GOLF CLUB ROAD WATER & WASTEWATER IMPROVEMENTS

LACEY PROJECT NUMBER PW 2020-40

SPECIFICATIONS AND BID DOCUMENTS
DEPARTMENT OF PUBLIC WORKS

LACEY PROJECT NUMBER PW 2020-40

CITY OF LACEY
WASHINGTON

CITY OFFICIALS

MAYOR	**ANDY RYDER**
DEPUTY MAYOR	**MALCOLM MILLER**
COUNCIL MEMBERS	**LENNY GREENSTEIN**
	MICHAEL STEADMAN
	CAROLYN COX
	ED KUNKEL
	ROBIN VAZQUEZ
CITY MANAGER	**RICK WALK**
CITY ATTORNEY	**DAVID S. SCHNEIDER**
DIRECTOR OF PUBLIC WORKS	**SCOTT EGGER, P.E.**
CITY ENGINEER	**AUBREY COLLIER, P.E., S.E.**

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ADVERTISEMENT FOR BIDS

GOLF CLUB ROAD WATER & WASTEWATER IMPROVEMENTS

NOTICE IS HEREBY GIVEN that sealed bids will be received by the City of Lacey at City Hall, Lacey, Washington until 2:30 p.m., **February 22, 2023**, at which time bids will be publicly opened via a live video stream. Links to the YouTube live video stream can be found at https://cityoflacey.org/rfp-rfq-rfi/ under the specific project section and on the specific project page on the Builders Exchange website located at http://bxwa.com/bxwa_toc/pub/2080/toc.html for the following work:

This contract provides for the installation of approximately 4,700 LF of 6-inch, 8-inch and 12-inch diameter water main, 4,500 LF of 8-inch, and18-inch diameter gravity wastewater main and 1,800 LF of 10-inch diameter pressure wastewater main located on Golf Club Road SE and Lacey Blvd SE between 26th Ave SE and Sleater-Kinney Road SE, including night work within the roundabout and the intersection of Lacey Blvd SE and Sleater-Kinney Rd SE as required. Work to include temporary traffic control, construction of service lines, meters, valves, transfer of water and sewer services, connections to existing water and wastewater systems, water and wastewater main abandonments, asphalt and concrete pavement, lawn restoration and other work.

Each bid must be accompanied by a certified check for five percent of the amount of the proposal made payable to the City Treasurer, or an approved bid bond for five percent of the amount of the proposal executed on the approved form attached to these specifications. If bid bond is used, the five percent may be shown in dollars and cents or the form may be filled in by inserting therein, in lieu thereof, "five percent of the amount of the accompanying proposal". Check of unsuccessful bidders will be returned immediately upon award of contract.

The City Council reserves the right to reject any and all bids and to waive all informalities.

Plans, Specifications, and Addenda for this project are available through the "City of Lacey" on-line plan room. Free of charge access is provided by going to http://bxwa.com and clicking on: "Posted Projects", "Public Works", "City of Lacey", and "Projects Bidding". Bidders are asked to "Register" in order to receive automatic email notification of future addenda and to be placed on the "Bidders List". Any questions regarding this contract can be directed to:

Jason Kashani
jkashani@ci.lacey.wa.us

The range for this project is $6,500,000 to $8,000,000.

Peri Edmonds, City Clerk
City of Lacey, Washington

Publish: **1/27/2023**
2/03/2023

A
INSTRUCTIONS

INSTRUCTIONS TO BIDDERS

Bidders shall examine contract and bid documents and the site and shall satisfy themselves as to conditions that exist.

Each Bidder shall submit to the City Clerk, Lacey, Washington a sealed bid endorsed upon the outside wrapper with **Golf Club Road Water & Wastewater Improvements** at the time and place designated in the advertisement.

Bids may be delivered in person to Lacey City Hall, 420 College Street SE, or by mail to City of Lacey 420 College St SE Lacey, WA 98503.

Bids will be publicly opened via a live video stream. Links to the YouTube live video stream can be found at hhttps://cityoflacey.org/rfp-rfq-rfi/ or under the specific project section and on the specific project page on the Builders Exchange website.

The City of Lacey is committed to offering reasonable accommodations to persons with disabilities. We invite any person with special needs to contact the City Clerk at (360) 491-3212 at least seventy-two (72) hours before the meeting to discuss any special accommodations that may be necessary. Citizens with hearing impairment may call the TDD line at (800) 833-6388.

Each Bidder shall complete the proposal with prices in figures with the extension properly computed. The proposal must be properly signed by a duly authorized agent. Proposal must acknowledge addenda, if any, received.

If alternates are included in the proposal the Bidder shall complete the alternates. The City will award the contract to the lowest responsible Bidder as determined by the Special Provisions. The City reserves the right to delete alternates after award.

Each bid shall include properly executed bid surety as outlined in the Advertisement and the Proposal.

Each Proposal must be accompanied by a signed Affidavit of Non-Collusion.

The City does not pre-qualify Bidders. However, if the apparent low Bidder has not already been determined qualified, the City shall afford seven (7) days after notification for the low Bidder to provide evidence for evaluation, as to capability to perform the work. The evaluation will include consideration of experience, personnel, equipment, financial resources as well as performance record. The information must be sufficient to enable the Bidder to obtain the required qualification rating prior to the award of the contract.

No bidder may withdraw his bid after the hour set for the opening of bids or before award of the contract unless said award is delayed for a period of forty-five (45) days.

CONTRACT PARTS

The contract to be executed as a result of this bid consists of multiple parts, all of which pertain as if fully attached hereto and Bidder shall consider all parts as a complete document. In the event of discrepancies between the various parts, precedent shall be in the following order:

1. Contract Form,
2. Addenda (if any),
3. Proposal Form,
4. Special Provisions,
5. Technical Specifications, if included,
6. Contract Plans,
7. WSDOT Standard Specifications for Road, Bridge, and Municipal Construction,
8. City of Lacey Development Guidelines and Public Works Standards, and
9. WSDOT Standard Plans for Road, Bridge and Municipal Construction

- The Bidder is directed to complete and return the forms in Section B as a bid proposal.

BIDDER'S CHECKLIST

The bidder's attention is especially called to the following forms which must be executed in full as required, and submitted with the bid proposal:

1. Proposal: The unit prices bid must be shown in the space provided.
2. Proposal Signature Sheet: To be filled in and signed by the bidder. All addenda must be acknowledged.
3. Bid Deposit Selection: Any bid shall be accompanied by a deposit of cash, certified check, cashier's check, or surety bond, in an amount equal to at least five percent (5%) of the total amount bid. Checks shall be payable to the City Clerk, City of Lacey, Washington.

