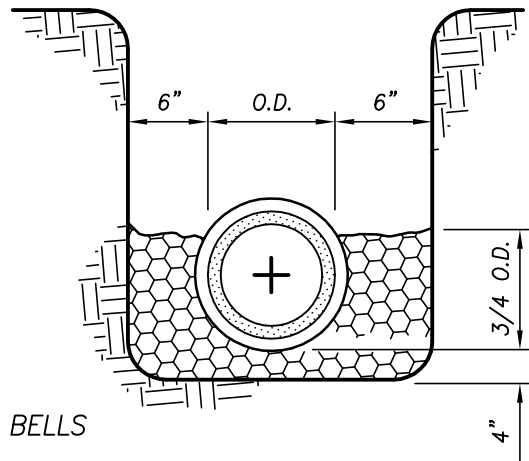
1. MINIMUM COVER SHALL BE 30 INCHES.
2. MANHOLES SHALL BE INSTALLED AT THE END OF ALL LINES, WHERE SEWERS INTERSECT, AT CHANGES IN LINE SIZE OR MATERIAL AND AT SERVICE CONNECTIONS LARGER THAN 4" IN DIAMETER.
3. ALL SERVICE CONNECTIONS TO SEWERS SHALL BE MADE AT WYES.
4. THE ENGINEERING DIVISION SHALL BE SUPPLIED WITH AN "AS-BUILT" PLAN SHOWING LOCATION OF ALL LATERALS AND INVERT ELEVATIONS.
5. A MANHOLE SHALL BE INSTALLED AT ALL CONNECTIONS TO A TRUNK LINE.

SANITARY SEWER DATA

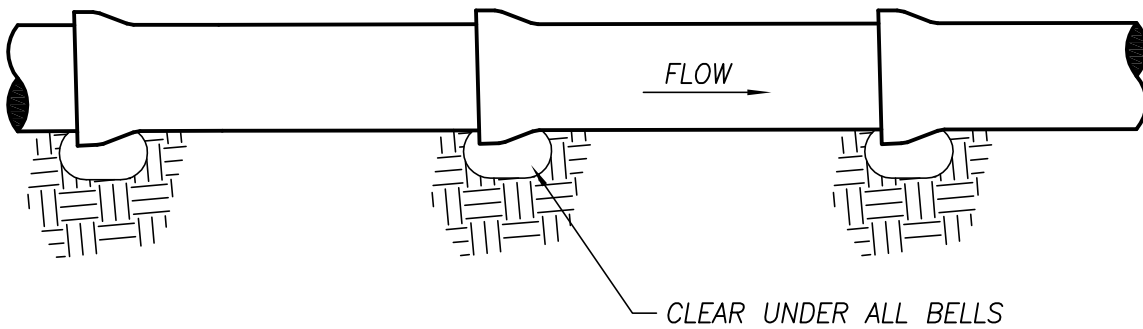
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	CHECK BY: NBB	APPROVED BY: 	COUNCIL APPROVAL
	SCALE: NONE	CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694	DEC, 2015



STANDARD TRENCH (TYP.)



IMPROVED BEDDING



NOTES:

1. WHEN BASE OF TRENCH IS HARD PAN, CONTRACTOR SHALL OVER-EXCAVATE 4" MIN. AND PLACE IMPORT OR SELECT NATIVE MATERIAL PRIOR TO INSTALLING PIPE
2. BACKFILL SETTLING AND COMPACTION SHALL NOT BE ACHIEVED BY MEANS OF "JETTING" OR PONDING.

SEWER LINE DETAIL



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CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

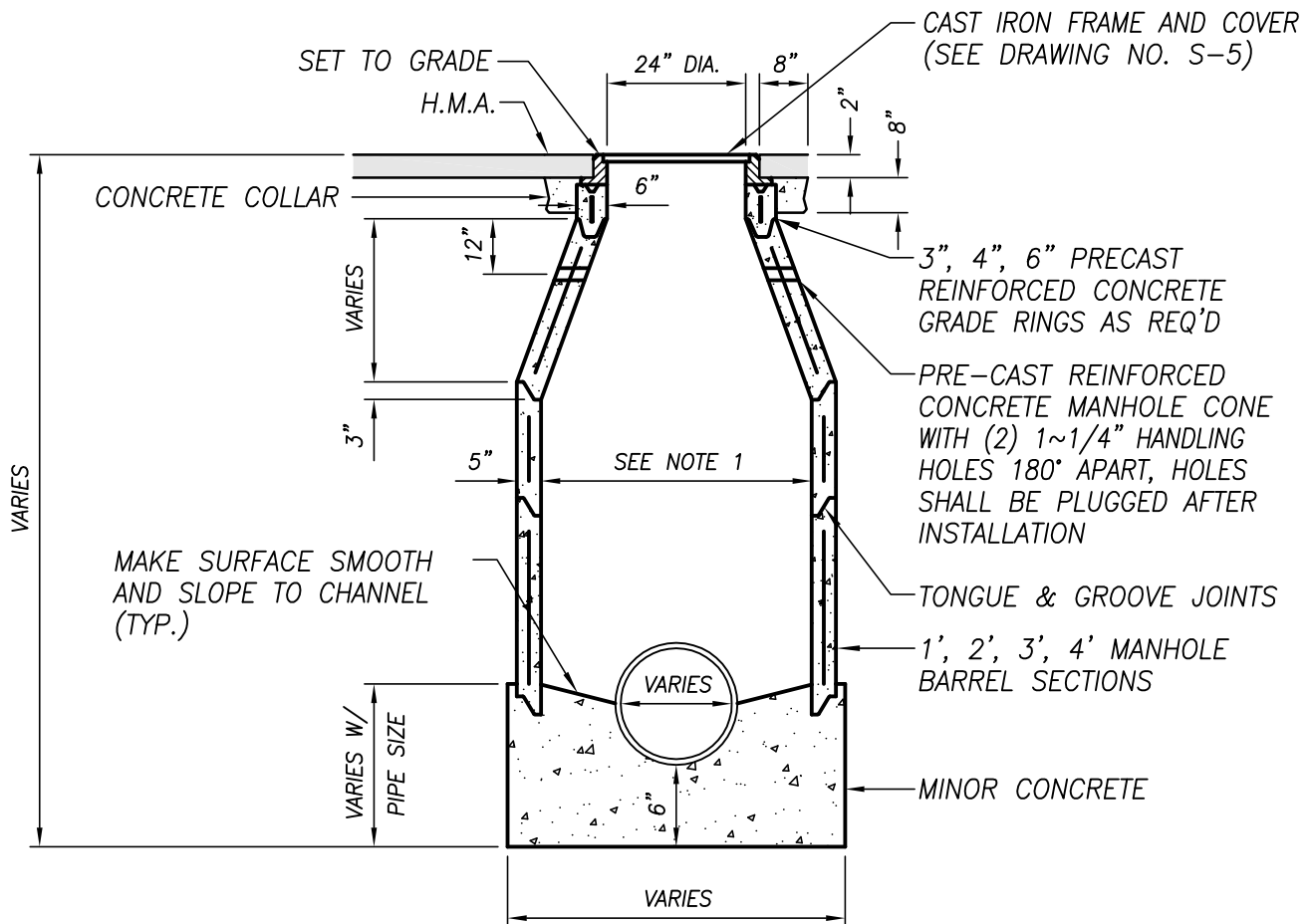
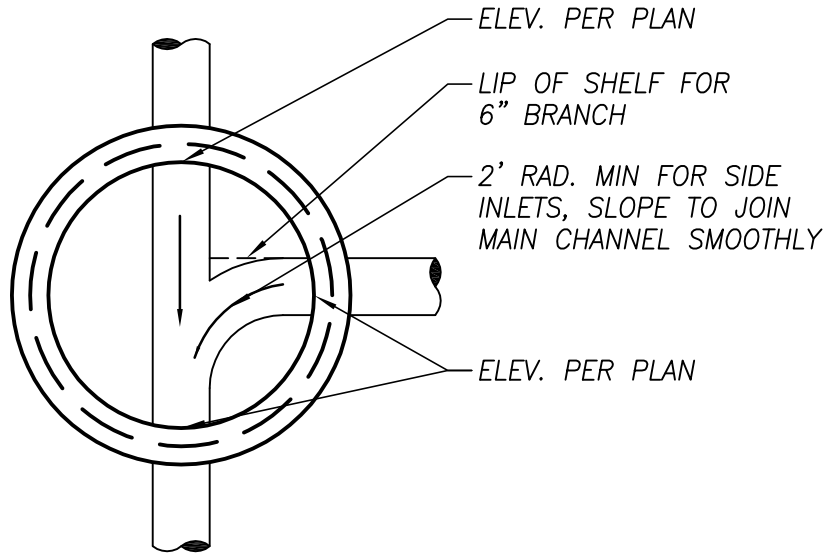
S-2

COUNCIL APPROVAL

DEC, 2015

NOTES:

1. MANHOLE DIAMETER SHALL BE 48" WHEN SERVING PIPES 24" IN DIAMETER OR SMALLER. MANHOLE DIAMETER SHALL BE 60" WHEN SERVING PIPES LARGER THAN 24" IN DIAMETER
2. SEE STANDARD DWG. S-4 FOR DROP MANHOLE DETAIL
3. THE DEPTH OF CHANNELS FLOWING INTO THE MAIN LINE SHALL BE NO DEEPER THAN HALF IT'S PIPE DIAMETER
4. ALL JOINTS SHALL BE SET WITH RAMNEK, OR APPROVED EQUAL, AND GROUTED



STANDARD MANHOLE

CITY OF TURLOCK



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

APPROVED BY:

Michael G. Pitcock

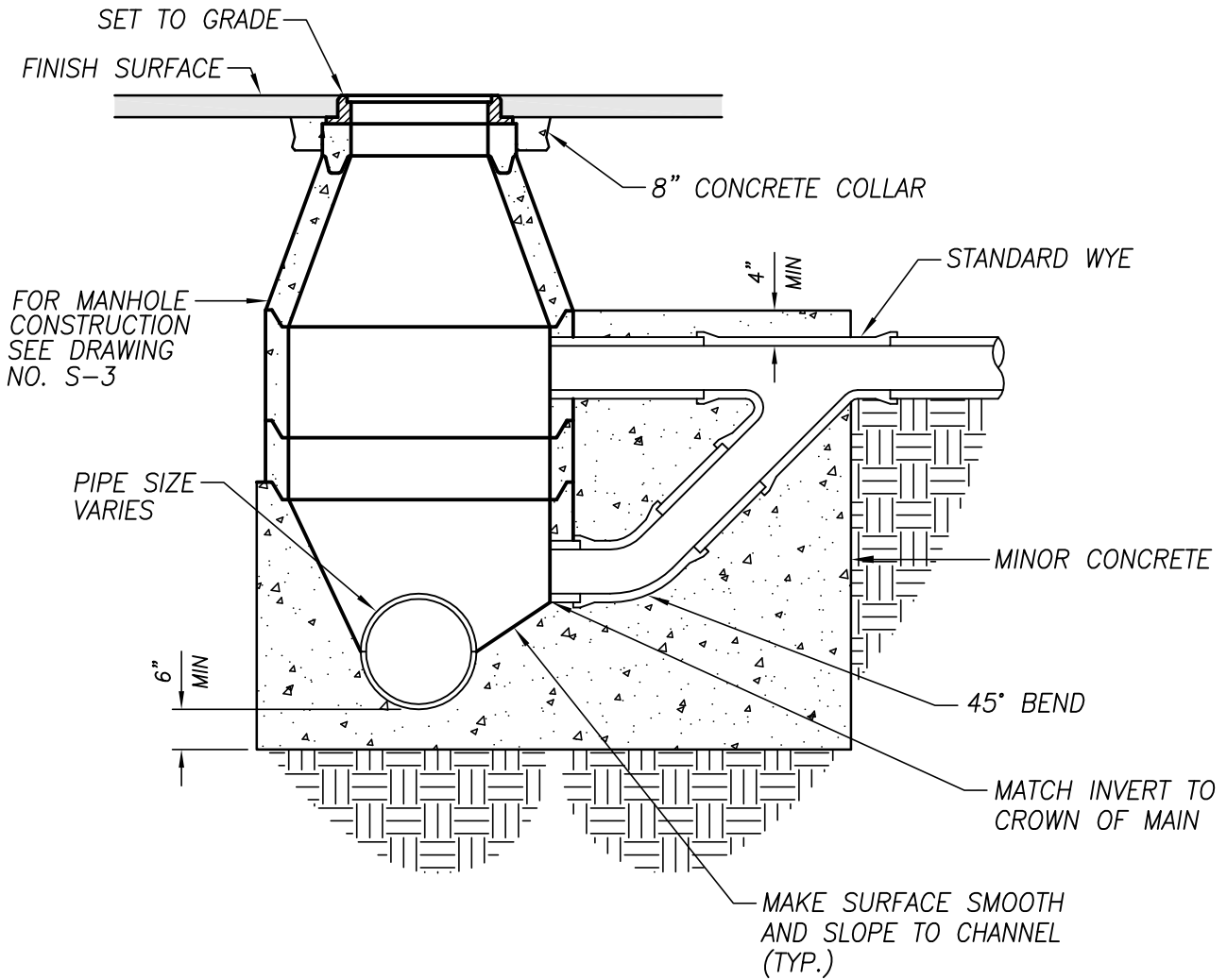
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

S-3

COUNCIL APPROVAL

DEC, 2015



FOR MANHOLE
CONSTRUCTION
SEE DRAWING
NO. S-3

PIPE SIZE
VARIES

6"
MIN

4"
MIN

NOTE:

1. DROP MANHOLE SHALL BE USED WHEN THE SLOPE OF THE LINE WOULD EXCEED 2%, OR AS APPROVED BY CITY ENGINEER.
2. ALTERATIONS MAY BE REQUIRED BY CITY ENGINEER.

STANDARD DROP MANHOLE

CITY OF TURLOCK



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

APPROVED BY:

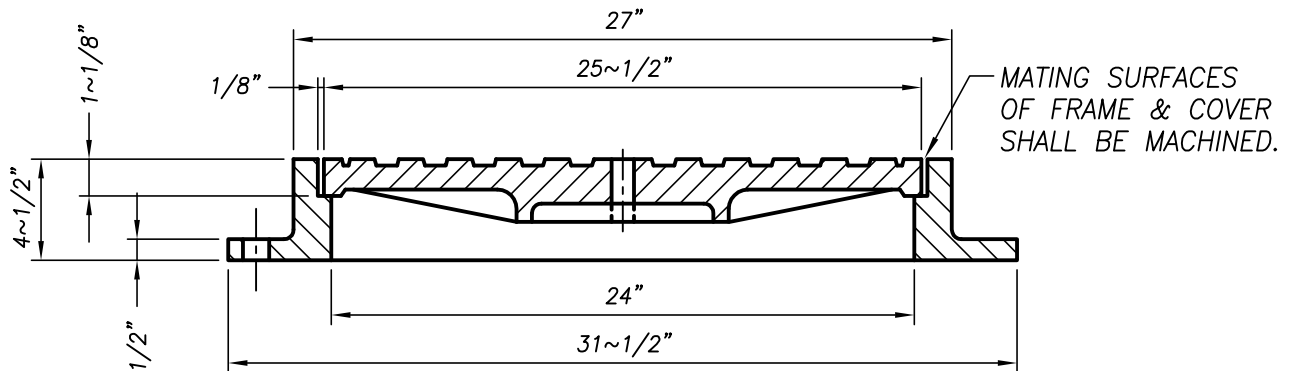
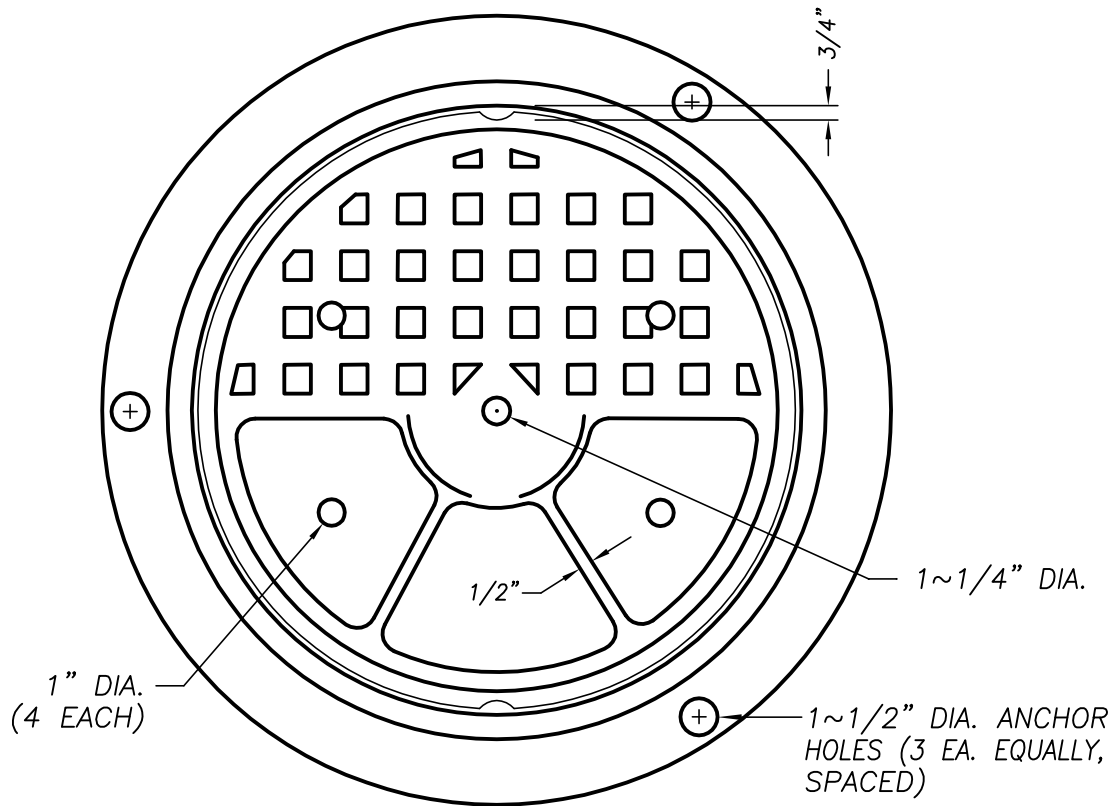
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

S-4

COUNCIL APPROVAL

DEC, 2015



SECTION A-A

NOTES:

1. CAST IRON SHALL HAVE A TENSILE STRENGTH OF 38,000 PSI.
2. FRAME SHALL BE SET TO FINISH GRADE
3. SOUTH BAY FOUNDRY FRAME AND LID NO. 624/106 OR APPROVED EQUAL FOR SANITARY SEWER.
4. SOUTH BAY FOUNDRY FRAME AND LID NO. 624 OR APPROVED EQUAL FOR STORM DRAIN.
5. WEIGHT OF LID SHALL BE 100 POUNDS MINIMUM.

MANHOLE FRAME AND COVER

CITY OF TURLOCK

DRAWING NO.

S-5

DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

APPROVED BY:

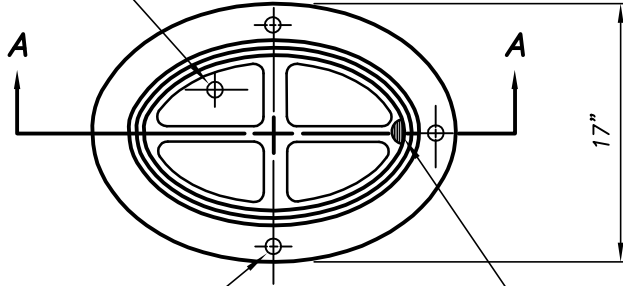
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

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DEC, 2015



7/8" DIA. HOLE

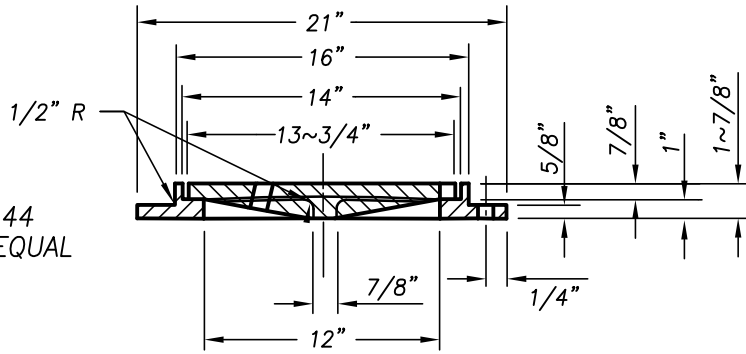


COVER:
PINKERTON A-143
OR APPROVED EQUAL

(3) HOLES FOR 5/8" DIA.
ANCHOR BOLTS

1" X 1-1/4" PICK HOLE

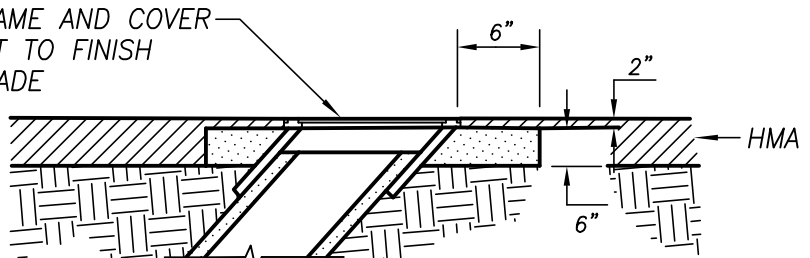
FRAME:
PINKERTON A-144
OR APPROVED EQUAL



SECTION A-A

FRAME AND COVER
SET TO FINISH
GRADE

NOTE:
ONLY TO BE USED WITH PRIOR
APPROVAL OF CITY ENGINEER.



RISER TO BE SAME
SIZE AS MAIN

MACHINE TAMPED
BEFORE INSTALLATION

V.C.P.

95% COMPACTION IN
ACCORDANCE WITH CITY STD.
DETAIL S-1. INSTALLATION
APPROVED BY CITY ENGINEER

45° LONG SWEEP EL

LAMP HOLE AND COVER

CITY OF TURLOCK

DRAWING NO.

S-6

COUNCIL APPROVAL

DEC, 2015



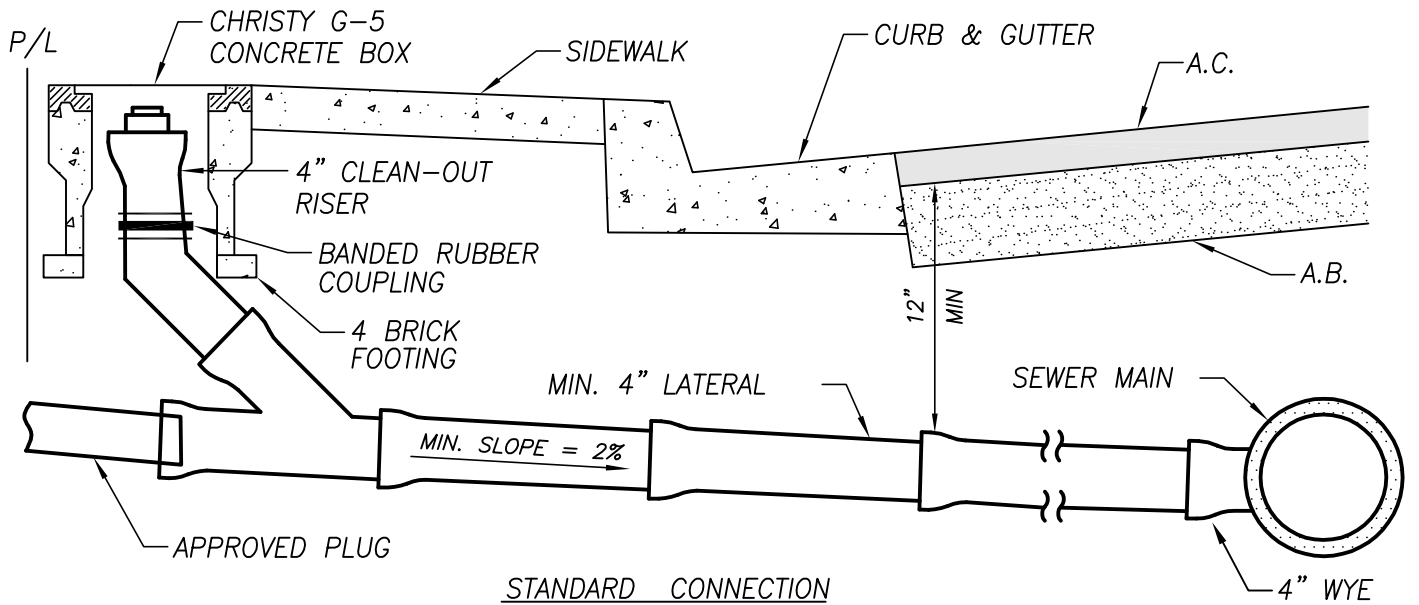
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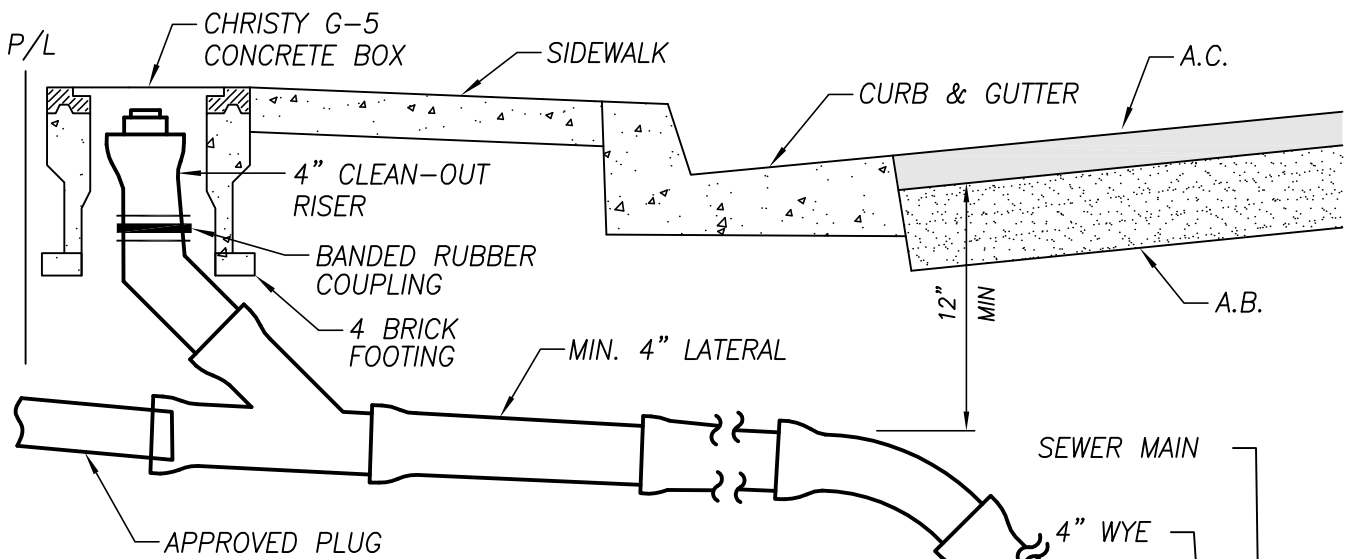
SCALE: NONE

APPROVED BY:

CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694



STANDARD CONNECTION



DEEP SEWER CONNECTION

NOTES:

1. IF DEPTH FROM GUTTER FLOW LINE TO TOP OF SEWER PIPE IS LESS THAN 12", DUCTILE IRON PIPE SHALL BE USED.
2. A LETTER 'S' (4" HIGH) SHALL BE STAMPED ON CURB FACE OVER CONNECTION PIPE.
3. RESIDENTIAL CONNECTIONS IN STREETS SHALL BE INSTALLED TO PROPERTY LINE.
4. CONNECTIONS IN ALLEYS SHALL BE INSTALLED TO PROPERTY LINE.
5. SEWER CONNECTION SHALL BE PER STANDARD SPECIFICATIONS. MINIMUM DIAMETER SHALL BE 4".
6. CHRISTY BOX TO BE PLACED 12 INCHES BACK OF SIDEWALK ON PROPERTY LINE SIDE.

SEWER CONNECTIONS

CITY OF TURLOCK



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CHECK BY: NBB

SCALE: NONE

APPROVED BY:

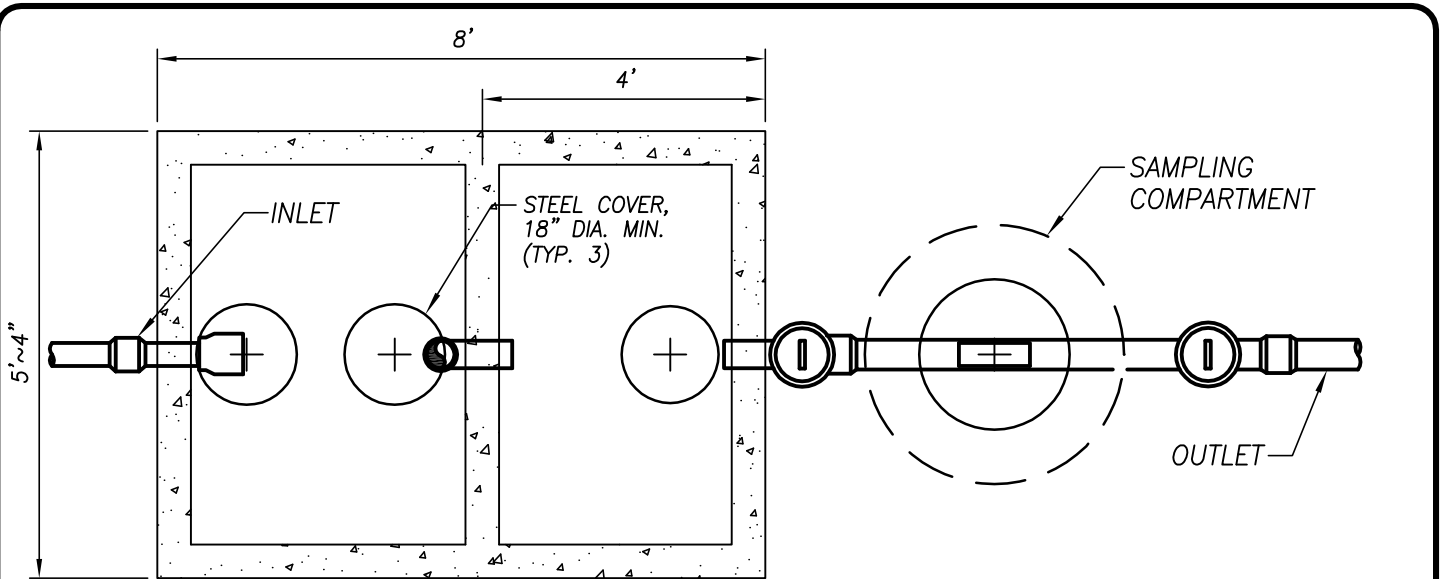
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

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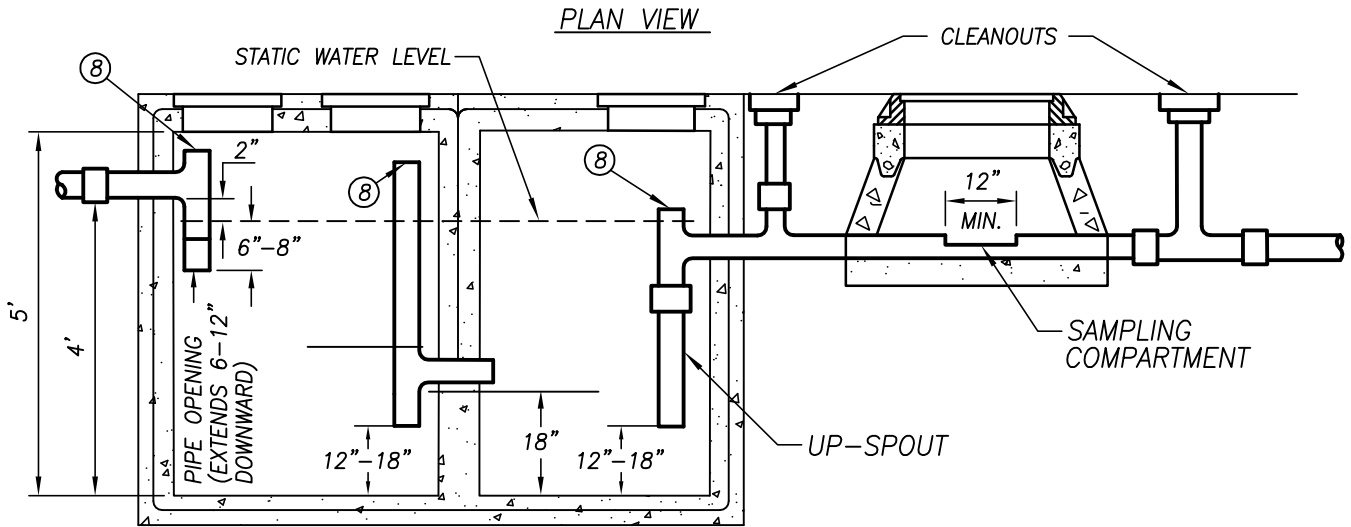
S-7

COUNCIL APPROVAL

DEC, 2015



PLAN VIEW



SECTION VIEW

NOTES:

1. DIMENSIONS SHOWN ARE FOR MINIMUM SIZE TRAP (750 GALLON).
2. WHEN A LARGER SIZE IS REQUIRED, THE UNIT SHALL BE DESIGNED BY A REGISTERED CIVIL ENGINEER AND APPROVED BY THE CITY ENGINEER.
3. CONCRETE SHALL BE MINIMUM 3000 PSI AT 28 DAYS.
4. A SAMPLING COMPARTMENT IS REQUIRED, THE CITY ENGINEER MAY WAIVE THE REQUIREMENT IF A HARDSHIP EXISTS.
5. COVERS SHALL BE STEEL AND SHALL BE GAS TIGHT.
6. ALL WASTE SHALL ENTER TRAP THROUGH THE INLET PIPE ONLY.
7. REINFORCEMENT SHALL BE ADEQUATE FOR TRAFFIC CONDITIONS IN AREA WHERE TRAP IS LOCATED.
8. TEES SHALL BE ACCESSIBLE FOR CLEANING THROUGH THE ACCESS COVERS.

TYPICAL GREASE INTERCEPTOR

CITY OF TURLOCK



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

APPROVED BY:

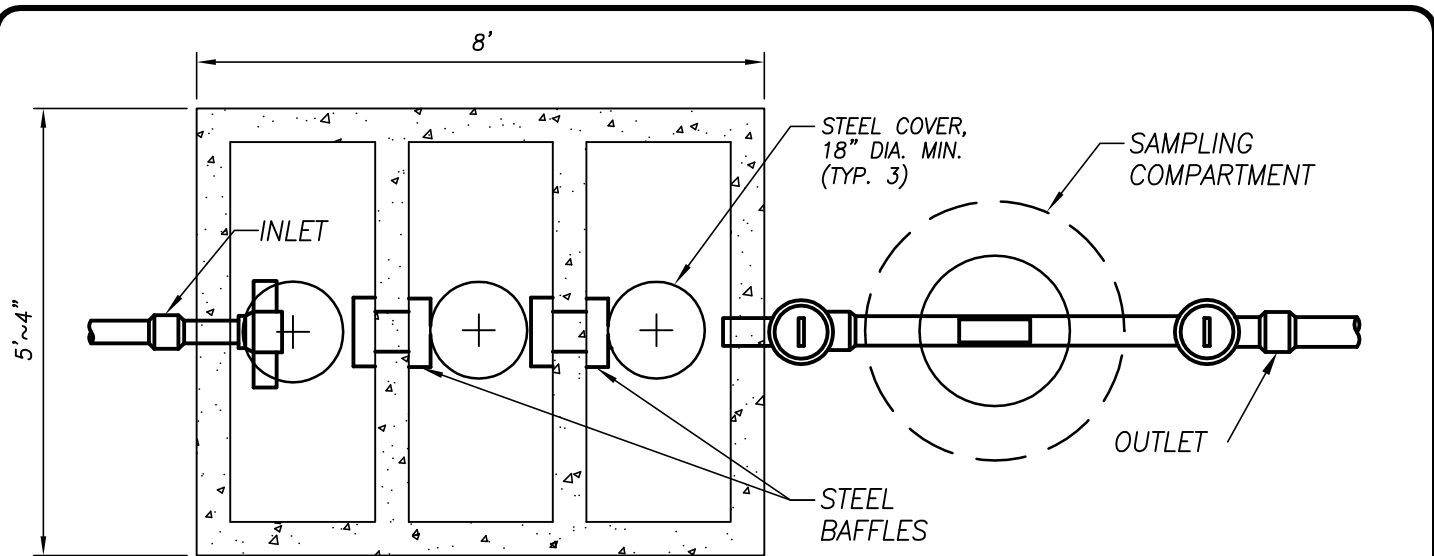
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

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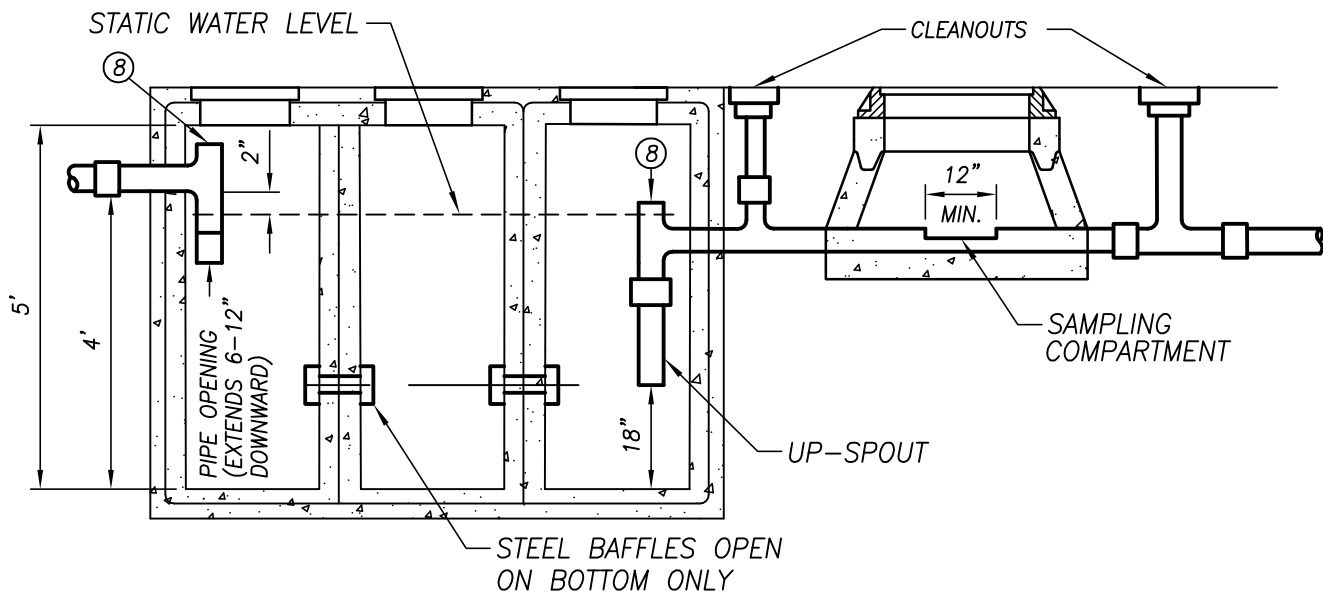
S-8

COUNCIL APPROVAL

DEC, 2015



PLAN VIEW




SECTION VIEW

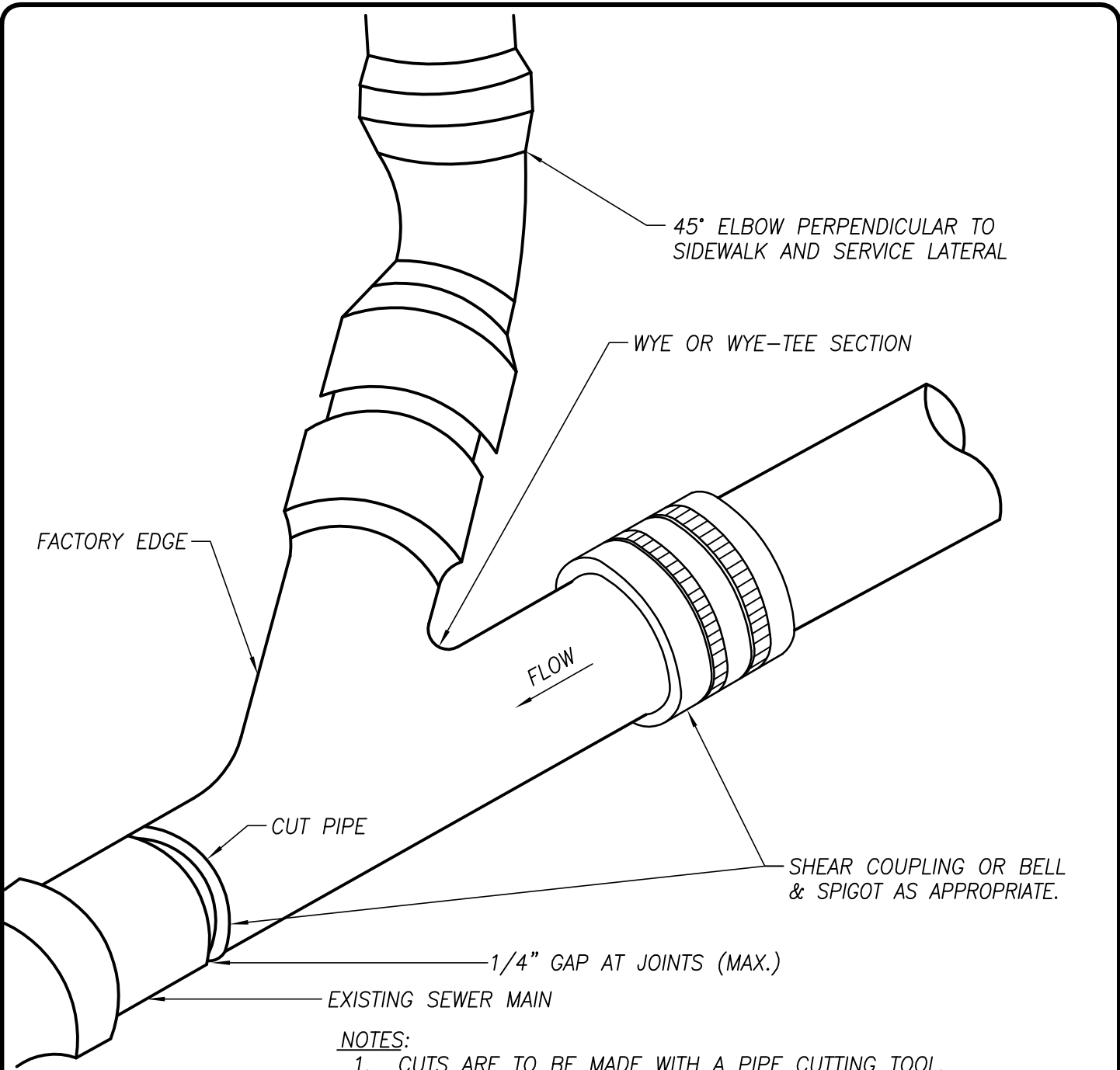
NOTES:

1. DIMENSIONS SHOWN ARE FOR MINIMUM SIZE TRAP (750 GALLON).
2. WHEN A LARGER SIZE IS REQUIRED, THE UNIT SHALL BE DESIGNED BY A REGISTERED CIVIL ENGINEER AND APPROVED BY THE CITY ENGINEER.
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5. COVERS SHALL BE STEEL AND SHALL BE GAS TIGHT.
6. ALL WASTE SHALL ENTER TRAP THROUGH THE INLET PIPE ONLY.
7. REINFORCEMENT SHALL BE ADEQUATE FOR TRAFFIC CONDITIONS IN AREA WHERE TRAP IS LOCATED.
8. TEES SHALL BE ACCESSIBLE FOR CLEANING THROUGH THE ACCESS COVERS.