   If a surety bond is used, it shall be submitted on a form furnished by the Commission and signed by the bidder and his surety company. The sureties' "attorney-in-fact" must be registered with the Washington State Insurance Commissioner. The power of attorney must also be submitted with the bond. See Specification section 1-02.7 for more information.
4. Non-Collusion and Debarment Affidavit
5. Subcontractors List

The following must be submitted by 2:30 P.M. of the second business day following the bid submittal deadline:

6. Certification of Compliance with Wage Payment Statutes Form
7. Certification of Employment Security (ESD) Good Standing and Number Form

The following must be completed before the contract can be awarded:

8. L&I training on the requirements related to public works and prevailing wages per RCW 39.04.350

The following forms are to be executed after the contract is awarded:

9. Contract: This agreement to be executed by the successful bidder
10. Performance and Payment Bond
11. Insurance Certificate

Bidder's Checklist

1.	Proposal	
2.	Proposal Signature Sheet	
	Addenda Acknowledged	
3.	Bid Deposit Selection	
	Power of Attorney included if applicable	
4.	Non-Collusion and Debarment Affidavit	
5.	Subcontractor List	
6.	Certification of Compliance with Wage Payment Statutes	
7.	Certification of Employment Security Department (ESD) List	
8.	L&I Public Works Prevailing Wage Training	

B
BID DOCUMENTS

CITY OF LACEY

Golf Club Road Water & Wastewater Improvements

Lacey Contract Number: PW 2020-40

Federal Aid Project Number:

WSDOT Contract Number:

TIB Contract Number:

Contract Proposal

DATE: _____

The undersigned, as bidder, has examined the bid documents as prepared by the Public Works Department, City of Lacey.

The undersigned, as bidder, proposes to furnish all material and perform all labor in accordance with the bid documents at the following prices.

Bidder must fill in unit prices in figures for each item and total.

Bidder shall sign this proposal form and submit all required paperwork with the bid.

A Roadway

No.	Quantity	Unit	Item ID	Item Description	Unit Price	Extended Price
A1	200000	MC	104-010	Minor Change	$1.00	$200,000.00
A2	1	LS	107-010	SPCC Plan	LUMP SUM	
A3	1	LS	109-010	Mobilization	LUMP SUM	
A4	1	LS	110-010	Project Temporary Traffic Control	LUMP SUM	
A5	5500	HR	110-040	Flaggers		
A6	10000	HR	110-070	Portable Changeable Message Sign		
A7	1	LS	202-510	Removal of Structures and Obstructions	LUMP SUM	
A8	4000	CY	203-010	Roadway Excavation Incl. Haul		
A9	1	LS	205-510	Trench Safety System	LUMP SUM	
A10	1	MGAL	208-510	Dust Control		
A11	250	CY	209-080	Controlled Density Fill		
A12	7	EA	213-710	Adjust Gas Valve Box		
A13	1	FA	214-506	Dewatering	$10,000.00	$10,000.00
A14	2100	TN	404-020	Crushed Surfacing Top Course		
A15	650	TN	504-110	Commercial HMA		
A16	4500	SY	504-200	Planing Bituminous Pavement		
A17	7000	TON	504-514	Fiber Reinforced HMA Cl 1/2 in. PG 58V-22		
A18	1	LS	504-610	Preparation of Existing Surfaces	LUMP SUM	
A19	1	LS	504-620	Driveway and Shoulder Preparation	LUMP SUM	
A20	10000	CALC	504-930	Asphalt Cost Price Adjustment	$1.00	$10,000.00
A21	22	EA	705-910	Raise Catch Basin to Grade		

A22	20	EA	705-920	Raise Manhole to Grade		
A23	9750	TN	708-610	Bank Run Gravel for Trench Backfill		
A24	6750	TN	708-620	Imported Pipe Bedding		
A25	200	HR	708-810	Utility Potholing		
A26	20	EA	712-915	Raise Valve Box to Grade		
A27	1	LS	801-010	ESC Lead	LUMP SUM	
A28	1	LS	801-680	Erosion/Water Pollution Control	LUMP SUM	
A29	100	LF	804-010	Cement Conc. Traffic Curb and Gutter		
A30	150	LF	804-020	Cement Conc. Traffic Curb		
A31	40	LF	804-100	Extruded Curb		
A32	1	LS	805-510	Lawn and Landscape Restoration	LUMP SUM	
A33	300	SY	806-510	6 Inch Cement Conc. Driveway Entrance		
A34	25	HUND	809-010	Raised Pavement Marker Type 1		
A35	10	HUND	809-020	Raised Pavement Marker Type 2		
A36	10	EA	813-515	Surface Monument		
A37	250	SY	814-510	Cement Conc. Sidewalk		
A38	2	EA	814-530	Cement Conc. Curb Ramp		
A39	100	SY	814-580	Concrete Paving Pattern C - Median		
A40	100	LF	822-020	Plastic Line		
A41	5200	LF	822-110	Plastic Wide Line		
A42	500	LF	822-130	Circulating Lane Line		
A43	8	EA	822-190	Plastic Traffic Arrow		
A44	1450	LF	822-670	Plastic Crosswalk Line		
A45	30	EA	822-780	Plastic Yield Line Symbol		
A46	35	EA	822-920	Plastic Parking Delineation Marking		
A47	1	LS	850-792	Project Closeout	$10,000.00	$10,000.00

Schedule A Subtotal:

Tax Rate (%) : 9.50 Tax:

Schedule A Total:

B Water

No.	Quantity	Unit	Item ID	Item Description	Unit Price	Extended Price
B1	125	LF	709-506	6 Inch Water Main		
B2	2850	LF	709-508	8 Inch Water Main		
B3	1650	LF	709-512	12 Inch D.I. Water Main		
B4	8	EA	709-810	Blow-off Assembly for Extendable Main		
B5	19	EA	709-950	Connect to Existing Water Main		
B6	1	EA	709-955	Welded Connect to Existing Water Main		
B7	5	EA	709-960	Pipe Abandonment		
B8	2	EA	712-502	2 Inch Gate Valve		

B9	1	EA	712-504	4 Inch Gate Valve		
B10	20	EA	712-506	6 Inch Gate Valve		
B11	34	EA	712-508	8 Inch Gate Valve		
B12	19	EA	712-512	12 Inch Gate Valve		
B13	2	EA	712-517	16 Inch Gate Valve		
B14	2	EA	712-610	2 Inch Air and Vacuum Release Valve		
B15	1	EA	712-713	12 Inch Inserted Valve		
B16	13	EA	714-510	Hydrant Assembly		
B17	34	EA	715-610	5/8 Inch Single Meter Service Connected to New Water Main		
B18	11	EA	715-660	5/8 Inch Double Meter Service Connected to New Water Main		
B19	1	EA	715-850	Sampling Station		
B20	1	EA	715-960	Replumb Water Service		
B21	5	EA	715-965	Water Service Connection		
B22	1	LS	850-717	Meter Vault Structure and Mechanical	LUMP SUM	

Schedule B Subtotal:

Tax Rate (%) : 9.50 Tax:

Schedule B Total:

C Sewer

No.	Quantity	Unit	Item ID	Item Description	Unit Price	Extended Price
C1	7	EA	705-048	Manhole 48 In. Diam. Type 1		
C2	20	EA	705-059	Manhole 60 In. Diam. Type 1		
C3	24	LF	705-061	Manhole Additional Height 60 In. Diam. Type 1		
C4	2	EA	705-605	Manhole Treatment		
C5	250	LF	717-508	8 Inch Diameter Sewer Pipe		
C6	4220	LF	717-518	18 Inch Diameter Sewer Pipe		
C7	1720	LF	717-710	10 Inch Diameter Force Main Sewer Pipe		
C8	1	EA	717-750	Pig Launch Port Assembly		
C9	4	EA	717-810	10 Inch Plug Valve		
C10	58	EA	717-850	Side Sewer Connections		
C11	14	EA	717-965	Connect to Existing Sewer System		
C12	1	FA	723-515	Bypass Pumping	$50,000.00	$50,000.00

Schedule C Subtotal:

Tax Rate (%) : 9.50 Tax:

Schedule C Total:

Contract Total:
(All Schedules)

The undersigned also agrees as follows:

- Within 10 calendar days after the contract is awarded to sign and return the contract and provide insurance documents.
- That this proposal cannot be withdrawn within 45 days after receipt of bids.
- That it is the understanding that the City of Lacey may accept or reject any or all bids.
- The undersigned hereby agrees to pay for labor not less than the prevailing rates of wages per the bid documents.
- Enclosed with this proposal is a bid deposit in the sum of 5% of the bid total amount which it is agreed shall be collected and retained by the City of Lacey as liquidated damages in the event this proposal is accepted by the City of Lacey with 45 calendar days after the receipt of bids and the undersigned fails to execute the contract and the required bond with the City of Lacey, under the conditions thereof, within 10 calendar days after the undersigned is notified that said proposal has been accepted, otherwise said bid deposit shall be returned to the undersigned upon demand.
- A Performance/Payment Bond will be furnished to the City with the contract.
- Retention will be held on this contract per RCW 60.28.011.

Addenda Receipt Acknowledged

_____,_____,_____

_____ _____

Signature of Bidder Date

(If an Individual, Partnership, or Non-Incorporated organization)

_____ _____

Firm Name Please Print Phone

Address of Bidder: _____

_____

Name and Address of Firm Members:

_____

_____

_____

_____

Signature of Bidder (if a Corporation)

Title: _____

Firm Name: _____ Phone: _____

Business Address: _____

Incorporated under the Laws of the State of _____

Officers Address

President: _____ _____

Secretary: _____ _____

Treasurer: _____ _____

BID DEPOSIT SELECTION

A bid deposit in an amount of five percent (5%) of the total bid amount is attached hereto:

CASH	☐	In the amount of _____
CASHIER'S CHECK	☐	In the amount of _____
CERTIFIED CHECK	☐	In the amount of _____
BID BOND	☐	In the amount of 5% of the total bid amount

CONTRACTOR'S BID DEPOSIT SURETY BOND
to City of Lacey, Washington

We,_____ , as Principal, existing under and by virtue of the laws of the State of Washington and authorized to do business in the State of Washington, and _____, as Surety, organized and existing under the laws of the State of _____ , are held and firmly bound unto the City of Lacey, a Washington municipality, as Obligee, in the penal sum of 5% of the total amount bid, not to exceed $_____ , for the payment of which we jointly and severally bind ourselves, and our legal representatives and successors.

WHEREAS, the Principal has submitted a bid for **Golf Club Road Water & Wastewater Improvements**.

NOW THEREFORE, the condition of the obligation is such that if the Obligee shall accept the bid of Principal and make timely award to the Principal according to the terms of the bid documents; and the Principal shall, within ten days after notice of the award, exclusive of the day of notice, enter into the contract with the Obligee and furnish the contractor's bonds (performance and payment bonds) with Surety satisfactory to the Obligee in an amount equal to 100% of the amount of the bid proposed including additives, alternatives and Washington State sales tax, then this obligation shall be null and void; otherwise if the Principal fails to enter into the contract and fails to furnish the contractor's bonds within ten days of notice of award, exclusive of the day of notice, the amount of the bid deposit shall be forfeited to the Obligee, payable by the Surety; but in no event will the Surety's liability exceed the face amount of this bid bond.

This bond may be executed in two original counterparts, and shall be signed by the parties' duly authorized officers. This bond will only be accepted if it is accompanied by a fully executed and original power of attorney for the officer executing on behalf of the surety.

PRINCIPAL (CONTRACTOR)		SURETY	
_____		_____	
Principal Signature	Date	Surety Signature	Date
_____		_____	
Printed Name		Printed Name	
_____		_____	
Title		Title	

Name, address, and telephone of local office/agent of Surety Company is:

_____

_____

NON-COLLUSION AND DEBARMENT AFFIDAVIT

State of)

)ss

County of)

I, the undersigned, being duly sworn, deposes and says that the person, firm, association, copartnership or corporation herein named, has not either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in the preparation and submission of a proposal of the City of Lacey for consideration in the award of a contract on the improvement described as follows.

I further certify that, except as noted below, the firm, association or corporation or any person in a controlling capacity associated therewith or any position involving the administration of State or federal funds; is not currently under suspension, debarment, voluntary exclusion, or determination of ineligibility by any federal or State agency; has not been suspended, debarred, voluntarily excluded or determined ineligible by any federal or State agency within the past three years; does not have a proposed debarment pending; and has not been indicted, convicted, or had a civil judgment rendered against said person, firm, association or corporation by a court of competent jurisdiction in any matter involving fraud or official misconduct within the past three years.

I further acknowledge that by signing my signature, I am deemed to have signed and have agreed to the provisions of this affidavit.

_____

Name of Project

_____

Name of Firm

_____

Signature of Authorized Member

Sworn to before me this

_____ day of _____ ,20 _____

_____

Notary Public

(CORPORATE SEAL)

CERTIFICATION OF COMPLIANCE WITH WAGE PAYMENT STATUTES

The bidder hereby certifies that, within the three-year period immediately preceding the bid solicitation date, the bidder is not a "willful" violator, as defined in RCW 49.48.082, of any provision of chapters 49.46, 49.48, or 49.52 RCW, as determined by a final and binding citation and notice of assessment issued by the Department of Labor and Industries or through a civil judgment entered by a court of limited or general jurisdiction.

I certify under penalty of perjury under the laws of the State of Washington that the foregoing is true and correct.