TYPICAL SAND AND OIL INTERCEPTOR




DRAWN BY: JSH	CITY OF TURLOCK	DRAWING NO. S-9
CHECK BY: NBB	APPROVED BY: 	COUNCIL APPROVAL
SCALE: NONE	CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694	DEC, 2015

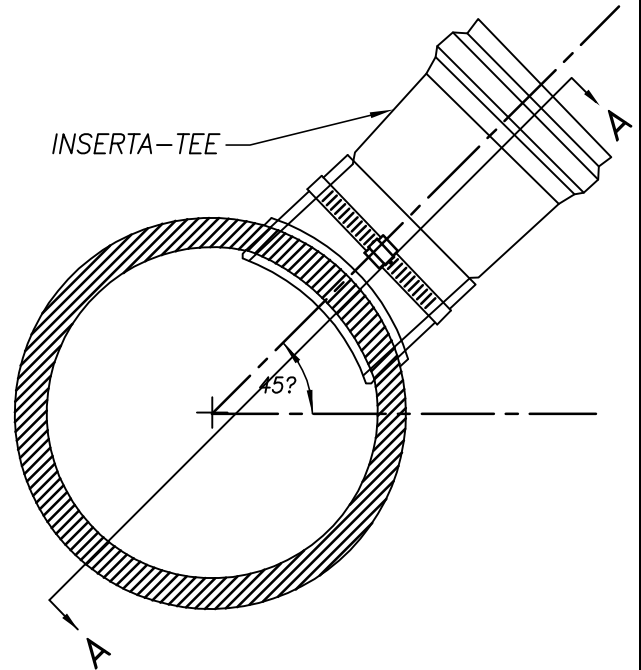
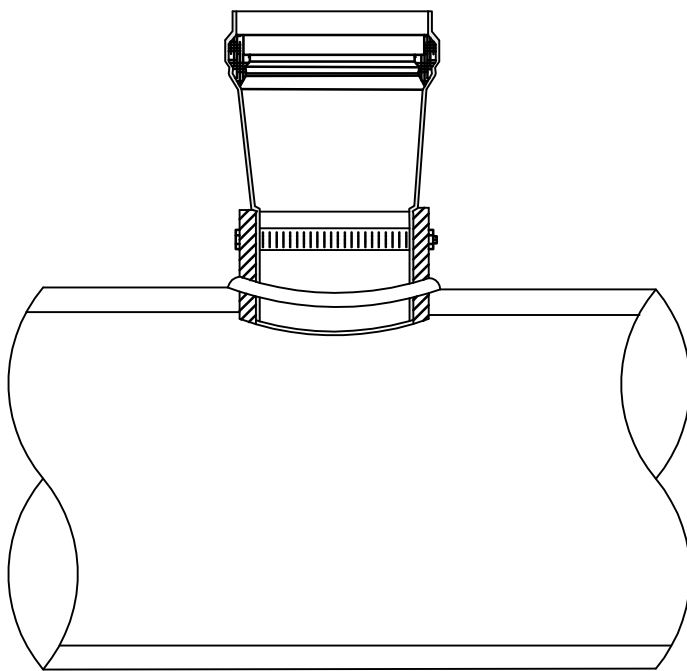
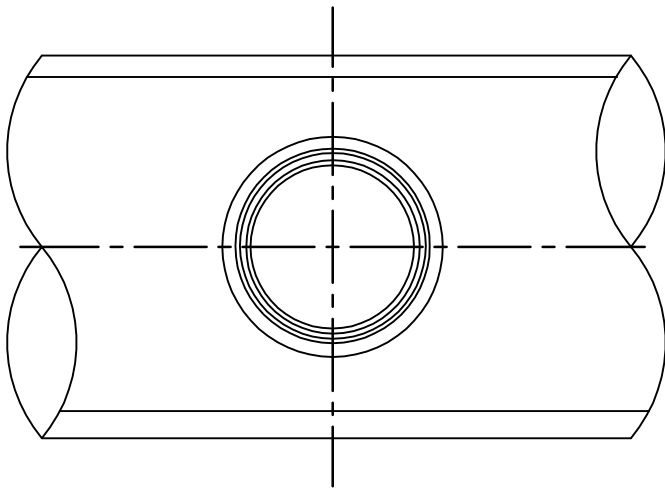


NOTES:

1. CUTS ARE TO BE MADE WITH A PIPE CUTTING TOOL.
2. THERE SHALL BE NO MORE THAN TWO BANDS IN FIVE FOOT LENGTH OF SEWER MAIN.
3. A MANHOLE SHALL BE REQUIRED TO CONNECT A SERVICE LATERAL LARGER THAN 4" INSIDE DIAMETER, UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.
4. WYES SHALL BE INSTALLED ON 10" LINES OR SMALLER.

NEW SERVICE WYE IN EXISTING LINE

	DRAWN BY: JSH	CITY OF TURLOCK APPROVED BY: <i>[Signature]</i> CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694	DRAWING NO. S-10
	CHECK BY: NBB		COUNCIL APPROVAL DEC, 2015
	SCALE: NONE		



SECTION A-A

NOTES:

1. PROCEDURE FOR CONNECTION OF 4" SERVICE ON 10" AND 12" MAINS ONLY.
2. CONNECTION TO SEWER LINES 15" AND LARGER SHALL BE MADE BY INSTALLING A MANHOLE.
3. TAPPING OF SEWER MAIN SHALL BE ACCOMPLISHED BY CITY CREWS OR OBSERVED BY THE ENGINEERING DIVISION

SERVICE CONNECTION TO EXISTING MAINS



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

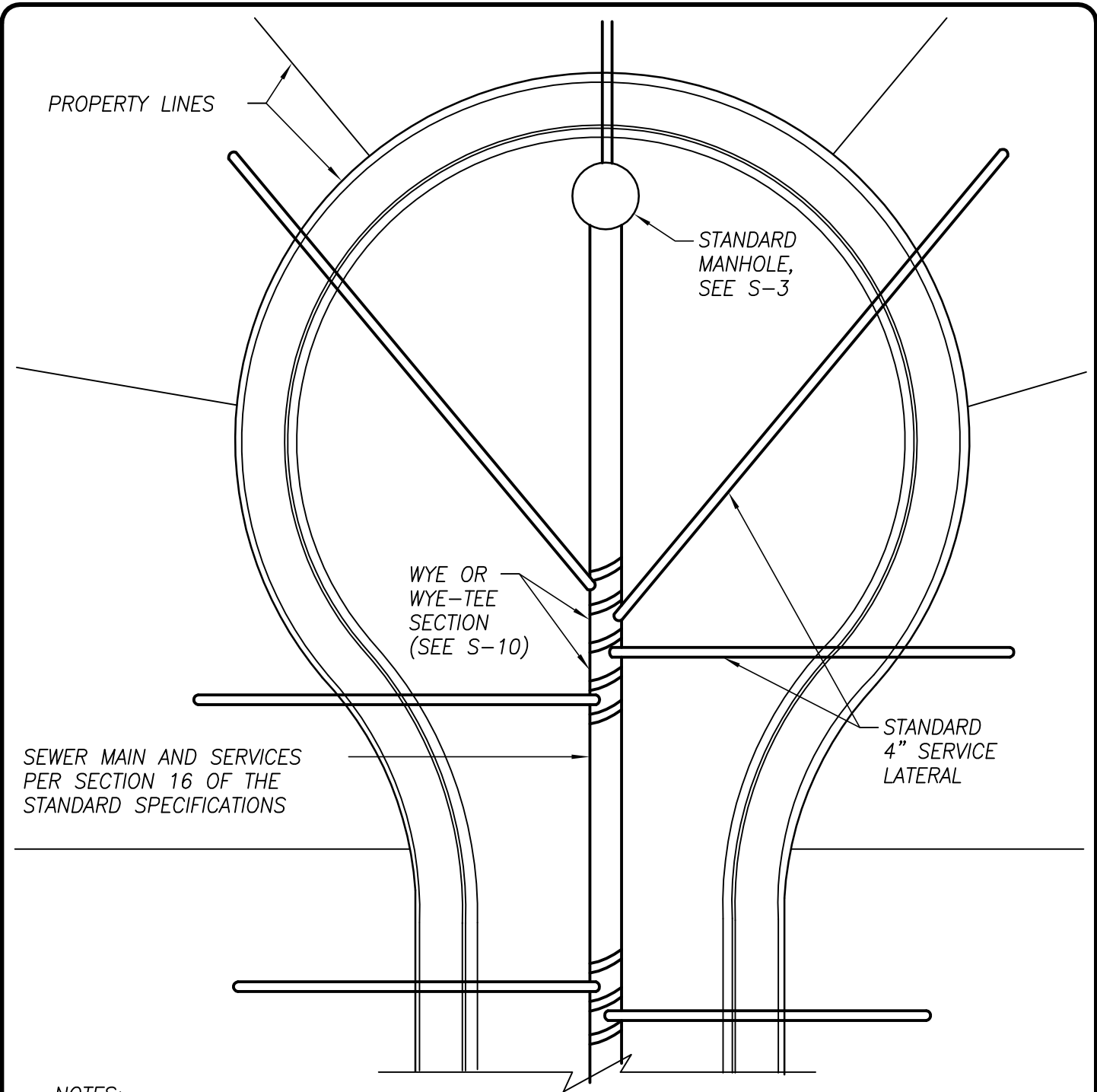
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

S-11

COUNCIL APPROVAL


DEC, 2015

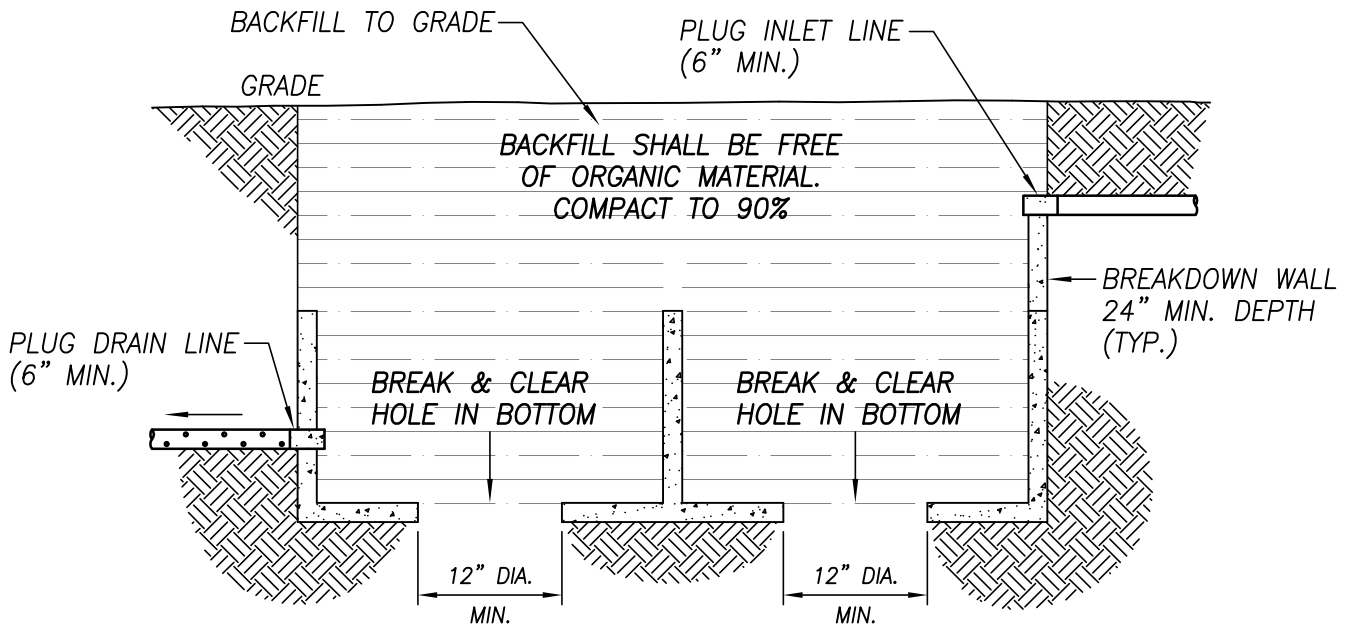


NOTES:

1. SEWER SERVICES SHALL NOT BE PLACED UNDER DRIVEWAY APPROACHES
2. MAXIMUM OF (1) CONNECTION TO MANHOLE UNLESS APPROVED BY THE CITY ENGINEER. SEE SPECIFICATION 16-1.14.
3. A MANHOLE SHALL BE REQUIRED AT THE MAIN AND ON-SITE FOR A SERVICE LARGER THAN 4", UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.

TYPICAL CUL-DE-SAC SEWER SERVICES

	DRAWN BY: JSH	CITY OF TURLOCK APPROVED BY: <i>M. Pitcock</i> CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694	DRAWING NO. S-12
	CHECK BY: NBB		COUNCIL APPROVAL DEC, 2015
	SCALE: NONE		



NOTES:

1. A REFUNDABLE DEPOSIT SHALL BE PAID PRIOR TO BEGINNING WORK. THE REFUND, LESS INSPECTION FEES, SHALL BE MADE AFTER THE WORK HAS BEEN INSPECTED AND APPROVED BY MUNICIPAL SERVICES DEPARTMENT.
2. SEPTIC TANK SHALL BE PUMPED OUT, FLOOR BROKEN OUT, WALLS BROKEN DOWN AND ALL PIPES PLUGGED WITH CONCRETE WITHIN 30 DAYS AFTER CONNECTING TO THE CITY SEWER SYSTEM.
3. INSPECTIONS SHALL BE SCHEDULED IN ADVANCE BY CALLING MUNICIPAL SERVICES DEPARTMENT AT (209) 668-5590
4. SEPTIC TANK SHALL NOT BE BACKFILLED UNTIL THE MUNICIPAL SERVICES DEPARTMENT HAS COMPLETED THE INSPECTION.
5. UPON APPROVAL, BACKFILL THE SEPTIC TANK AS SHOWN IN THE ILLUSTRATION.

SEPTIC TANK DESTRUCTION



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

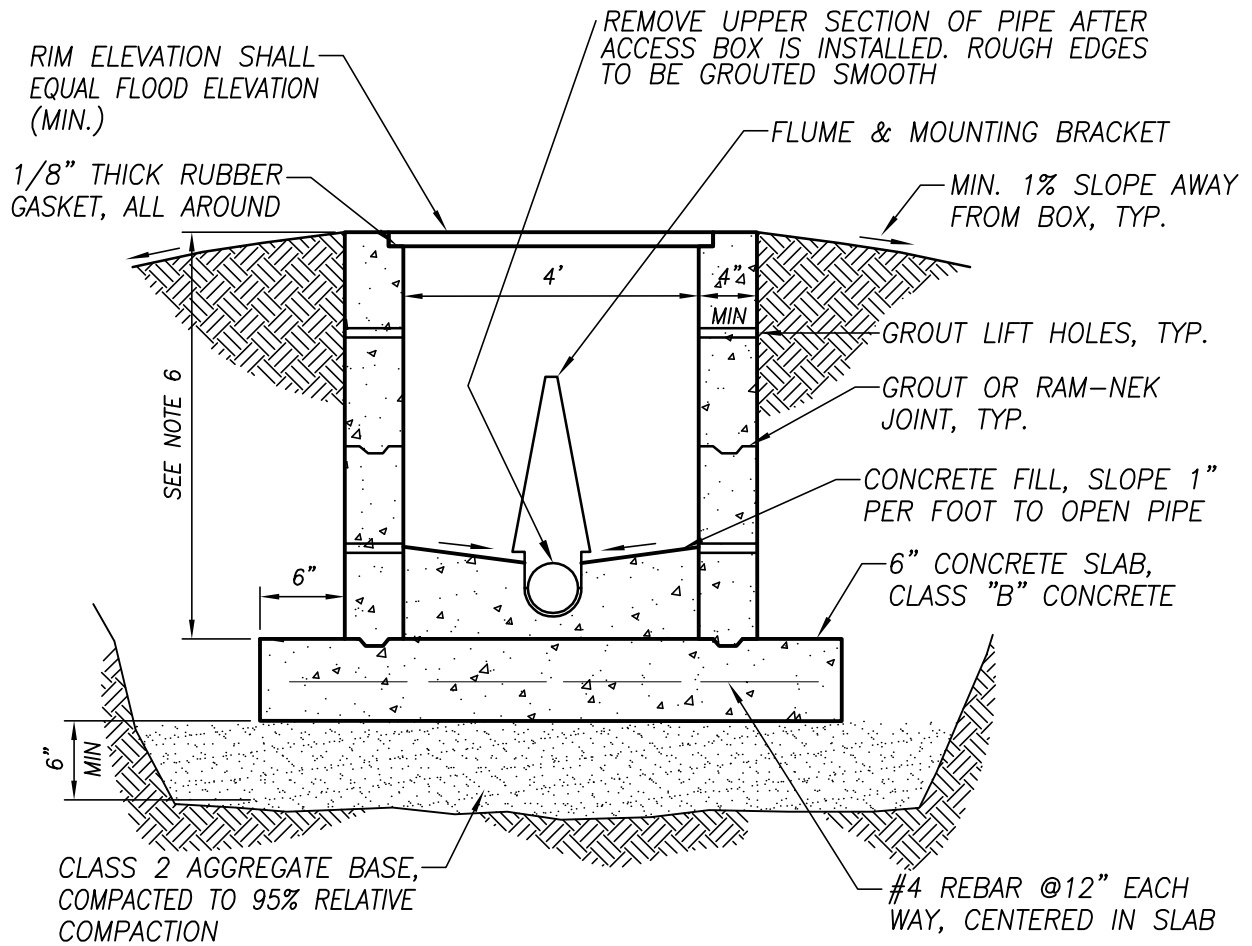
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

S-13

COUNCIL APPROVAL

DEC, 2015



NOTES:

1. ACCESS BOX TYPE MONITORING STATION AND FLUME TO BE USED WITH SHALLOW LATERALS IN NON-TRAFFIC LOADED AREAS.
2. ACCESS BOX SHALL BE 5' X 4' PRE-CAST CONCRETE WITH TWO-PIECE GALVANIZED STEEL LID, PARKWAY TYPE, HINGED, SPRINGLOADED, SCREW DOWN TYPE.
3. BOX AND COVER SHALL BE CHRISTY CONCRETE PRODUCTS, "R" SERIES PRE-CAST PIT, OR EQUAL.
4. FLUME SHALL BE PARSHALL INVERT TYPE OR PERMANENT TYPE WITH TRANSDUCER MOUNTING BRACKET. FLUME SHALL BE PLASTIFAB PARSHALL OR EQUAL. SIZE TO BE DETERMINED BY VOLUME OF FLOW TO BE MEASURED. SET FLUME LEVEL AT DOWN-STREAM END OF PIPE AND GROUT IN PLACE WITH TRANSDUCER BRACKET ATTACHED. USE END BULKHEADS TO MATCH THE SMALLER FLUME WHEN PIPE SIZE IS LARGER THAN THE FLUME.
5. A DETAILED SUBMITTAL INDICATING EXACT EQUIPMENT TO BE FURNISHED MUST BE PROVIDED FOR CITY REVIEW AND APPROVAL.
6. MINIMUM VERTICAL CLEARANCE MUST BE VERIFIED PRIOR TO INSTALLATION OF FLUME AND MONITOR EQUIPMENT.
7. INSTALLATION SHALL BE FREE OF BACKWATER CONDITIONS.

INDUSTRIAL WASTE MONITOR – ACCESS BOX TYPE



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

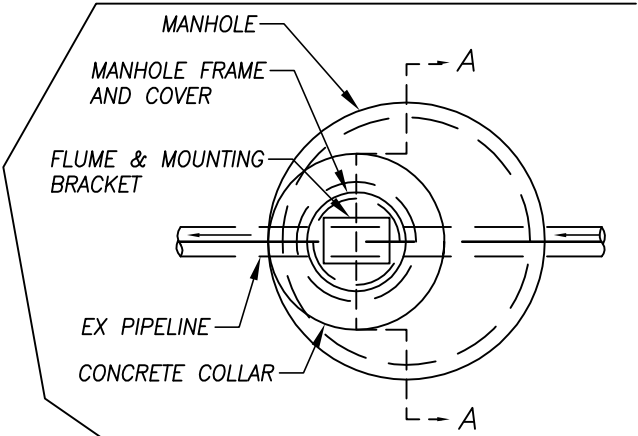
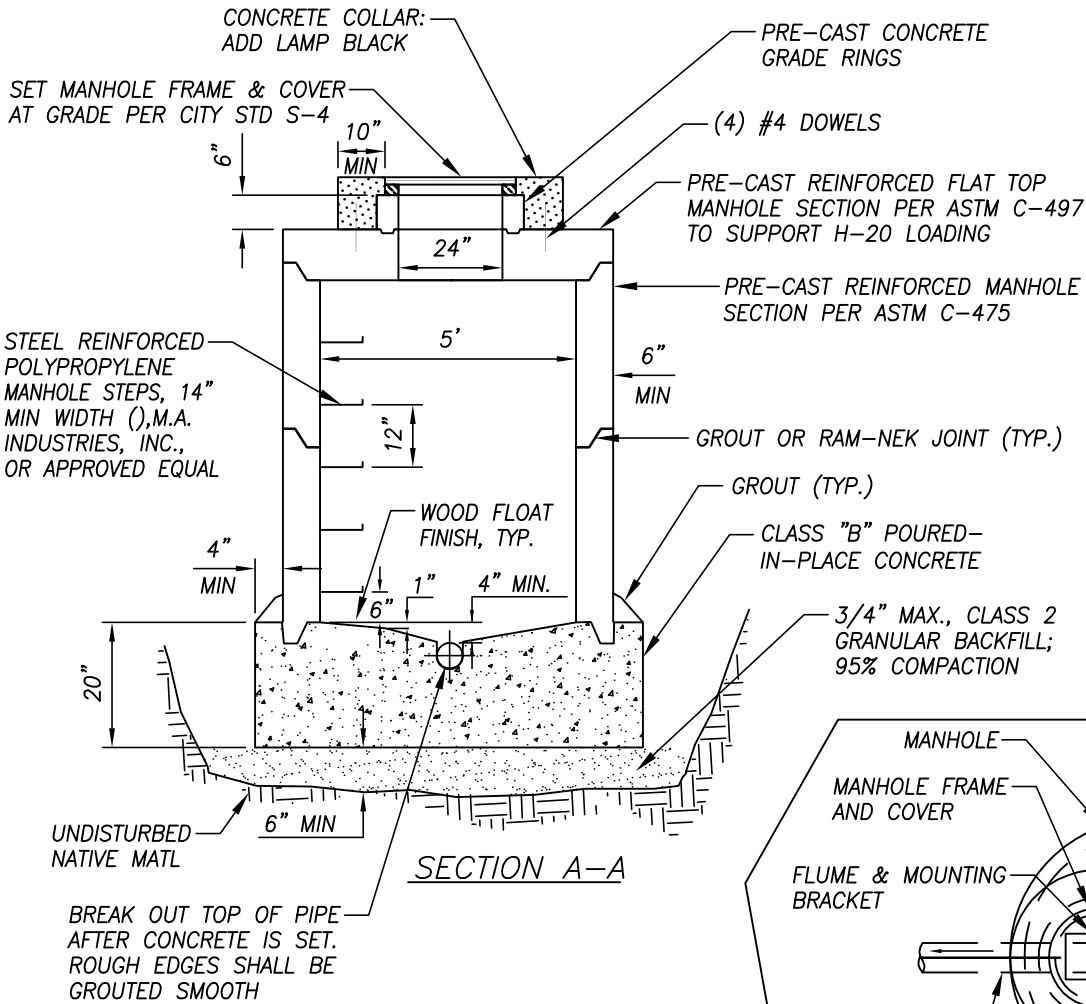
CITY ENGINEER – MICHAEL G. PITCOCK – RCE 52694

DRAWING NO.

S-14

COUNCIL APPROVAL

DEC, 2015




NOTES:

1. MANHOLE TYPE MONITORING STATION AND FLUME TO BE USED WITH DEEP LATERALS OR IN TRAFFIC LOADED AREAS.
2. FLUME SHALL BE PARSHALL INVERT TYPE OR PERMANENT TYPE WITH TRANSDUCER MOUNTING BRACKET. FLUME SHALL BE PLASTIFAB PARSHALL OR EQUAL. SIZE TO BE DETERMINED BY VOLUME OF FLOW TO BE MEASURED. SET FLUME LEVEL AT DOWN-STREAM END OF PIPE AND GROUT IN PLACE WITH TRANSDUCER BRACKET ATTACHED. USE END BULKHEADS TO MATCH THE SMALLER FLUME WHEN PIPE SIZE IS LARGER THAN THE FLUME.
3. A DETAILED SUBMITTAL INDICATING EXACT EQUIPMENT TO BE FURNISHED MUST BE PROVIDED FOR CITY REVIEW AND APPROVAL.
4. MINIMUM VERTICAL CLEARANCE MUST BE VERIFIED PRIOR TO INSTALLATION OF FLUME AND MONITOR EQUIPMENT.
5. INSTALLATION SHALL BE FREE OF BACKWATER CONDITIONS.

INDUSTRIAL WASTE MONITOR – MANHOLE TYPE



DRAWN BY: JSH	CITY OF TURLOCK APPROVED BY:  CITY ENGINEER – MICHAEL G. PITCOCK – RCE 52694	DRAWING NO. S-15
CHECK BY: NBB		COUNCIL APPROVAL DEC, 2015
SCALE: NONE		

17 STORM DRAIN COLLECTION SYSTEM

17-1 DESCRIPTION

This work shall consist of furnishing and installing storm drainage facilities in accordance with the Standard Drawings and these Standard Specifications.

17-2 INTERIM DRAINAGE FACILITIES

When the use of an interim drainage facility is required, it shall be constructed in accordance with the Standard Drawings.

Under no circumstances will a downwell be used when an interim drainage facility is required.

17-3 PIPING REQUIREMENTS

Storm drain pipe may be reinforced concrete pipe, cast-in-place concrete pipe and PVC pipe and shall conform to the below listed specifications for each type of pipe. The class of pipe to be used shall be shown on the plans or specified in the Special Provisions.

Reinforced Concrete Pipe

Reinforced concrete pipe shall conform to the requirements as outlined in Section 65 of the Caltrans Specifications. The use of rubber gasket joints will be required unless specified otherwise by the Engineer.

Cast-In-Place Concrete Pipe

Cast-in-place concrete pipe shall conform to the requirements as outlined in Section 63 of the Caltrans Specifications.

Polyvinyl Chloride Pipe

PVC shall conform to the requirements of ASTM Designation F794 and subsection 16-4 or approved equal. PVC pipe shall be bell and spigot only with polyisoprene rubber gasket meeting or exceeding ASTM F477 requirements.

17-4 MINIMUM PIPE SIZE

The minimum pipe size for storm drain purposes shall be 18 inches unless otherwise approved by the Engineer.

17-5 PIPE LAYING

Unless otherwise specified by the Engineer, all pipes shall be laid with the bells facing the direction of laying and shall be laid in accurate conformity with the prescribed lines and grades. Each length shall be jointed to the preceding section as hereinafter specified; and after said jointing procedure has commenced, there shall be no movement of the pipe whatsoever in subsequent operations. Each pipe shall have a firm bearing for its full length in the trench, except at bell holes and field joints. Only approved lubricants shall be used as an aid to mating bells and spigots. The reference line on the spigot end should be flush with the end of the bell.

Every precaution shall be taken to protect the pipe against the entrance of foreign material before the pipe is placed in the trench. At the close of the day's operations, or whenever workmen are absent from the job site, the last section of pipe shall be plugged, capped or otherwise tightly closed to prevent the entry of foreign matter of any nature.

All trenches shall be of sufficient depth to provide a minimum cover of 30 inches, measured from the top of the pipe to the finish grade, unless otherwise approved by the Engineer.

17-6 PRECAST MANHOLE SECTIONS

Precast manhole sections shall conform to size, shape and details shown on the Standard Plans. Pipe sections shall conform to current ASTM Specification C76, Class II. A minimum of one cage of reinforcing is required, the cross sectional area of which is equal to that specified for the inner cage of the above ASTM Specifications. Cement used in the precast sections shall be Type II or Type V. (ASTM Specification C478 may be used in lieu of C76).

Manholes shall be placed at every change in line direction, at lateral connections and no more than 500 feet apart unless otherwise approved by the Engineer.

17-7 CATCH BASINS

All catch basin walls shall be free of voids and have a smooth finish. All lumber used in the construction of the catch basin shall be removed. Precast sections shall have a water stop inserted and seams shall be grouted.

17-8 RISER RINGS

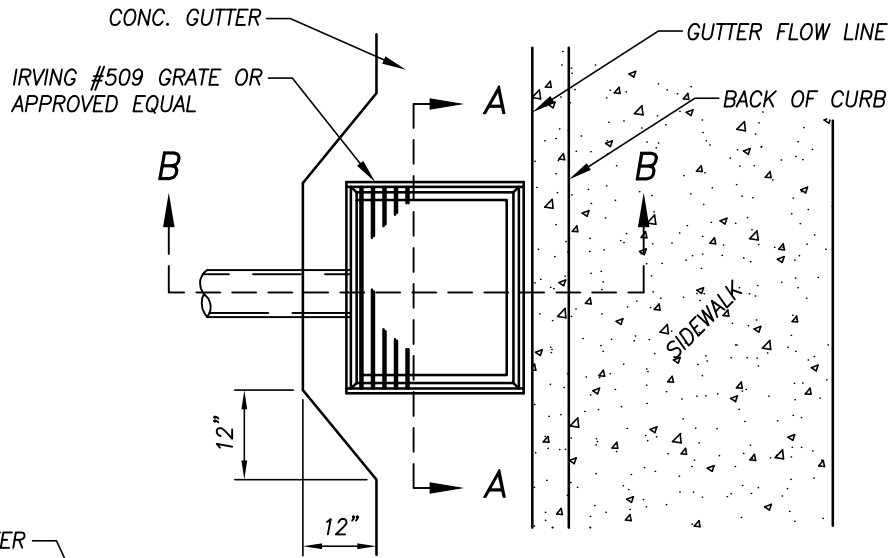
Riser rings shall conform to these Standard Specifications.

17-9 HORIZONTAL ALIGNMENT DESIGN

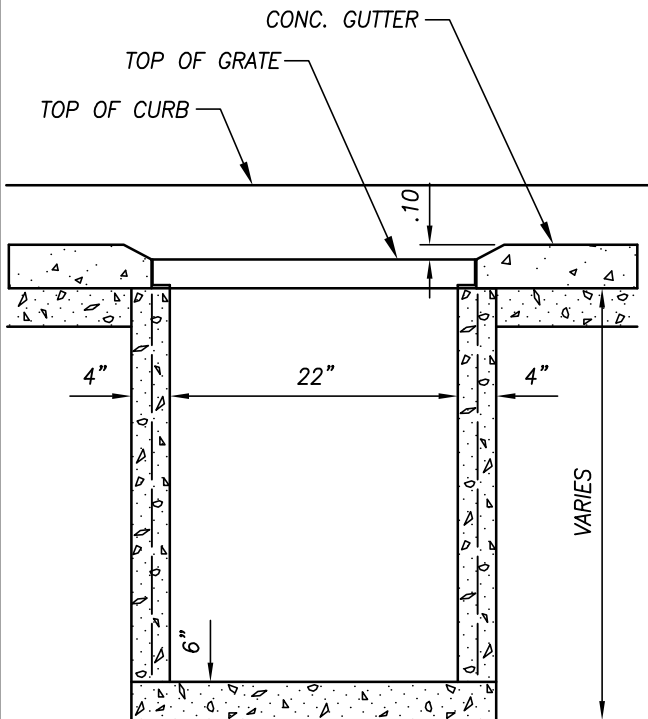
Storm drain lines shall be straight lines from manhole to manhole, except as specified herein. For radius storm drain lines, the minimum radius used shall be 300 feet and shall use only RCP. Construction of lines on a radius shall be inspected prior to any backfilling.

17-10 TESTING AND ACCEPTANCE

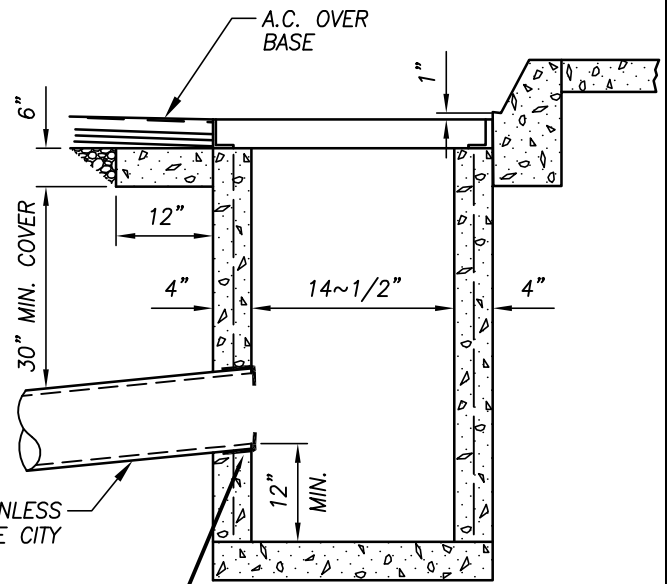
The storm drainage pipe installed shall be tested as outlined in these Standard Specifications and as directed by the Engineer.



PLAN VIEW



SECTION A-A



SECTION B-B

18" MIN. PIPE UNLESS APPROVED BY THE CITY ENGINEER

WATER STOP GASKET TO BE USED FOR PLASTIC PIPE

6" NATIVE SOIL COMPACTED TO 95%

NOTE:

ONLY TO BE USED WITH THE WRITTEN PERMISSION OF THE CITY ENGINEER

CATCH BASIN NO. 1

CITY OF TURLOCK

DRAWING NO.

SD-1

COUNCIL APPROVAL

DEC, 2015

DRAWN BY: JSH

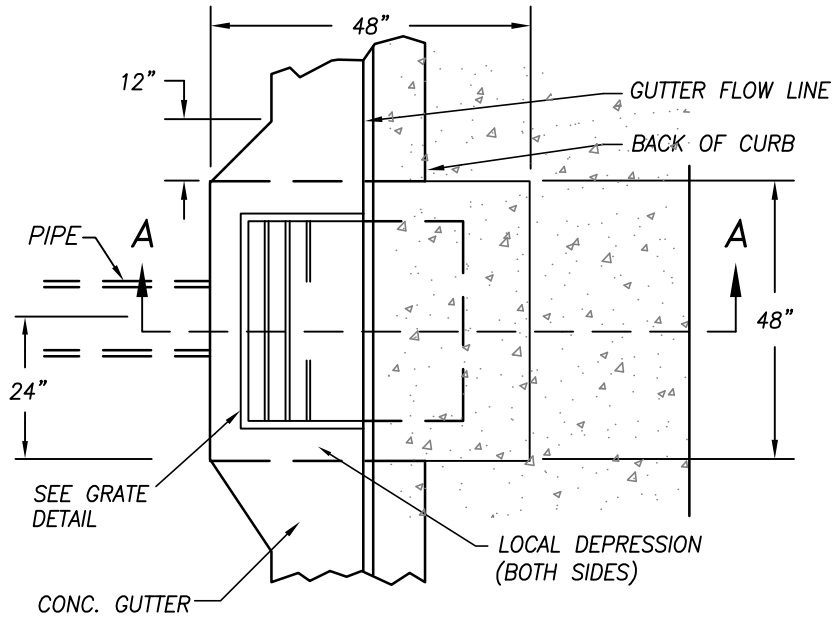
CHECK BY: NBB

SCALE: NONE

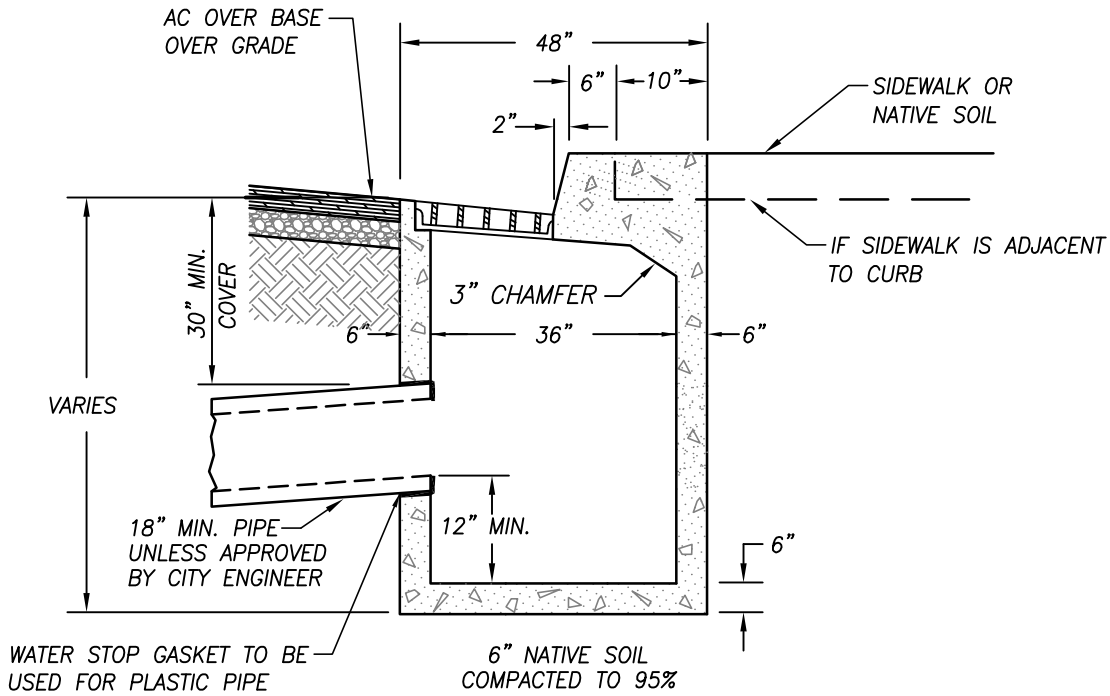
APPROVED BY:

CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694





PLAN VIEW



SECTION A-A

NOTE:
ONLY TO BE USED WITH THE WRITTEN PERMISSION OF THE CITY ENGINEER

CATCH BASIN NO. 2

CITY OF TURLOCK

DRAWING NO.