_____
Bidder's Business Name

_____
Signature of Authorized Official*

_____
Printed Name

_____
Title

_____ _____ _____
Date City State

Check One:

Sole Proprietorship ☐ Partnership ☐ Joint Venture ☐ Corporation ☐

State of Incorporation, or if not a corporation, State where business entity was formed:

_____

If a co-partnership, give firm name under which business is transacted:

_____

** If a corporation, proposal must be executed in the corporate name by the president or vice-president (or any other corporate officer accompanied by evidence of authority to sign). If a co-partnership, proposal must be executed by a partner.*

This form must be submitted with the Bid Proposal or as a Supplement to the Bid no later than 24 hours after the time for delivery of the Bid Proposal, as provided for in Section 1-02.9 of the Contract Provisions.

CERTIFICATION OF EMPLOYMENT SECURITY DEPARTMENT (ESD) GOOD STANDING AND NUMBER

The bidder hereby provides an ESD number and certifies that per RCW 39.04.350 and Title 50 RCW, in which the City will verify prior to entering into contract with the Contractor, that the Bidder has a valid ESD number and is deemed to be in good standing with Washington State's Employment Security Department.

I certify under penalty of perjury under the laws of the State of Washington that the foregoing is true and correct.

_____
Bidder's Business Name

_____
Employment Security Department (ESD) Number

_____
WA State Unified Business Identifier (UBI #)

_____
Signature of Authorized Official*

_____
Printed Name

_____
Title

_____	_____	_____
Date	City	State

This form must be submitted with the Bid Proposal or as a Supplement to the Bid no later than 24 hours after the time for delivery of the Bid Proposal, as provided for in Section 1-02.9 of the Contract Provisions.

SUBCONTRACTOR LIST

Prepared in compliance with RCW 39.30.060 as amended

To Be Submitted with the Bid Proposal

Project Name: _____

Failure to list subcontractors with whom the bidder, if awarded the contract, will directly subcontract for performance of the work of structural steel installation and rebar installation, heating, ventilation and air conditioning, plumbing, as described in Chapter 18.106RCW, and electrical, as described in Chapter 19.28 RCW or naming more than one subcontractor to perform the same work will result in your bid being non-responsive and therefore void.

Subcontractor(s) with whom the bidder will directly subcontract that are proposed to perform the work of structural steel installation and rebar installation, heating, ventilation and air conditioning, plumbing, as described in Chapter 18.106 RCW, and electrical as described in Chapter 19.28 RCW **must** be listed below. The work to be performed is to be listed below the subcontractor(s) name.

To the extent the Project includes one or more categories of work referenced in RCW 39.30.060, and no subcontractor is listed below to perform such work, the bidder certifies that the work will either (i) be performed by the bidder itself, or (ii) be performed by a lower tier subcontractor who will not contract directly with the bidder.

Subcontractor Name: _____
Work to be Performed: Structural steel installation

Subcontractor Name: _____
Work to be Performed: Rebar installation

Subcontractor Name: _____
Work to be Performed: Plumbing

Subcontractor Name: _____
Work to be Performed: Electrical

Subcontractor Name: _____
Work to be Performed: Heating ventilation and air conditioning

* Bidder's are notified that is the opinion of the enforcement agency that PVC or metal conduit, junction boxes, etc, are considered electrical equipment and therefore considered part of electrical work, even if the installation is for future use and no wiring or electrical current is connected during the project.

C
CONTRACT DOCUMENTS

Project Number PW _____

CONSTRUCTION CONTRACT

THIS AGREEMENT, made and effective as of the date of the last signature below, between the City of Lacey, hereinafter called Owner, under and by virtue of the charter, laws and ordinances of the said Owner and the laws of the State of Washington, and _____ hereinafter called Contractor,

WITNESSETH:

That in consideration of the payment, covenants and agreement hereinafter mentioned, attached and made a part of this Agreement, to be made and performed by the parties hereto, the parties covenant and agree as follows regarding:

1. The Contractor shall do all work and furnish all tools, materials and equipment in accordance with and as described in the attached Plans and Specifications, and in full compliance with the terms, conditions and stipulations herein set forth and attached, now referred to and by such reference incorporated herein and made a part hereof as fully for all purposes as if here set forth at length, and shall perform any alterations in or in addition to the work covered by this Contract and every part thereof and any force account work which may be ordered as provided in this Contract and every part thereof.

   The Contractor shall provide and bear the expense of all materials, labor, equipment, tools, implements and conveniences and things of every description that may be requisite for the transfer of materials and for constructing and completing the work provided for in this Contract and every part thereof, except such as are mentioned in the Specifications to be furnished by the Owner.

2. The Owner hereby promises and agrees with the Contractor to employ, and does employ the Contractor to provide the materials and to do and cause to be done the above described work and to complete and finish the same according to the attached Plans and Specifications and the schedule of unit or itemized prices hereto attached, at the time and in the manner and upon the conditions provided for in this Contract and every part thereof.

3. Contractor, for himself and for his heirs, executors, administrators, successors, assigns, does hereby agree to the full performance of all the covenants herein contained upon the part of Contractor.

4. It is further provided that no liability shall attach to Owner or Agent thereof by reason of entering into this Contract, except as expressly provided herein.

5. Payments will be made under the Contract according to the schedule of rates and prices and the specification attached and made a part thereof. Partial payments under the Contract will be made at the request of the Contractor not more than once each month upon approval of the Owner, as hereinafter specified, provided they are in accordance with the provisions of RCW 60.28.010. There will be reserved and retained from monies

earned by the Contractor, as determined by such monthly estimates, a sum equal to 5 percent of the Contract price.

Payment of the retained percentage shall be withheld for a period of forty-five (45) days following the final acceptance of the work and materials by the Owner, and shall be paid the Contractor at the expiration of said forty-five (45) days in event no claims, as provided by law, have been filed against such funds; and provided further, that releases have been obtained from all departments and agencies having jurisdiction over the activities of the Contractor. In the event such claims are filed, Contractor shall be paid such retained percentages less an amount sufficient to pay any such claims together with a sum sufficient to pay the cost of such action, and to cover attorney fees as determined by the Owner.

6. Requests for review of substitute items of material or equipment will not be accepted by the Owner or Agent from anyone other than the Contractor. If the Contractor wishes to furnish a substitute item, the Contractor shall make written application to the Owner's Agent for acceptance thereof, certifying that the proposed substitute will perform adequately the functions called for by the general design, be similar and of equal substance to that specified and be suited to the same use and capable of performing the same function as that specified. All variations of the proposed substitute from that specified shall be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, which shall be considered by the Owner in evaluating the proposed substitute. The Owner may require the Contractor to furnish at the Contractor's expense, additional data about the proposed substitute. The Owner will be the sole judge of acceptability, and no substitute will be ordered without the Owner's prior written acceptance. The Owner may require the Contractor to furnish at the Contractor's expense, a special performance guarantee or other surety with respect to any other substitute.

   The Owner or Agent will record the time and expenses in evaluating substitutions proposed by the Contractor. Whether or not the Owner accepts a proposed substitute, the Contractor shall reimburse the Owner for the costs of evaluating any proposed substitute.

7. The Owner reserves the right, after the final payment has been made, to claim and recover by process of law such sums as may be sufficient to make good any defects in the equipment or to recover any over-payment resulting from dishonest acts of the Contractor.

8. The contract time will commence to run, and the Contractor shall start to perform his obligation under the contract documents, on the day indicated in the Notice to Proceed given by Owner to Contractor; but in no event shall contract time commence to run later than the 30th calendar day after the date when both Owner and Contractor execute the Contract. A Notice to Proceed may be given at any time within thirty (30) calendar days after the date when both Owner and Contractor execute the Contract.

9. The Contractor shall guarantee the materials and workmanship for a period of one (1) year from and after the date of final acceptance by the Owner.

   If, within said guarantee period, repairs are required which, in the opinion of the Owner, are rendered necessary as a result of work or materials which are inferior, defective or not

in accordance with the terms of the Contract, the Contractor shall, promptly upon receipt of notice from the Owner, and without expense to the Owner, (a) correct all defects and place in satisfactory condition in every particular all of such guaranteed work and materials; (b) make good all damage which in the opinion of the Owner is caused by such defects; and (c) make good any other work or material or the equipment and contents of a building, structure or site disturbed in fulfilling any such guarantee.

If the Contractor, after notice, fails within ten (10) days to proceed to comply to the terms of this guarantee, the Owner may have the defects corrected, and the Contractor and his Surety shall be liable for all expense incurred, provided, however, that in case of an emergency where, in the opinion of the Owner, delay would cause serious loss or damage, repairs may be made without notice being given to the Contractor and the Contractor shall pay the cost thereof.

IN WITNESS WHEREOF, the said Contractor has executed this instrument and the City Manager, pursuant to resolution duly adopted, has caused this instrument to be executed in the name of the City of Lacey the day and year first above-written.

_____

_____

_____

Contractor Date

_____

Contractor's Registration Number (UBI No.)

_____

City of Lacey Business License Number

_____

City Manager Date

ATTEST:
By:

_____

City Clerk

APPROVED AS TO FORM:
By :

_____

City Attorney

CONTRACTOR'S PERFORMANCE/PAYMENT BOND
to City of Lacey, Washington

The City of Lacey, Washington, in Thurston County, has awarded to _____ (Contractor), as Principal, a contract for the construction of the project designated as **Golf Club Road Water & Wastewater Improvements**, Project No. **PW 2020-40** in Lacey, Washington, and said Principal is required under the terms of the Contract to furnish a performance/payment bond in accordance with chapter 39.08 Revised Code of Washington (RCW).

The Principal, and _____(Surety), a corporation, organized under the laws of _____ and licensed to do business in the State of Washington as surety and named in the current list of "Surety Companies Acceptable in Federal Bonds" as published in the Federal Register by the Audit Staff Bureau of Accounts, U.S. Treasury Dept., are jointly and severally held and firmly bound to the City of Lacey, as Obligee, in the sum of $_____ total Contract amount (including Washington State sales tax), subject to the provisions herein.

The obligations of this bond shall become null and void, if and when the Principal, its heirs, executors, administrators, successors, or assigns shall well and faithfully perform all of the Principal's obligations under the Contract and fulfill all the terms and conditions of all duly authorized modifications, additions, and changes to said Contract that may hereafter be made, at the time and in the manner therein specified; shall pay all persons in accordance with chapters 39.08, 39.12, and 60.28 RCW, including all workers, laborers, mechanics, subcontractors, and material suppliers, and all persons who shall supply such contractor or subcontractor with provisions and supplies for the carrying on of such work; shall warranty the work as provided in the Contract and shall indemnify and hold harmless the Obligee from any defects in the workmanship and materials incorporated into the work for the period identified in the Contract; and if such obligations have not been fulfilled, this bond shall remain in full force and effect.

The Surety for value received agrees that no change, extension of time, alteration or addition to the terms of the Contract, the specifications accompanying the Contract, or to the work to be performed under the Contract shall in any way affect its obligation on this bond, and waives notice of any change, extension of time, alteration or addition to the terms of the Contract or the work performed. The Surety agrees that modifications and changes to the terms and conditions of the Contract that increase the total amount to be paid the Principal shall automatically increase the obligation of the Surety on this bond and notice to Surety is not required for such increased obligation.

This bond may be executed in two original counterparts and shall be signed by the parties' duly authorized officers. This bond will only be accepted if it is accompanied by a fully executed and original power of attorney for the officer executing on behalf of the surety.

PRINCIPAL (CONTRACTOR)		SURETY	
_____		_____	
Principal Signature	Date	Surety Signature	Date
_____		_____	
Printed Name		Printed Name	
_____		_____	
Title		Title	

Name, address, and telephone of local office/agent of Surety Company is:

_____

_____

DECLARATION OF OPTION FOR MANAGEMENT OF STATUTORY RETAINED PERCENTAGE

A. I hereby elect to have the retained percentage of this contract held in a fund by the City of Lacey until forty-five (45) days following final acceptance of the work.

_____
Contractor (please print)

_____ _____
Date Signature

B. I hereby elect to have the City of Lacey invest the retained percentage of this contract from time to time as such retained percentage accrues and in accordance with RCW Ch. 60.28.

I hereby designate _____ as the repository for the escrow of said funds.

I hereby further agree to be fully responsible for payment of all costs or fees incurred as a result of placing said percentage in escrow and investing it as authorized by statue.

The City of Lacey shall not be liable in any way for any costs or fees in connection therewith.

_____
Contractor (please print)

_____ _____
Date Signature

C. I hereby elect to hold a retainage bond.

_____
Contractor (please print)

_____ _____
Date Signature

D
SPECIAL PROVISIONS

TABLE OF CONTENTS

SPECIAL PROVISIONS

INTRODUCTION TO THE SPECIAL PROVISIONS
(January 19, 2022 APWA GSP)

The work on this project shall be accomplished in accordance with the *Standard Specifications for Road, Bridge and Municipal Construction*, 2022 edition, as issued by the Washington State Department of Transportation (WSDOT) and the American Public Works Association (APWA), Washington State Chapter (hereafter "Standard Specifications"). The Standard Specifications, as modified or supplemented by these Special Provisions, all of which are made a part of the Contract Documents, shall govern all of the Work.

These Special Provisions are made up of both General Special Provisions (GSPs) from various sources, which may have project-specific fill-ins; and project-specific Special Provisions. Each Provision either supplements, modifies, or replaces the comparable Standard Specification, or is a new Provision. The deletion, amendment, alteration, or addition to any subsection or portion of the Standard Specifications is meant to pertain only to that particular portion of the section, and in no way should it be interpreted that the balance of the section does not apply.