SD-2

COUNCIL APPROVAL

NOV., 2015



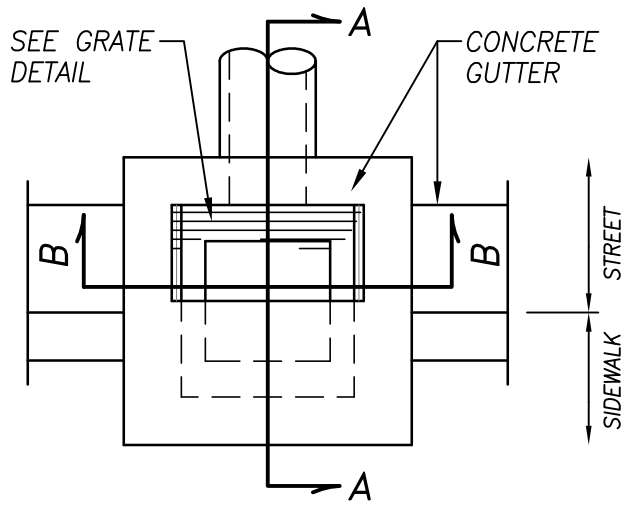
DRAWN BY: VL

CHECK BY: NBB

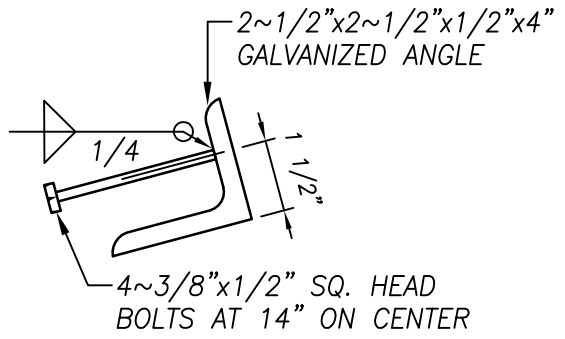
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APPROVED BY:

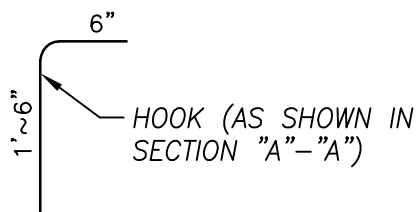
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694



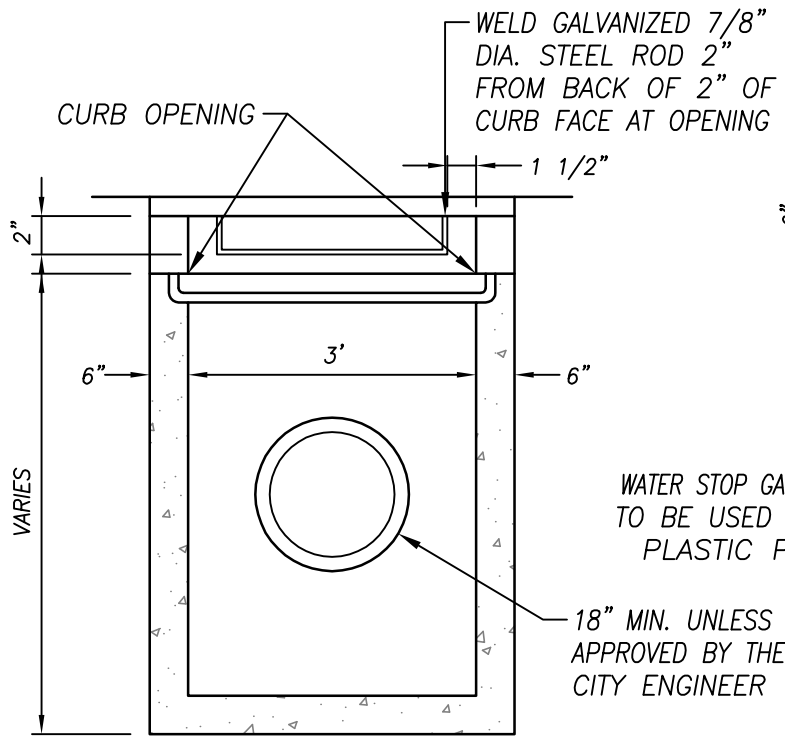
PLAN



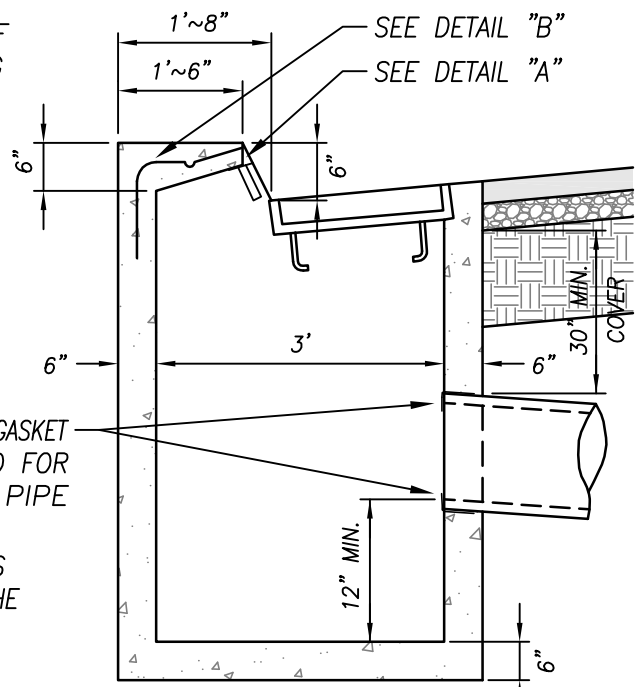
DETAIL A



DETAIL B



SECTION "B"-"B"



SECTION "A"-"A"

CATCH BASIN NO. 3

CITY OF TURLOCK

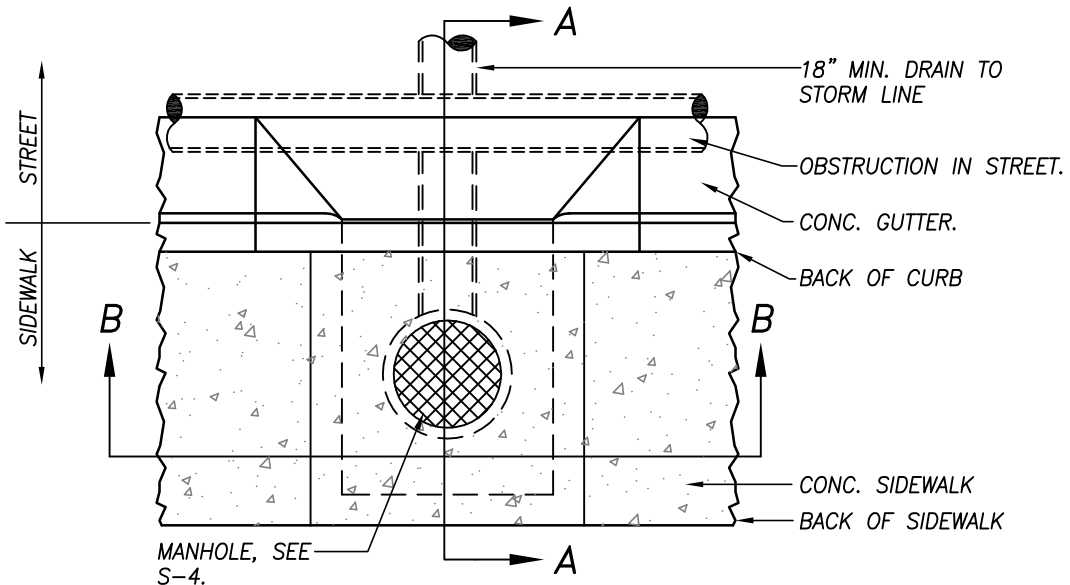


DRAWN BY: JSH
 CHECK BY: NBB
 SCALE: NONE

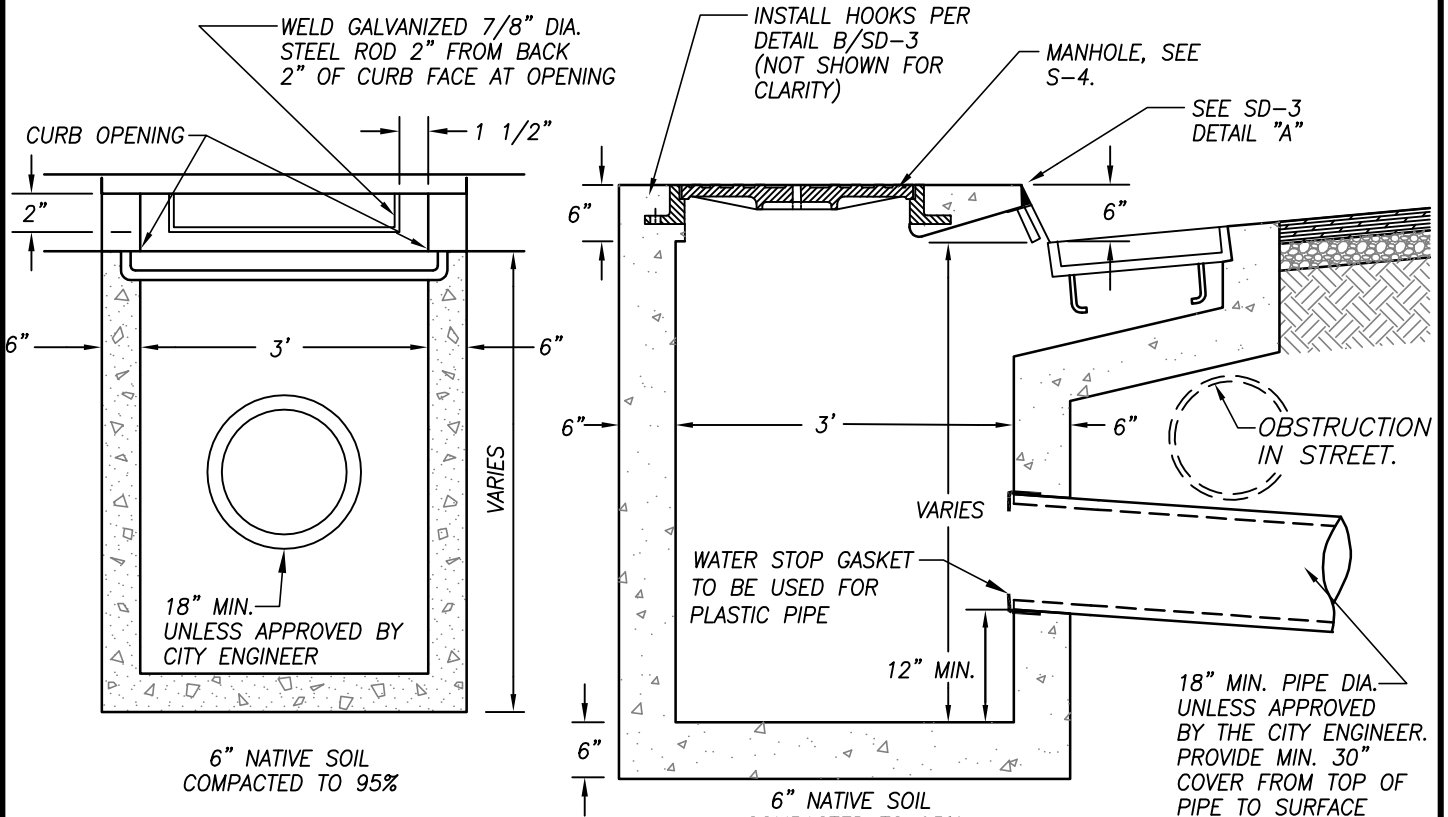
APPROVED BY:

 CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.
SD-3
 COUNCIL APPROVAL
NOV., 2015



PLAN



SECTION B-B

SECTION A-A

NOTE:
ONLY TO BE USED WITH THE WRITTEN PERMISSION OF THE CITY ENGINEER

CATCH BASIN NO. 4

CITY OF TURLOCK



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

APPROVED BY:

Michael G. Pitcock

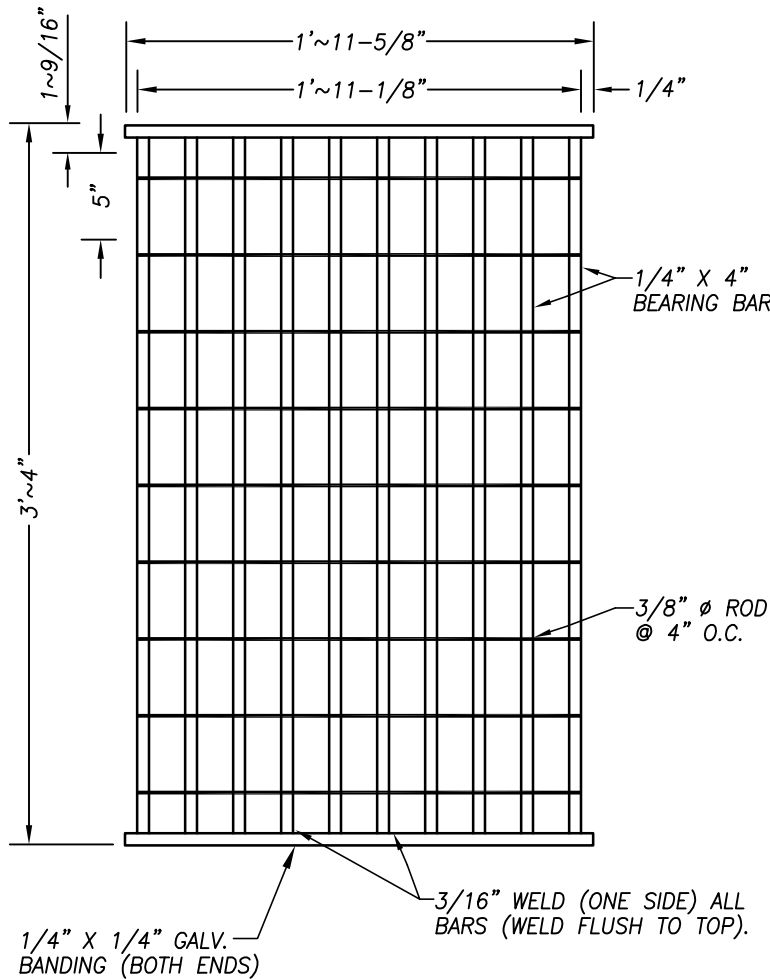
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

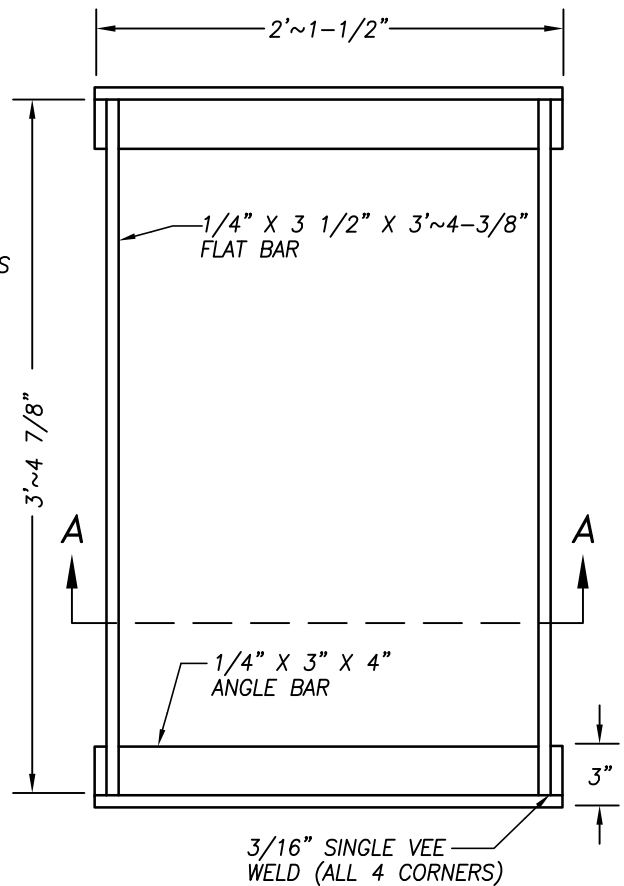
SD-4

COUNCIL APPROVAL

NOV., 2015



GRATE

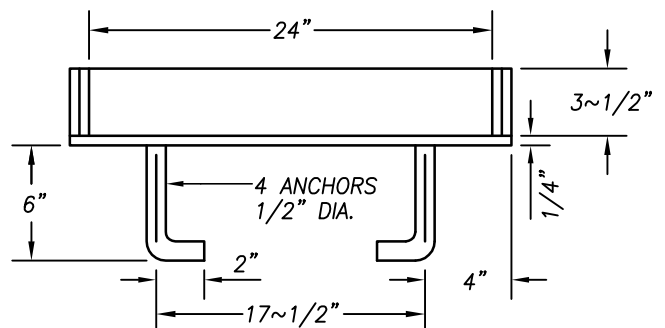


FRAME

PLAN VIEW

NOTES:

1. PLACE GRATE BARS PARALLEL TO CURB LINE.
2. ALL MISCELLANEOUS IRON AND STEEL SHALL BE HOT DIP GALVANIZED AFTER FABRICATION.
3. 3/8" DIA. RIVETS SHALL BE PLACED AT 5" ON CENTER THROUGH BEARING BARS.
4. OPEN AREA = 79.8%
5. IRVING GRATE TYPE "V" BANDED & GALVANIZED, STATE STANDARD NO. 24-10S, OR APPROVED EQUAL.



SECTION A-A

GRATE DETAIL FOR SD-2 & SD-3



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

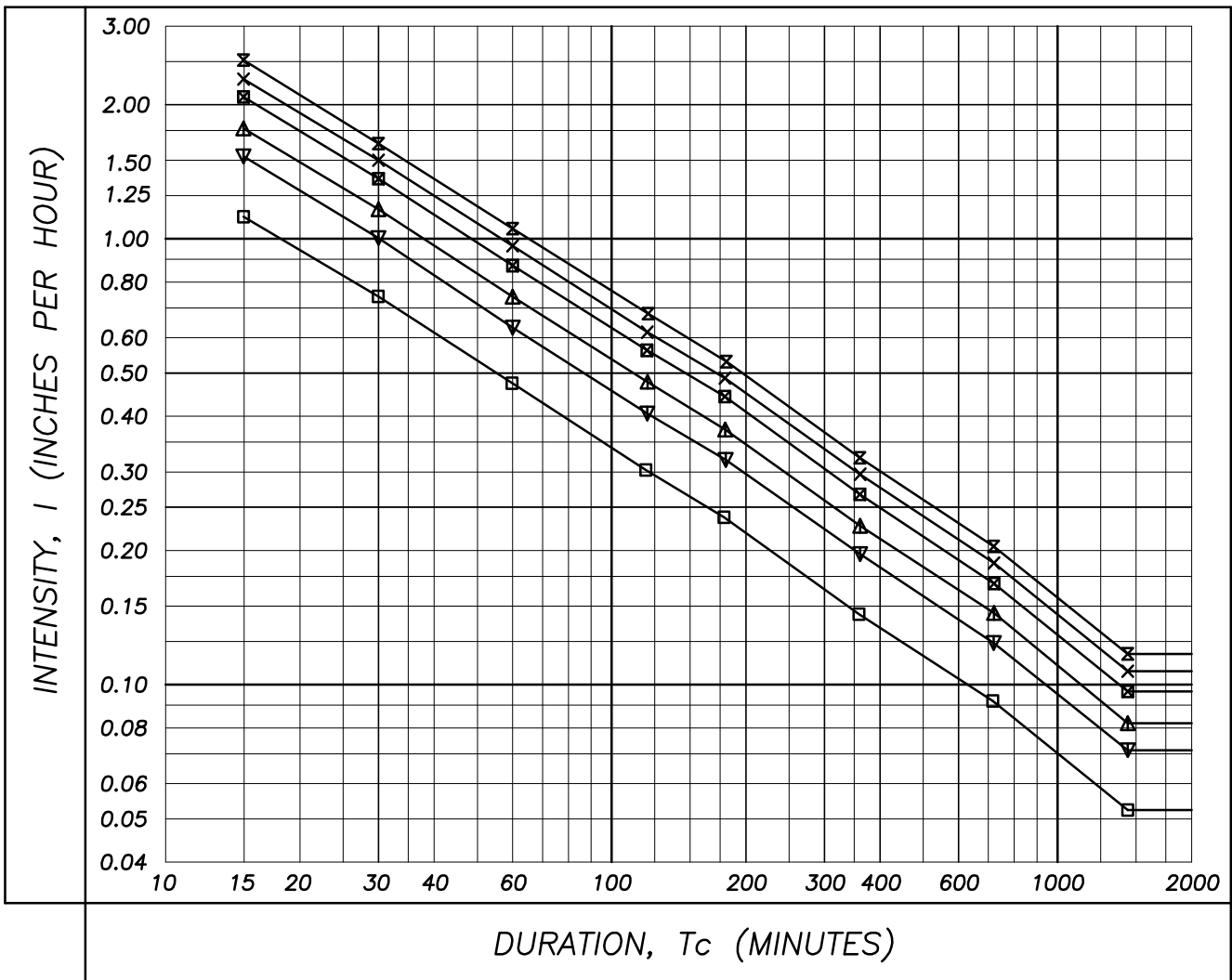
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

SD-5

COUNCIL APPROVAL

NOV., 2015



LEGEND

- 2
- ▽ 5
- △ 10
- ⊠ 25
- × 50
- ⊠ 100

RAINFALL INTENSITY-DURATION CURVE



DRAWN BY: JSH

CHECK BY: ARO

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

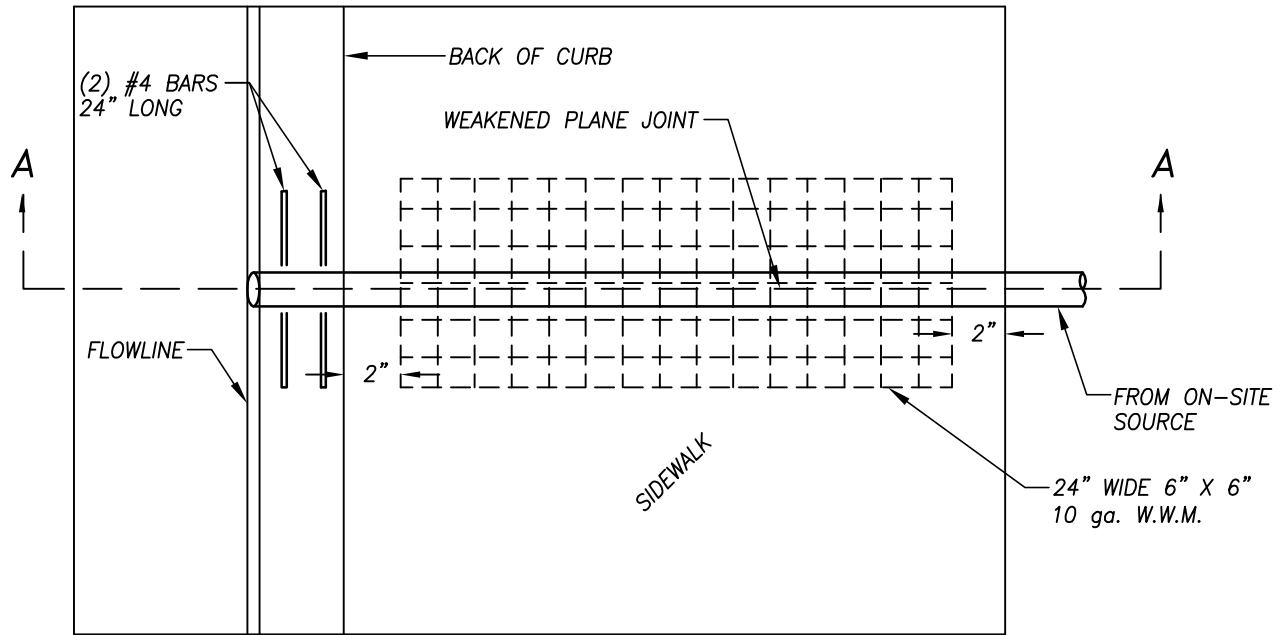
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

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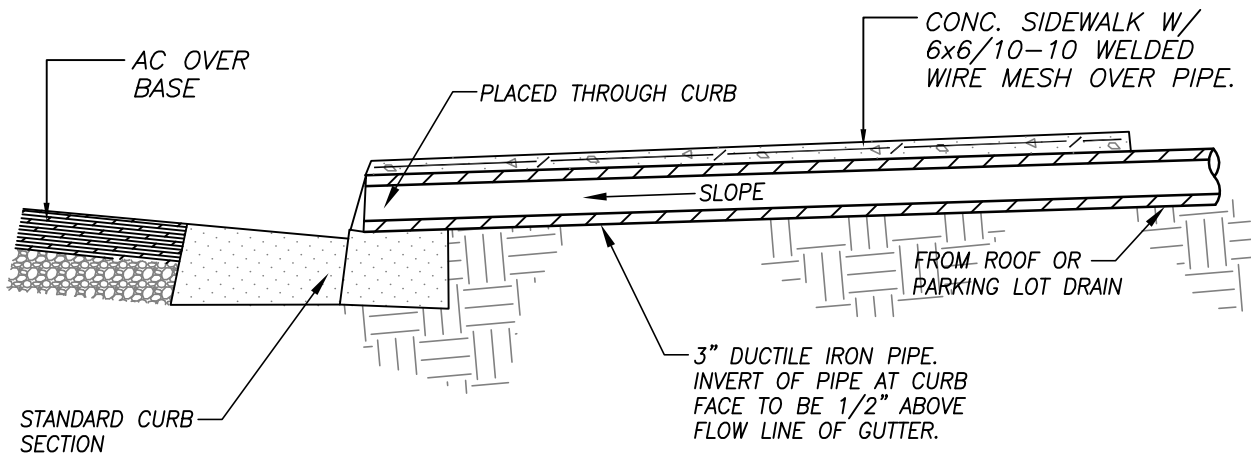
SD-6

COUNCIL APPROVAL

NOV., 2015



PLAN



SECTION A-A

NOTES:

1. ALL ROOF DRAINAGE SHALL DRAIN TO ON-SITE DISPOSAL. THIS STANDARD APPLIES ONLY WITH CITY ENGINEER'S APPROVAL.
2. WHEN ROOF DOWNSPOUT OR PARKING LOT DRAIN IS WITHIN 50 FEET OF AN EXISTING OR PROPOSED CATCH BASIN, PIPE DRAIN SHALL BE CONNECTED TO CATCH BASIN AND NOT PLACED THROUGH CURB.

SIDEWALK UNDER-DRAIN



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

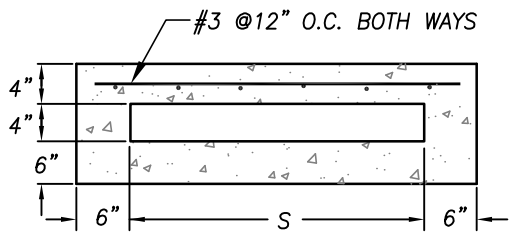
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

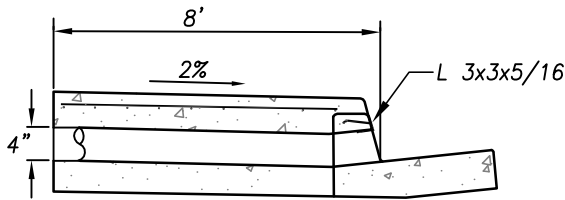
SD-7

COUNCIL APPROVAL

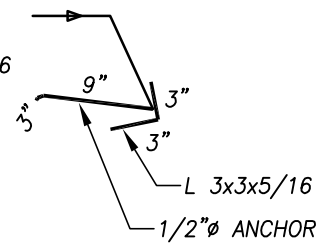
NOV., 2015



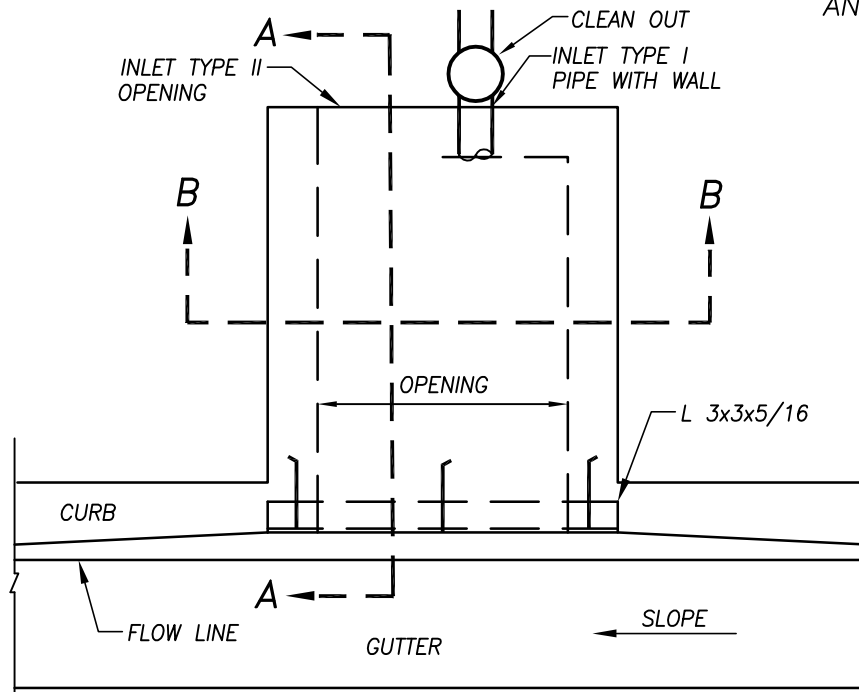
SECTION B-B



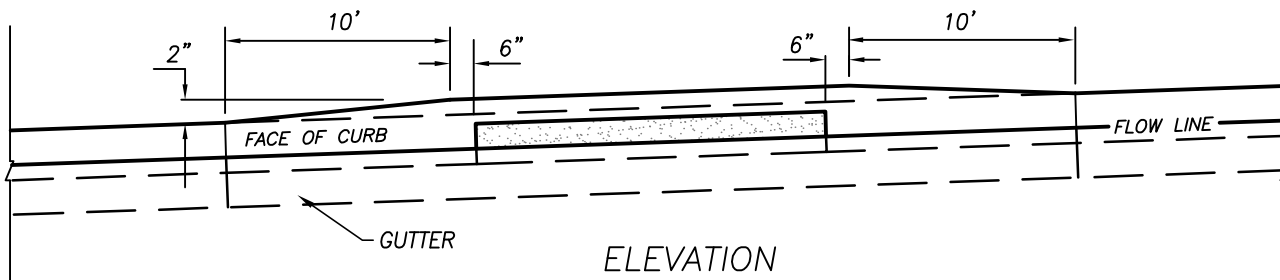
SECTION A-A



ANGLE ANCHOR DETAIL



PLAN



ELEVATION

NOTES:

1. "S" SHALL NOT EXCEED 6 FEET.
2. FLOOR OF BOX TO BE TROWELED SMOOTH.
3. TOP OF INLET STRUCTURE TO BE FLUSH WITH ADJACENT SURFACE WHERE PRACTICABLE.
4. THE 3" LEG OF THE INTERIOR ANCHORS SHALL BE PARALLEL TO THE TOP OF SIDEWALK.
5. FOR "S" IN EXCESS OF 4 FEET A DOUBLE BOX STRUCTURE SHALL BE USED.

ALTERNATE CURB DRAIN



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

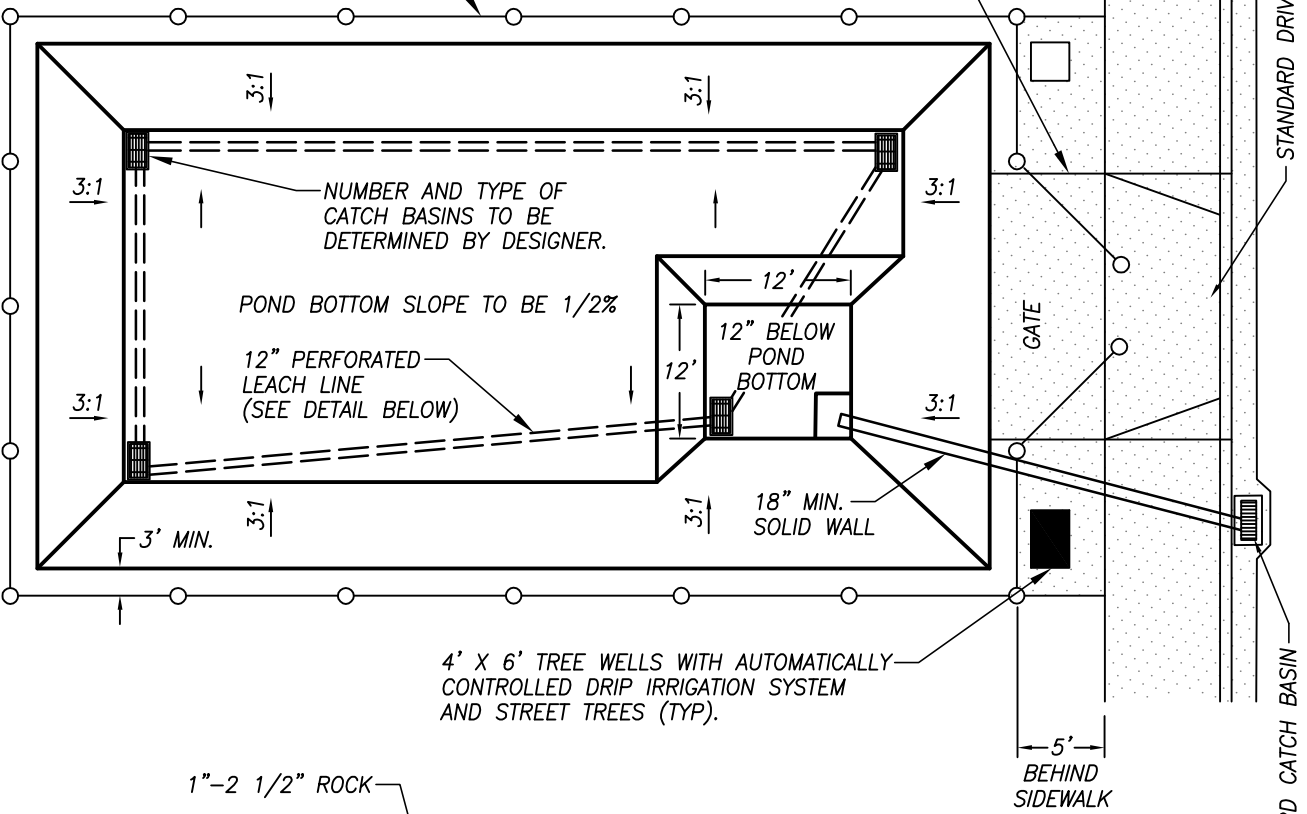
SD-8

COUNCIL APPROVAL

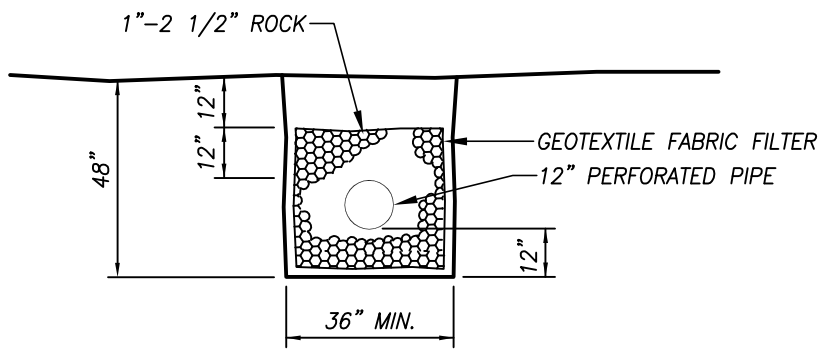
NOV., 2015

6' CHAIN LINK FENCE W/6" WIDE MOW STRIP. SEE STD. DWG. M-6.

CONCRETE APPROACH BEHIND SIDEWALK



4' X 6' TREE WELLS WITH AUTOMATICALLY CONTROLLED DRIP IRRIGATION SYSTEM AND STREET TREES (TYP).



LEACH LINE DETAIL

NOTES:

1. WEED CONTROL TO BE APPLIED TO BANKS PRIOR TO ACCEPTANCE BY THE CITY.
2. DESIGNER SHALL SUBMIT SOIL LOG AND OTHER PERTINENT DESIGN DATA FOR APPROVAL BY THE CITY.
3. DESIGNS AS SHOWN ARE CONCEPTUAL. ALTERNATE DESIGNS OR MODIFICATIONS TO THE STANDARD SHALL BE SUBMITTED TO THE CITY ENGINEER FOR APPROVAL WHEN DEPTH TO GROUND WATER IS LESS THAN 8 FEET AND / OR OTHER FACTORS LIMIT THE IMPLEMENTATION OF THE STANDARD DESIGN.

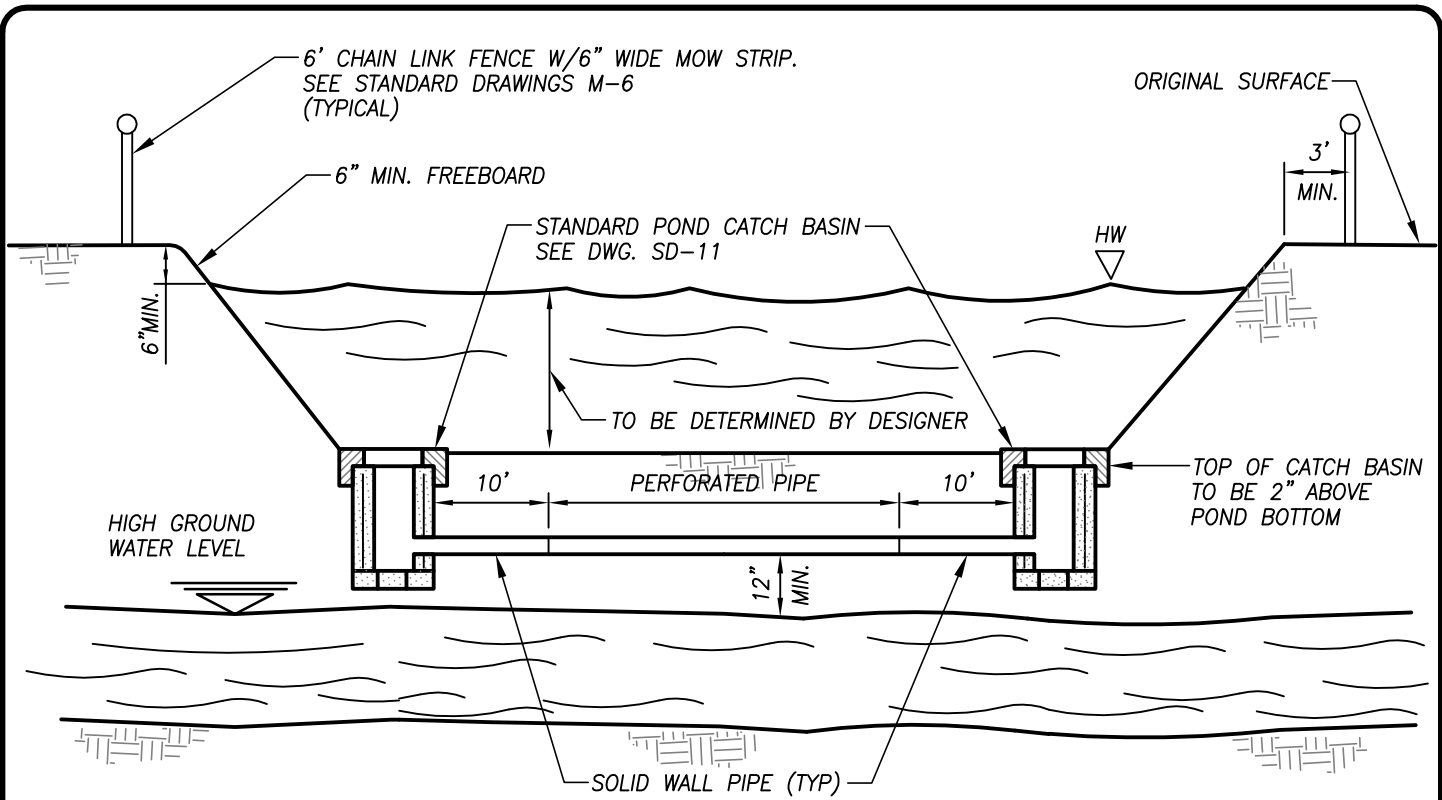
INTERIM DRAINAGE POND



DRAWN BY: JSH
 CHECK BY: NBB
 SCALE: NONE

CITY OF TURLOCK
 APPROVED BY: *[Signature]*
 CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

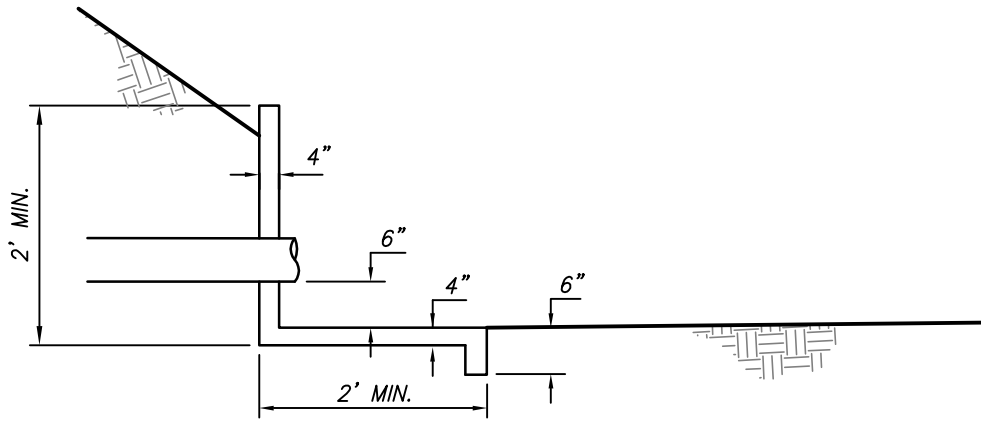
DRAWING NO.
SD-9
 COUNCIL APPROVAL
NOV., 2015



POND CROSS-SECTION

NOTE:

HW: DESIGN HIGH WATER SHALL BE EQUAL TO ONE FOOT BELOW LOWEST TOP OF CURB (TC) OF CONNECTED CATCH BASIN.



OUTLET DETAIL

INTERIM DRAINAGE POND

CITY OF TURLOCK



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

APPROVED BY:

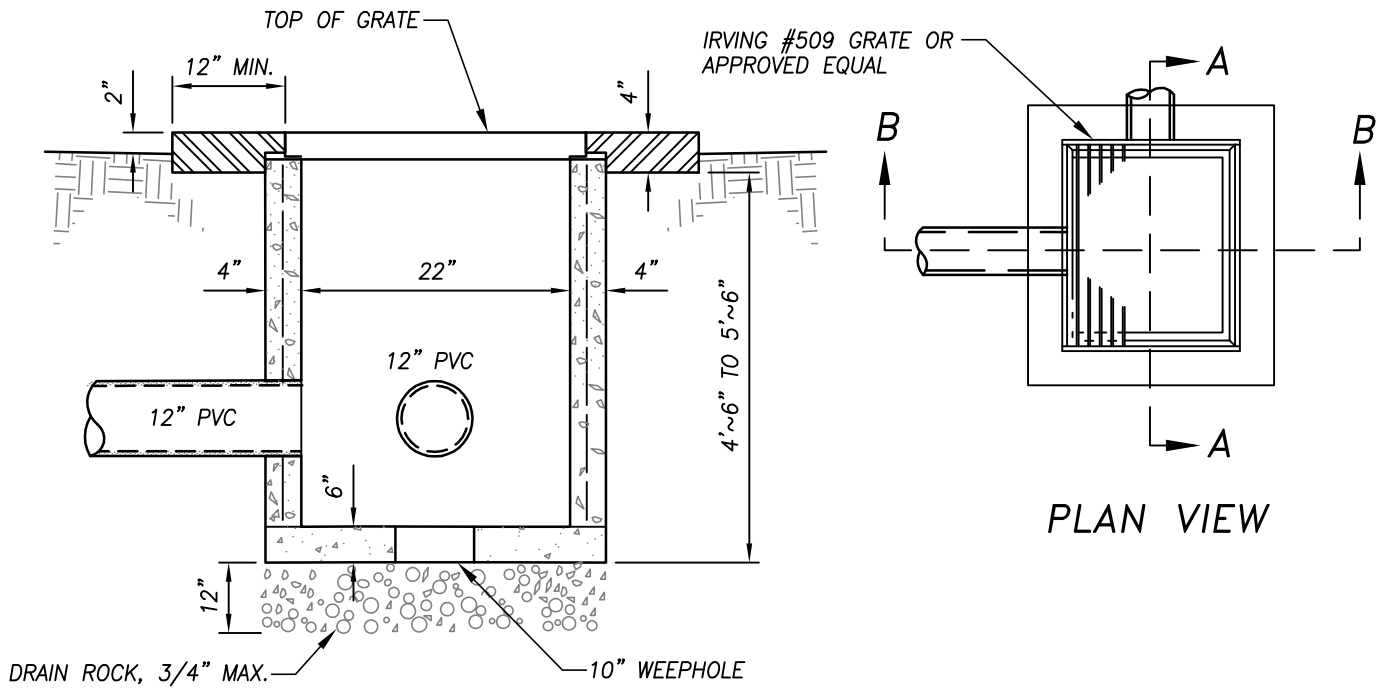
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

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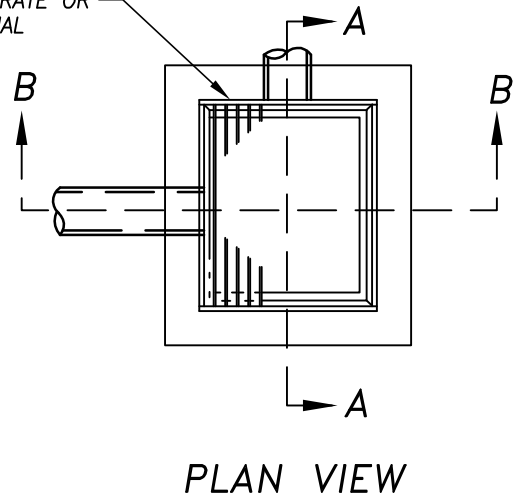
SD-10

COUNCIL APPROVAL

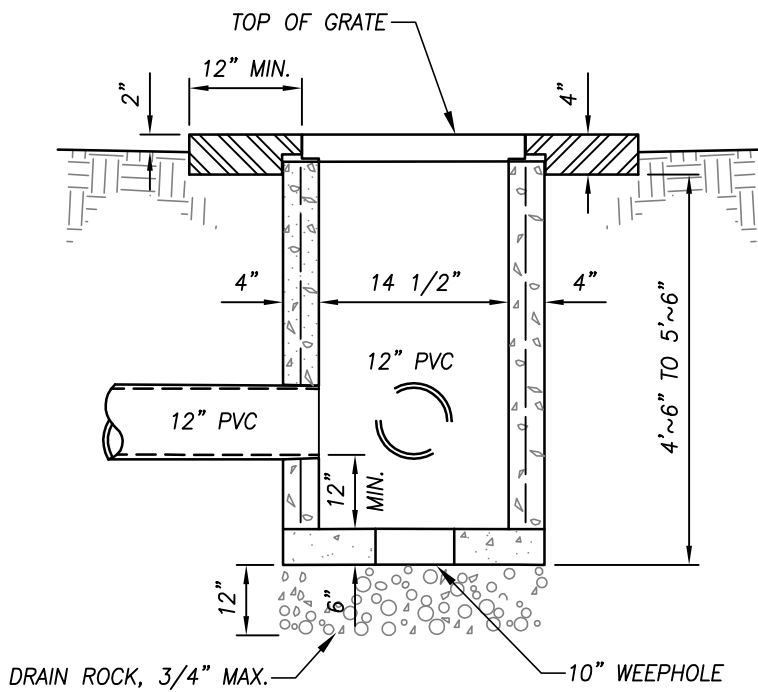
NOV., 2015



SECTION A-A



PLAN VIEW



SECTION B-B

POND CATCH BASIN

CITY OF TURLOCK



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

APPROVED BY:

CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

SD-11

COUNCIL APPROVAL

NOV., 2015

INTERIM DRAINAGE FACILITIES: WHEN REQUESTED TO DO SO, THE DEVELOPER SHALL DESIGNATE A CERTAIN LOT OR LOTS TO BE UTILIZED AS A STORM DRAINAGE BASIN THE DRAINAGE BASIN LOT(S) SHALL BE NUMBERED SUBDIVISION LOTS SIMILAR IN SIZE AND SHAPE TO THE OTHER SUBDIVISION LOTS.

FENCING: SPECIAL ATTENTION IS DIRECTED TO STANDARD DRAWING SD-7 FOR DETAILS FOR VISIBILITY SETBACKS FOR DRAINAGE BASINS LOCATED ON CORNER LOTS.

CONCRETE: CONCRETE TO BE PLACED IN THE AREA BETWEEN THE SIDEWALK AND THE CHAIN LINK FENCE SHALL BE 3-1/2 INCHES THICK AND SHALL BE SEPARATED FROM THE SIDEWALK BY AN EXPANSION JOINT. ONE DRIVEWAY BREAKDOWN SHALL BE INSTALLED TO SERVE THE DRAINAGE BASIN AND SHALL BE LOCATED AS SHOWN IN THE STANDARD DRAWINGS AND AS DIRECTED BY THE ENGINEER.

DESIGN CRITERIA: THE DRAINAGE BASIN SHALL BE DESIGNED TO RETAIN A 3 INCH STORM OVER THE ENTIRE TRIBUTARY AREA (INCLUDING STREETS), WITH DESIGN RUNOFF COEFFICIENTS "C" AS LISTED BELOW:



<u>DESIGNATION</u>	<u>"C"</u>
RESIDENTIAL LOW DENSITY (3-7 UNITS/ACRE)	0.40
RESIDENTIAL MEDIUM DENSITY (8-12 UNITS/ACRE)	0.55
RESIDENTIAL HIGH DENSITY (12-30 UNITS/ACRE)	0.70
COMMERCIAL	0.80
INDUSTRIAL	EST. BY DESIGNER

NOTE: IN LIEU OF USING THESE COEFFICIENTS, COMPOSITE COEFFICIENTS MAY BE DETERMINED FOR LAND USES WITHIN THE DEVELOPMENT BY USING THE FOLLOWING BASIC COEFFICIENTS:

<u>SURFACE</u>	<u>"C"</u>
PAVEMENT	0.95
ROOFS	0.80
COMPACTED EARTH WITHOUT PAVING	0.75
LAWNS AND OPEN LAND	0.10 TO 0.20

BASIN CHARACTERISTICS: THE DRAINAGE BASIN SHALL NOT BE EXCAVATED WITHIN 18 INCHES OF THE PROJECTED MAXIMUM GROUND WATER LEVEL AS DETERMINED BY THE ENGINEER. BOTH THE WATER AND SEWER CONNECTIONS SHALL BE INSTALLED TO EACH OF THE SUBDIVISION LOTS WITHIN THE DRAINAGE BASIN.