The project-specific Special Provisions are not labeled as such, but are generally denoted with (******). The GSPs are labeled under the headers of each GSP, with the effective date of the GSP and its source, except WSDOT uses a date only (2nd on list). For example:

(March 8, 2013 APWA GSP)
(April 1, 2013)
(May 1, 2013 Lacey GSP)

Also incorporated into the Contract Documents by reference are:

- *Manual on Uniform Traffic Control Devices for Streets and Highways*, currently adopted edition, with Washington State modifications, if any
- *Standard Plans for Road, Bridge and Municipal Construction*, WSDOT/APWA, current edition
- City of Lacey Development Guidelines and Public Works Standards, current edition

Contractor shall obtain copies of these publications, at Contractor's own expense.

DESCRIPTION OF WORK

This contract provides for the installation of approximately 4,700 LF of 6-inch, 8-inch and 12-inch diameter water main, 4,500 LF of 8-inch, and18-inch diameter gravity wastewater main and 1,800 LF of 10-inch diameter pressure wastewater main located on Golf Club Road SE and Lacey Blvd SE between 26th Ave SE and Sleater-Kinney Road SE, including night/weekend work within and adjacent to the roundabout and the intersection of Lacey Blvd SE and Sleater-Kinney Rd SE as described in section 1-07.23(1) and 1-08.0(2)A. Work to include temporary traffic control, bypass pumping, construction of service lines, meters, valves, transfer of water and sewer services, connections to existing water and wastewater systems, water and wastewater main abandonments, asphalt and concrete pavement, lawn restoration and other work.

1-01 DEFINITIONS AND TERMS

1-01.3 Definitions

(January 19, 2022 APWA GSP)

Delete the heading Completion Dates and the three paragraphs that follow it, and replace them with the following:

Dates

Bid Opening Date
The date on which the Contracting Agency publicly opens and reads the Bids.

Award Date
The date of the formal decision of the Contracting Agency to accept the lowest responsible and responsive Bidder for the Work.

Contract Execution Date
The date the Contracting Agency officially binds the Agency to the Contract.

Notice to Proceed Date
The date stated in the Notice to Proceed on which the Contract time begins.

Substantial Completion Date
The day the Engineer determines the Contracting Agency has full and unrestricted use and benefit of the facilities, both from the operational and safety standpoint, any remaining traffic disruptions will be rare and brief, and only minor incidental work, replacement of temporary substitute facilities, plant establishment periods, or correction or repair remains for the Physical Completion of the total Contract.

Physical Completion Date
The day all of the Work is physically completed on the project. All documentation required by the Contract and required by law does not necessarily need to be furnished by the Contractor by this date.

Completion Date
The day all the Work specified in the Contract is completed and all the obligations of the Contractor under the contract are fulfilled by the Contractor. All documentation required by the Contract and required by law must be furnished by the Contractor before establishment of this date.

Final Acceptance Date
The date on which the Contracting Agency accepts the Work as complete.

Supplement this Section with the following:

All references in the Standard Specifications or WSDOT General Special Provisions, to the terms "Department of Transportation", "Washington State Transportation Commission", "Commission", "Secretary of Transportation", "Secretary", "Headquarters", and "State Treasurer" shall be revised to read "Contracting Agency".

All references to the terms "State" or "state" shall be revised to read "Contracting Agency" unless the reference is to an administrative agency of the State of Washington, a State statute or regulation, or the context reasonably indicates otherwise.

All references to "State Materials Laboratory" shall be revised to read "Contracting Agency designated location".

All references to "final contract voucher certification" shall be interpreted to mean the Contracting Agency form(s) by which final payment is authorized, and final completion and acceptance granted.

Additive
A supplemental unit of work or group of bid items, identified separately in the Bid Proposal, which may, at the discretion of the Contracting Agency, be awarded in addition to the base bid.

Alternate
One of two or more units of work or groups of bid items, identified separately in the Bid Proposal, from which the Contracting Agency may make a choice between different methods or material of construction for performing the same work.

Business Day
A business day is any day from Monday through Friday except holidays as listed in Section 1-08.5.

Contract Bond
The definition in the Standard Specifications for "Contract Bond" applies to whatever bond form(s) are required by the Contract Documents, which may be a combination of a Payment Bond and a Performance Bond.

Contract Documents
See definition for "Contract".

Contract Time
The period of time established by the terms and conditions of the Contract within which the Work must be physically completed.

Notice of Award
The written notice from the Contracting Agency to the successful Bidder signifying the Contracting Agency's acceptance of the Bid Proposal.

Notice to Proceed
The written notice from the Contracting Agency or Engineer to the Contractor authorizing and directing the Contractor to proceed with the Work and establishing the date on which the Contract time begins.

Traffic
Both vehicular and non-vehicular traffic, such as pedestrians, bicyclists, wheelchairs, and equestrian traffic.

1-02 BID PROCEDURES AND CONDITIONS

1-02.1 Prequalification of Bidders

Delete this Section and replace it with the following:

1-02.1 Qualifications of Bidder

(January 24, 2011 APWA GSP)

Before award of a public works contract, a bidder must meet at least the minimum qualifications of RCW 39.04.350(1) to be considered a responsible bidder and qualified to be awarded a public works project.

1-02.2 Plans and Specifications
(June 27, 2011 APWA GSP)

Delete this section and replace it with the following:

Information as to where Bid Documents can be obtained or reviewed will be found in the Call for Bids (Advertisement for Bids) for the work.

After award of the contract, plans and specifications will be issued to the Contractor at no cost as detailed below:

To Prime Contractor	No. of Sets	Basis of Distribution
Reduced plans (11" x 17")	3	Furnished automatically upon award
Contract Provisions	3	Furnished automatically upon award
Large plans (22" x 34")	3	Furnished only upon request

Additional plans and Contract Provisions may be obtained by the Contractor from the source stated in the Call for Bids, at the Contractor's own expense.

1-02.4 Examination of Plans, Specifications and Site of Work

1-02.4(1) General
(January 19, 2022 APWA GSP Option B)

The first sentence of the ninth paragraph, beginning with "Any prospective Bidder desiring…", is revised to read:

Any prospective Bidder desiring an explanation or interpretation of the Bid Documents, shall request the explanation or interpretation in writing by close of business 5 business days preceding the bid opening to allow a written reply to reach all prospective Bidders before the submission of their Bids.

1-02.5 Proposal Forms
(July 31, 2017 APWA GSP)

Delete this section and replace it with the following:

The Proposal Form will identify the project and its location and describe the work. It will also list estimated quantities, units of measurement, the items of work, and the materials to be furnished at the unit bid prices. The bidder shall complete spaces on the proposal form that call for, but are not limited to, unit prices; extensions; summations; the total bid amount; signatures; date; and, where applicable, retail sales taxes and acknowledgment of addenda; the bidder's name, address, telephone number, and signature; the bidder's UDBE/DBE/M/WBE commitment, if applicable; a State of Washington Contractor's Registration Number; and a Business License Number, if applicable. Bids shall be completed by typing or shall be printed in ink by hand, preferably in black ink. The required certifications are included as part of the Proposal Form.

The Contracting Agency reserves the right to arrange the proposal forms with alternates and additives, if such be to the advantage of the Contracting Agency. The bidder shall bid on all alternates and additives set forth in the Proposal Form unless otherwise specified.

1-02.6 Preparation of Proposal

(March 3, 2022 Lacey GSP)

Supplement the second paragraph with the following:

4. If a minimum bid amount has been established for any item, the unit or lump sum price must equal or exceed the minimum amount stated.
5. Any correction to a bid made by interlineation, alteration, or erasure, shall be initialed by the signer of the bid.

Delete the last two paragraphs, and replace it with the following:

The Bidder shall submit a completed Contractor Certification Wage Law Compliance form, provided by the Contracting Agency. Failure to return this certification within 24 hours of the bid opening will make this Bid Nonresponsive and ineligible for Award. A Contractor Certification of Wage Law Compliance form is included in the Proposal Forms.

The Bidder shall make no stipulation on the Bid Form, nor qualify the bid in any manner.

A bid by a corporation shall be executed in the corporate name, by the president or a vice president (or other corporate officer accompanied by evidence of authority to sign).

A bid by a partnership shall be executed in the partnership name, and signed by a partner.

A bid by a joint venture shall be executed in the joint venture name and signed by a member of the joint venture.

1-02.7 Bid Deposit

(March 8, 2013 APWA GSP)

Supplement this section with the following:

Bid bonds shall contain the following:

1. Contracting Agency-assigned number for the project;
2. Name of the project;
3. The Contracting Agency named as obligee;
4. The amount of the bid bond stated either as a dollar figure or as a percentage which represents five percent of the maximum bid amount that could be awarded;
5. Signature of the bidder's officer empowered to sign official statements. The signature of the person authorized to submit the bid should agree with the signature on the bond, and the title of the person must accompany the said signature;
6. The signature of the surety's officer empowered to sign the bond and the power of attorney.

If so stated in the Contract Provisions, bidder must use the bond form included in the Contract Provisions.

If so stated in the Contract Provisions, cash will not be accepted for a bid deposit.

1-02.9 Delivery of Proposal

(March 3, 2022 Lacey GSP)

Delete this section and replace it with the following:

Each Proposal shall be submitted in a sealed envelope, with the Project Name and Project Number as stated in the Call for Bids clearly marked on the outside of the envelope, or as otherwise required in the Bid Documents, to ensure proper handling and delivery.

If supplemental information is due after the Bid Proposal is due, the document(s) shall be submitted as follows:

1. In a sealed envelope labeled the same as for the Proposal, with "Supplemental Information" added, or
2. By e-mail to the following e-mail address: ProjectAdmin@ci.lacey.wa.us

All other information required to be submitted with the Bid Proposal must be submitted with the Bid Proposal itself, at the time stated in the Call for Bids.

Proposals that are received as required will be publicly opened and read as specified in Section 1-02.12. The Contracting Agency will not open or consider any Bid Proposal that is received after the time specified in the Call for Bids for receipt of Bid Proposals, or received in a location other than that specified in the Call for Bids. The Contracting Agency will not open or consider any "Supplemental Information" that is received after the time specified, or received in a location other than that specified in the Call for Bids.

If an emergency or unanticipated event interrupts normal work processes of the Contracting Agency so that Proposals cannot be received at the office designated for receipt of bids as specified in Section 1-02.12 the time specified for receipt of the Proposal will be deemed to be extended to the same time of day specified in the solicitation on the first work day on which the normal work processes of the Contracting Agency resume.

1-02.10 Withdrawing, Revising, or Supplementing Proposal

(July 23, 2015 APWA GSP)

Delete this section in its entirety, and replace it with the following:

After submitting a physical Bid Proposal to the Contracting Agency, the Bidder may withdraw, revise, or supplement it if:

1. The Bidder submits a written request signed by an authorized person and physically delivers it to the place designated for receipt of Bid Proposals, and
2. The Contracting Agency receives the request before the time set for receipt of Bid Proposals, and
3. The revised or supplemented Bid Proposal (if any) is received by the Contracting Agency before the time set for receipt of Bid Proposals.

If the Bidder's request to withdraw, revise, or supplement its Bid Proposal is received before the time set for receipt of Bid Proposals, the Contracting Agency will return the unopened Proposal package to the Bidder. The Bidder must then submit the revised or supplemented package in its entirety. If the Bidder does not submit a revised or supplemented package, then its bid shall be considered withdrawn.

Late revised or supplemented Bid Proposals or late withdrawal requests will be date recorded by the Contracting Agency and returned unopened. Mailed, Emailed, or faxed requests to withdraw, revise, or supplement a Bid Proposal are not acceptable.

1-02.12 Public Opening of Proposals

(November 20, 2020 Lacey GSP)

Delete and replace this section with the following:

Proposals will be opened and publicly read by live video stream per the "Instructions to Bidders" in Section A of these Specifications at the time as indicated in the call for Bids

1-02.13 Irregular Proposals

(October 1, 2020 APWA GSP)

Delete this section and replace it with the following:

1. A Proposal will be considered irregular and will be rejected if:
a. The Bidder is not prequalified when so required;
b. The authorized Proposal form furnished by the Contracting Agency is not used or is altered;
c. The completed Proposal form contains any unauthorized additions, deletions, alternate Bids, or conditions;
d. The Bidder adds provisions reserving the right to reject or accept the award, or enter into the Contract;
e. A price per unit cannot be determined from the Bid Proposal;
f. The Proposal form is not properly executed;
g. The Bidder fails to submit or properly complete a Subcontractor list, if applicable, as required in Section 1-02.6;
h. The Bidder fails to submit or properly complete a Disadvantaged Business Enterprise Certification, if applicable, as required in Section 1-02.6;
i. The Bidder fails to submit written confirmation from each DBE firm listed on the Bidder's completed DBE Utilization Certification that they are in agreement with the bidder's DBE participation commitment, if applicable, as required in Section 1-02.6, or if the written confirmation that is submitted fails to meet the requirements of the Special Provisions;
j The Bidder fails to submit DBE Good Faith Effort documentation, if applicable, as required in Section 1-02.6, or if the documentation that is submitted fails to demonstrate that a Good Faith Effort to meet the Condition of Award was made;
k. The Bidder fails to submit a DBE Bid Item Breakdown form, if applicable, as required in Section 1-02.6, or if the documentation that is submitted fails to meet the requirements of the Special Provisions;
l. The Bidder fails to submit DBE Trucking Credit Forms, if applicable, as required in Section 1-02.6, or if the documentation that is submitted fails to meet the requirements of the Special Provisions;
m. The Bid Proposal does not constitute a definite and unqualified offer to meet the material terms of the Bid invitation; or
n. More than one Proposal is submitted for the same project from a Bidder under the same or different names.