INTERIM DRAINAGE POND SPECIFICATION

	DRAWN BY: JSH	CITY OF TURLOCK	DRAWING NO. SD-12
	CHECK BY: NBB	APPROVED BY: 	COUNCIL APPROVAL
	SCALE: NONE	CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694	NOV., 2015

18 STREET LIGHTING AND APPURTENANCES

18-1 GENERAL

All electrical equipment shall conform to the standards of the National Electrical Manufacturers Association. In addition to the requirements of the Standard Drawings and these Standard Specifications, all material and work shall conform to the requirements of the Municipal Code of the City of Turlock, the National Electric Code, Caltrans, the Electrical Safety Orders of the State of California, Rules of Overhead Line Construction G.O. 95, State of California, Public Utilities Commission, the American Standards Association, and the Turlock Irrigation District, hereinafter referred to as "TID".

18-2 CONDUIT

All installations of conductor between the standard and the energy source shall be placed in a minimum 1 inch conduit. Conduit installed under streets through the foundation for standards and on wooden utility poles shall be a minimum 1 inch PVC Schedule 40 or an approved equal. Pole bases shall contain 1 inch rigid conduits min. as noted on applicable standard details. Conduit shall conform to the requirements of the National Electric Code and shall be so marked along every 10 feet of tubing. Refer to Articles 352 and 358 in the 2004 edition of the National Electric Code.

Conduit shall be prepared in such a manner as to provide true protection for the conductor. Standard couplings and connectors shall be used. Crimping of conduit will not be allowed. All bends in conduit shall be sweeping bends and shall contain no splices or couplings through the span of the bend.

Conduit within the public right-of-way shall not be less than 24 inches below the curb grade. Within public utility easements its depth shall not be less than 30 inches below finish property elevation.

Underground conduit trenches shall be backfilled with clean material, free of lumps and other material that has been approved by the Engineer. Conduit runs within an existing street area shall be backfilled with a three sack concrete slurry mix. Under no circumstances will a material be used, which may be injurious to the conduit. Backfill shall be compacted to a relative compaction that is at least as great as that of the native undisturbed soil in the area. The Engineer will be the sole judge as to whether the relative compaction of the backfill in the utility trenches is acceptable.

18-3 CONDUCTORS

Conductors shall be a minimum No. 10 copper, XHHW-2 single conductor, Underwriters Laboratory approved. Wire size must be large enough to prevent no more than 5% voltage drop.

All conductor splicing shall comply with Caltrans splicing methods and specifications.

No conductor shall be drawn into any conduit until the installation of the conduit run is complete and the conduit is clean. If the conduit is installed in a concrete foundation, the conductor shall not be drawn into the conduit until the concrete has obtained a compressive strength of 1,000 psi.

All conductors shall be installed without injury to the insulation. Conductors shall be drawn into the conduit at the same time. At least 3 feet of slack shall be left in the conductor where it enters the conduit.

18-4 PULL BOXES

Pull boxes shall be installed at locations where the change in direction of a conduit run, exceeds 45 degrees and at all pole bases. Pull boxes shall be B-16 boxes and shall be installed so that the cover is level with the

curb or sidewalk grade. Pull boxes shall be installed with a locking device to deter theft. The bottom of the box shall be imbedded in concrete and have a crushed rock drain. The maximum distance between pull boxes shall be 200 feet.

18-5 LIGHTING STANDARDS

Hot-dip galvanized steel street lighting standards shall be installed in accordance with the following procedures:

1. Standards at all locations shall be same as below or an approved equal. Standards shall be 25 feet in length with a mast arm length of 12 feet. All standards shall have inspection plates approved by the Engineer.
2. Foundations shall conform to subsection 86-2.03 of the Caltrans Specifications. Standards shall be erected in a true vertical position. All nuts on anchor bolts in the foundations and bracket attachments shall be tightly set. Standards shall not be erected until the foundation has set for a minimum of 5 days.
3. The location of the electrolier as shown on the improvement plans shall not be changed without the written approval of the Engineer.
4. All street light standards shall be grounded by means of a ground wire, which is fastened to a grounding connector on the standard and to all conduit grounding bushings.
5. In cases where more than one conduit enters the base, all such conduits shall be bonded with bonding bushings and wire. The bonding wire shall be at least the same gauge as the largest circuit conductor (minimum No. 8 XHHW-2 copper wire).

18-6 STANDARD LUMINARIES AND LAMPS

Luminaries and lamps to be furnished and/or installed under these specifications shall be as follows:

LOCATION	LUMINAIRE
All intersections and intermediate lights on Major and Collector Streets	GC1-40F-MV-NW-2-GY-1A or an approved equal (120 volt primary)
Ornamental 55 Watt Hadco	R52BANNIAFRR55RE or an approved equal (120 volt primary)

Luminaries shall be LED lamps, glass refractors, and built-in receptacles for photo electric cells. The luminaire voltage shall be as specified on the improvement plans.

18-7 ORNAMENTAL STREET LIGHT

Ornamental street lights shall be installed on residential streets only (collectors only with Engineer’s approval). Ornamental street light shall be installed according to City Standard Drawings. Light shall be Hadco with internal houseside shield and special reflector assembly with P2540-15A ground lug with galvanized arods and twist-lock receptacle. All ornamental street lights shall be located 18 inches behind

back of curb and at lot line or 3 feet away from curb return. A catalog sheet must be submitted to City of Turlock for all antique street lights prior to installation.

18-8 PHOTOELECTRIC CELL

The photoelectric cell to be furnished and installed with each luminaire shall be externally mounted with a twist-lock receptacle, compatible with the equipment and adequate for the load. It shall be a Ripley 6390TF or an approved equal.

18-9 CLEARANCE

The standard and mast arm shall be erected such that the minimum clearance from overhead lines to any point in the fixture is as defined by General Order 95.

OVER HEAD LINE	MINIMUM CLEARANCE (FT)
0 - 750 V	3
+ 750 V	10

Where necessary, the Contractor shall arrange with TID and the City for approval to provide the above clearance requirements.

18-10 INDIVIDUAL FIXTURE FUSE

The fuse holder shall be accessible from the inspection plate in the standard and shall be single-pole, waterproof, in-line type. Fuse size shall not exceed 5 amps.

18-11 CONNECTION TO ELECTRICAL DISTRIBUTION SYSTEM

All services to electroliers shall be installed underground. Where a street lighting circuit is to be energized by an underground energy source, the circuit shall terminate at the TID electric service box or transformer as specified by TID. The electrical interconnection to the TID system shall be made by TID personnel.

Where a street lighting circuit is to be energized by an overhead energy source, the Contractor shall furnish and install a weatherproof, fused disconnect switch complete with a 20 ampere cartridge fuse. This switch shall be a Cutler-Hammer No. 4143H3201 or an approved equal. From the disconnect switch, the Contractor shall install 1 inch rigid metal conduit, conductors and a weather head to 6 feet below the existing power lines. The Contractor shall coordinate the placement of the disconnect switch and conduit with TID.

18-12 TESTING

The street lights shall be tested a minimum of 48 hours prior to requesting final acceptance by the Engineer.

18-13 AS-BUILTS

The Contractor will be required to furnish the City a marked up drawing showing as-built conduit runs and pull boxes before requesting final acceptance by the Engineer.

18-14 INTERNALLY ILLUMINATED STREET NAME SIGNS (IISNS)

IISNS shall conform to Section 86 of the Caltrans Standard Specifications. IISNS shall have white lettering on blue background. A safety Cable shall be installed from the IISNS to the support arm.

18-15 DETECTOR HANDHOLE

Detector handholes shall be placed for all detector loops and shall be located on the line lines. Handholes shall be raised and set to existing grade without the use of riser rings or locking grade rings. Handholes shall be set on bricks clean, crushed rock sump shall be installed. The bottom of the handholes shall not be filled with mortar or concrete.

NOTES:

1. CONTACT T.I.D. PRIOR TO ENTERING UNDERGROUND SERVICE BOX OR PRIOR TO ATTACHING ANY MATERIAL TO T.I.D. POLES.
2. T.I.D. WILL COMPLETE CONNECTION OF 120V CIRCUIT UPON RECEIPT OF SIGNED APPLICATION FOR SERVICE FROM THE CITY OF TURLOCK.
3. MINIMUM CONDUIT COVER:
24" BELOW CURB GRADE WITHIN THE PUBLIC RIGHT-OF-WAY.
30" BELOW FINISH PROPERTY ELEVATION WITHIN PUBLIC UTILITY EASEMENT.
4. MAINTAIN 36" CLEARANCE IN FRONT OF INSPECTION PLATE.
5. WHERE ORNAMENTAL STREET LIGHTING IS USED IN LIEU OF THE CITY'S STANDARD STREET LIGHTING SYSTEM, ORNAMENTAL STREET LIGHT LUMINAIRES SHALL BE 55 WATT, PER CITY STANDARD DRAWING E-4.
6. ORNAMENTAL STREET LIGHTING IS NOT ALLOWED ON ARTERIAL STREETS OR AT INTERSECTIONS.
7. WHEN POLE LOCATIONS CONFLICT WITH A FIRE HYDRANT, CURB RAMP OR OTHER EXISTING OR PROPOSED FACILITY, PLACE AS DIRECTED BY THE CITY ENGINEER.
8. INSTALL IDENTIFICATION NUMBERS AS DIRECTED BY THE ENGINEER.

STREET LIGHT NOTES


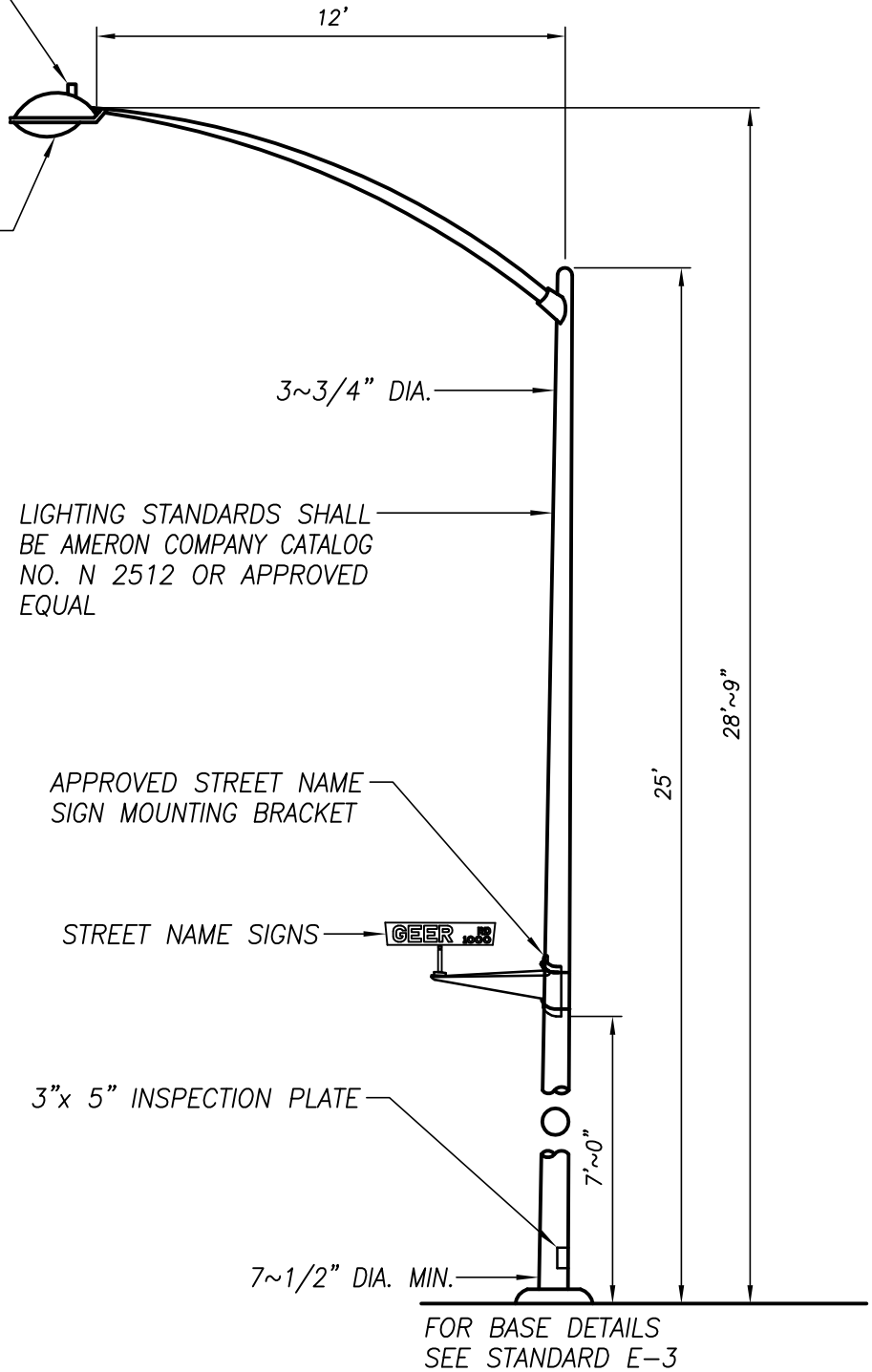
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	CHECK BY: NBB		APPROVED BY: 
	SCALE: NONE	CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694	COUNCIL APPROVAL
			DEC, 2015

PHOTO CELL SHALL BE RIPLEY 6390TF OR APPROVED EQUAL AND SHALL BE POINTED IN A NORTHERLY DIRECTION

LEOTEK GREENCOBRA LED STREET LIGHT, ORDER GC1-40F-MV-NW-2-GY-1A



STREET LIGHT

CITY OF TURLOCK

DRAWING NO.

E-2

COUNCIL APPROVAL

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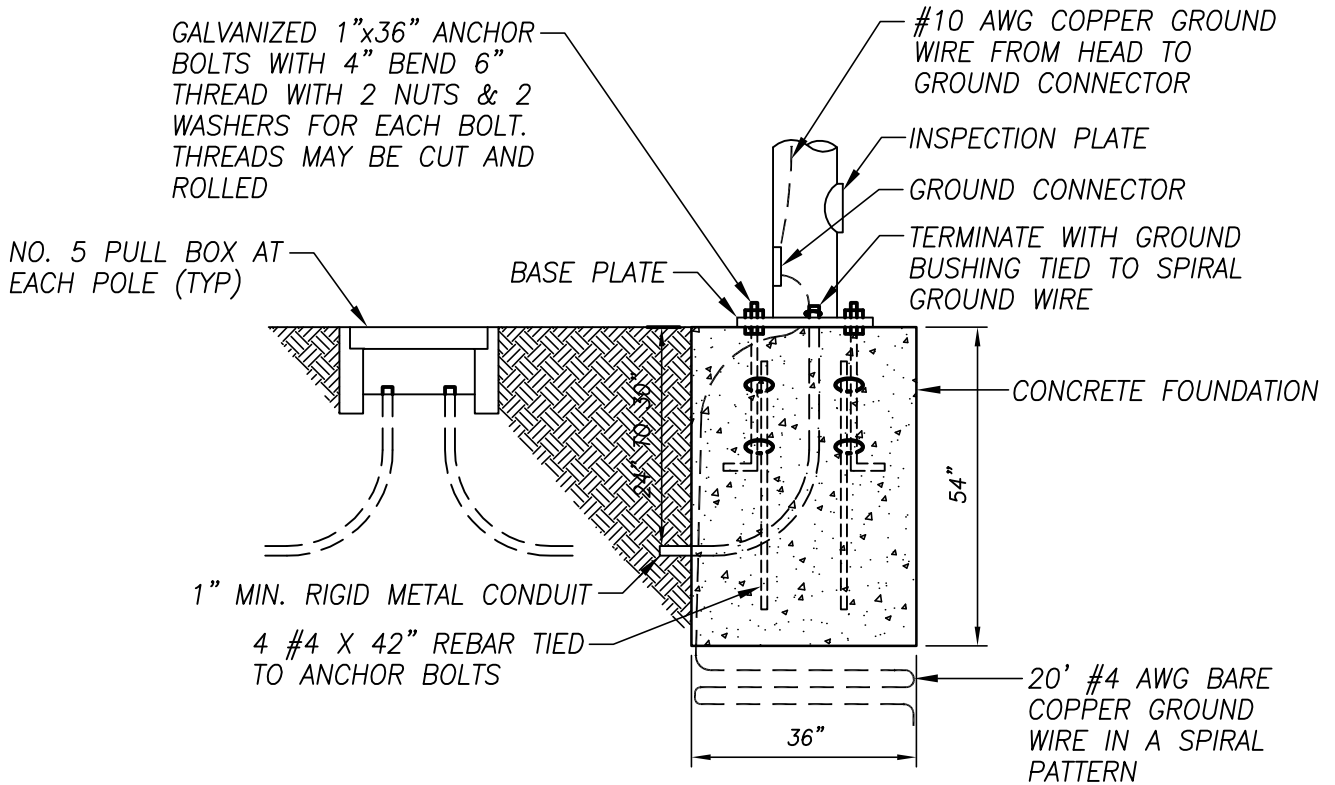
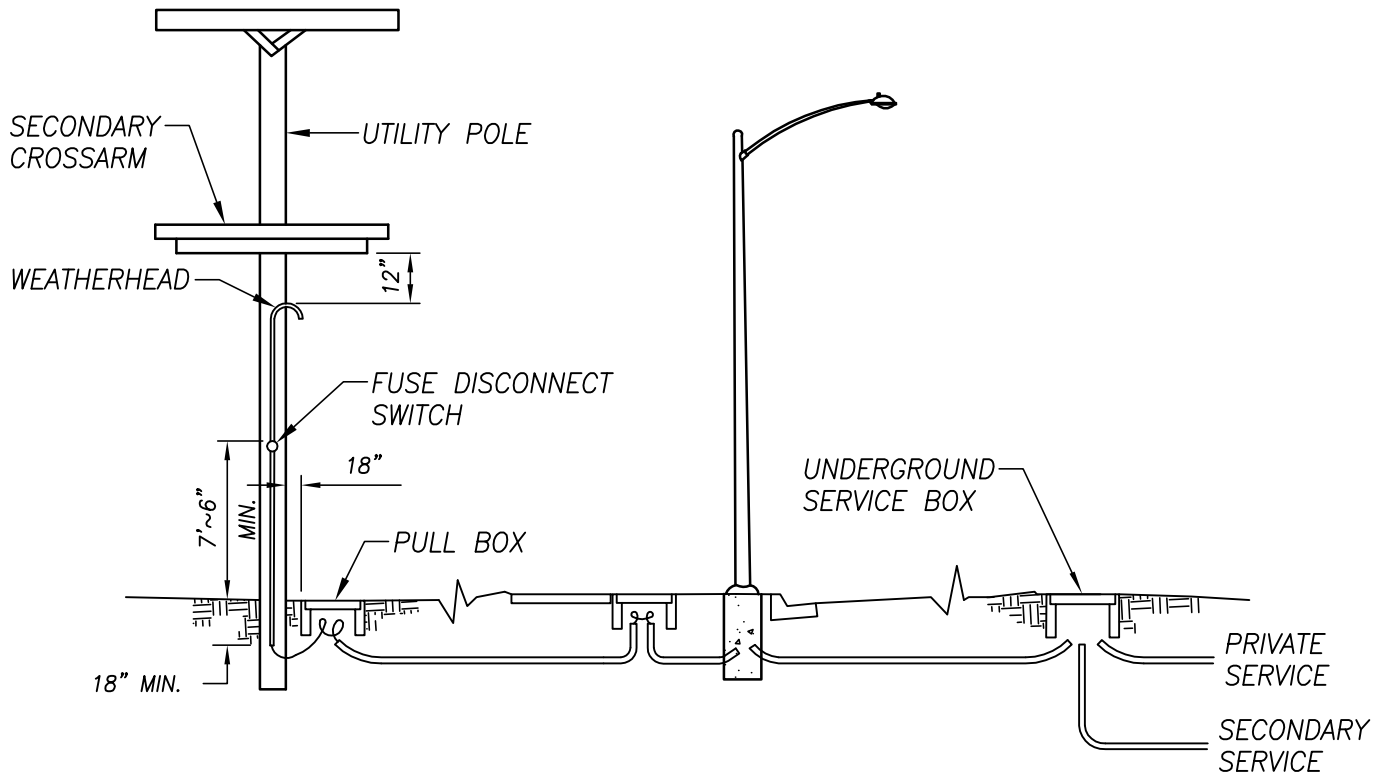
DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

APPROVED BY:

CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694



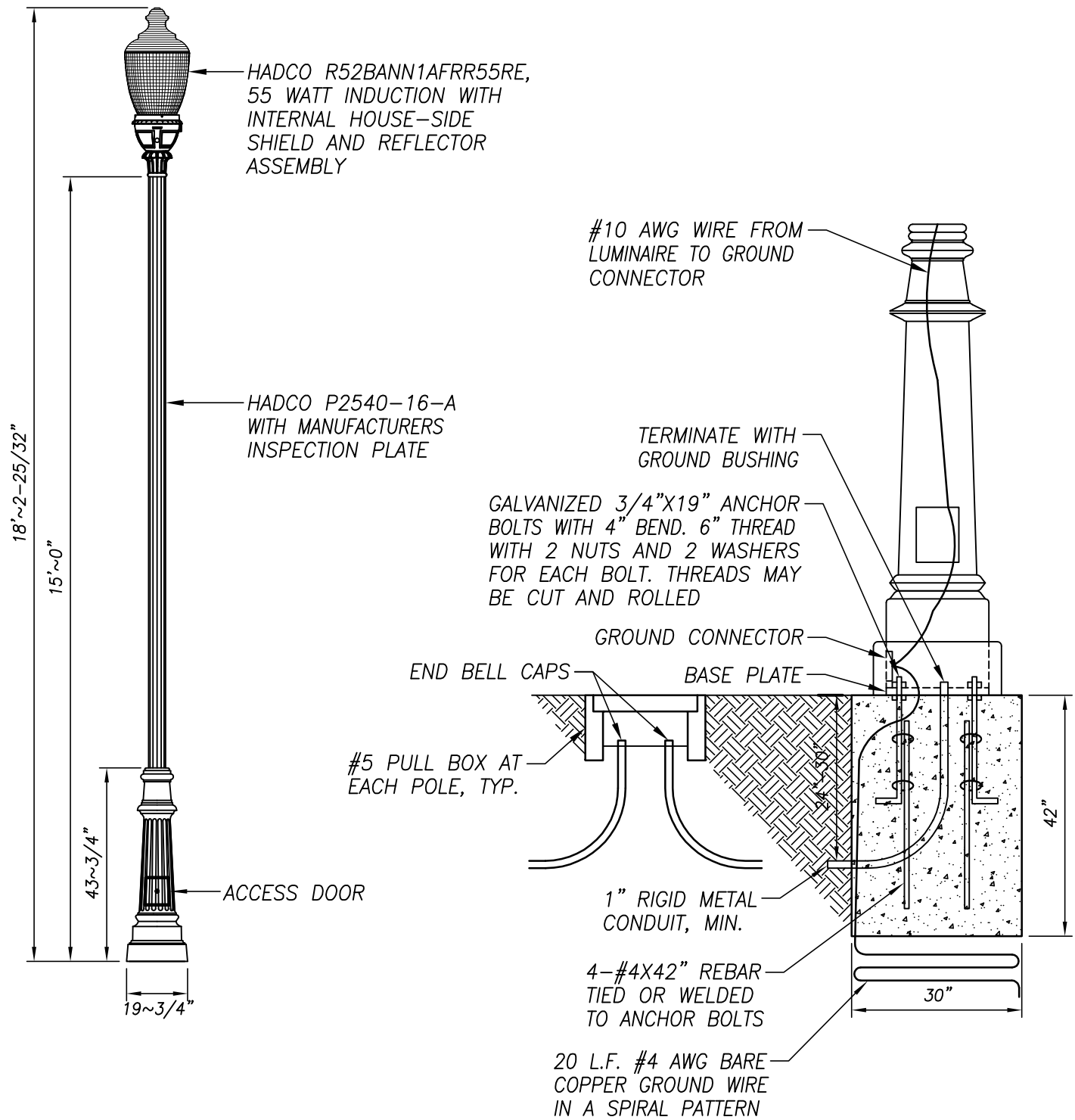
STREET LIGHT BASE AND CONDUIT RUN



DRAWN BY: JSH
 CHECK BY: NBB
 SCALE: NONE

CITY OF TURLOCK
 APPROVED BY: *[Signature]*
 CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.
E-3
 COUNCIL APPROVAL
DEC, 2015



ORNAMENTAL STREET LIGHT

CITY OF TURLOCK



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

APPROVED BY:

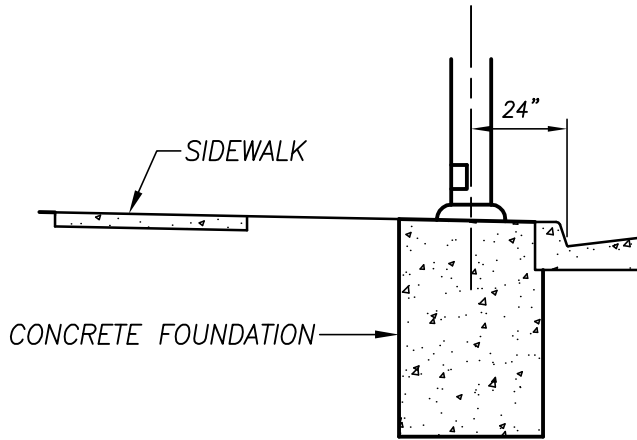
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

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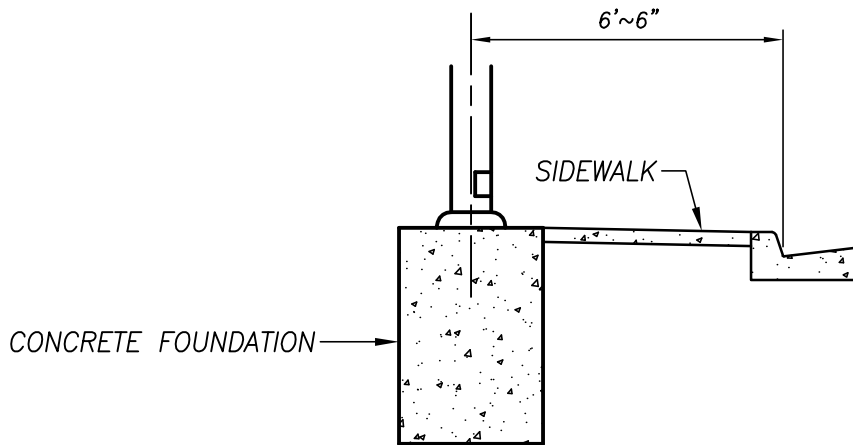
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COUNCIL APPROVAL

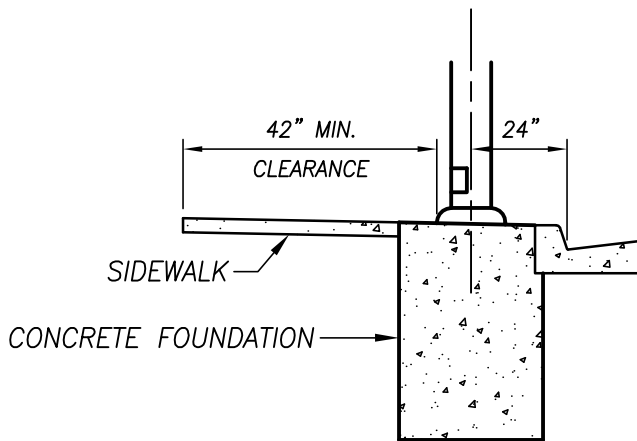
DEC, 2015



RESIDENTIAL WITH PARKWAY



RESIDENTIAL WITHOUT PARKWAY



INDUSTRIAL AND COMMERCIAL

TYPICAL STREET LIGHT LOCATIONS



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

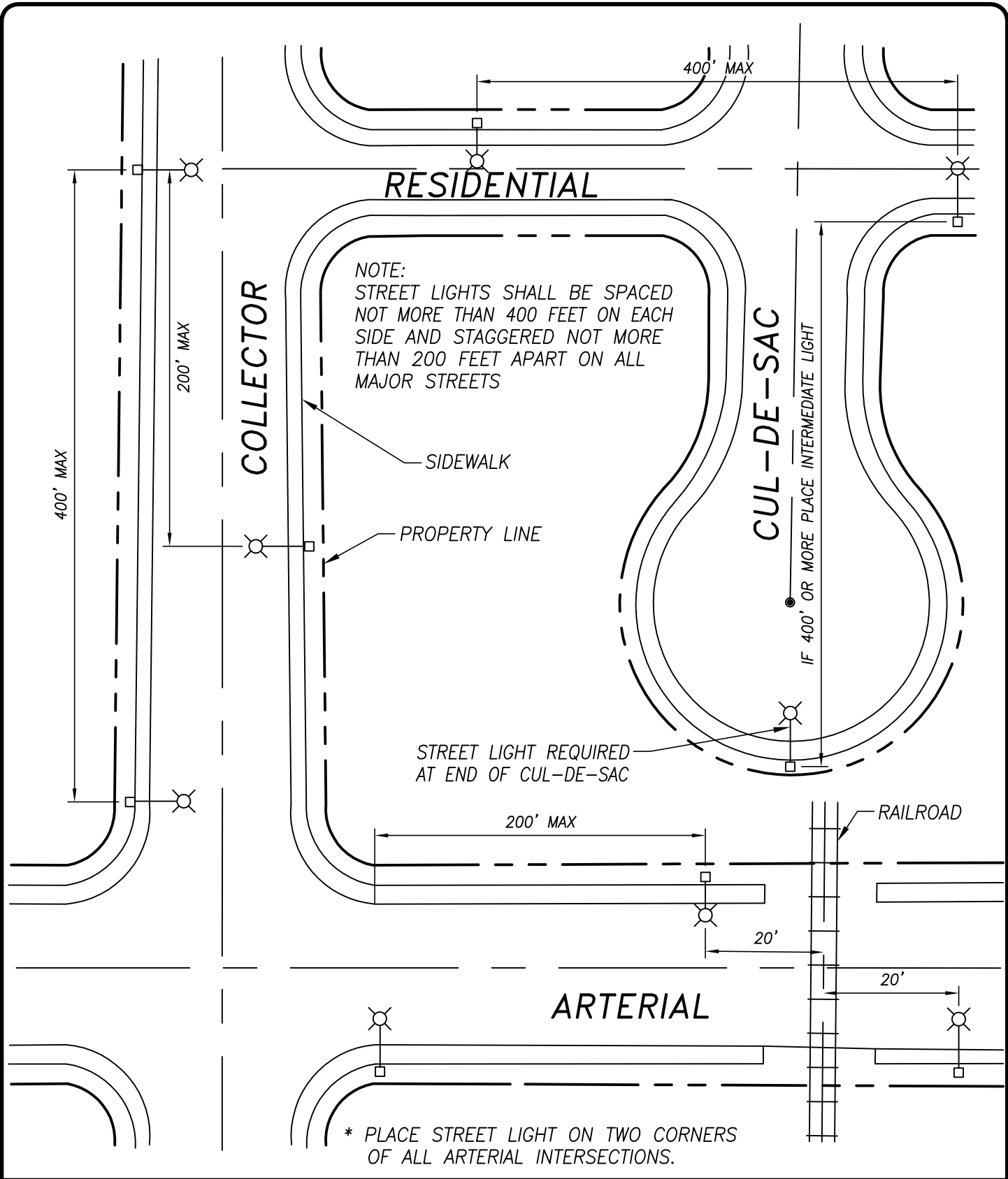
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

E-5

COUNCIL APPROVAL

DEC, 2015



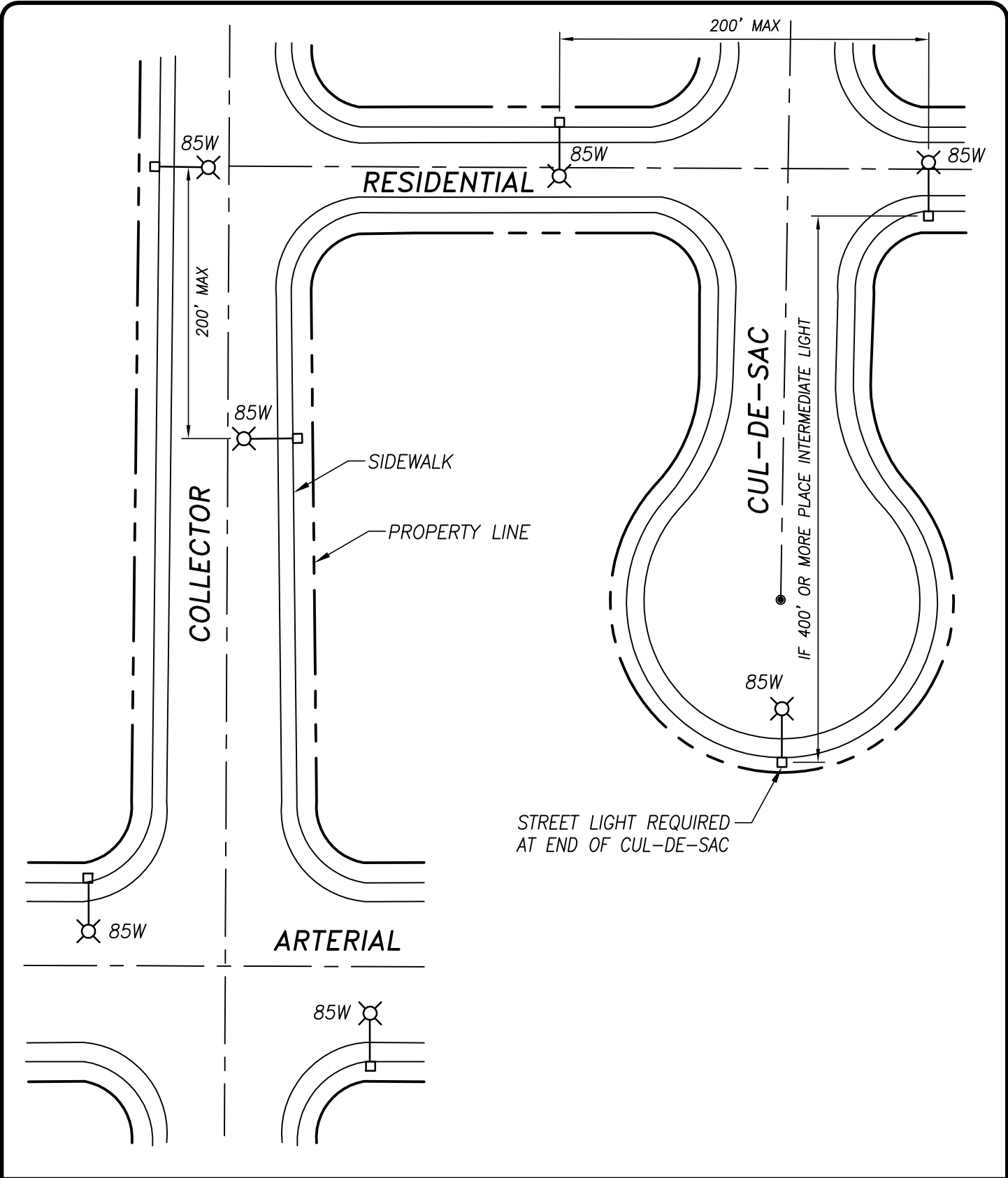
STANDARD STREET LIGHT LOCATIONS



DRAWN BY: JSH
CHECK BY: NBB
SCALE: NONE

CITY OF TURLOCK
APPROVED BY: *[Signature]*
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.
E-6
COUNCIL APPROVAL
DEC, 2015



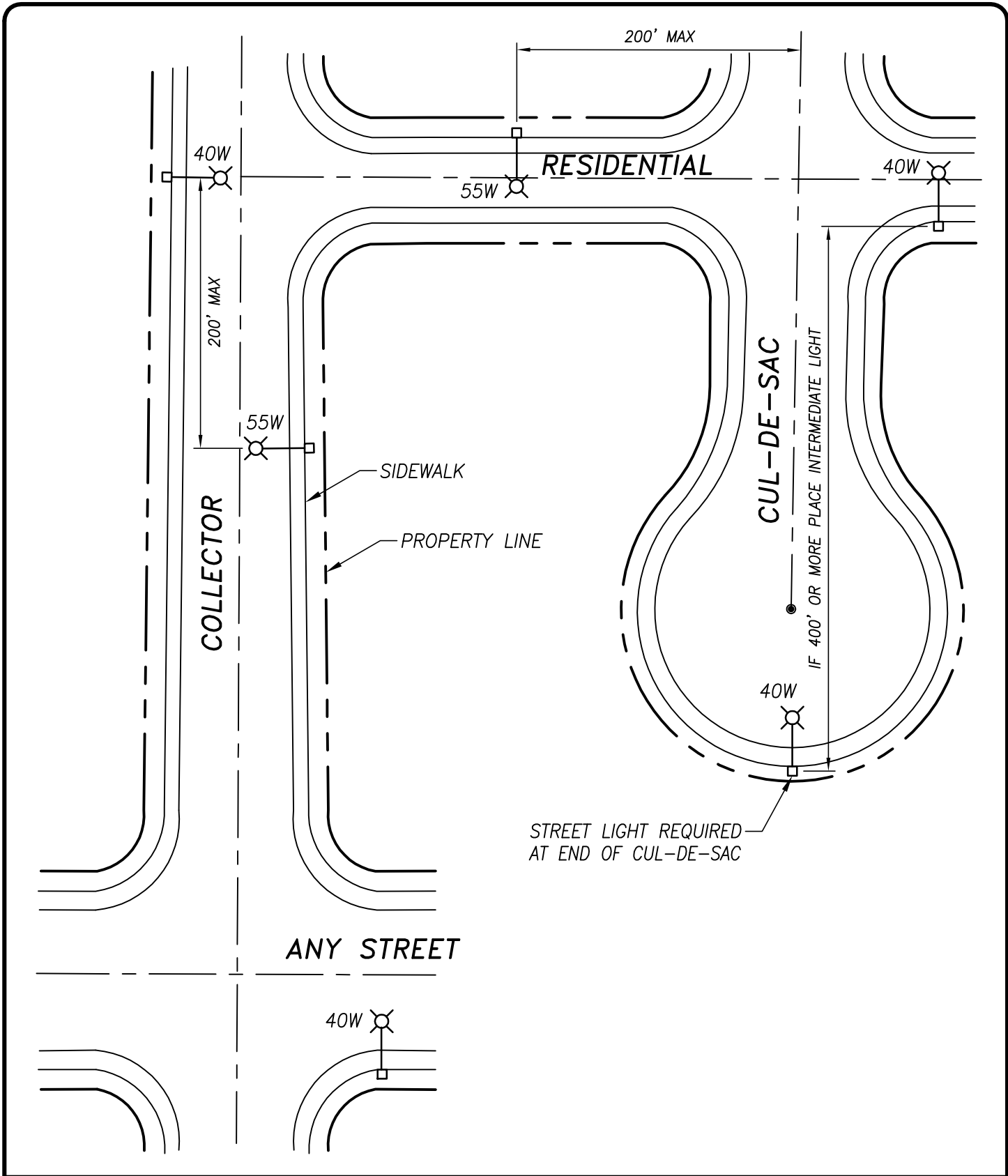
STREET LIGHT LOCATIONS



DRAWN BY: JSH
 CHECK BY: NBB
 SCALE: NONE

CITY OF TURLOCK
 APPROVED BY: *[Signature]*
 CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.
E-7
 COUNCIL APPROVAL
DEC, 2015



ORNAMENTAL STREET LIGHT LOCATION



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

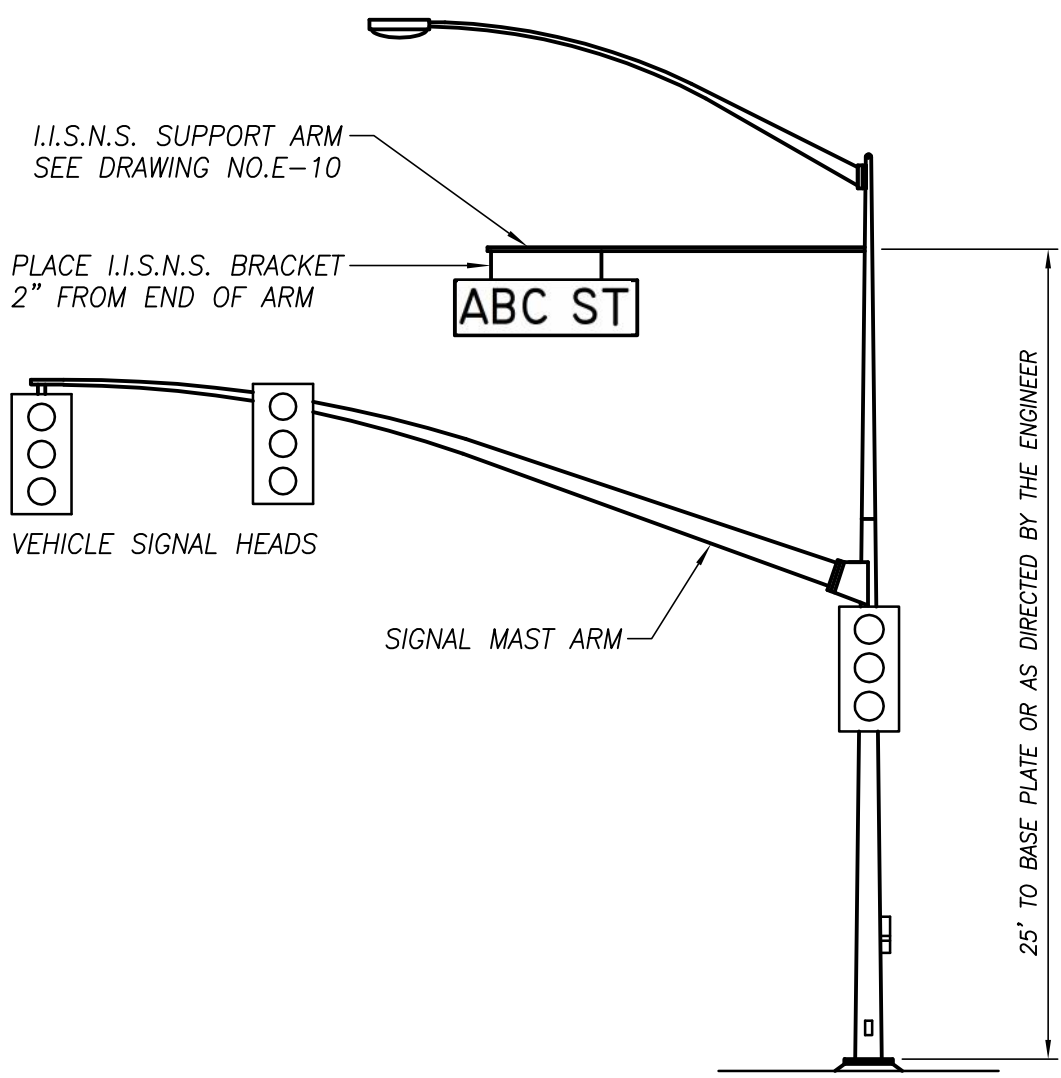
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

E-8

COUNCIL APPROVAL

DEC, 2015



NOTES:

1. INTERNALLY ILLUMINATED STREET NAME SIGN (I.I.S.N.S.) ARM SHALL ALIGN WITH THE MAST ARM
2. FOR SUPPORT ARM DESIGN SEE DRAWING NO. E-10
3. INSTALL SAFETY CABLE FROM I.I.S.N.S. TO SUPPORT ARM

I.I.S.N.S. SUPPORT ARM

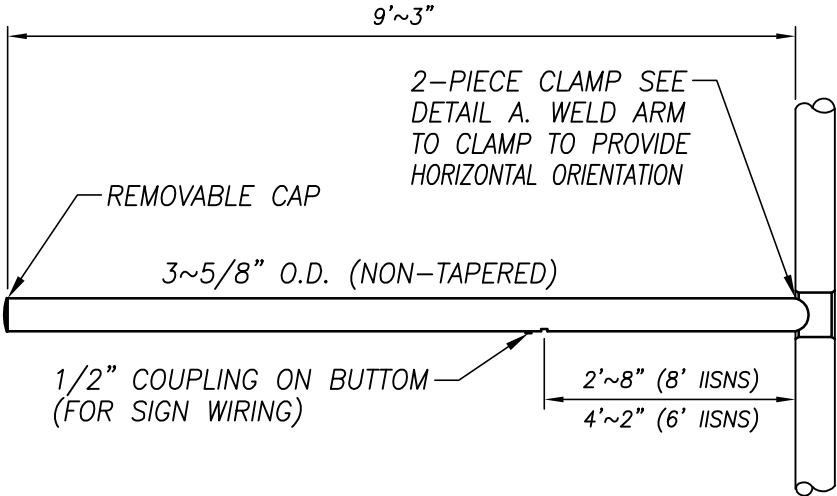


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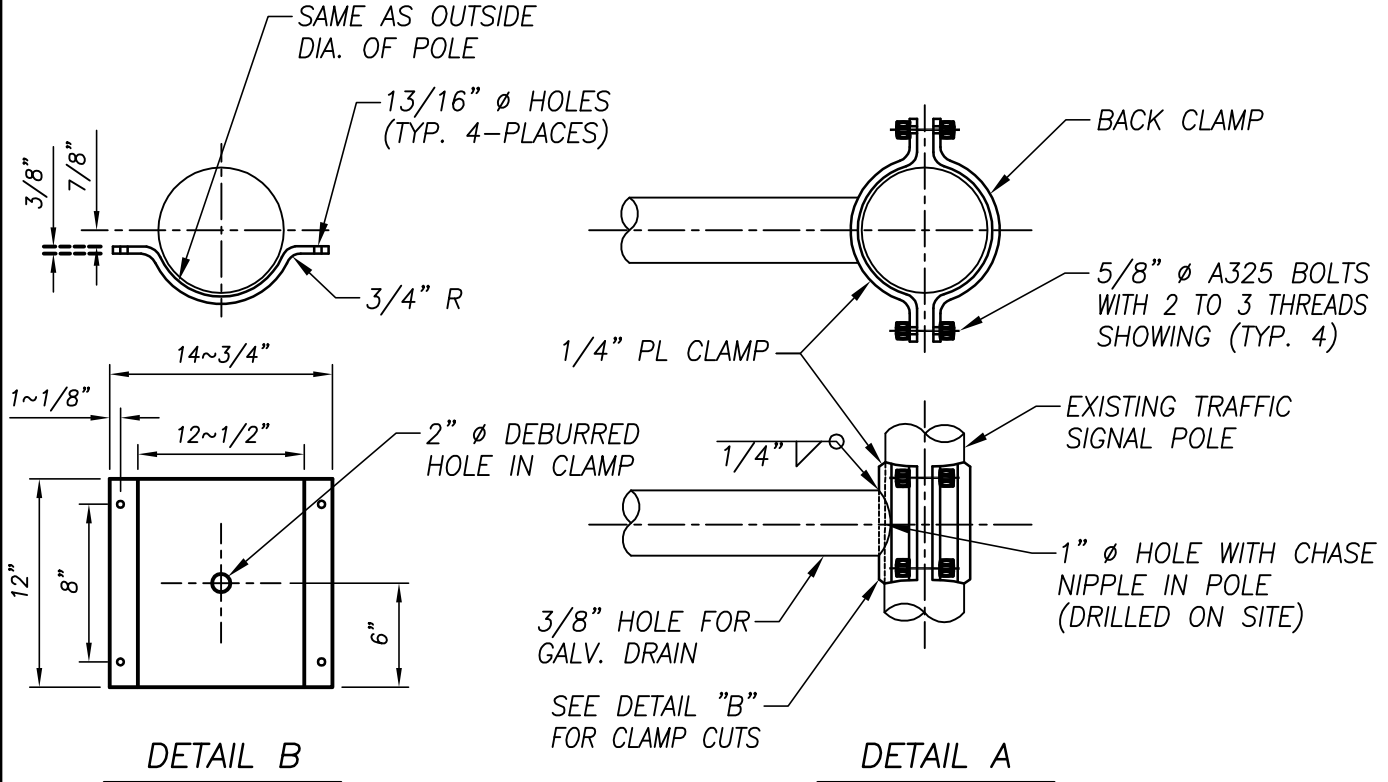
CITY OF TURLOCK
 APPROVED BY: *[Signature]*
 CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.
E-9
 COUNCIL APPROVAL
DEC, 2015

GENERAL NOTES	
MATERIAL SPECIFICATIONS	
SHAFT	STEEL OF 48,000 PSI MINIMUM YIELD AFTER FABRICATION
CLAMP PLATE	ASTM A-572 GR 50 STEEL
MANUFACTURING PROCESSES	
LONGITUDINAL WELDS	ALL WELDS SHALL CONFORM TO AWS D 1.1 WELD SPECIFICATION
FINISH COATING	
STRUCTURE	HOT DIP GALVANIZED PER ASTM A-123
HARDWARE	HOT DIP GALVANIZED PER ASTM A-153
DESIGN CRITERIA	
STRUCTURE, HARDWARE AND WELDING	IN ACCORDANCE WITH THE "SPECIFICATIONS FOR STRUCTURAL SUPPORTS OF HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS". AASHTO 1994



I.I.S.N.S. SUPPORT ARM



CLAMP DETAILS

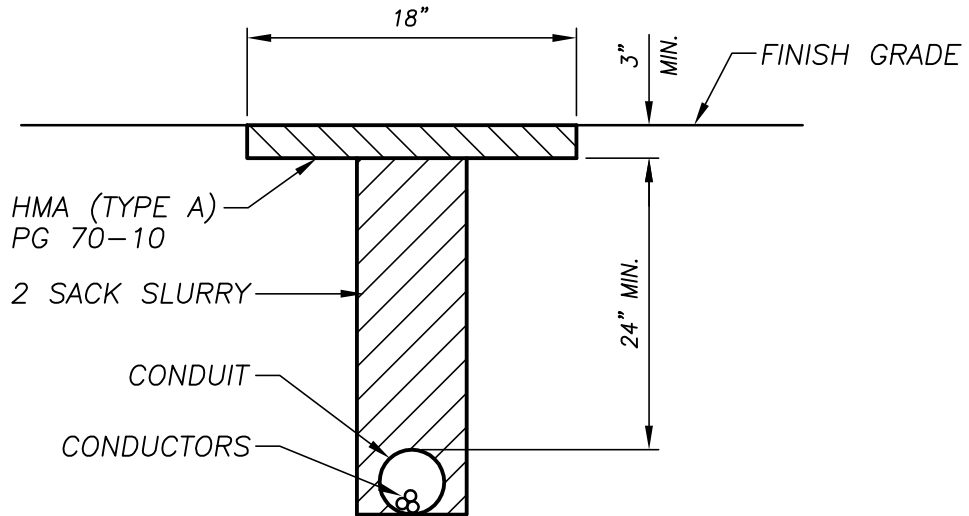
I.I.S.N.S. SUPPORT ARM MOUNTING



DRAWN BY: JSH
CHECK BY: NBB
SCALE: NONE

CITY OF TURLOCK
APPROVED BY:
M. Pitcock
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.
E-10
COUNCIL APPROVAL
DEC, 2015



CONDUIT TRENCH DETAIL



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

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DRAWING NO.

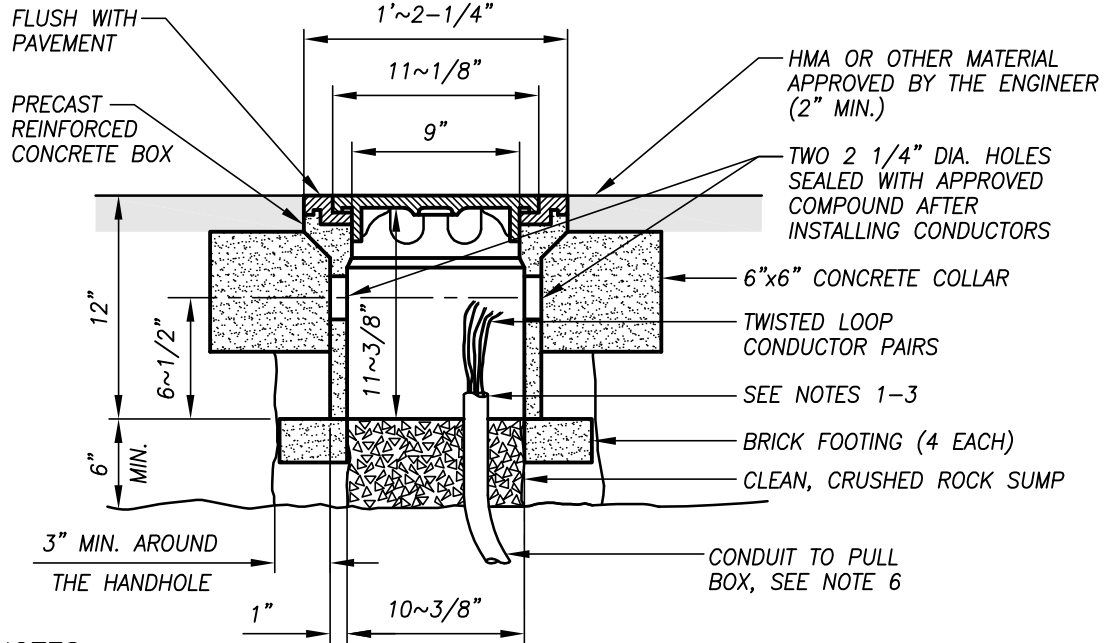
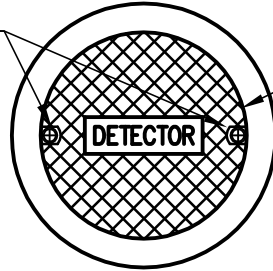
E-11

COUNCIL APPROVAL

DEC, 2015

5/16" x 1-1/2" SCREW (BRASS, STAINLESS STEEL OR OTHER NON-CORRODING MATERIAL)

CAST IRON FRAME AND COVER



NOTES:

1. BUSHING SHALL BE USED AT END OF CONDUIT
2. TAPE DETECTOR CONDUCTORS OR CABLES 3" EACH SIDE OF BUSHINGS
3. INSTALL DUCT SEAL COMPOUND TO EACH END OF TERMINATION CONDUIT BEFORE INSTALLING SEALANT
4. ROUND ALL SHARP EDGES WHERE DETECTOR CONDUCTORS OR CABLES HAVE TO PASS
5. END OF CONDUIT SHALL BE 3 ~ 1/8" BELOW ROADWAY SURFACE
6. CONDUIT SIZE SHALL BE 2" MINIMUM
7. SPLICE DETECTOR CONDUCTORS OR CABLES TO LEAD-IN-CABLE AT PULL BOX, RUN TO CONTROLLER CABINET
8. LOCATION OF DETECTOR HANDHOLE ON LANE LINE UNLESS OTHERWISE NOTED
9. CONDUIT SHALL HAVE 24" COVER

DETECTOR HANDHOLE DETAIL



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

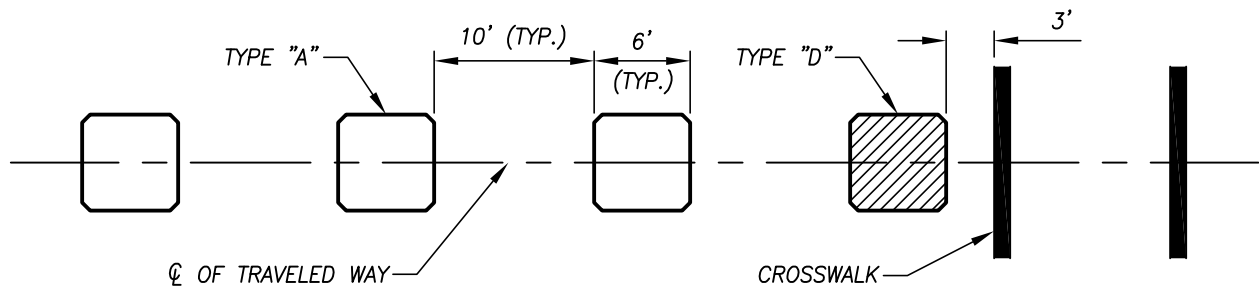
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

E-12

COUNCIL APPROVAL

DEC, 2015



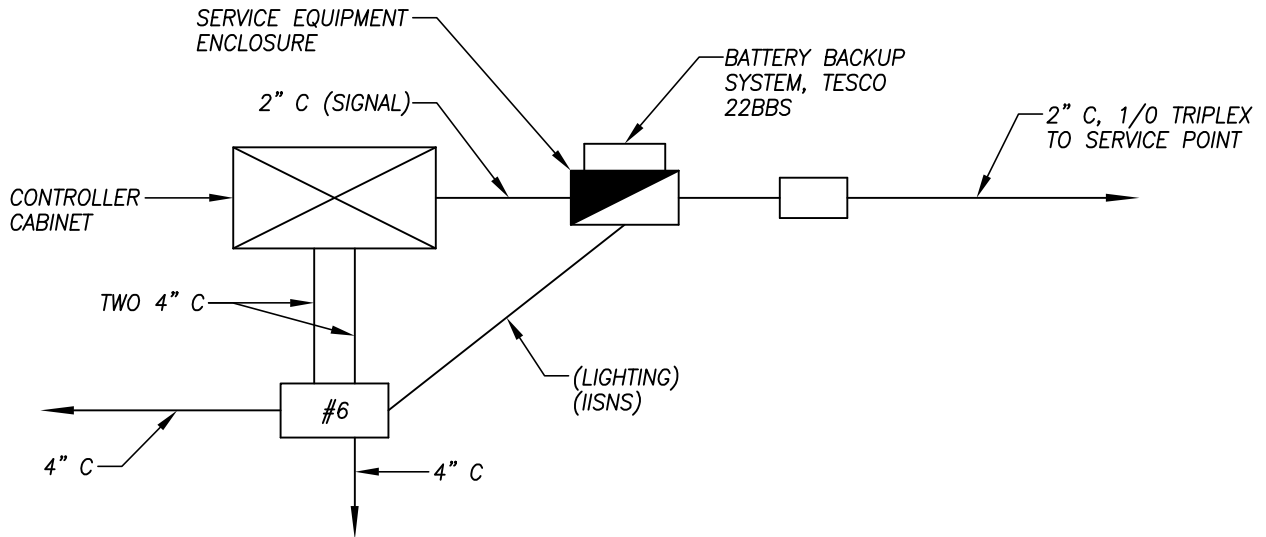
TYPICAL LOOP DETECTOR SPACING



DRAWN BY: JSH
 CHECK BY: NBB
 SCALE: NONE

CITY OF TURLOCK
 APPROVED BY: *[Signature]*
 CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.
E-13
 COUNCIL APPROVAL
DEC, 2015



NOTES:

1. SIZES OF CONDUITS LISTED ARE MINIMUMS ONLY. LARGER CONDUITS SHALL BE USED IF FILL IS GREATER THAN 26%

TRAFFIC SIGNAL SERVICE DIAGRAM



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

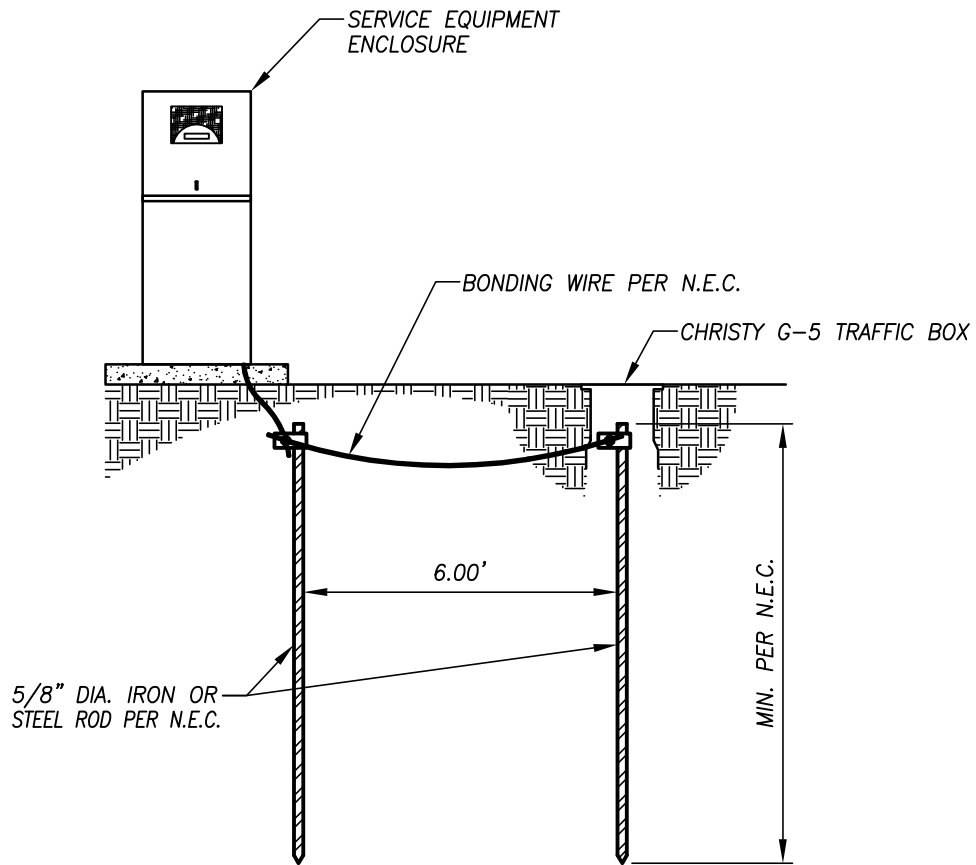
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

E-14

COUNCIL APPROVAL

DEC, 2015



GROUNDING ELECTRODE SYSTEM



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

E-15

COUNCIL APPROVAL

DEC, 2015

19 LANDSCAPE AND IRRIGATION MATERIALS

19-1 LANDSCAPE MATERIALS

GENERAL

Topsoil shall be designated as Class A (imported), Class B (selected) or Class C (unclassified) as specified herein. The Engineer shall determine the suitability of topsoil prior to use. Topsoil shall be transported from the source to its final position unless stockpiling is specified.

CLASS A TOPSOIL

Class A topsoil shall be from a source outside the limits of the project selected by the Contractor and in compliance with the requirements specified herein. The Engineer may make such inspections and perform such tests as deemed necessary to determine that the material meets the requirements. At least 15 days before scheduled use, the proposed source of topsoil must be submitted to the Engineer for approval. The Contractor shall submit a written request for approval which shall be accompanied by a written report of a testing agency registered by the State for agricultural soil evaluation which states that the proposed source complies with these specifications. Class A topsoil shall have the same relative composition and structure, a friable sandy loam character, and be free of roots, clods and stones larger than 1 inch in greatest dimension, pockets of coarse sand, noxious weeds, sticks, brush, and other litter. It shall not be infested with nematodes or other undesirable insects and plant disease organisms.

Class A topsoil shall meet the following additional requirements:

GRADATION LIMITS

Sand 50% to 80%, clay 20% maximum, and silt 30% maximum. The sand, clay and silt gradation limits shall be as defined in ASTM D422.

PERMEABILITY RATE

Not less than 0.5 inches (13 mm) per hour or more than 2 inches (51 mm) per hour when tested in accordance with ASTM D2434 or other approved methods.

AGRICULTURAL SUITABILITY

The topsoil shall be suitable to sustain the growth of the plants specified.

CLASS B TOPSOIL

Class B topsoil is defined as material which is obtained from sources and in the quantities designated on the plans or in the Special Provisions and which requires transport to the designated landscape areas. Such designated sources of the Class B topsoil may be within or outside the project limits. The cost of stripping the surface of vegetation and debris at the designated locations and processing of the material to a finely divided state, before it is spread, shall be included in the price bid for hauling and placing.

CLASS C TOPSOIL

Class C topsoil is defined as soil found in place in the designated landscape area, including soil compacted in place as part of the earthwork specified for the project.

19-2 SOIL FERTILIZING AND CONDITIONING MATERIALS

GENERAL

Fertilizing materials shall comply with the applicable requirements of the State Agricultural Code. All fertilizing materials shall be packaged first grade, commercial quality products identified as to source, type of material, weight, and manufacturer's guaranteed analysis. Fertilizing material shall not contain toxic ingredients or fillers in quantities harmful to human life, animals or plants. When required by the Engineer, the Contractor shall furnish a Certificate of Compliance stating that the material substantially meets the specifications.

Biosolids obtained from the City are qualified for use as a landscape fertilizer material.

MANURE

Manure shall be the product of yard fed cattle, free of weed seed, straw or other inert material, and aged at least 3 months. The manure shall have been processed by grinding and screening and shall be of a consistency that will readily spread with a mechanical spreader. Manure may be supplied in bulk if the source is approved in advance by the Engineer.

COMMERCIAL FERTILIZER

Commercial fertilizer shall be a pelletized or granular product having a chemical analysis as specified on the plans or in the Special Provisions. Commercial fertilizer shall be free-flowing material delivered in unopened sacks. Material which becomes caked or otherwise damaged shall not be used.

HERBICIDES

Pre-Emergent: Shall be Ron Star or approved equal and shall be applied per manufacturer's recommendations. Conform to all national, state, county, and city reporting requirements.

Post-Emergent: Shall be Roundup or approved equal and shall be applied per manufacturer's recommendations. Conform to all national, state, county, and city reporting requirements.

ORGANIC SOIL AMENDMENT

Organic soil amendment shall be selected from Type 1, 2 or 3 products as described herein.

Type 1 organic soil amendment shall be a ground or processed wood product derived from redwood, fir or cedar sawdust, or from the bark of fir or pine, treated with a non-toxic agent to absorb water quickly, and shall comply with the following requirements:

GRADATION SIEVE SIZE	PERCENT PASSING (minimum)
1/4" (6.4 mm)	95
No. 8	80
No. 35	30

TYPE	NITROGEN CONTENT (%, Dry Weight)
Redwood	0.4 - 0.6
Fir	0.56 - 0.84
Cedar	0.56 - 0.84
Fir Bark	0.8 - 1.2
Pine Bark	0.8 - 1.2

SALINITY

Maximum saturation extract conductivity: 2.5 milliohms per centimeter at 25°C.

WETTABILITY

When one teaspoon of tap water is applied to 4 cubic inches (0.0000655m³) of the air-dry product, the material shall become completely damp in a period not exceeding 2 minutes. Any wetting agent added shall be guaranteed non-plyto toxic at the rate used. Type 2 organic soil amendment shall be a relatively dry friable organic compost derived from sewage sludge processed for agricultural use. It shall contain at least 1% nitrogen by dry weight, and comply substantially with the gradation for Type 1 soil amendment. Type 3 soil amendments shall be hay and stable bedding which has been processed and used as the growing medium for the commercial production of mushrooms. It shall contain at least 1% nitrogen by dry weight and comply substantially with the gradation for Type 1 soil amendment.

MULCH

Mulch shall be designated by Type in accordance with the requirements herein. Mulch shall be packaged in bales or bags unless the Engineer approves a bulk source in advance of delivery to the site of the work.

TYPE 1 MULCH (GROUND WOOD PRODUCT)

Shall comply with the requirements for Type 1 organic soil amendment.

TYPE 2 MULCH (SEWAGE SLUDGE PRODUCT)

Shall comply with the requirements for Type 2 organic soil amendment.

TYPE 3 MULCH (MUSHROOM COMPOST)

Shall comply with the requirements for Type 3 organic soil amendment.

TYPE 4 MULCH (PEAT)

Shall be brown compressed sphagnum or hypnum.

TYPE 5 MULCH (FIR BARK CHIPS)

Shall be fir bark chips in the gradation specified.

TYPE 6 MULCH (STRAW)

Shall be either threshed new straw or stable bedding material derived from rice, oats or barley. Straw in an advanced state of decomposition will not be acceptable.

19-3 SEED

Seed shall be fresh, clean, new crop seed, mechanically premixed to specified proportions. Seed shall be delivered to the site in original unopened containers bearing the dealer's guaranteed analysis and germination percentage, and a certificate or stamp or release by a County agriculture commissioner. Any seed tagged "warning, hold for inspection" shall be inspected and released by the agriculture commissioner of the County within which the seeds are to be planted.

19-4 PLANTS

GENERAL

Plants shall be inspected and approved at the nursery by the City prior to shipment to the planting site. All plants shall have a growth habit normal to the species and shall be sound, healthy, vigorous, and free from insect pests, plant diseases, sun scalds, fresh bark abrasions, excessive abrasions, or other objectionable disfigurements. Tree trunks shall be sturdy and well "hardened off". All plants shall have normal well-developed branch systems, and vigorous and fibrous root systems which are neither root nor pot-bound and are free of kinked or girdling roots. Other than the normal side pruning during the growth period, no pruning shall be done prior to inspection at the nursery.

TREES

All trees shall be of the specified height and crown to the last division of the terminal leader and diameter. The height shall be measured from the root, the diameter shall be measured 6 inches above the crown roots. The height of palm trees shall be measured from the ground line to the base of the growing bud. The tree shall stand reasonably erect without support. Tree height shall be a minimum of 6 feet measured from 6 inches above crown roots to bottom of canopy. Caliper size of tree shall be ¾ inch to 1 inch measured 12 inches above the planting depth.

SHRUBS

Shrubs shall be of the specified type and size, selected from high quality well-shaped nursery stock.

FLATTED PLANTS

Ground cover plants and other flatted plants shall be grown and remain in the flats until transplanted at the site. The soil and spacing of the plants in the flat shall insure the minimum disturbance of the root system at time of transplanting.

SOD AND STOLONS

Turf grass stolons shall be fresh clean living sections of runners of hybrid Bermuda grass or hybrid bent grass as designated in the contract documents. They shall be free of turf disease, insects or weeds, and capable of healthy vigorous growth. For mechanical or hand spreading, Bermuda grass stolons shall be 1 inch to 4

inches (25 mm to 102 mm) long and bent grass 4 inches to 8 inches (102 mm to 203 mm) long. Stolons to be planted in a slurry mixture as described in Subsection 308-4.8 shall be supplied in shorter sections as required.

CUTTINGS

Cuttings shall be fresh stock cut with a sharp hand tool from the stems of healthy vigorous plants of the species specified. If not otherwise specified, the length of cuttings shall be in accordance with the best horticultural practice as determined by the Engineer.

TREE AND SHRUB PLANTING

1. Water plants immediately upon arrival at site. Maintain in moist condition until planted.
2. Space plants uniformly as shown on Drawings.
3. Dig plant pits two times the size of the rootball, and 8 inches deeper than the length of the rootball. Provide level bottom. Fill pits with water after excavation. Auger the bottom of holes that do not drain sufficiently to provide proper drainage within four hours. Maintain pits in wet, friable condition prior to planting.
4. Install root barriers around trees per City's specification.
5. Install plants immediately after removal of container. Position plants so that tip of rootball is no more than 1 inch above finish grade. Set plants vertical in plant pit.
6. Backfill pit with a blended mixture containing one part nitrolized humus, one part native soil, one part topsoil, and ¼ cup of iron sulfate per cubic yard of backfill. When the plant is set and the backfill has been water settled, the top of the rootball shall be flush with finish grade. Best Paks shall be placed approximately 6 inches below finish grade during backfilling in quantity as recommended by the manufacturer.
7. Water all plants immediately after planting and completely saturate.
8. Stake trees as detailed, or as directed to properly support the plant material supplied.
9. Prune each tree and shrub to preserve the natural character of the plant per American Standard for Nursery Stock, as published by the American Association of Nurserymen. Prune to remove all suckers, deadwood, and broken or badly bruised branches. Paint cuts over ¾ inch in diameter and exposed cambium of bruised areas with tree paint as specified herein.
10. Maintain 18 inch radius clear zone, measured from center of tree trunk, around all trees in lawn areas. Clear zone shall be kept free of turf, weeds, and debris

19-5 HEADERS, STAKES AND TIES

GENERAL

Lumber for landscape work shall be construction heart rough redwood in the sizes specified. Galvanized steel pipe shall be as specified in Subsection 212-2.1. Nails, lag screws and miscellaneous hardware shall be

galvanized commercial quality material. Miscellaneous fabricated metal items shall be made from steel conforming to ASTM A36.

HEADERS AND STAKES

Headers shall be 2 inch by 4 inch except that two 1 inch by 4 inch boards shall be supplied for lamination on turns and curves. Header stock shall be supplied in lengths at least 10 feet. Stakes for headers shall be pointed 2 inch by 4 inch, at least 18 inches long. Joint splicing lumber shall be 1 inch by 4 inch, 2 feet long.

TREE STAKES

The type of tree stake shall be as designated in the Special Provisions. The normal length of the tree support stakes shall be 8 feet.

When trees are too large for normal staking practices, and when deemed necessary by the Engineer, the length of tree support stakes shall be 10 feet. Guy wire shall be No. 12 BWG zinc-coated iron. Tree ties shall be nylon "Tie-It Super" tree ties manufactured by Arthur Enterprises of vinyl impregnated nylon with a bursting strength of 300 psi and a tensile strength of 300 psi. Provide a minimum of three ties per tree. Deadman stakes shall be either 2 inch by 4 inch redwood or 3/4 inch diameter steel pipe 3 feet long. Covers for wire shall be garden, 2 inch minimum diameter.

19-6 IRRIGATION SYSTEM MATERIALS

PIPE AND FITTINGS

GENERAL

The type of pipe materials and fittings shall be as designated on the plans or in the Special Provisions and shall comply with the following:

STEEL PIPE

Steel pipe shall be galvanized, standard weight (Schedule 40) complying with the requirements of ASTM A120. Steel pipe shall be jointed with galvanized, threaded, standard weight malleable iron fittings and couplings.

PLASTIC PIPE FOR USE WITH SOLVENT WELD SOCKET OR THREADED FITTINGS

Plastic pipe shall be rigid unplasticized PVC 1220 (Type 1, Grade 2), conforming to ASTM D1785. Plastic pipe marked with product standard PS-21-70 conforms to the ASTM requirements. The minimum pressure rating shall not be less than the working pressures indicated therein for the schedule and sizes listed. Schedule 40 pipe shall be used for installation on the discharge side of control valves and Schedule 80 pipe shall be used for continuously pressurized pipe on the supply side of control valves. Schedule 80 only, shall be supplied when threaded joints are specified or otherwise permitted by the Engineer. Fittings and couplings for plastic pipe shall be threaded or slip-fitting tapered socket solvent weld type. Threaded adapters shall be provided with socket pipe for connections to threaded pipe. Plastic pipe fittings and couplings shall be PVC I or PVC 1/11 material supplied in the same schedule size specified for the pipe. The type of plastic material and schedule size shall be indicated on each fitting or coupling. Fittings and couplings shall comply with the following specifications:

SOCKET FITTINGS	
Schedule 40	ASTM D2466
Schedule 80	ASTM D2467
THREADED FITTINGS	
Schedule 80	ASTM D2464

PLASTIC PIPE FOR USE WITH RUBBER RING GASKETS

Plastic pipe for use with rubber ring gaskets shall be rigid unplasticized polyvinyl chloride PVC 1120 (Type 1, Grade 1), manufactured in accordance with ASTM D2241. Plastic pipe marked with product standard PS 22-70 conforms to ASTM requirements. Pipe shall be supplied with plain ends or with an integral thickened expanded bell with rubber ring groove. Couplings for plain end pipe shall be of the single rubber ring type with solvent weld socket on one end or shall be of the double rubber ring type. Rubber ring gaskets shall be of a synthetic rubber supplied in accordance the requirements of ASTM D1869. Pipe shall be furnished in the following Standard Dimension Ratios (SDR) and Pressure Ratings:

PRESSURE RATING	STANDARD DIMENSION RATIO (SDR)
160 psi (1.103 MPa)	SDR 26
200 psi (1.379 MPa)	SDR 21

COPPER PIPE

Copper pipe shall be Type K in accordance with ASTM B88. Copper pipe shall be jointed with the appropriate solder type wrought copper fittings for 2½ inch and smaller sizes. Cast brass fittings shall be used for sizes over 2½ inches.

PIPE AND WIRE DEPTH

- a. Pressure Supply Piping - 18 inches from top of pipe
- b. Non-Pressure Piping (rotor) - 12 inches from top of pipe
- c. Non-Pressure Piping (pop-up) - 12 inches from top of pipe
- d. Control Wiring - side of pressure main

19-7 VALVES AND VALVE BOXES

GENERAL

Valves shall be of the size, type and capacity designated on the plan or in the Special Provisions and shall comply with the requirements specified herein. All valves except garden valves shall be capable of satisfactory performance at a working pressure of 200 psi (1.379 MPa). Valves shall be designed to permit disassembly to replace sealing components without removal of the valve body from the pipeline.

GATE VALVES

Gate valves in sizes 2 inches and smaller shall be all bronze double disc wedge type with integral taper seats and non-rising stem. Sizes 2½ inches and larger shall be iron body brass trimmed with other features the same as for 2 inch. Ball valves shall be “Kitz #58” brass or equal, size as specified on plan.

MANUAL CONTROL VALVES

Manual control valves shall be brass or bronze, and shall be straight or angle pattern globe valves, full opening, key operated with replaceable compression disc and ground joint union on the discharge end.

REMOTE CONTROL VALVES

Remote control valves shall be electrically operated. They shall be industrial strength glass-filled nylon globe valves with nylon-reinforced rubber diaphragm for life and heavy-duty performance at 200 psi pressure. They shall have manual internal and external bleed. They shall have accurately machined valve seat surfaces, equipped with flow control adjustment and capability for manual operation. They shall be readily disassembled for servicing.

When grouped together, allow at least 12 inch between valve boxes. Install each remote control valve in a separate valve box. Place gravel in bottom of each box below valve with a minimum of 2 cubic feet of ¾ inch crushed rock.

GARDEN VALVES

Garden valves shall be brass or bronze except for the handle. They shall have a replaceable compression disc, and shall be ¾ inch straight-nosed, key operated and pressure rated for operation at 150 psi.

QUICK-COUPLING VALVES AND ASSEMBLIES

Quick-coupling valves shall be brass or bronze with built-in flow control and self-closing valve with lockable cover. Model 33 LRC for ¾ inch shall be supplied unless otherwise required. Quick-Coupler assembly shall consist of the valve, quick coupler connection, and hose swivel. Quick-coupler valve shall be assembled using KBI Triple swing assembly schedule 80.

VALVE BOXES

Brand or weld controller letter and station number on lid of each valve box. Letter and number size shall be no smaller than 1 inch and no greater in size than 1½ inch. Depth of branding shall be no more than inch into valve box lid. Boxes are to be installed per standard details.

Quick-Coupler Valve Boxes:

Christy G5 round concrete box with cast iron cover. Label cover with “QCV”.

Gate / Ball Valve Boxes:

Christy G5 round concrete box with cast iron cover. Label cover with “VALVE”.

Remote Control Valve Boxes:

Christy B30 concrete box with locking metal cover. Label cover with “VALVE”.

Wire Stub/Splice Boxes:

Christy G5 traffic valve box with cast iron cover. Label cover with “WSB”.

19-8 BACKFLOW PREVENTER ASSEMBLY

The backflow preventer assembly shall consist of a backflow preventer unit and related components conforming to the governing code requirements. Cover backflow assembly with "Polar Barrier Blanket" or equal. Entire backflow device to be enclosed with strong box aluminum alloy enclosure or equal.

19-9 SPRINKLER EQUIPMENT

Sprinkler heads, bubbler heads, spray nozzles, and drip emitters shall be of the types and sizes shown on the plans. Such equipment shall be brass, bronze, stainless steel, and plastic, except for minor components. Equipment of one type and flow characteristic shall be from the same manufacturer and all equipment shall bear the manufacturer's name and identification code in a position where they can be identified in the installed position.

Fixed head sprinklers shall have a one-piece housing with provision for interior parts replacement. Pop-up sprinklers shall be designated to rise at least 3 inches during operation. Full or part circle sprinklers shall be interchangeable in the same housing. Shrubbery and bubbler heads shall be adjustable from full flow to shut off.

Sprinkler Heads:

Install sprinkler heads where designated on drawings or where staked. Set to finish grade as detailed. Spacing of head shall not exceed the maximum indicated on drawing unless re-staked as directed by the City. In no case shall the spacing exceed maximum recommended by manufacturer. Install heads on swing joint assembly, as detailed. Plant placement shall not interfere with intended sprinkler head coverage, piping or other equipment.

19-10 ELECTRICAL MATERIALS

GENERAL

The contractor shall furnish and install all electrical equipment and materials required for R complete electrical system. All equipment and materials shall comply with the requirements of the governing code and the serving utility and shall be approved and identified by Underwriters Laboratories, Inc. (UL).

CONDUIT AND CONDUCTORS

CONDUIT

Conduit shall be SCH 80 PVC conforming to the applicable provisions of Subsection 209-2.3.

CONDUCTORS

Line voltage conductors shall be supplied in the sizes and types shown on the plan and shall be THW, 600 volt insulation rating, conforming to the applicable provisions of ASTM D734. Low voltage control conductors shall be Type UF and supplied in the sizes shown on the plan or in accordance with the control equipment manufacturer's recommendation, and shall be UL approved for direct burial installation.

ELECTRIC CONTROL WIRING

LOW VOLTAGE

- a. Electrical control wire AWG UF UL approved No. 14 direct burial copper wire or larger, if required, to operate system as designed.
- b. Wire colors:
Control wires – red, No. 14
Common wires – white, No. 14
Master valve wires – blue, No. 14
Spare wires – same color as above, No.14
- c. Bury control wiring between controller and electric valves in pressure supply line trenches, strung as close as possible to main pipe lines with such wires to be consistently located below and to side of pipe, or in separate trenches.
- d. Bundle all 24 volt wires at 10 foot intervals and lay with pressure supply line pipe to one side of the trench.
- e. Provide an expansion loop at every pressure pipe angle fitting, every electric control valve location (in valve box), and every 500 feet. Form expansion loop by wrapping wire at least 8 times around a $\frac{3}{4}$ inch pipe and withdrawing the pipe.
- f. Make all splices and E.C.U. connections using Rainbird petite connectors or similar dry splice method.
- g. Install all control wire splices not occurring at control valve in separate splice valve box.
- h. If multiple controllers are utilized, and wire paths of different controllers cross each other, both common and control wires from each controller shall be different colors approved by the City.
- i. Install control wire for each control valve.
- j. Run one spare 14-1 wire from each controller pedestal the entire length of the mainline, and loop through each valve box.
- k. Pull additional 14-1 wire from each controller pedestal to location identified on plan. Label spare wires at controller and wire stub box.

HIGH VOLTAGE

Type required by local codes and ordinances, of proper size, to accommodate needs of equipment serviced.

For booster pumps and automatic controllers (refer to electrical plans) coordinate three phase 460 volt power to booster pump. Coordinate 120 volt power to automatic controller. All electric work shall conform to local codes, ordinances, and authorities having jurisdiction. All high voltage electrical work to be performed by a licensed electrician.

IRRIGATION POINT OF CONNECTION AND BOOSTER PUMP

Install according to manufacturer's instructions and in accordance with local codes.

AUTOMATIC CONTROLLER

1. Install controller in accordance with manufacturer's instructions and as detailed and located on drawings.
2. Connect remote control valves to controller in numerical sequence as shown on drawings.
3. City shall review final location of controller.
4. All above ground conduit shall be rigid galvanized with appropriate fittings.

19-11 CONTROLLER UNIT

CONTROLLER MODEL

The controller assembly shall be a Rain Master DX2 Series Satellite Assembly as manufactured by United Green Tech. Specifically, the controller unit shall be:

SA6-RM8-**-RHG-PMR-F SAV-**P with flow sensor;

SA6-RM8-**-RHG-PMR-CAC (Controller without handheld unit).

** Number of irrigation stations

SATELLITE ASSEMBLIES

For each project, one satellite assembly with handheld unit is required. All additional satellite assemblies may be provided without handheld unit.

Satellite assembly shall be provided in a stainless steel, vandal resistant, top entry enclosure. Enclosure shall have a stainless steel, pre-drilled removable backboard, controller, terminal interface board, ground rod with clamp and 120 volt outlet. The entire assembly shall be UL listed. The satellite assembly interface board shall be clearly pre-labeled providing the proper points of connection for station valves, commons, master valves, pump starts, and sensors.

ELECTRICAL

An electrical junction box shall be provided with an on/off switch and a duplex receptacle equipped with a ground fault interrupt circuit.

19-12 JOB SITE CONDITIONS

PROTECTION OF PROPERTY

1. Preserve and protect all trees, plants, monuments, structures, and paved areas from damage due to work of this section. In the event damage does occur, all damage to inanimate items shall be completely repaired or replaced to satisfaction of owner or landscape architect, and all injury to living plants shall be repaired by Landscape Contractor. All costs of such repairs shall be charged to and paid by the Landscape Contractor.
2. Protect buildings, walks, walls, and other property from damage. Flare and barricade open ditches. Damage caused to asphalt, concrete or other building material surfaces shall be repaired or replaced at no cost to the owner. Restore disturbed areas to original condition.

PROTECTION AND REPAIR OF UNDERGROUND LINES

1. Request proper utility company to stake exact location (including depth) of all underground electric, gas, or telephone lines. Take whatever precautions are necessary to protect these underground lines from damage, and in the event damage does occur, Landscape Contractor shall repair all damage. Landscape Contractor shall pay all cost of such repairs unless other arrangements have been made.
2. Request owner, in writing, to locate all private utilities proceeding with excavation. If, after such request utilities are encountered and damaged by installer, owner shall repair them at no cost to installer. If Landscape Contractor damages staked or located utilities, owner shall repair them at Landscape Contractor's expense unless other arrangements have been made.

REPLACEMENT OF PAVING AND CURBS

1. Where trenches and lines cross existing roadways, paths curbing, etc., damage to these shall be kept to a minimum and shall be restored to original condition.

19-13 WARRANTY / GUARANTEE

Manufacturer shall warrant materials against defects for a period of one year from date of substantial completion. Installer(s) shall guarantee workmanship for similar period.

SETTLING

Settling of backfilled trenches, which may occur during guarantee period, shall be repaired at no expense to owner, including complete restoration of damaged property.

VANDALISM

Expenses due to vandalism before substantial completion shall be borne by landscape contractor

TURF AND PLANTING AREAS

Owner or contractor will maintain turf and planting areas during warranty period, so as not to hamper proper operation of irrigation system.

19-14 MAINTENANCE STOCK / EXTRA STOCK

MAINTENANCE STOCK

Furnish the following maintenance item to owner prior to final acceptance.

1. Two sets of special tools required for removing, disassembling and adjusting each type of sprinkler head and valve supplied on project.
2. Two keys for each automatic controller.
3. Two keys and two matching hose swivels for each type of quick coupling valve.

EXTRA STOCK

In addition to installed system, furnish the following items to owner.

1. Two sprinkler heads of each type used.

2. Two nozzles for each type of sprinkler head used.
3. Five bubblers for each type used

19-15 GUARANTEE / QUALITY ASSURANCE

Contractor shall possess a valid California Contractor License at the time his/her bid is submitted.

REVIEWS

The contractor shall request the following reviews, 3 days in advance, prior to proceeding with the work. Site reviews shall be conducted with the contractors construction superintendent and/or foreman in charge of the project for all reviews. All meeting conversation shall be in English.

1. Plant material shall be reviewed by the owner of landscape architect prior to planting. The owner or their authorized representative reserves the right to refuse any plant material that is deemed unacceptable.
2. Plant Material Layout locations shall be marked prior to plant pit excavation for review and approval. All material planted prior to review may be subject to rejection and relocation at no additional cost to the owner.

QUALITY AND SIZE

Quality and size shall conform to the current editions of "Horticulture Standards" for number on grade nursery stock as adopted by the American Association of Nurserymen. Only nursery grown stock shall be used unless otherwise specified on the plans.

SHRUB, GROUND COVER, AND TURF GUARANTEE

Guarantee shrubs, ground covers and turf areas as to growth and health for 1 year after acceptance by the owner or their authorized representative starting at the beginning of the maintenance period.

TREE GUARANTEE

Guarantee trees as to growth and health for one year after acceptance by the owner or their authorized representative starting at the beginning of the maintenance period.

PLANT MATERIAL REMOVAL AND REPLACEMENT

All plant material overgrown, root-bound, too recently canned, diseased, unhealthy, badly shaped, or with damaged rootballs are considered unacceptable and shall be removed from the project site. Plant materials that are damaged by the contractor during the maintenance period shall be replaced. Replace all unhealthy, dying or diseased plants, provided the owner, on a quarterly basis, has performed adequate maintenance. Replace with materials as originally specified. Contractor shall not be held liable for acts of God, vandalism or theft after substantial completion has been awarded.

19-16 DELIVERY, STORAGE AND HANDLING

LABELING / PROTECTION

Each tree, shrub, groundcover flat, container of fertilizer or other construction material shall be labeled by grower or manufacturer as separate items. Protect materials from deterioration at all times. Contractor

shall be responsible for vandalism, theft and damage to plant material until commencement of the maintenance period.

DELIVERIES

Bulk deliveries of mulch, topsoil, etc., shall be accompanied by two delivery tickets. One delivery ticket shall be provided to the owner or their authorized representative. Seed and fertilizer shall be delivered in sealed waterproof containers. Materials in damaged packaging are not acceptable.

19-17 JOB CONDITIONS

CONDITIONS

The planting areas shall be free of waste or debris developed by other trades. Verify actual job conditions prior to the start of work and report any discrepancies between the plans and actual conditions immediately to the owner or their authorized representative.

EXAMINATION

Locate cables, conduit, piping, and other obstacles prior to beginning excavation. Notify general contractor of obstacles requiring relocation. Verify that landscape irrigation system has been properly installed and functioning.

19-18 GRADING

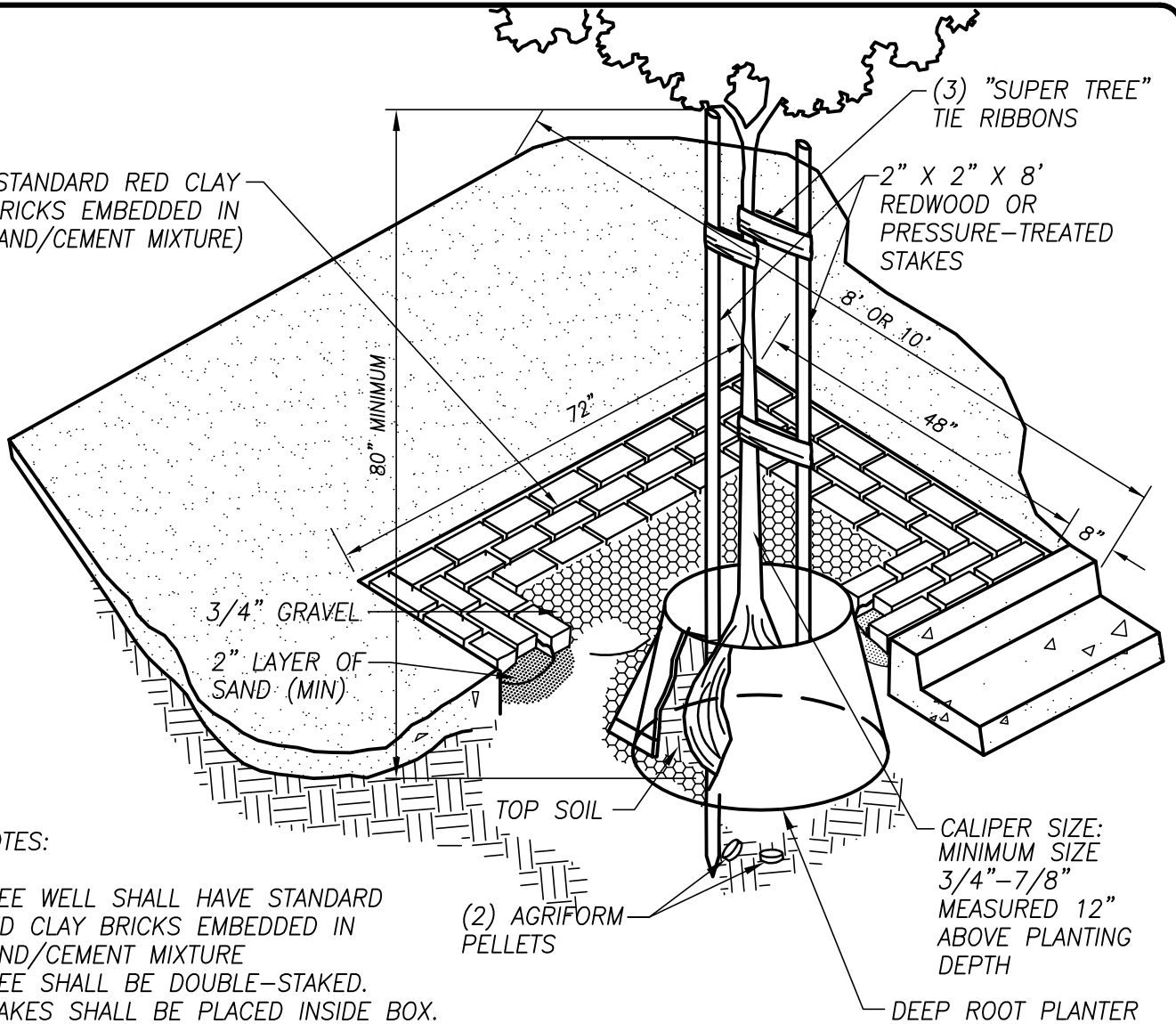
EXISTING SOIL

Work soil in manner that does not cause excessive compaction or clods that will not break easily. Soil compacted by construction equipment or soil on compacted cut slopes or grades shall be pulverized to a minimum depth of two inches by disking or plowing before applying topsoil. Apply water as necessary to obtain optimum moisture content for tilling and planting.

FINE GRADING

Grade planting areas to a minimum slope of $\frac{1}{4}$ inch per foot to drain. Contractor shall provide positive drainage from all structures with no pockets of standing water. Contractor shall maintain a vertical grade of $\frac{1}{2}$ inch minimum to 1 inch maximum below all walls and paving surfaces.

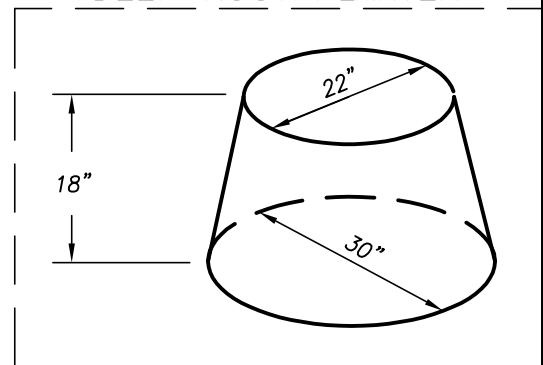
(STANDARD RED CLAY BRICKS EMBEDDED IN SAND/CEMENT MIXTURE)



NOTES:

1. TREE WELL SHALL HAVE STANDARD RED CLAY BRICKS EMBEDDED IN SAND/CEMENT MIXTURE
2. TREE SHALL BE DOUBLE-STAKED. STAKES SHALL BE PLACED INSIDE BOX.
3. TREE SHALL BE PLANTED INSIDE "DEEP ROOT PLANTER" AND BACKFILLED WITH SUITABLE MATERIAL
4. 3/4" GRAVEL SHALL BE USED TO FILL IN AROUND PERIMETER OF PLANTER, 6" TO 8" WIDE. THE GRAVEL SHALL EXTEND BENEATH THE 18" DEPTH OF THE DEEP ROOT PLANTER.
5. IRRIGATION PIPE TO BE STUBBED THROUGH BOX. RISER WILL BE FLEX W/BUBBLER HEAD.
6. ALL STREET TREES WITHIN 10' OF ANY CURB OR SIDEWALK SHALL HAVE A DEEP ROOT PLANTER OR PANELS INSTALLED.
7. DEEP ROOT PLANTER CAN BE SUBSTITUTED WITH A MIN. OF (4) 18" x 24" PLANTER PANELS AS PER MANUFACTURER'S SPECIFICATIONS.

DEEP ROOT PLANTER



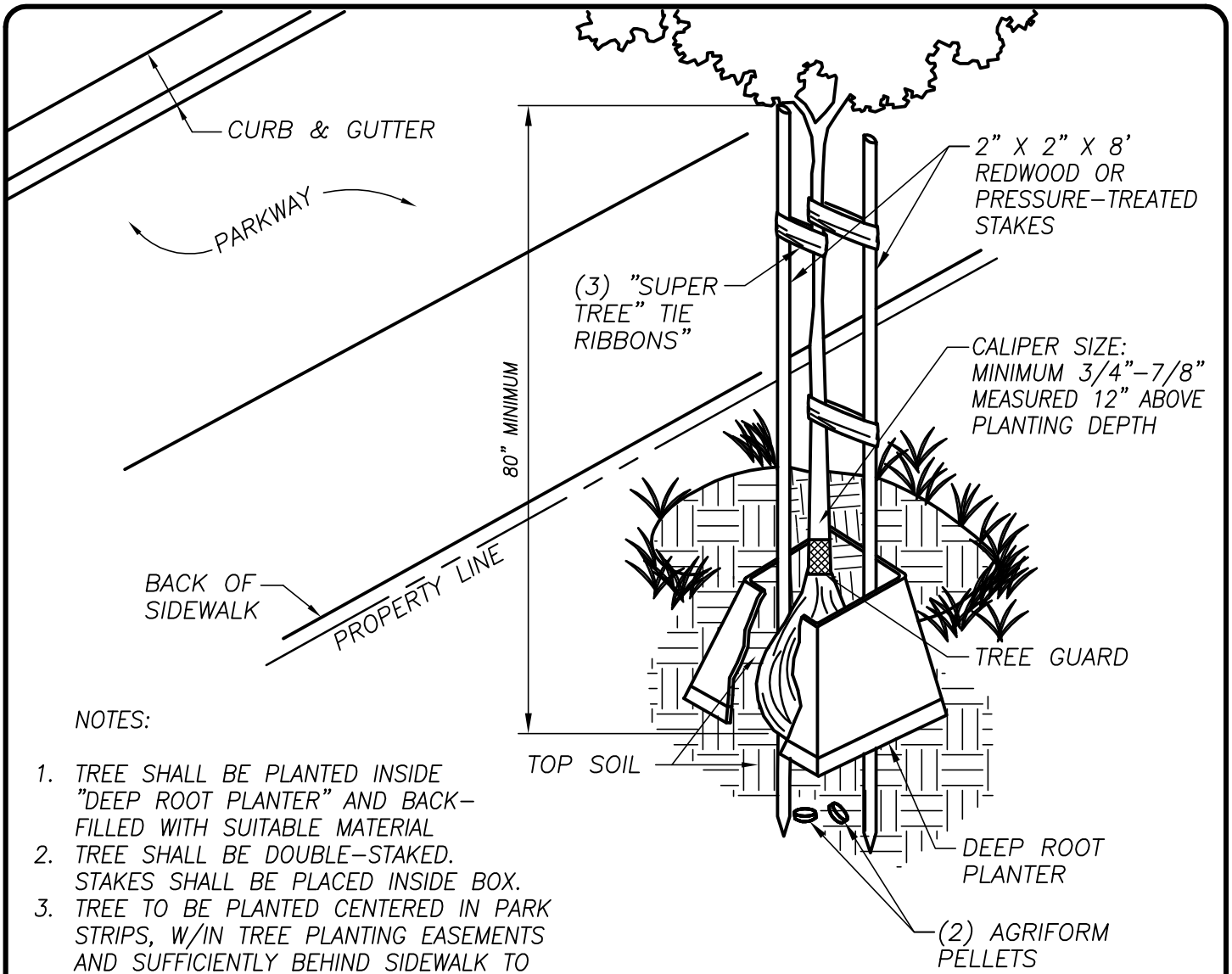
COMMERCIAL/RESIDENTIAL STREET TREE IN TREE WELL



DRAWN BY: JSH
 CHECK BY: NBB
 SCALE: NONE

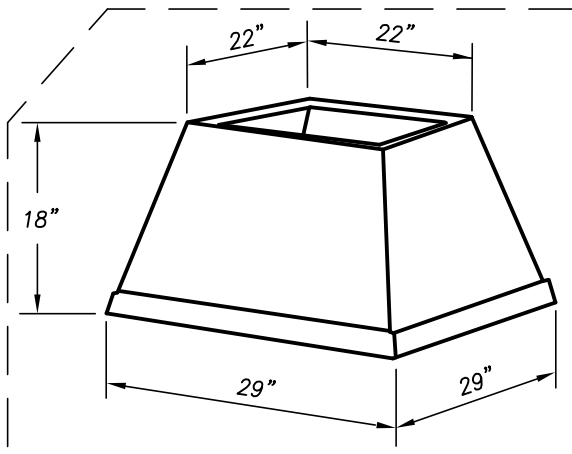
CITY OF TURLOCK
 APPROVED BY: *[Signature]*
 CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.
L-1
 COUNCIL APPROVAL
DEC, 2015



NOTES:

1. TREE SHALL BE PLANTED INSIDE "DEEP ROOT PLANTER" AND BACK-FILLED WITH SUITABLE MATERIAL
2. TREE SHALL BE DOUBLE-STAKED. STAKES SHALL BE PLACED INSIDE BOX.
3. TREE TO BE PLANTED CENTERED IN PARK STRIPS, W/IN TREE PLANTING EASEMENTS AND SUFFICIENTLY BEHIND SIDEWALK TO ELIMINATE DAMAGE TO THE SIDEWALK AND/OR TREE.
4. STREET TREE LOCATIONS TO BE CONFIRMED DURING CONSTRUCTION OF OFF-SITE IMPROVEMENTS.
5. PLANT TREES 20 FEET FROM CURB RETURNS AND STREET LIGHTS, 5 FEET FROM SEWER LINES, 5 FEET FROM DRIVE APPROACH OPENINGS, AND OUT OF 15 FEET CLEAR VISION TRIANGLE FOR DRIVE APPROACH. TREES ARE TO BE SPACED 30' TO 60' APART DEPENDING ON TREE SPACING
6. ALL STREET TREES WITHIN 10' OF ANY CURB OR SIDEWALK SHALL HAVE A DEEP ROOT BOX OR PANELS INSTALLED.
7. DEEP ROOT PLANTER BOXES CAN BE SUBSTITUTED WITH A MINIMUM OF (4) 18"X24" PLANTER PANELS AS PER MANUFACTURER'S SPECIFICATIONS.



DEEP ROOT PLANTER DETAIL

COMMERCIAL/RESIDENTIAL STREET TREE IN TREE WELL



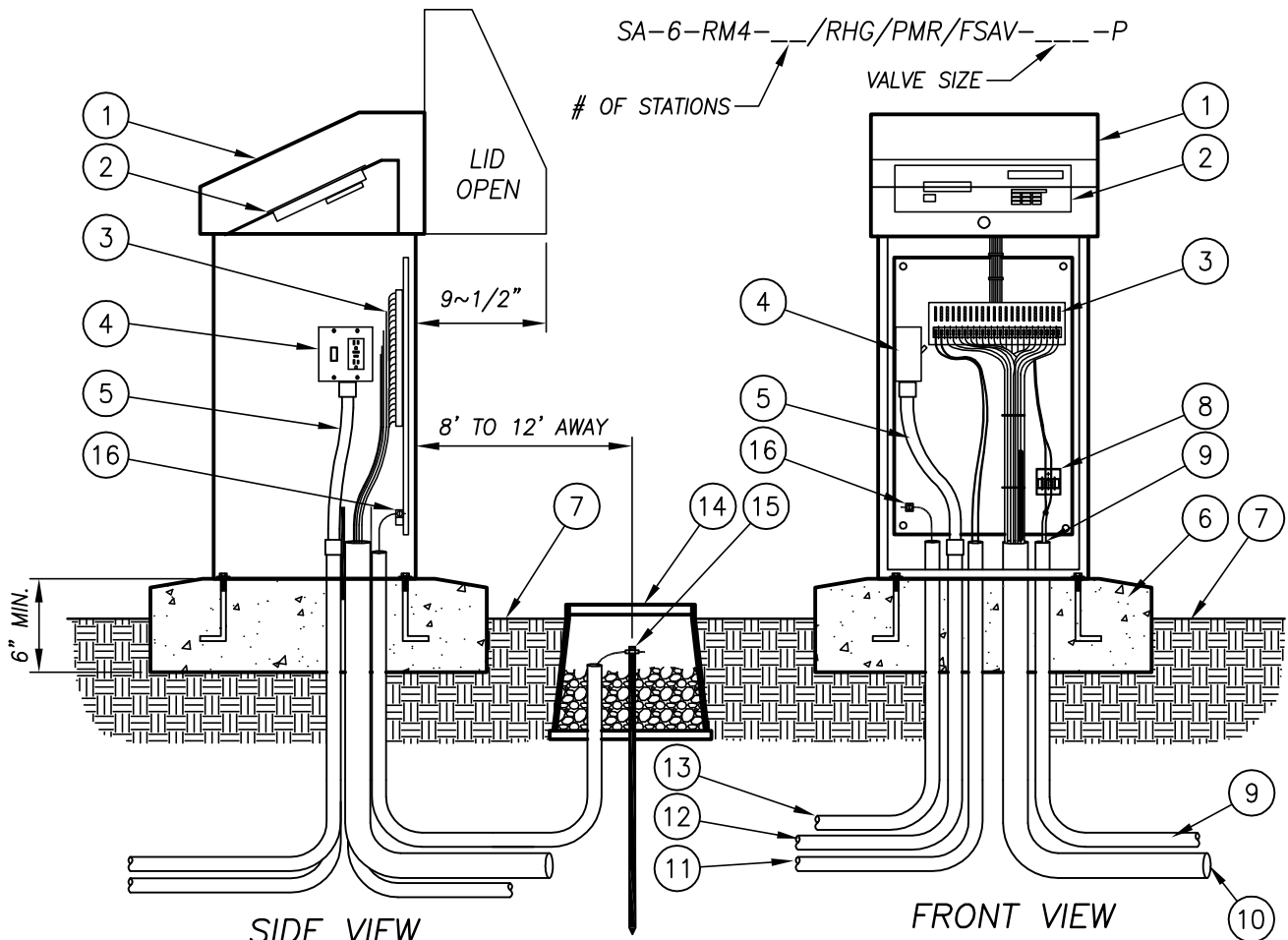
DRAWN BY: JSH
 CHECK BY: NBB
 SCALE: NONE

CITY OF TURLOCK

APPROVED BY: *[Signature]*
 CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.
L-2



COUNCIL APPROVAL
DEC, 2015

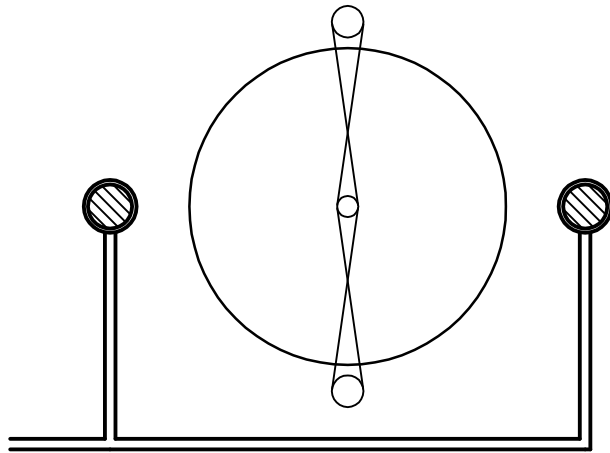
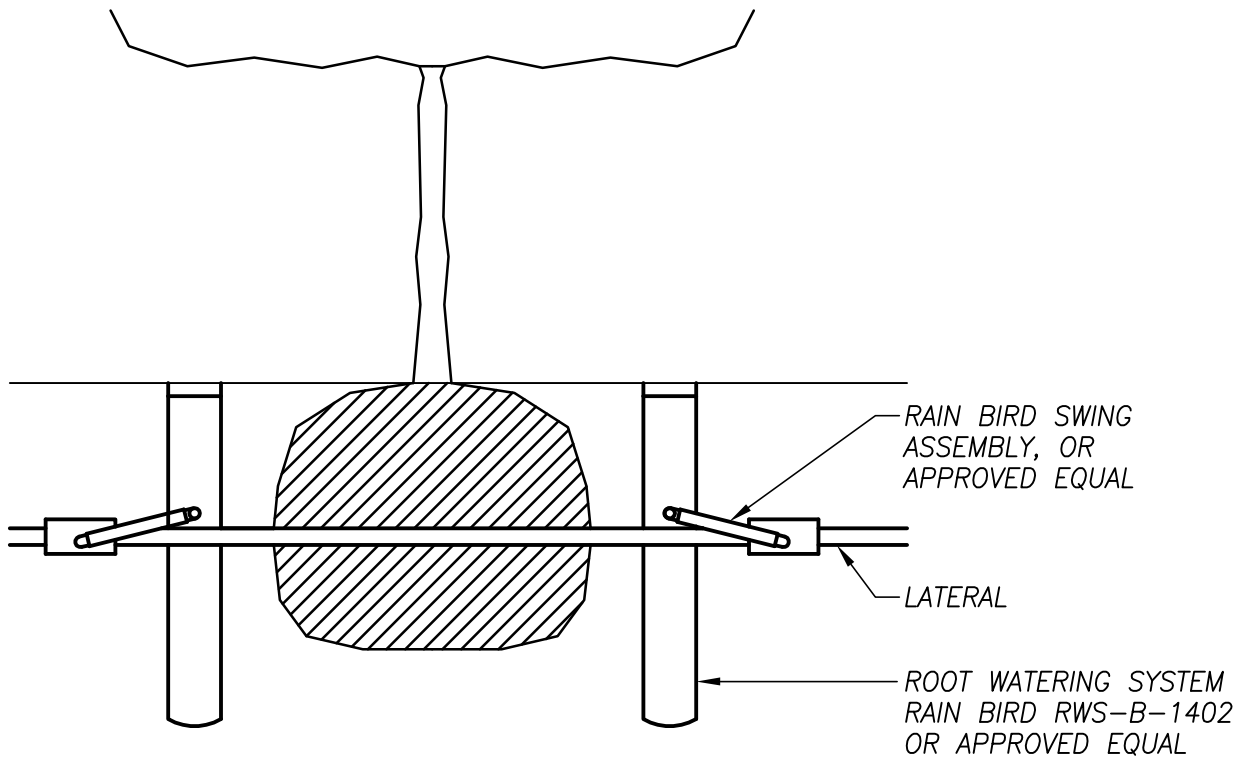


- ① STRONGBOX STAINLESS STEEL NEMA 3R RAINPROOF ENCLOSURE (UL LISTED).
- ② SATELLITE ASSEMBLY. ASSEMBLED IN ENCLOSURE BY SITEONE GREENTECH.
- ③ TERMINAL STRIP FOR VALVE WIRES.
- ④ POWER SWITCH/GFCI RECEPTACLE.
- ⑤ ELECTRICAL FLEX CONDUIT FOR POWER.
- ⑥ 6" MIN THICK, CONCRETE PAD WITH ANCHOR BOLTS PER MANUFACTURER RECOMMENDATIONS.
- ⑦ FINISHED GRADE.
- ⑧ FLOW SENSOR TERMINAL BOARD.
- ⑨ 1" CONDUIT AND SWEEP ELL WITH FLOW SENSOR CABLE.
- ⑩ 3" CONDUIT AND SWEEP ELL FOR LEAD WIRES.
- ⑪ 1" CONDUIT AND SWEEP ELL FOR MASTER VALVE WIRES.
- ⑫ 1" CONDUIT AND SWEEP ELL FOR 110 VAC POWER LINE.
- ⑬ 1" CONDUIT AND SWEEP ELL FOR GROUND WIRE.
- ⑭ 10" ROUND VALVE BOX AROUND GROUND ROD. FILL WITH 3/4" CRUSHED ROCK.
- ⑮ 5/8"x8' GROUND ROD WITH #6 GROUND WIRE AND CLAMP. LOCATE 8'-12' FROM ENCLOSURE.
- ⑯ #6 GROUND WIRE SECURED TO BACKBOARD GROUNDING TERMINAL.

NOTE: SEE IRRIGATION LEGEND CALL OUT FOR INCLUDED SATELLITE COMMUNICATION COMPONENTS. SUGGESTED CONDUIT SIZES MAY NEED TO BE LARGER.

CONTROLLER ASSEMBLY INSTALLATION

	DRAWN BY: JSH	CITY OF TURLOCK	DRAWING NO. L-3
	CHECK BY: NBB	APPROVED BY: 	COUNCIL APPROVAL DEC, 2015
	SCALE: NONE	CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694	



NOTES:

1. INSTALL TWO ROOT WATERING SYSTEMS PER TREE
2. ROOT WATERING SYSTEM SHALL BE EVENLY SPACED ADJACENT TO THE ROOT ZONE AND WITHIN THE TREE CANOPY
3. FILL ROOT WATERING SYSTEM WITH PEA GRAVEL
4. PLACE SOIL SOCK ON OUTSIDE OF THE ROOT WATERING SYTEM

DEEP ROOT TREE BUBBLER



DRAWN BY: VL

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

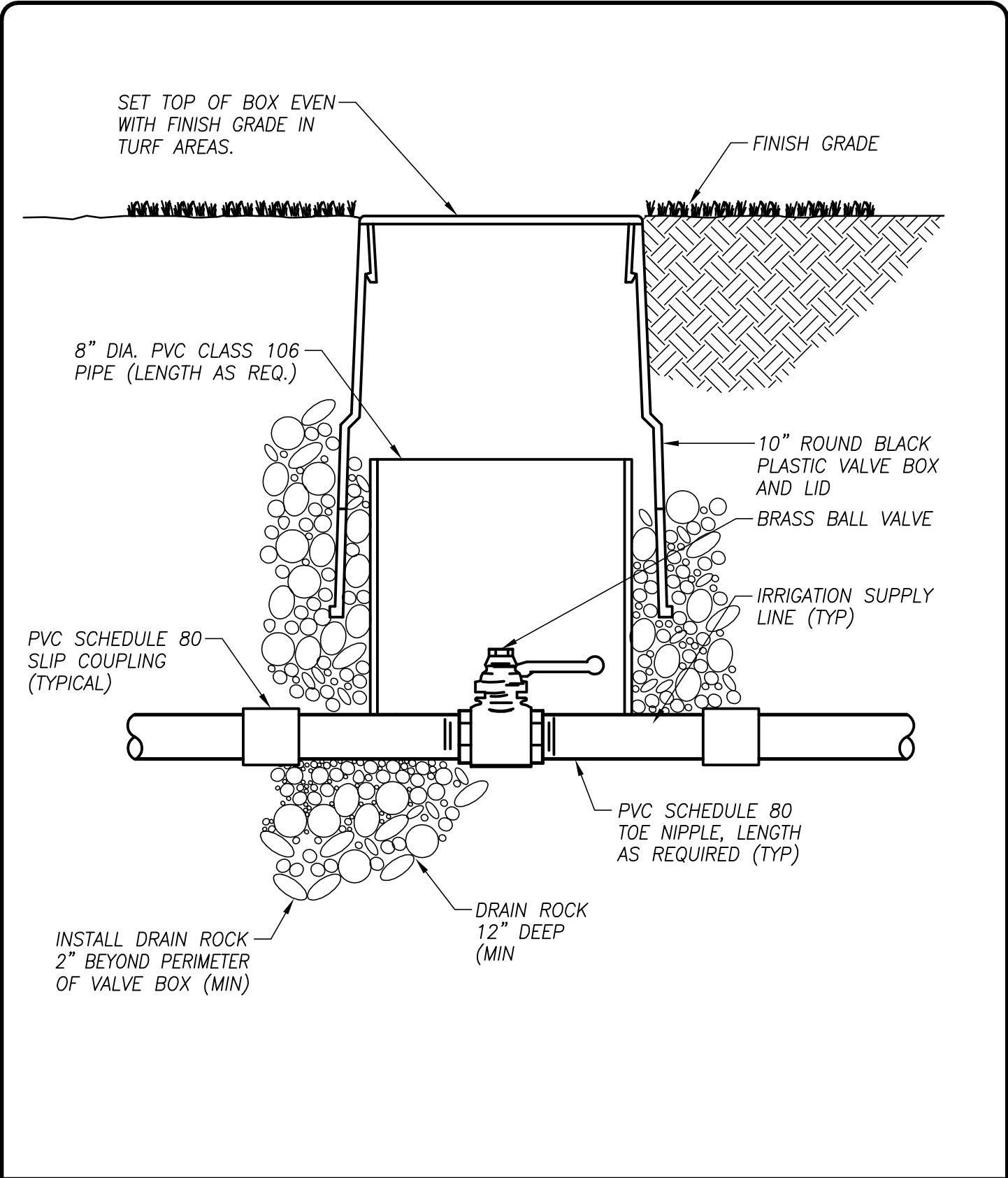
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

L-4

COUNCIL APPROVAL

DEC, 2015



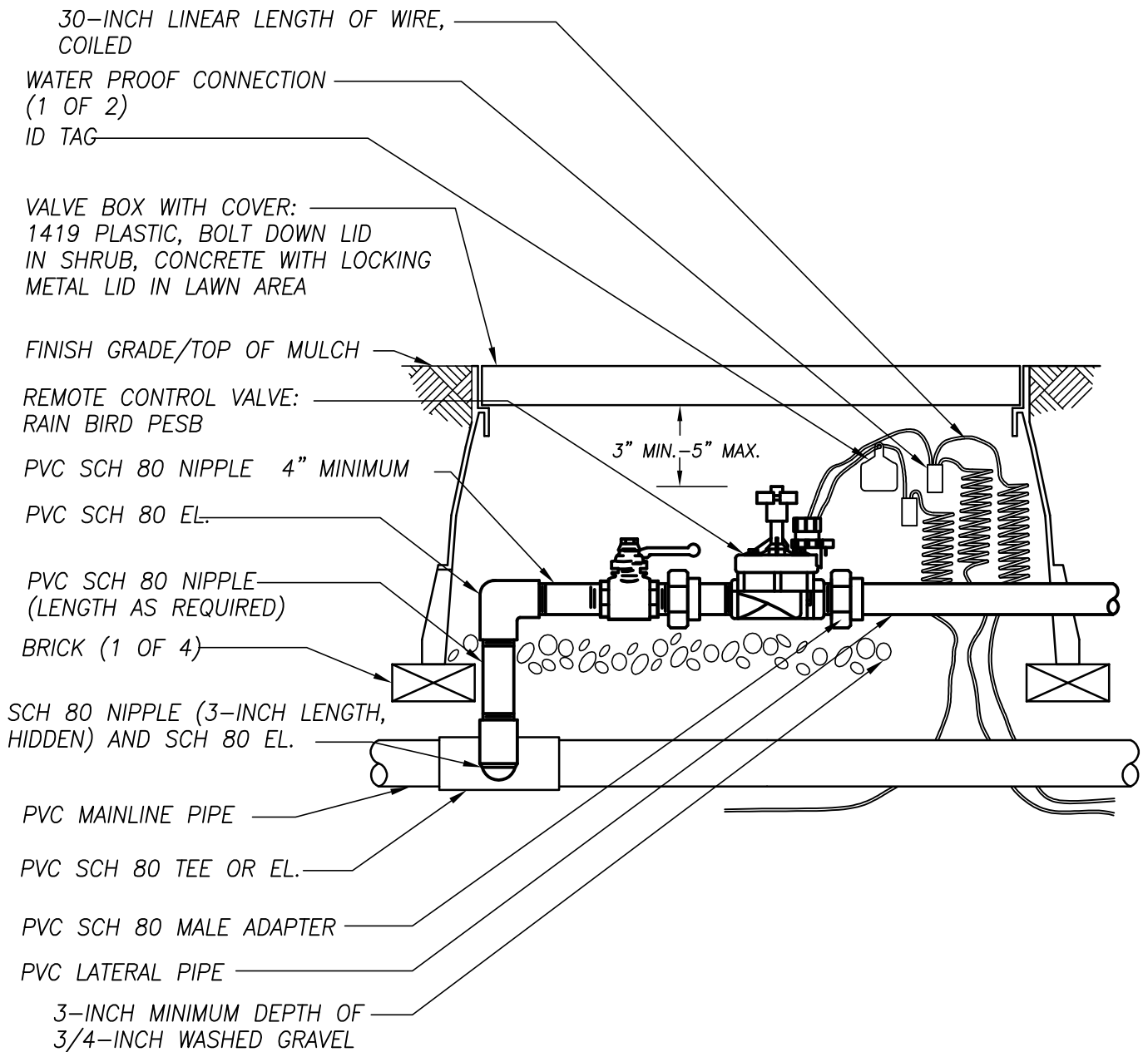
STANDARD BALL VALVE INSTALLATION



DRAWN BY: VL
 CHECK BY: NBB
 SCALE: NONE

CITY OF TURLOCK
 APPROVED BY:
M. Pitcock
 CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.
L-5
 COUNCIL APPROVAL
DEC, 2015



NOTE: USE 1419 CONCRETE VALVE BOX WITH BOLT DOWN LIDS IF INSTALLED IN SIDEWALK AREA. SET FLUSH TO GRADE.

HARD GLUE ALL FITTINGS FROM POINT OF CONTACT TO BRASS BALL VALVE.

REMOTE CONTROL VALVE



DRAWN BY: VL

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

L-6

COUNCIL APPROVAL

DEC, 2015

1" - 2" FROM BOTTOM
BOTTOM OF LID TO TOP
OF VALVE

FINISH GRADE/
TOP OF MULCH

QUICK-COUPLING VALVE:
RAIN BIRD MODEL 33LRC

3" MINIMUM DEPTH
OF 3/4" WASHED
GRAVEL

PVC SCH 80 EL. TT

#4 REBAR 36" IN LENGTH
STAINLESS STEEL GEAR
CLAMPS OR EQUIVALENT
SUPPORT SYSTEM

10" PLASTIC VALVE BOX WITH
BOLT DOWN LID 10-INCH SIZE

PVC SCH 80 NIPPLE
6" MINIMUM LENGTH

TSJ-12-1"

PVC SCH 80 TEE OR EL

PVC MAINLINE PIPE

PVC SCH 80 EL. TT

NOTE:

1. FURNISH FITTINGS AND PIPING SIZED THE SAME SIZE AS THE INLET SIZE OF THE QUICK COUPLING VALVE.

STANDARD QUICK-COUPLING VALVE



DRAWN BY: VL

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

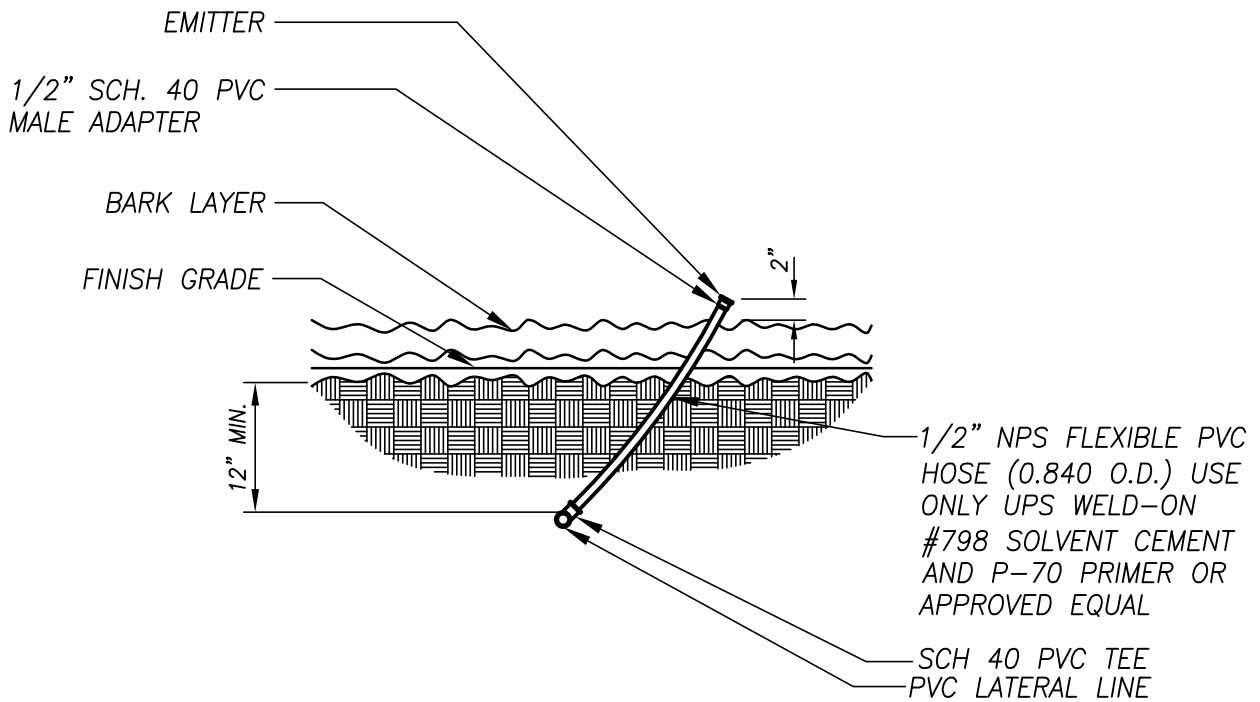
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

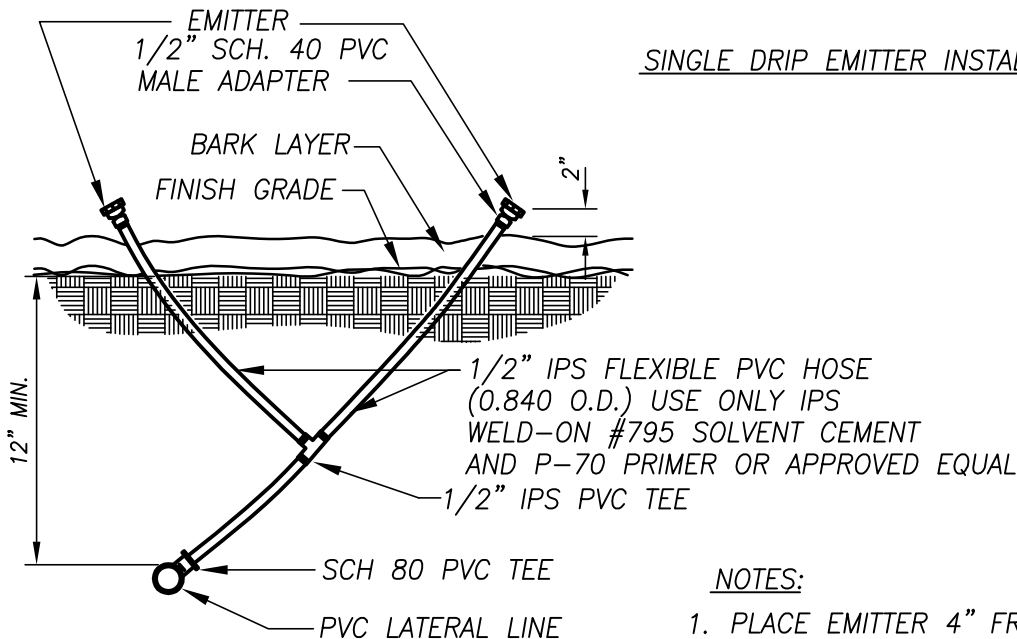
L-7

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DEC, 2015



SINGLE DRIP EMITTER INSTALLATION



MULTI DRIP EMITTER INSTALLATION

NOTES:

1. PLACE EMITTER 4" FROM CENTER LINE OF SHRUB
2. EMITTER MUST BE VISIBLE TO MAINTENANCE PERSONNEL
3. USE MULTI DRIP EMITTER FOR TREE AND GROUND COVER AREAS ONLY. INSTALL UP TO 3 EMITTERS PER MULTI-DRIP EMITTER.

DRIP EMITTER ASSEMBLY DETAIL



DRAWN BY: VL

CHECK BY: NBB

SCALE: NONE

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DRAWING NO.

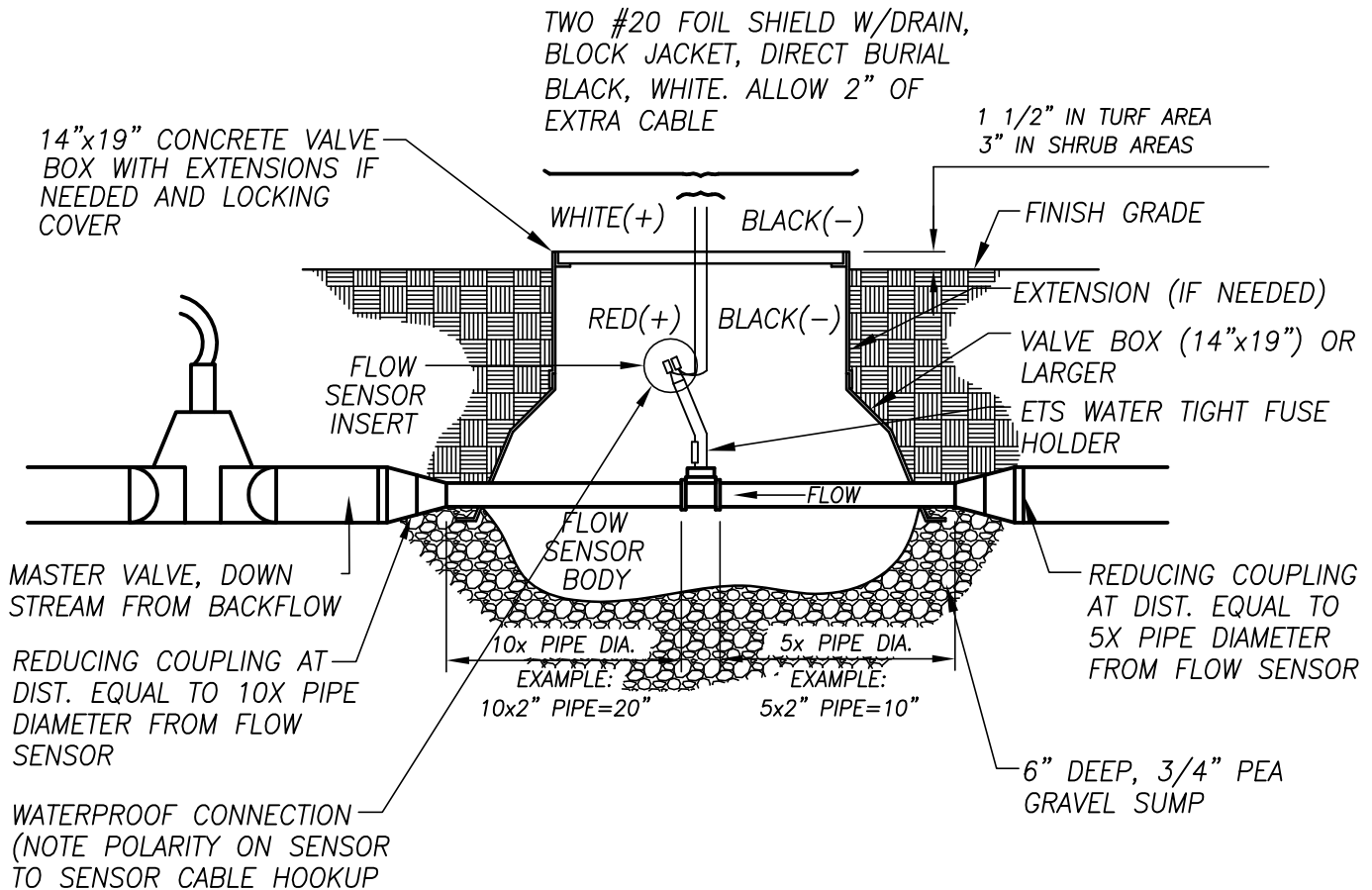
L-8

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LOSCO REDUCING COUPLINGS ARE AVAILABLE IN THE FOLLOWING SIZES AND PART NUMBERS:

- 429-585 8"x6"
- 429-532 5"x4"
- 429-422 4"x3"
- 429-338 3"x2"
- 429-251 2"x1 1/2"
- 429-212 1 1/2"x1 1/4"
- 429-168 1 1/4"x1"



NOTES:

1. FLOW SENSOR MUST BE INSTALLED WITH INSERT (TOP) POSITIONED VERTICALLY AND BODY (TEE) POSITIONED HORIZONTALLY.
2. FLOW SENSOR CABLE MUST BE RUN IN 1" CONDUIT FROM FLOW SENSOR TO CONTROLLER ENCLOSURE.

MASTER VALVE/FLOW SENSOR



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CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

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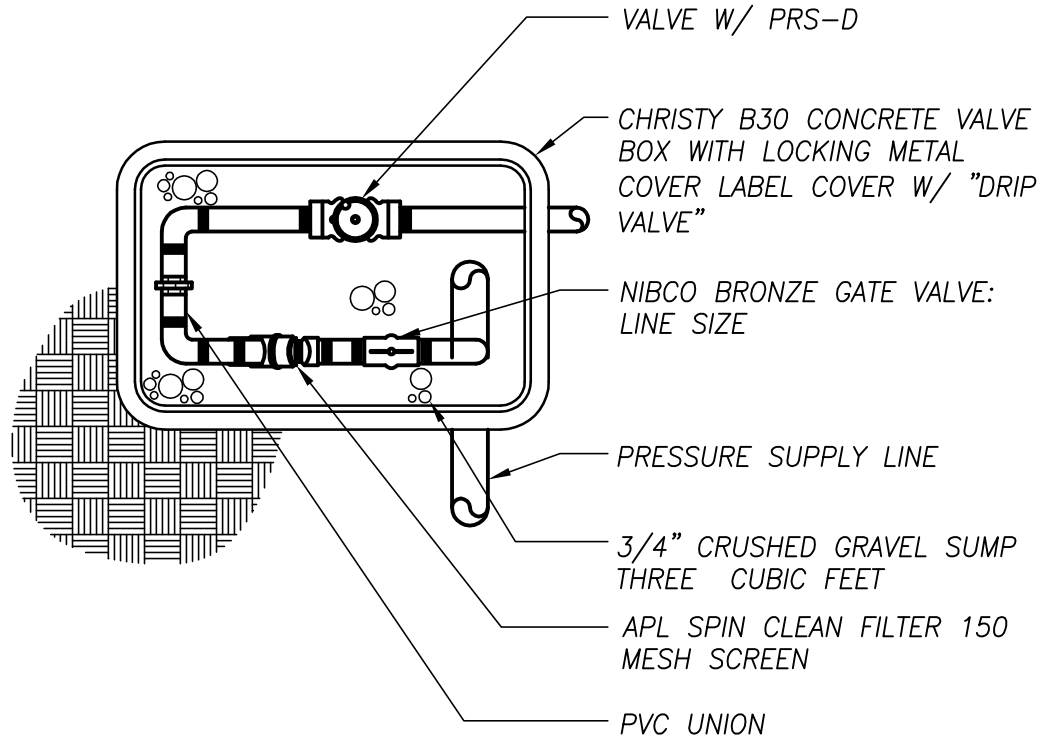
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DRAWING NO.

L-9

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DEC, 2015



NOTES:

1. INSTALL ASSEMBLY TO REST ON GRAVEL SUMP. CONTAIN ENTIRE ASSEMBLY WITHIN VALVE BOX. NO EXTENSIONS ACCEPTED.
2. VALVE BOX TO BE 2" ABOVE FINISH GRADE IN ALL TURF AREAS AND 3" ABOVE FINISH GRADE IN ALL PLANTER AREAS.

DRIP VALVE ASSEMBLY

CITY OF TURLOCK

DRAWING NO.

L-10

COUNCIL APPROVAL

DEC, 2015



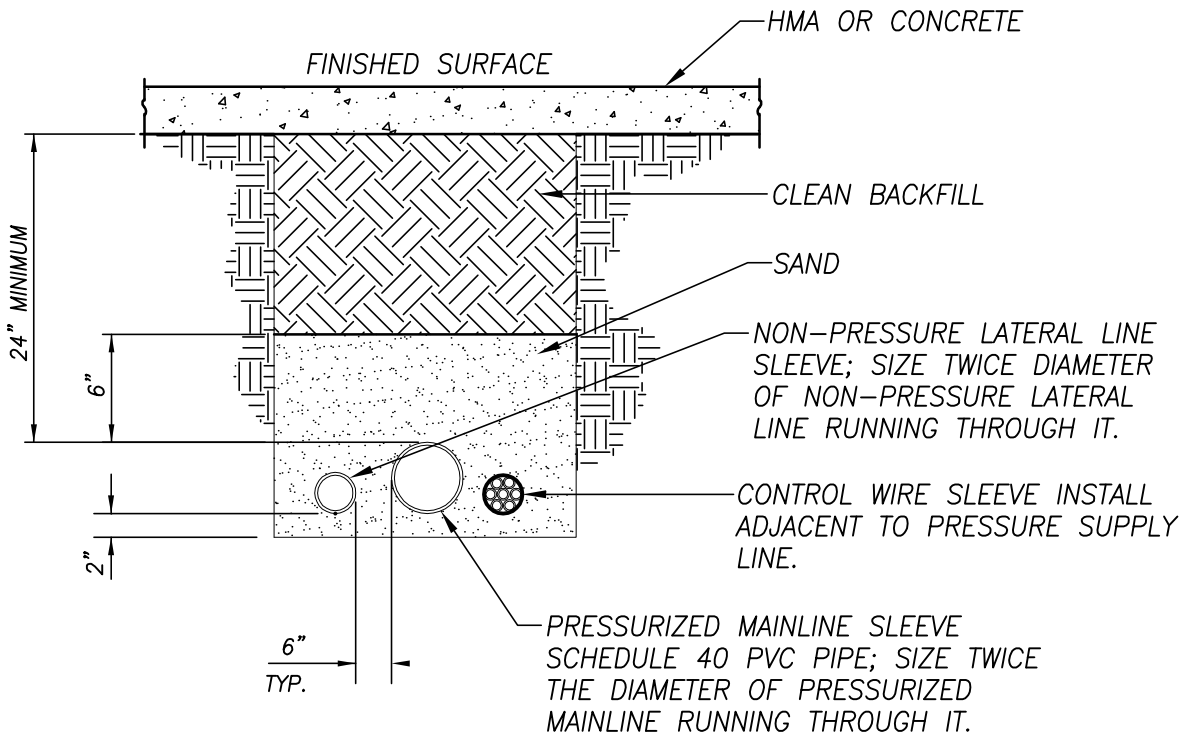
DRAWN BY: VL

CHECK BY: NBB

SCALE: NONE

APPROVED BY:

CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694



NOTES:

1. EXTEND ALL SLEEVES 12" BEYOND EDGE OF HARDSCAPING AT BOTH ENDS
2. COMPACT SOIL BACKFILL TO 90% THROUGH WATER JETTING. 4" OF SCREENED SAND REQUIRED AROUND MAIN LINE PRIOR TO WATER JET COMPACTION.
3. SCHEDULE 40 PVC PIPE MUST BE USED AS SLEEVE UNDER ALL PAVING, WITH A 4" SCREENED SAND COVER.
4. ALL IRRIGATION WIRE MUST HAVE A SEPARATE SLEEVE MEETING THE SAME STATED INSTALLATION CONDITIONS.

SLEEVING DETAIL



DRAWN BY: VL

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

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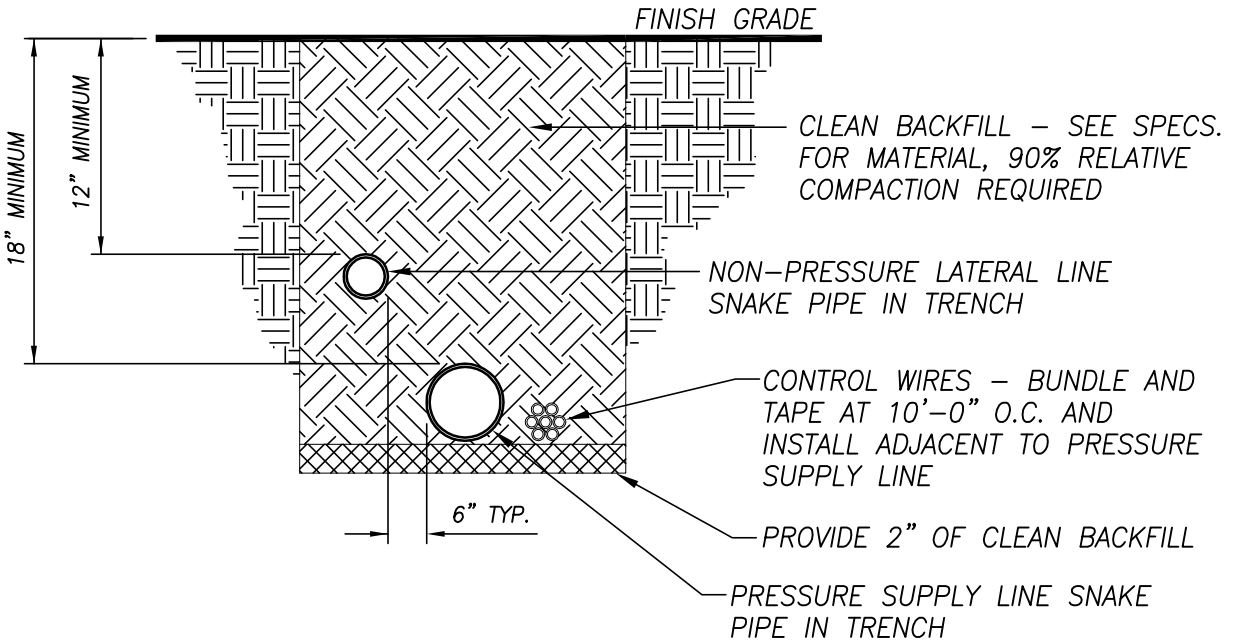
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DRAWING NO.

L-11

COUNCIL APPROVAL

DEC, 2015



NOTES:

1. PIGTAIL AND LOOP CONTROL WIRE AT ALL 90 DEGREE CHANGES IN DIRECTION.
2. INSTALL MAIN LINE ACCORDING TO MANUFACTURER'S SPECIFICATIONS. COMPACT SOIL BACKFILL TO 90% THROUGH WATER JETTING. 4" OF SCREENED SAND REQUIRED AROUND MAIN LINE PRIOR TO WATER COMPACTION.

TRENCHING DETAIL



DRAWN BY: VL

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

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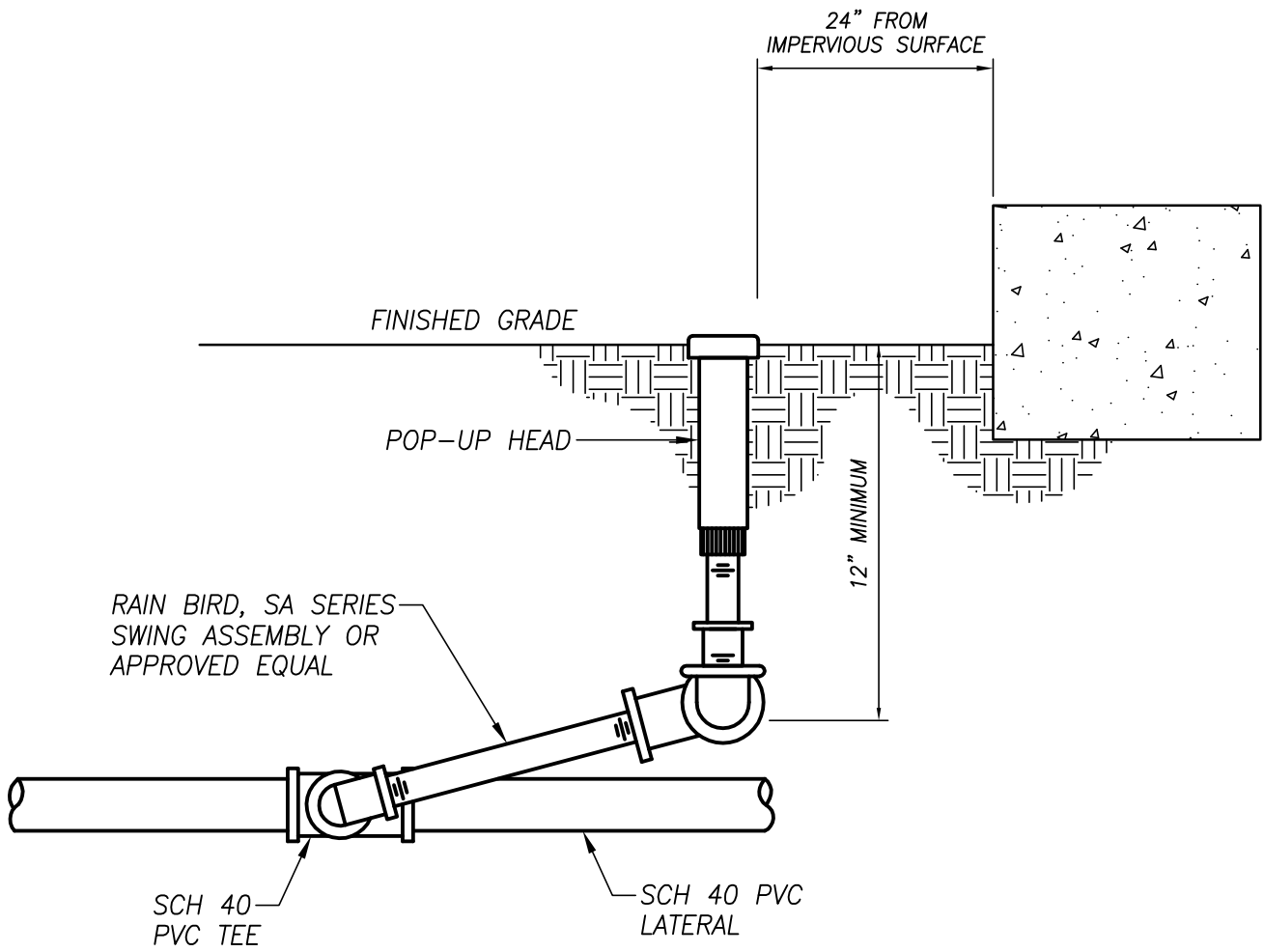
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DRAWING NO.

L-12

COUNCIL APPROVAL

DEC, 2015



POP-UP SPRAY HEAD

CITY OF TURLOCK



DRAWN BY: VL

CHECK BY: NBB

SCALE: NONE

APPROVED BY:

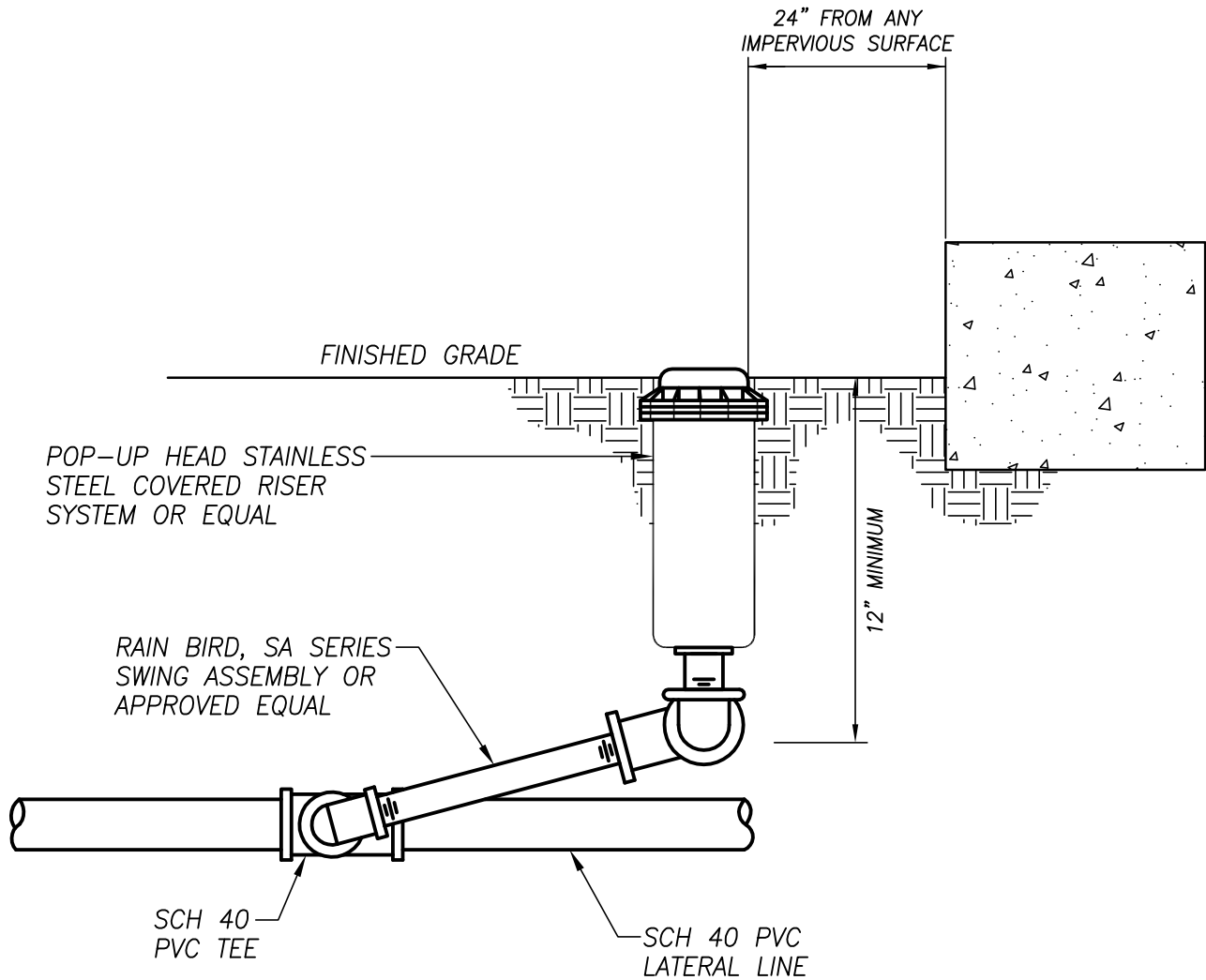
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DRAWING NO.

L-13

COUNCIL APPROVAL

DEC, 2015



POP-UP ROTOR

CITY OF TURLOCK



DRAWN BY: VL

CHECK BY: NBB

SCALE: NONE

APPROVED BY:

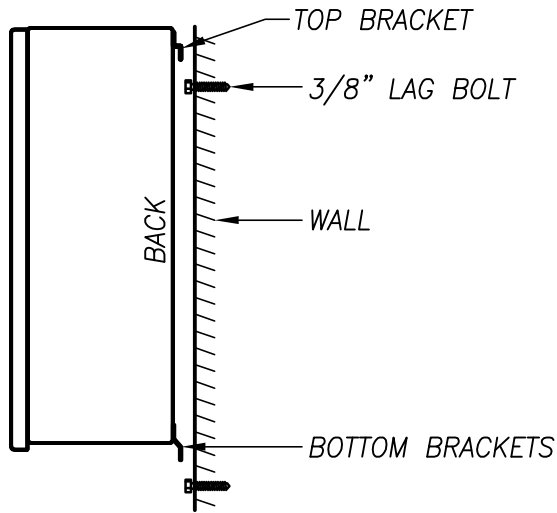
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

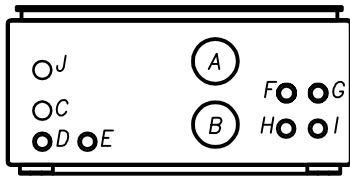
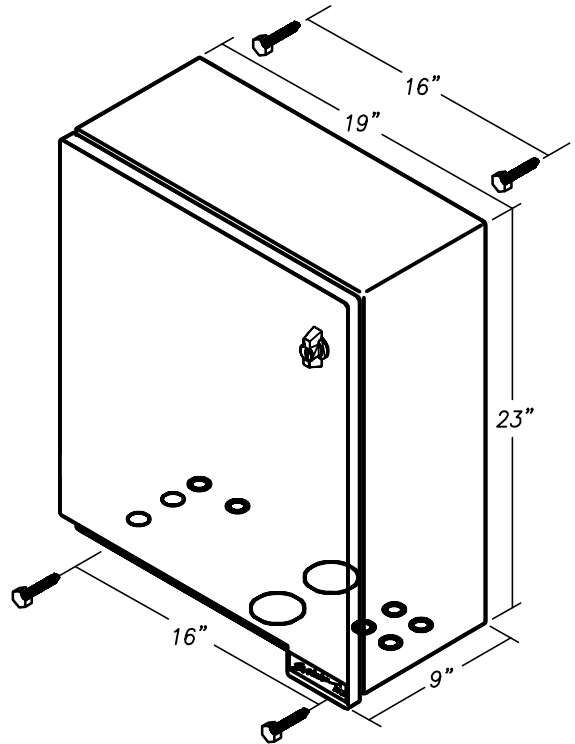
L-14

COUNCIL APPROVAL

DEC, 2015



SIDE VIEW



BOTTOM FRONT VIEW

KNOCKOUTS		
ITEM	ACCOMODATES	DESCRIPTION
A,B	2" CONDUIT	STATION WIRES
C	1/2" CONDUIT	INCOMING AC
D,E	1/2"OR3/4" CONDUIT	HARDWIRE COMMUNICATIONS
F,G,H,I	1/2"OR3/4" CONDUIT	SENSOR WIRING
J		RESERVED

NOTES:

1. POSITION THE CONTROLLER SO THAT THE FRONT PANEL DISPLAY APPEARS SLIGHTLY ABOVE EYE LEVEL.
2. FOR THE TOP BRACKET ATTACH 3/8" LAG BOLTS TO WALL ON 16" CENTER. LEAVE A 1/8" GAP BETWEEN LAG BOLT HEAD AND WALL.
3. HANG CONTROL BOX ON LAG BOLTS.
4. DRILL AND MOUNT THE TWO LOWER 3/8" LAG BOLTS USING THE BOTTOM BRACKETS AS A GUIDE.

WALL MOUNTED CONTROLLER



DRAWN BY: VL

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

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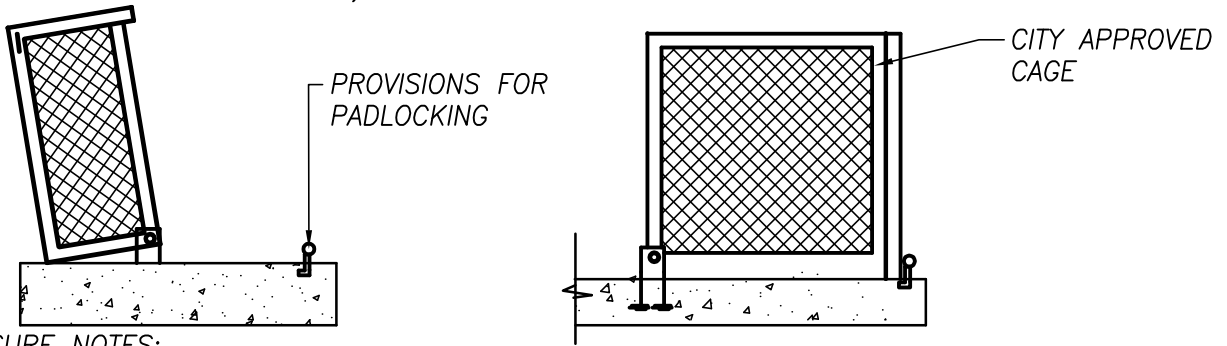
DRAWING NO.

L-15

COUNCIL APPROVAL

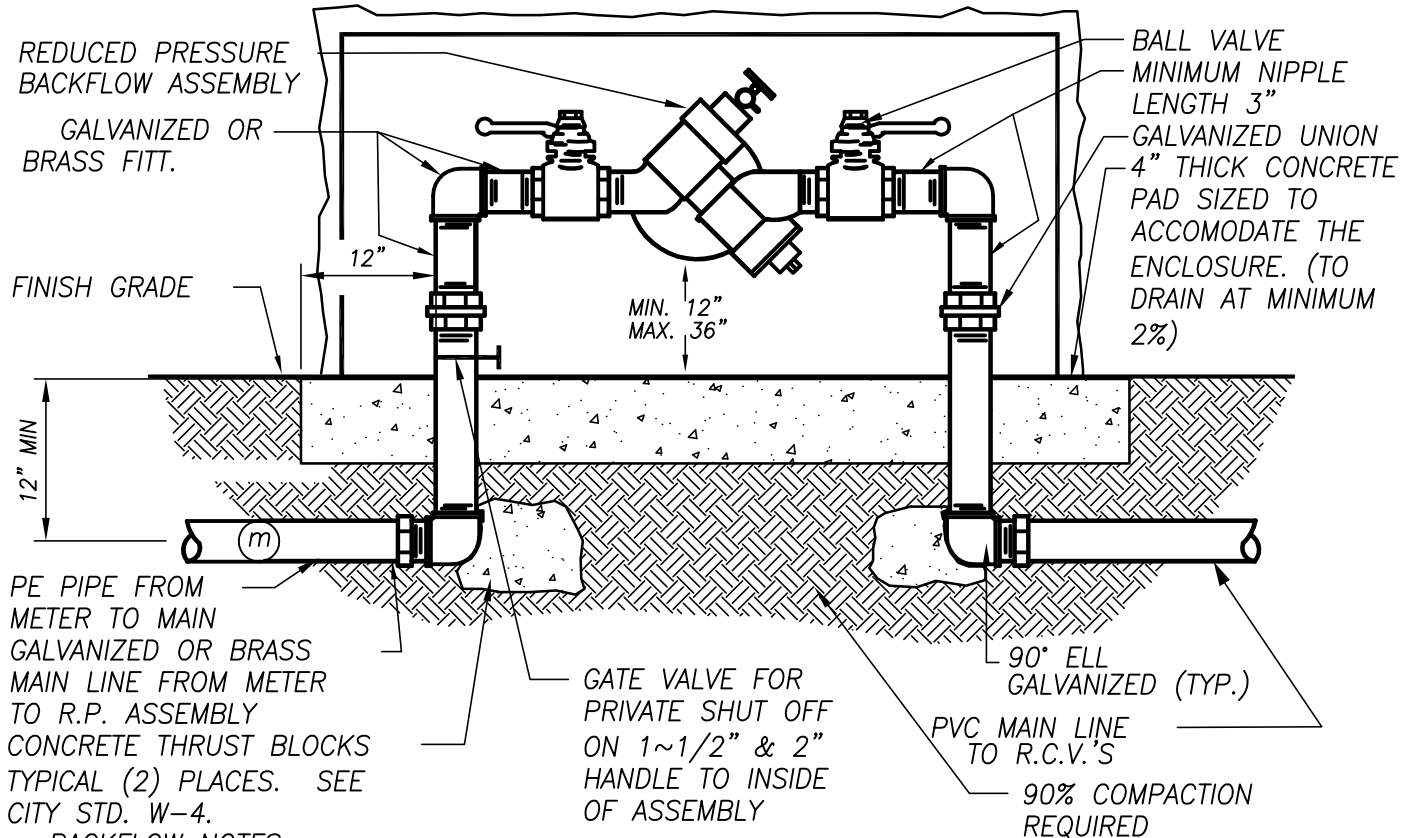
DEC, 2015

ENCLOSURE FOR 2" AND SMALLER LINES;
LINES OVER 2" DIA, USE APPROVED BLANKET ONLY.



ENCLOSURE NOTES:

1. REFER TO MANUFACTURER'S CATALOG FOR CORRECT DIMENSIONS TO FIT SIZE OF SPECIFIED BACKFLOW.
2. CONCRETE FOUNDATION DIMENSIONS TO SUIT EACH INDIVIDUAL INSTALLATION. CONCRETE TO BE OUT 6" FROM CAGE AND SLOPED TO DRAIN.
3. COVER BACKFLOW ASSEMBLY WITH POLAR BLANKET TO PREVENT FREEZE DAMAGE. ENCLOSE ENTIRE BACKFLOW DEVICE WITH STRONG BOX BC-45-CR OR APPROVED EQUAL.



REDUCED PRESSURE BACKFLOW ASSEMBLY
GALVANIZED OR BRASS FITT.
FINISH GRADE
12" MIN
PE PIPE FROM METER TO MAIN
GALVANIZED OR BRASS MAIN LINE FROM METER TO R.P. ASSEMBLY
CONCRETE THRUST BLOCKS TYPICAL (2) PLACES. SEE CITY STD. W-4.

BALL VALVE
MINIMUM NIPPLE LENGTH 3"
GALVANIZED UNION
4" THICK CONCRETE PAD SIZED TO ACCOMODATE THE ENCLOSURE. (TO DRAIN AT MINIMUM 2%)
90° ELL GALVANIZED (TYP.)

GATE VALVE FOR PRIVATE SHUT OFF ON 1~1/2" & 2" HANDLE TO INSIDE OF ASSEMBLY
PVC MAIN LINE TO R.C.V.'S
90% COMPACTION REQUIRED

BACKFLOW NOTES:

1. EQUIPMENT TO BE INSTALLED AT A MINIMUM OF 24" FROM ANY STRUCTURES OR HARDSCAPING. COVER BACKFLOW ASSEMBLY WITH POLAR BLANKET TO PREVENT FREEZE DAMAGE.
2. ENCLOSE ENTIRE BACKFLOW DEVICE WITH STRONG BOX BC-45-CR OR APPROVED EQUAL.
3. WHEN UNIT IS NEXT TO A STRUCTURE (I.E. WALL, BUILDING, ETC.) MOUNT TEST COCKS ON OPEN OR NON STRUCTURE SIDE.

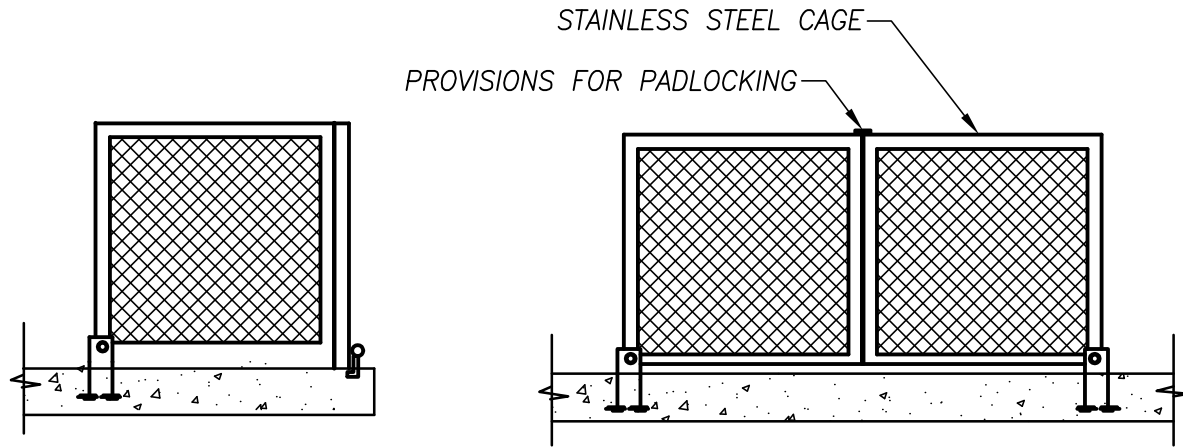
3/4"-2" BACKFLOW PREVENTER ASSEMBLY DETAIL



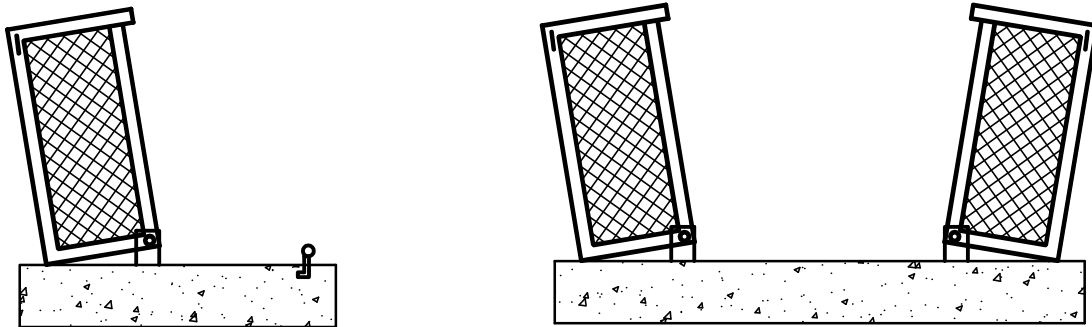
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SCALE: NONE

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APPROVED BY: *[Signature]*
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.
L-16
COUNCIL APPROVAL
DEC, 2015



FRONT VIEW OF ENCLOSURE



ENCLOSURE FOR 2" AND SMALLER

ENCLOSURE FOR 2~1/2" AND LARGER

ENCLOSURE IN OPEN POSITION

NOTES:

1. REFER TO MANUFACTURER'S CATALOG FOR CORRECT DIMENSIONS TO FIT THE SIZE OF SPECIFIED BACKFLOW.
2. CONCRETE FOUNDATION DIMENSIONS TO SUIT EACH INDIVIDUAL INSTALLATION. CONCRETE TO EXTEND 6" BEYOND CAGE AND SLOPED TO DRAIN.

STANDARD ENCLOSURE

CITY OF TURLOCK



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CHECK BY: NBB

SCALE: NONE

APPROVED BY:

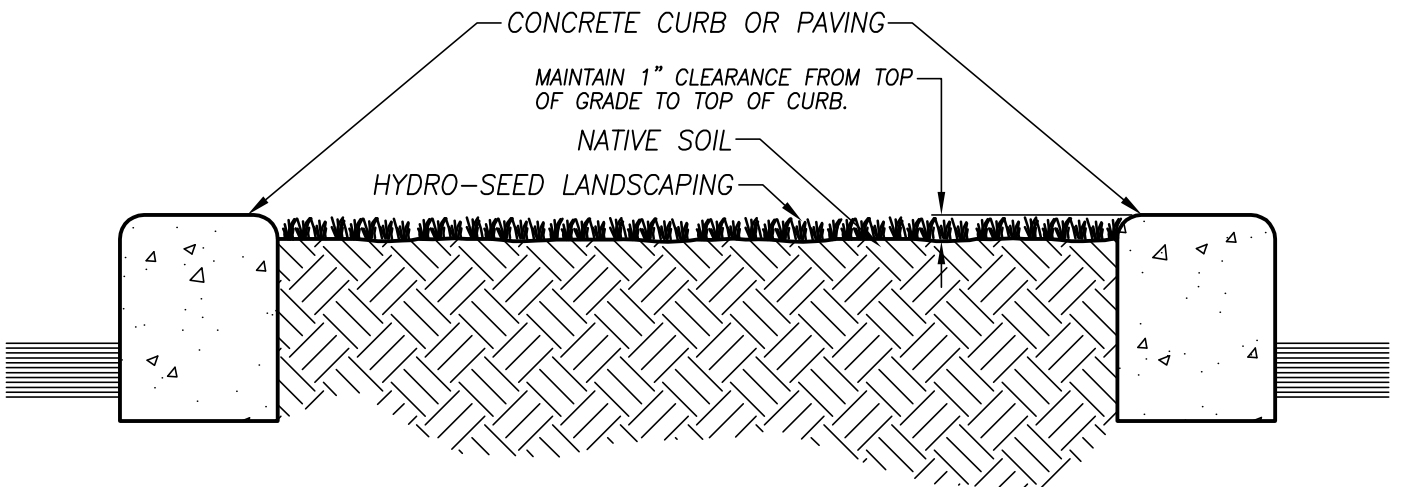
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

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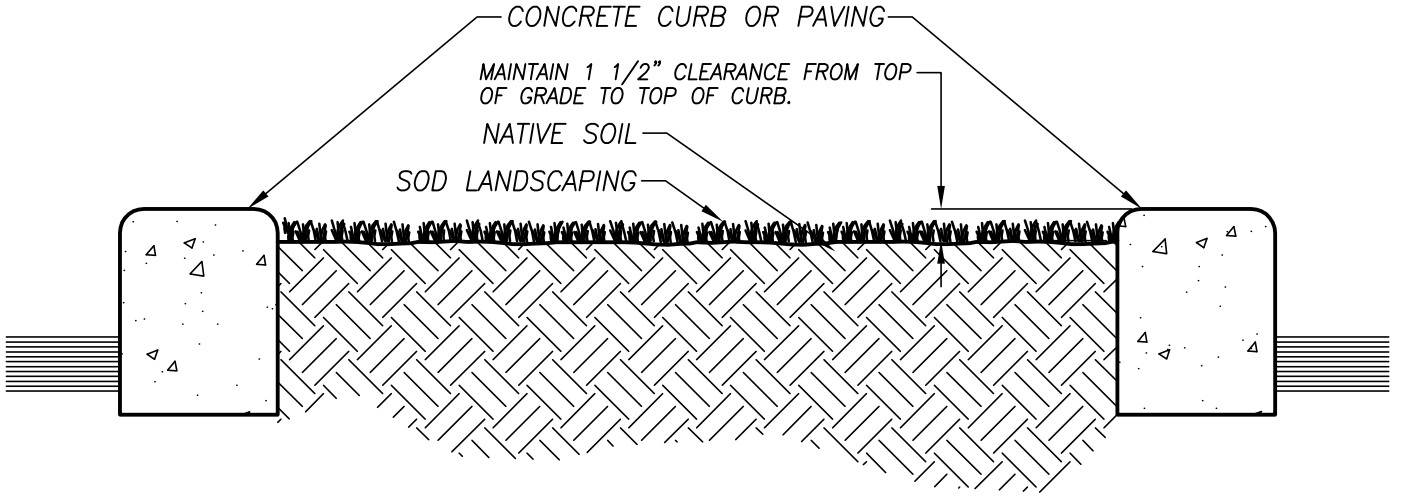
L-17

COUNCIL APPROVAL

DEC, 2015



HYDRO-SEEDING GRADES



SOD GRADES

HYDRO-SEEDING GRADES



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 CHECK BY: NBB
 SCALE: NONE

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 APPROVED BY: *[Signature]*
 CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.
L-18
 COUNCIL APPROVAL
DEC, 2015

20 FENCING

20-1 CHAIN LINK FENCE FABRIC

Chain link fence fabric shall conform to the specifications of ASTM designation A392, Class 1 zinc coating. The wire used in the manufacture of the fabric shall be at least 9 gauge and woven into 2 inch mesh.

20-2 POSTS AND BRACES

The base material for the manufacture of steel pipe used for posts and braces shall conform to the specifications of ASTM designation A120 and shall be of good commercial-quality weldable steel. Posts and braces shall be galvanized in accordance with specifications of ASTM designation A123.

Posts and braces shall conform to the following requirements:

TYPE OF POST	GATE OPENING SIZE	SIZE	WEIGHT (LBS. PER FOOT)
Line Post	N/A	2 " OD	3.65
Corner and End Post	N/A	2 " OD	5.79
Top Rail and Braces	N/A	1 " OD	2.27
Gate Frame	N/A	1 " OD	2.27
Gate Post	to 6'	2 " OD	3.65
Gate Post	6' to 12'	4" OD	9.11
Gate Post	13' to 18'	6 " OD	18.97
Gate Post	Over 18'	8 " OD	24.70

All line posts shall be spaced not further than 10 feet on center.

All posts shall be fitted with rainproof caps designed so as to fit securely over the top of the posts.

All end posts on fences shall be braced with 1 inch OD horizontal pipe bracing of the same material as the top rail, securely attached to the end and first line post with malleable iron fittings. They shall be truss braced from the first line post to the bottom of the end post with a inch galvanized truss rod assembly, or 7 gauge galvanized wire twisted to the proper tension. Corner posts shall be braced in both directions.

20-3 TENSION WIRES

The fence shall have a bottom tension wire of 7 gauge galvanized, high carbon steel coil spring wire, securely fixed to the fabric, line posts and terminal posts. If the top rail is omitted, a top tension wire shall be securely fixed. With a top tension wire, the rainproof cap shall carry the top tension wire.

20-4 FITTINGS

All fittings shall be hot dipped galvanized and shall be malleable, cast iron or pressed steel.

20-5 FABRIC TIES

Tie wires and hog rings shall be at least 9 gauge steel and post clips shall be at least 6 gauge steel; all these shall be galvanized in accordance with ASTM designation A116, Coating Class 3.

20-6 GATES

Gates shall be hung by at least two steel or malleable iron hinges not less than 3 inches in width, so designed as to securely clamp the gate posts as to permit the gate to be swung back against the fence.

Gates shall be provided with a combination steel or malleable iron catch and locking attachment of approved design which will not rotate around the latch post. Stops to hold gates open and a center rest with catch shall be provided where required.

20-7 FOOTINGS

Line, corner and end posts shall be set in concrete to a minimum depth of 36 inches. The diameter of the footing shall be no less than 3 times the diameter of the posts. Gate posts shall be set in a concrete footing of the depth and diameter required to handle the gate installed.

Concrete to be used for the footings shall be produced from commercial quality aggregates and cement, and shall contain not less than 470 pounds of cement per cubic yard (5 sacks).

21 REFUSE

21-1 REFUSE BIN ENCLOSURE

The required width of a collection equipment access shall not be obstructed in any manner including parking of vehicles. Minimum required widths and clearance established herein shall be maintained at all times unless approved otherwise by the Engineer.

21-2 DIMENSIONS

Collection equipment access roads shall have an unobstructed width of not less than 20 feet and an unobstructed vertical clearance of not less than 16 feet.

21-3 SURFACE

Collection equipment access roads shall be designed and maintained to support the imposed load of collection equipment and shall be provided with a smooth surface so as to provide all-weather driving capabilities.

21-4 TURNING RADIUS

The turning radius of a collection equipment access road shall be 50 feet, or as otherwise approved by the Engineer.

21-5 DEAD ENDS

Dead end collection equipment access roads in excess of 150 feet in length shall be provided with appropriate provisions for the turning around of collection equipment. The minimum radius for the turnaround shall be as specified in Section 21-4.

21-6 GRADE

The maximum gradient for a collection equipment access road shall be 2%, or as otherwise approved by the Engineer.

21-7 STORAGE

Enclosure is for refuse or recycling containers ONLY.

21-8 MULTIPLE ENCLOSURES

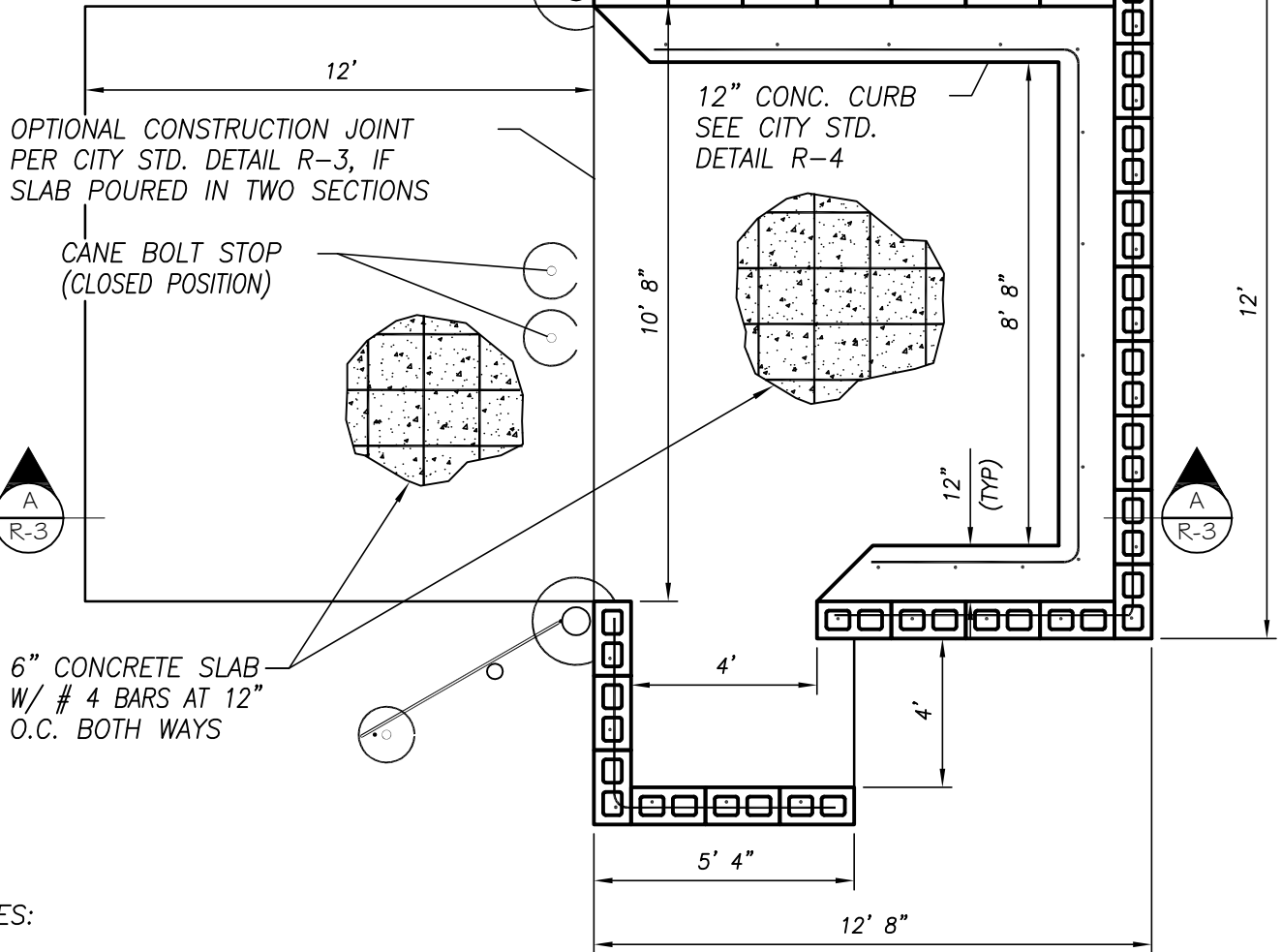
If more than one enclosure is to be built on a site, each enclosure must be identified with a letter. The identification shall consist of a letter or number having a principal stroke of not less than $\frac{3}{4}$ inch wide and at least 6 inches high on a contrasting background.

SWING DOORS SHALL PIVOT AT THE FRONT OF THE POSTS AND SHALL LOCK IN CANE BOLT STOPS IN THE CLOSED AND OPEN POSITIONS

CANE BOLT STOP (OPEN POSITION)
SEE CITY STD. R-4 FOR DETAIL

3" BOLLARD FILL WITH CONCRETE
3' ABOVE FINISH GRADE, 2' MIN.
BELOW FINISH GRADE

8" ϕ SOLID GROUTED STEEL
PIPE, 72" ABOVE GRADE AND
36" MINIMUM BELOW GRADE,
SET INTO A 15" ϕ CONC. FTG.



OPTIONAL CONSTRUCTION JOINT
PER CITY STD. DETAIL R-3, IF
SLAB POURED IN TWO SECTIONS

CANE BOLT STOP
(CLOSED POSITION)

6" CONCRETE SLAB
W/ # 4 BARS AT 12"
O.C. BOTH WAYS

NOTES:

1. LAP ALL STEEL SPLICES 12" MIN.
2. MAINTAIN 3" CLEARANCE WHEN REBAR IS USED FOR REINFORCING CONC.
3. PROVIDE 3" INSIDE RADIUS BEND FOR #4 REBARS.
4. SEE CITY STANDARD R-3 AND R-4 FOR DETAILS NOT SHOWN

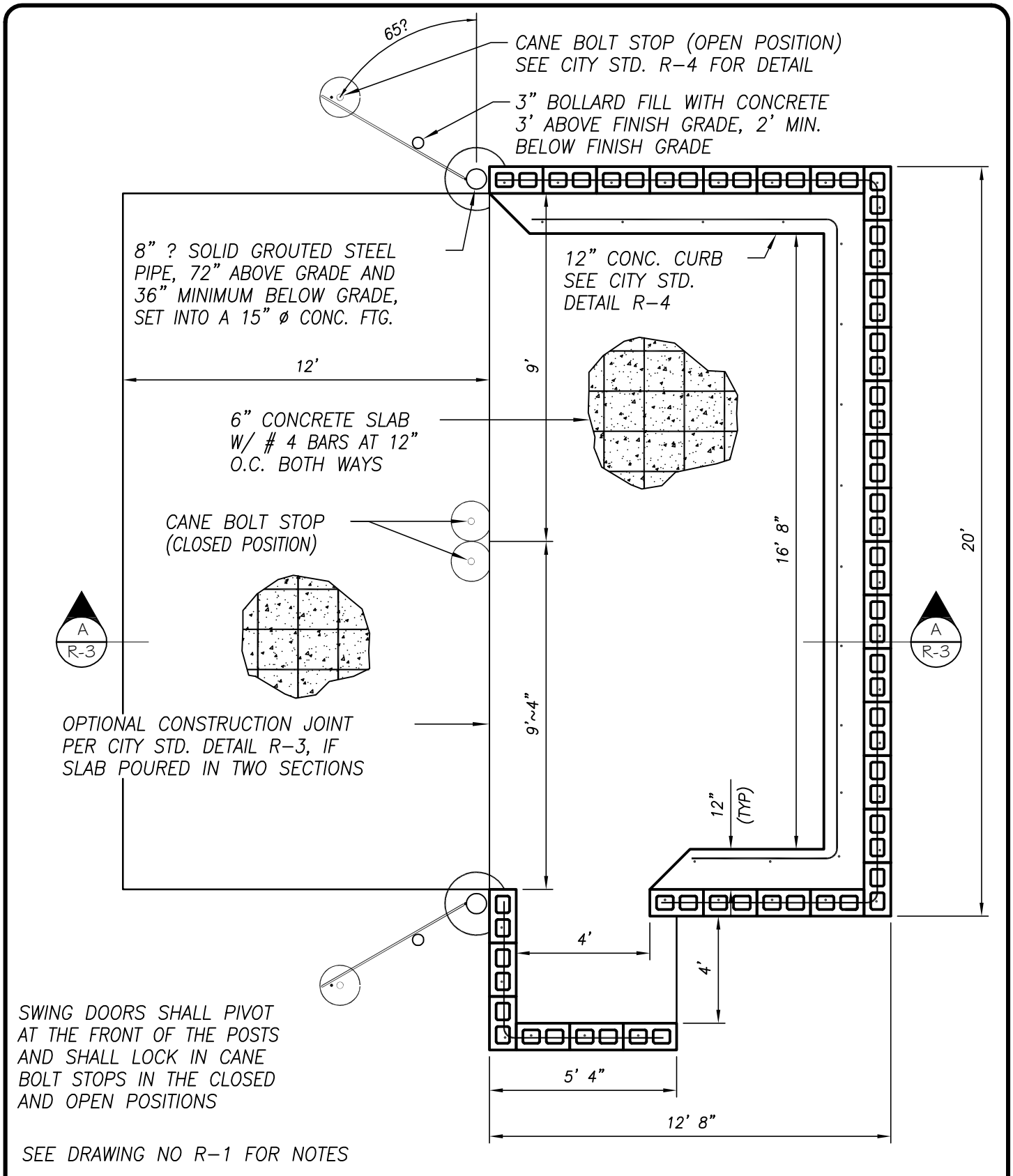
REFUSE AND RECYCLE BIN ENCLOSURE



DRAWN BY: JSH
CHECK BY: NBB
SCALE: NONE

CITY OF TURLOCK
APPROVED BY: *[Signature]*
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

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R-1
COUNCIL APPROVAL
DEC, 2015



DUAL REFUSE AND RECYCLE BIN ENCLOSURE



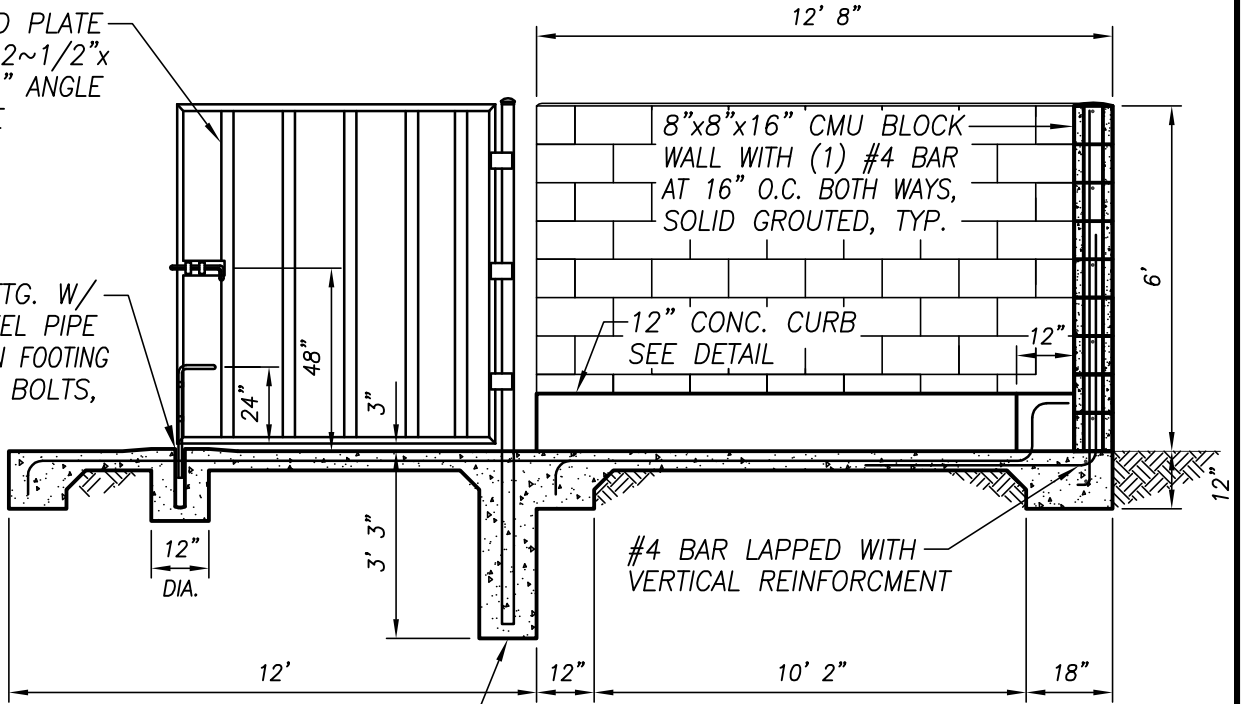
DRAWN BY: JSH
CHECK BY: NBB
SCALE: NONE

CITY OF TURLOCK
APPROVED BY: *[Signature]*
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.
R-2
COUNCIL APPROVAL
DEC, 2015

CORROGATED PLATE
WELDED TO 2~1/2"x
2~1/2"x1/8" ANGLE
IRON FRAME

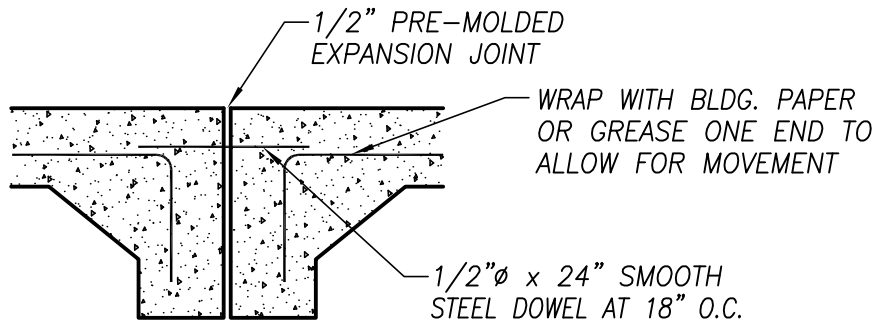
12" DIA. FTG. W/
2"x12" STEEL PIPE
CENTERED IN FOOTING
FOR CANE BOLTS,
SEE PLAN



15" DIA. FTG. W/ 8" ϕ
STEEL PIPE, CENTERED
IN FTG., SOLID GROUTED

#4 BAR LAPPED WITH
VERTICAL REINFORCEMENT

SEE NOTE 3



DOWELING DETAIL

SEE DRAWING NO R-1 FOR NOTES

REFUSE AND RECYCLE BIN ENCLOSURE DETAILS



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

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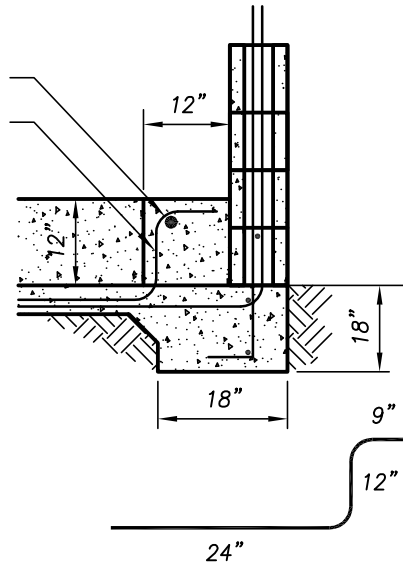
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R-3

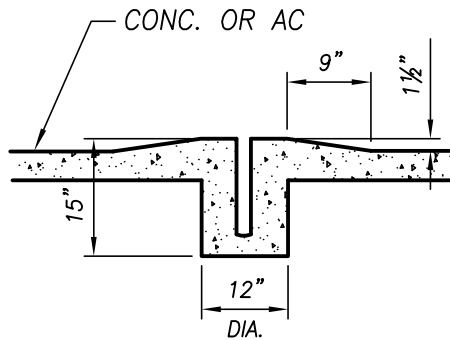
COUNCIL APPROVAL

DEC, 2015

#4 BAR CONTINUOUS
 #4 BAR @ 18" O.C.



12" RAISED CURB DETAIL



CANE BOLT STOP DETAIL

SEE DRAWING NO R-1 FOR NOTES

REFUSE AND RECYCLE BIN ENCLOSURE DETAILS



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

R-4

COUNCIL APPROVAL

DEC, 2015

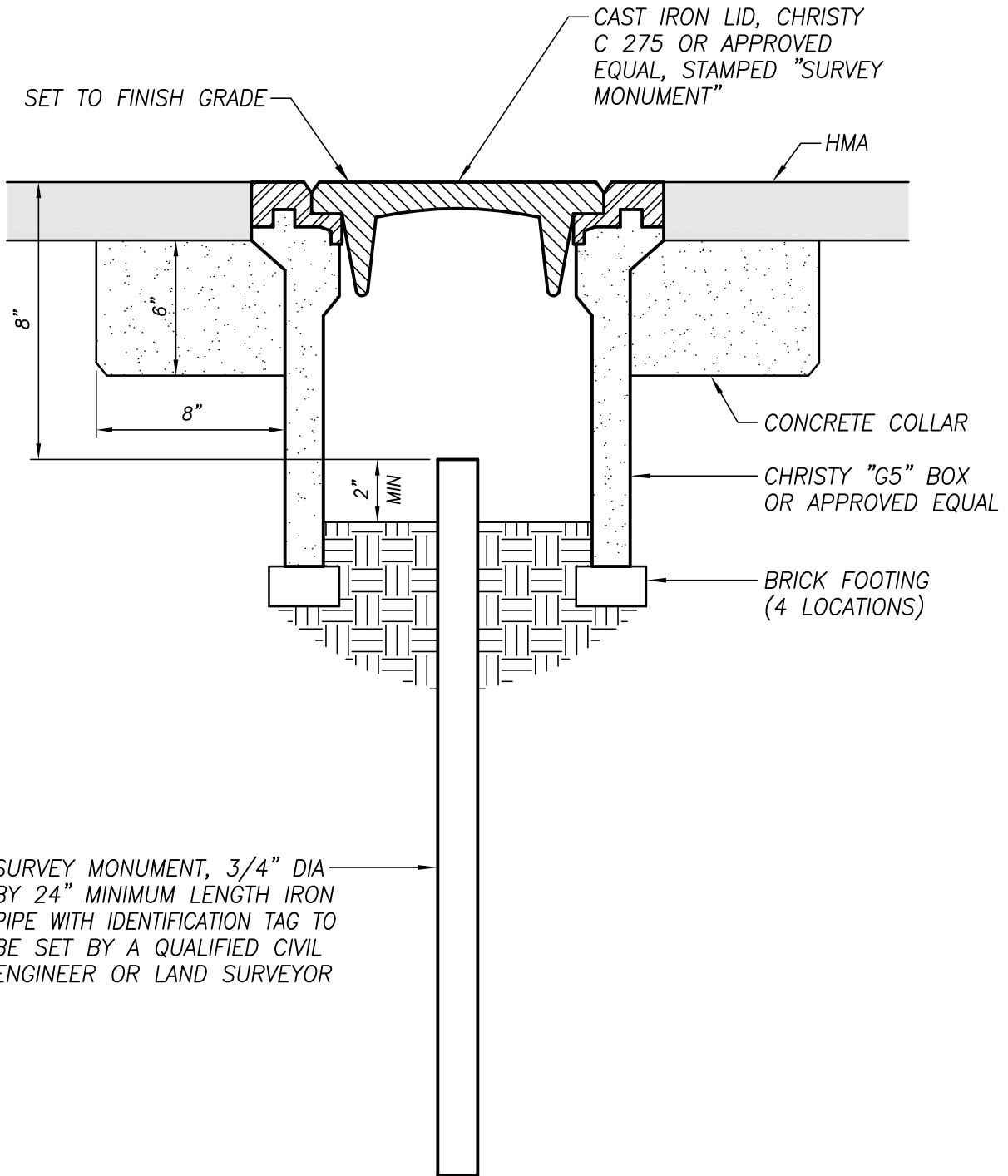
22 MISCELLANEOUS

22-1 SURVEY MONUMENTS

The Contractor shall be responsible for protecting all survey monuments. Any such monuments damaged or destroyed shall be repaired or replaced by either of the following methods:

The Contractor may hire a surveyor or civil engineer, either of which shall be licensed by the State of California, or

The City Engineer will repair or replace said monuments and One Thousand Dollars (\$1,000.00) will be retained from the Contractor's final payment for each such monument. However, every effort shall be made by the Contractor to maintain the original monuments in their original location and condition.



NOTES:

1. MONUMENTS SHALL BE SET AFTER PAVING OPERATIONS ARE COMPLETE.
2. MONUMENTS ARE TO BE PLACED AT THE INTERSECTION OF CENTERLINES, BEGINNING OF CURVE, END OF CURVE, POINT OF REVERSE CURVE, ETC. FOR ALL PUBLIC ROADWAYS.

MONUMENT DETAIL



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

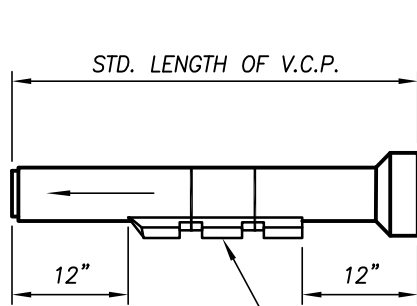
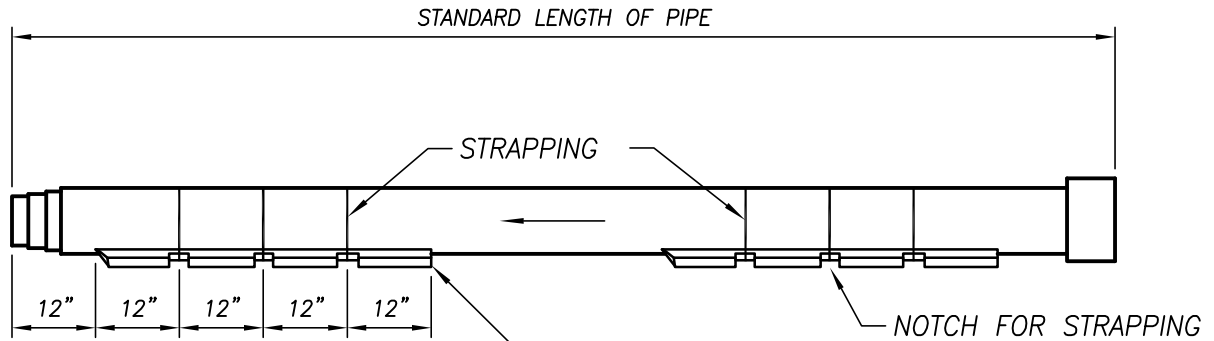
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

M-1

COUNCIL APPROVAL

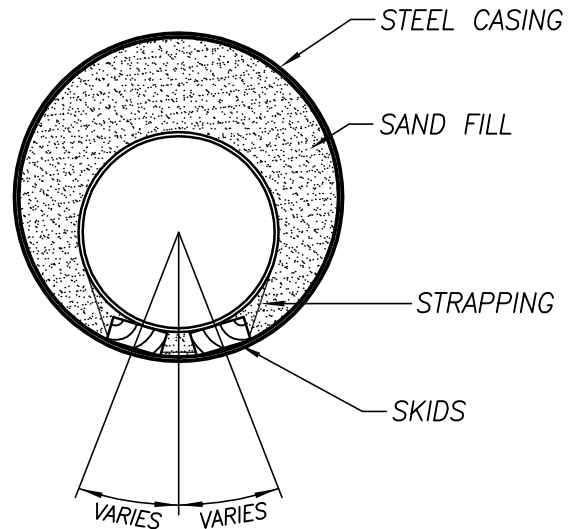
DEC, 2015



2" X 4" UNFINISHED REDWOOD SKIDS-4" LONG, BEVELED AT LEADING END. 4 SKIDS PER PIPE LENGTH

2" X 4" SKIDS FOR 6" & 8" V.C.P.
 3" X 4" SKIDS FOR 10" & 12" V.C.P.
 PROVIDE ADEQUATE CLEARANCE FOR BELL OF PIPE.

STEEL CASING SCHEDULE		
PIPE SIZE	CASING	THICKNESS
6" C-900 PIPE	12" I.D.	3/16"
8" C-900 PIPE	16" I.D.	1/4"
10" C-900 PIPE	18" I.D.	1/4"
12" C-900 PIPE	20" I.D.	1/4"
6" V.C.P.	14" I.D.	3/16"
8" V.C.P.	16" I.D.	1/4"
10" V.C.P.	20" I.D.	1/4"
12" V.C.P.	22" I.D.	1/4"
15" V.C.P.	26" I.D.	1/4"



NOTES:

1. CASING SHALL BE INSTALLED BY THE JACKING OR BORING METHOD.
2. CASING SHALL BE EITHER WELDED OR RIVETED TYPE.
3. REDWOOD SKIDS SHALL BE PROVIDED AS PER ABOVE DETAIL.
4. NOTCHES IN REDWOOD SKIDS SHALL BE EVENLY SPACED.

BORING STANDARD

CITY OF TURLOCK



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

APPROVED BY:

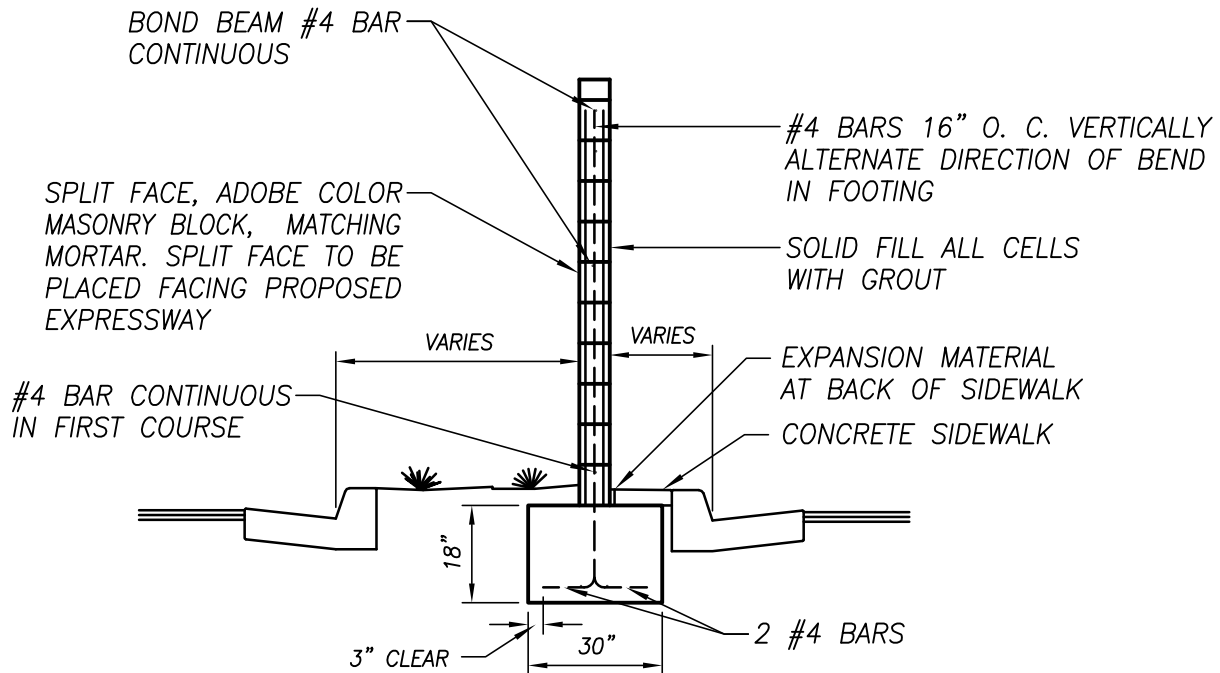
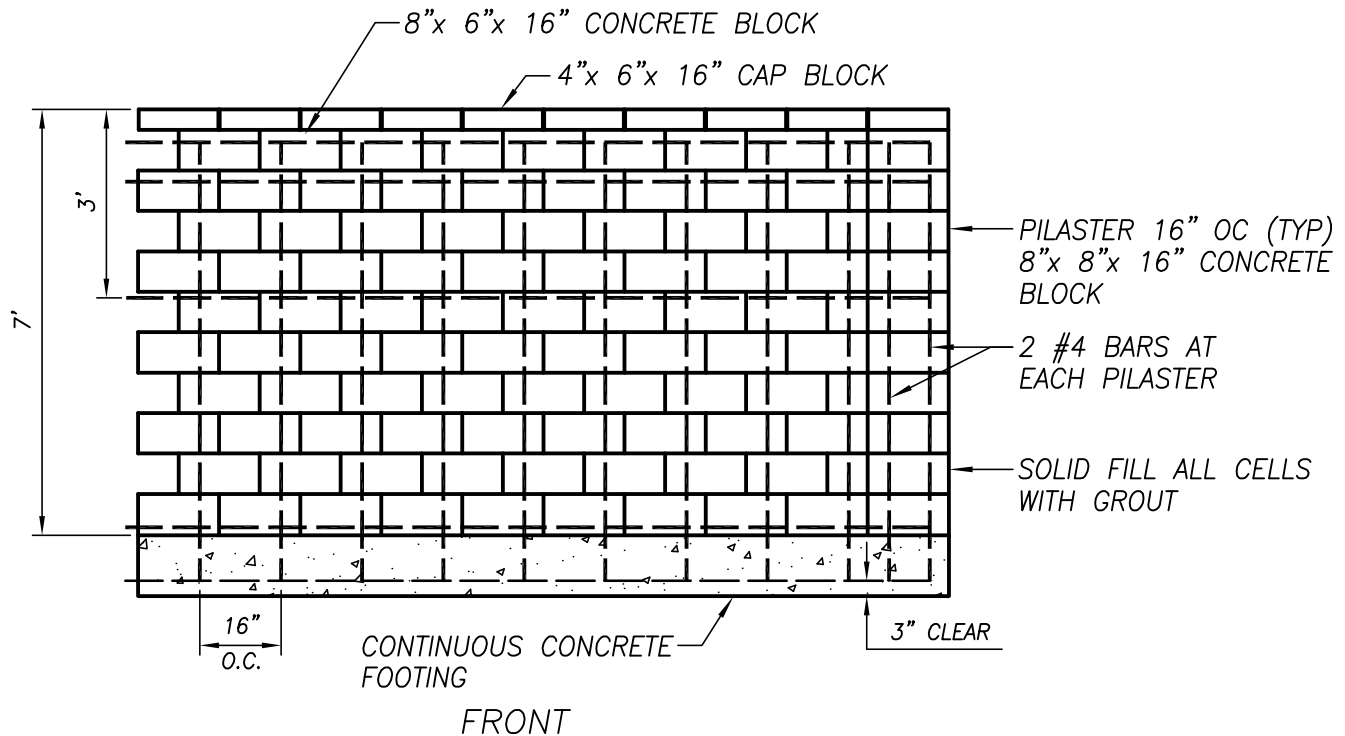
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DRAWING NO.

M-2

COUNCIL APPROVAL

DEC, 2015



NOTES:

1. LAP ALL STEEL SPLICES 12" MIN. OR ACCORDING TO ACI 318 WHICH EVER IS GREATER
2. MASONRY MAY REQUIRE 50 BAR DIAMETERS.

7 FOOT ACCESS CONTROL WALL

CITY OF TURLOCK

DRAWING NO.

M-3

COUNCIL APPROVAL

DEC, 2015



DRAWN BY: JSH

CHECK BY: NBB

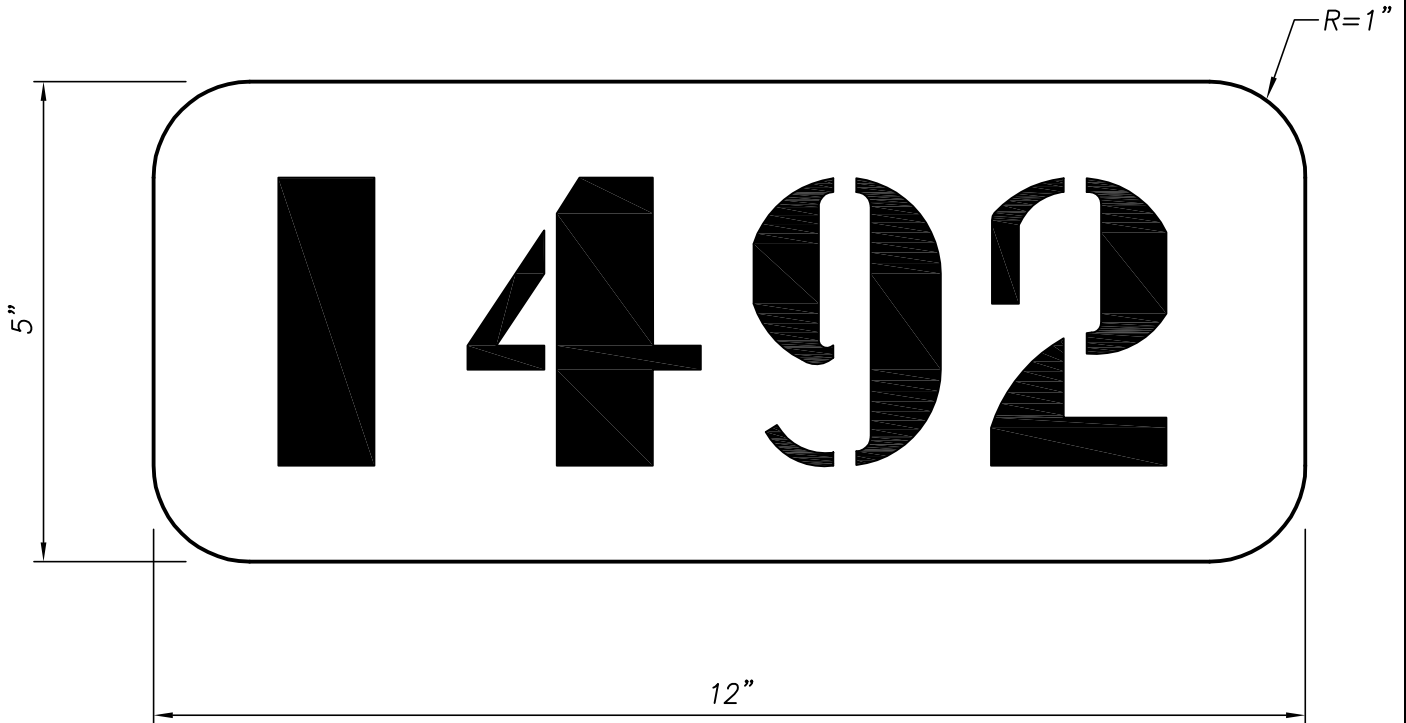
SCALE: NONE

APPROVED BY:

CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

NOTES:

1. CURB HOUSE NUMBERS SHALL BE PLACED WITHIN FIVE FEET OF THE DRIVEWAY OR AT THE CENTER OF THE LOT WHEN NO DRIVEWAY EXISTS
2. CURB HOUSE NUMBERS TO BE FLUSH WITH THE TOP OF 6" VERTICAL CURB OR 1" BELOW THE TOP OF 9" VERTICAL CURB
3. PAINT SHALL BE EXTERIOR LATEX STUCCO TYPE; WHITE SHALL BE USED FOR BACKGROUND AND BLACK SHALL BE USED FOR NUMBERS
4. 3" GOTHIC ADJUSTABLE BRASS STENCILS SHALL BE USED TO PLACE NUMBERS ON CURB.



STANDARD CITY CURB HOUSE NUMBERS



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

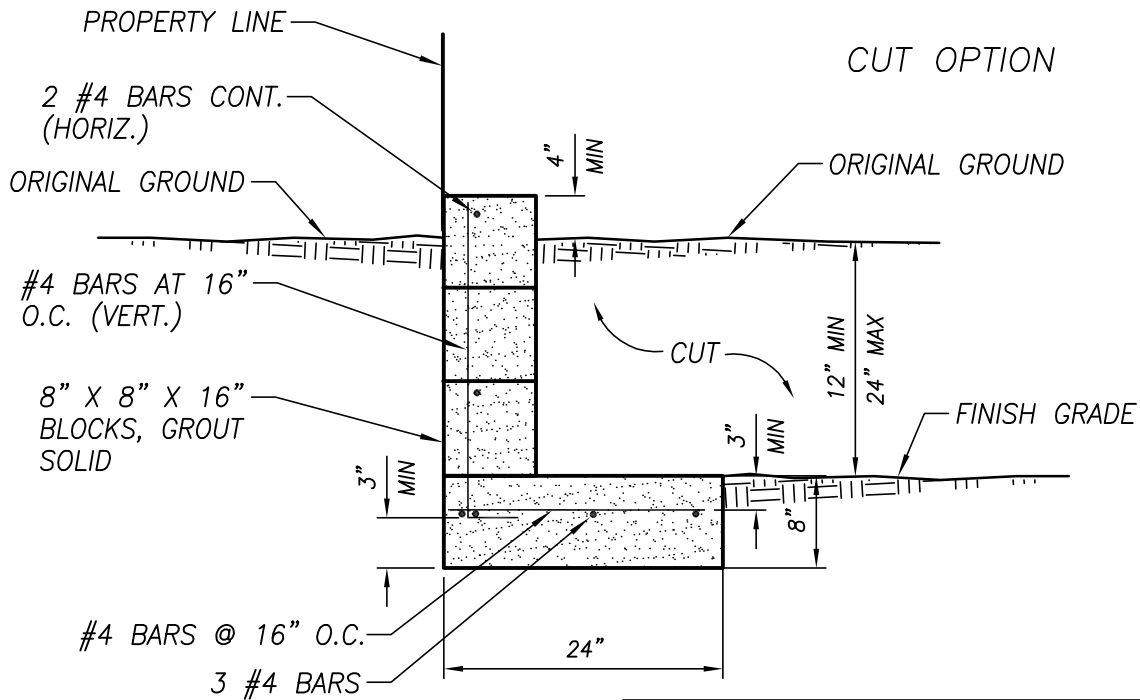
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

M-4

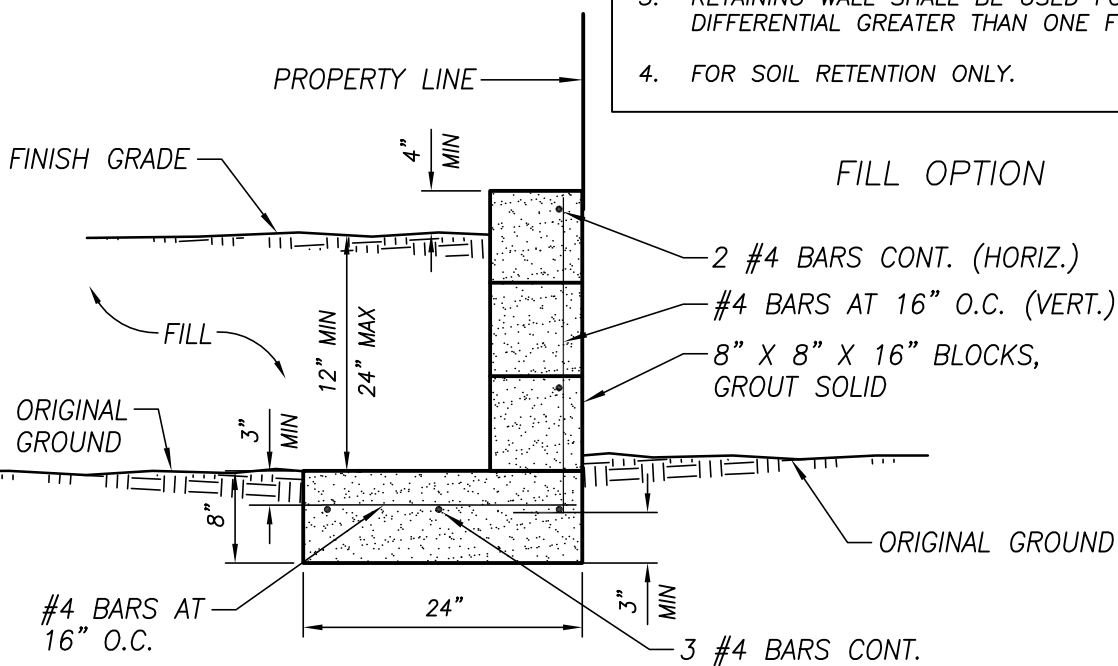
COUNCIL APPROVAL

DEC, 2015



NOTE:

1. THE PROPERTY LINE SHALL ALWAYS BE LOCATED ON THE OUTER FACE OF THE RETAINING WALL.
2. THE BASE OF THE RETAINING WALL SHALL BE LOCATED ON THE PARCEL FOR WHICH THE WALL IS REQUIRED.
3. RETAINING WALL SHALL BE USED FOR LOT DIFFERENTIAL GREATER THAN ONE FOOT.
4. FOR SOIL RETENTION ONLY.



STANDARD RETAINING WALL



DRAWN BY: JSH

CHECK BY: NBB

SCALE: NONE

CITY OF TURLOCK

APPROVED BY:

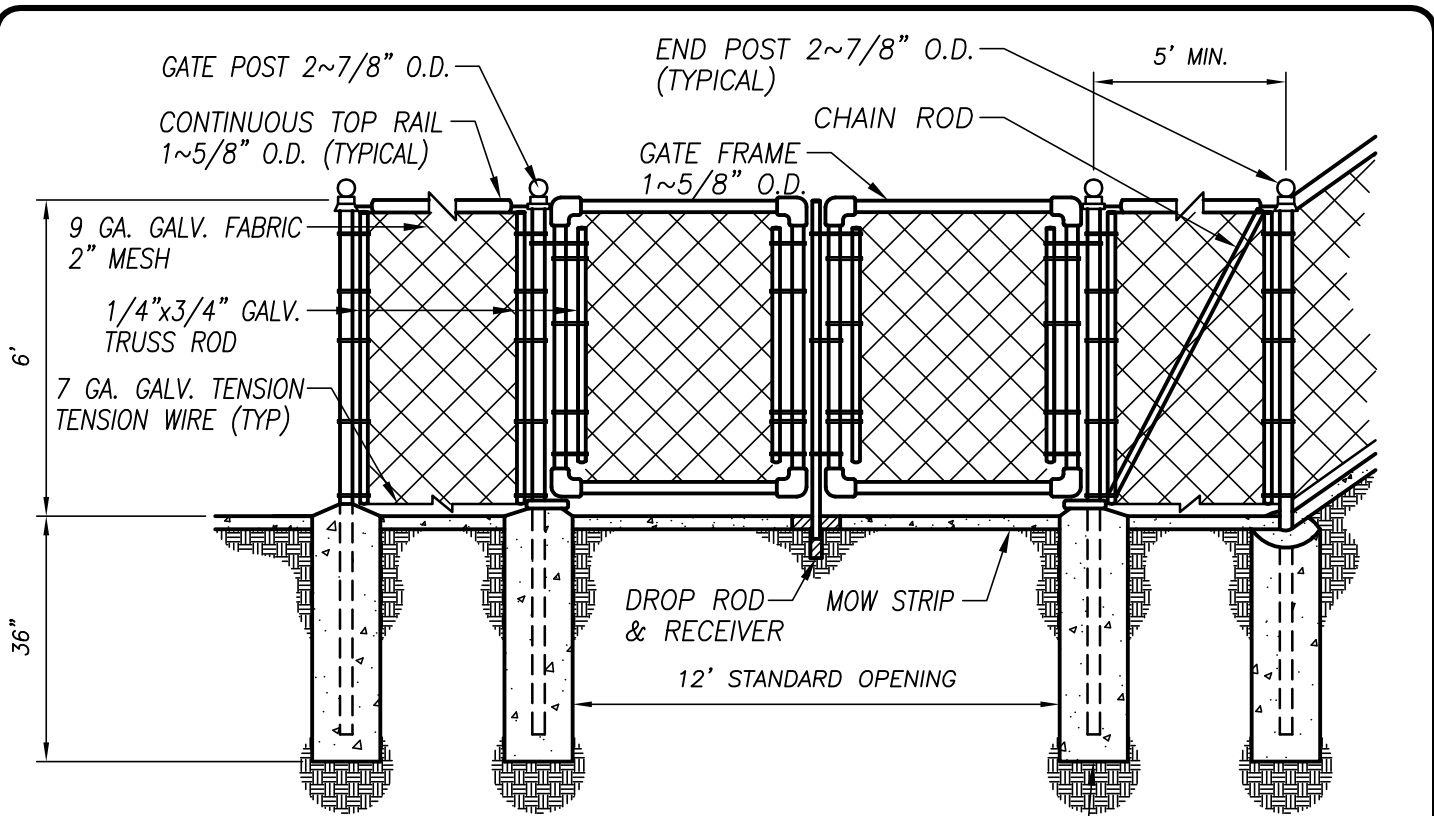
CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.

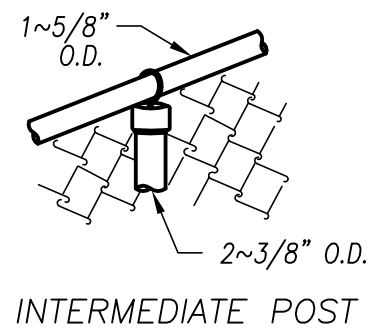
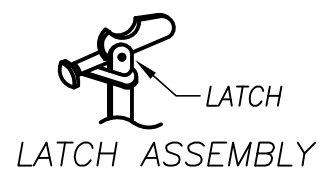
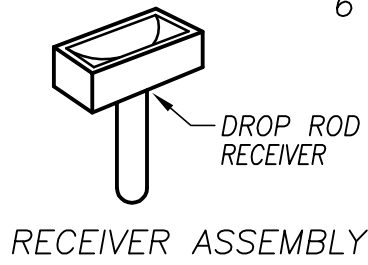
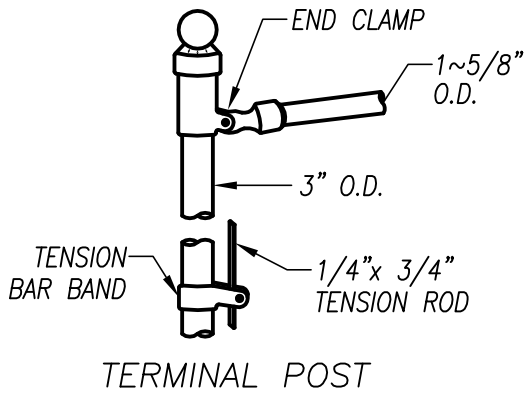
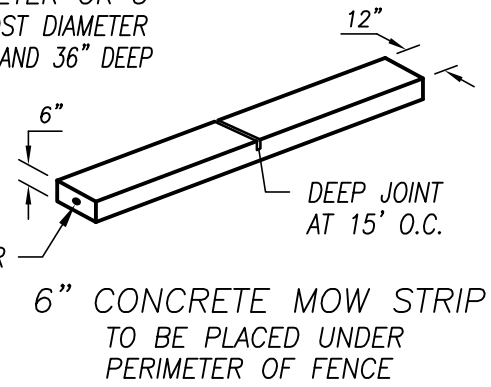
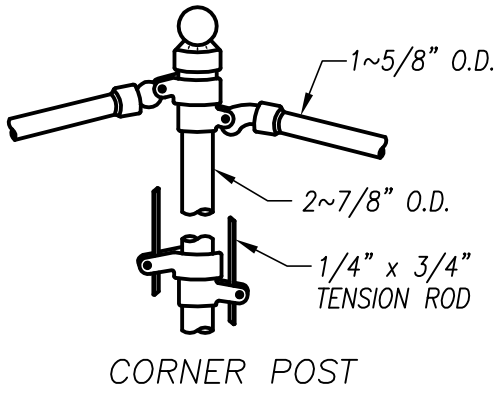
M-5

COUNCIL APPROVAL

DEC, 2015



CONCRETE FOOTINGS SHALL BE 9" IN DIAMETER OR 3 TIMES OF THE POST DIAMETER WHICH IS GREATER AND 36" DEEP



FENCE DETAILS

CITY OF TURLOCK



DRAWN BY: JSH
 CHECK BY: NBB
 SCALE: NONE

APPROVED BY:

 CITY ENGINEER - MICHAEL G. PITCOCK - RCE 52694

DRAWING NO.
M-6
 COUNCIL APPROVAL
DEC, 2015