2. A Proposal may be considered irregular and may be rejected if:
a. The Proposal does not include a unit price for every Bid item;
b. Any of the unit prices are excessively unbalanced (either above or below the amount of a reasonable Bid) to the potential detriment of the Contracting Agency;
c. Receipt of Addenda is not acknowledged;
d. A member of a joint venture or partnership and the joint venture or partnership submit Proposals for the same project (in such an instance, both Bids may be rejected); or
e. If Proposal form entries are not made in ink.

1-02.14 Disqualification of Bidders

(May 17, 2018 APWA GSP Option A)

Delete this Section and replace it with the following:

A Bidder will be deemed not responsible if the Bidder does not meet the mandatory bidder responsibility criteria in RCW 39.04.350(1), as amended.

The Contracting Agency will verify that the Bidder meets the mandatory bidder responsibility criteria in RCW 39.04.350(1). To assess bidder responsibility, the Contracting Agency reserves the right to request documentation as needed from the Bidder and third parties concerning the Bidder's compliance with the mandatory bidder responsibility criteria.

If the Contracting Agency determines the Bidder does not meet the mandatory bidder responsibility criteria in RCW 39.04.350(1) and is therefore not a responsible Bidder, the Contracting Agency shall notify the Bidder in writing, with the reasons for its determination. If the Bidder disagrees with this determination, it may appeal the determination within two (2) business days of the Contracting Agency's determination by presenting its appeal and any additional information to the Contracting Agency. The Contracting Agency will consider the appeal and any additional information before issuing its final determination. If the final determination affirms that the Bidder is not responsible, the Contracting Agency will not execute a contract with any other Bidder until at least two business days after the Bidder determined to be not responsible has received the Contracting Agency's final determination..

1-02.15 Pre-Award Information
(August 14, 2013 APWA GSP)

Revise this section to read:

Before awarding any contract, the Contracting Agency may require one or more of these items or actions of the apparent lowest responsible bidder:

1. A complete statement of the origin, composition, and manufacture of any or all materials to be used,
2. Samples of these materials for quality and fitness tests,
3. A progress schedule (in a form the Contracting Agency requires) showing the order of and time required for the various phases of the work,
4. A breakdown of costs assigned to any bid item,
5. Attendance at a conference with the Engineer or representatives of the Engineer,
6. Obtain, and furnish a copy of, a business license to do business in the city or county where the work is located.
7. Any other information or action taken that is deemed necessary to ensure that the bidder is the lowest responsible bidder.

1-03 AWARD AND EXECUTION OF CONTRACT

1-03.1 Consideration of Bids
(January 23, 2006 APWA GSP)

Revise the first paragraph to read:

After opening and reading proposals, the Contracting Agency will check them for correctness of extensions of the prices per unit and the total price. If a discrepancy exists between the price per unit and the extended amount of any bid item, the price per unit will control. If a minimum bid amount has been established for any item and the bidder's unit or lump sum price is less than the minimum specified amount, the Contracting Agency will unilaterally revise the unit or lump sum price, to the minimum specified amount and recalculate the extension. The total of extensions, corrected where necessary, including sales taxes where applicable and such additives and/or alternates as selected by the Contracting

Agency, will be used by the Contracting Agency for award purposes and to fix the Awarded Contract Price amount and the amount of the contract bond.

1-03.3 Execution of Contract
(January 19, 2022 APWA GSP)

Revise this section to read:

Within 3 calendar days of Award date (not including Saturdays, Sundays and Holidays), the successful Bidder shall provide the information necessary to execute the Contract to the Contracting Agency. The Bidder shall send the contact information, including the full name, email address, and phone number, for the authorized signer and bonding agent to the Contracting Agency.

Copies of the Contract Provisions, including the unsigned Form of Contract, will be available for signature by the successful bidder on the first business day following award. The number of copies to be executed by the Contractor will be determined by the Contracting Agency.

Within 10 calendar days after the award date, the successful bidder shall return the signed Contracting Agency-prepared contract, an insurance certification as required by Section 1-07.18, a satisfactory bond as required by law and Section 1-03.4, and the Transfer of Coverage form for the Construction Stormwater General Permit with sections I, III, and VIII completed when provided. Before execution of the contract by the Contracting Agency, the successful bidder shall provide any pre-award information the Contracting Agency may require under Section 1-02.15.

Until the Contracting Agency executes a contract, no proposal shall bind the Contracting Agency nor shall any work begin within the project limits or within Contracting Agency-furnished sites. The Contractor shall bear all risks for any work begun outside such areas and for any materials ordered before the contract is executed by the Contracting Agency.

If the bidder experiences circumstances beyond their control that prevents return of the contract documents within the calendar days after the award date stated above, the Contracting Agency may grant up to a maximum of 10 additional calendar days for return of the documents, provided the Contracting Agency deems the circumstances warrant it.

1-03.4 Contract Bond
(July 23, 2015 APWA GSP)

Delete the first paragraph and replace it with the following:

The successful bidder shall provide executed payment and performance bond(s) for the full contract amount. The bond may be a combined payment and performance bond; or be separate payment and performance bonds. In the case of separate payment and performance bonds, each shall be for the full contract amount. The bond(s) shall:

1. Be on Contracting Agency-furnished form(s);
2. Be signed by an approved surety (or sureties) that:

    a) Is registered with the Washington State Insurance Commissioner, and
    b) Appears on the current Authorized Insurance List in the State of Washington published by the Office of the Insurance Commissioner,

3. Guarantee that the Contractor will perform and comply with all obligations, duties, and conditions under the Contract, including but not limited to the duty and obligation to indemnify,

defend, and protect the Contracting Agency against all losses and claims related directly or indirectly from any failure:

a) Of the Contractor (or any of the employees, subcontractors, or lower tier subcontractors of the Contractor) to faithfully perform and comply with all contract obligations, conditions, and duties, or
b) Of the Contractor (or the subcontractors or lower tier subcontractors of the Contractor) to pay all laborers, mechanics, subcontractors, lower tier subcontractors, material person, or any other person who provides supplies or provisions for carrying out the work;

4. Be conditioned upon the payment of taxes, increases, and penalties incurred on the project under titles 50, 51, and 82 RCW; and
5. Be accompanied by a power of attorney for the Surety's officer empowered to sign the bond; and
6. Be signed by an officer of the Contractor empowered to sign official statements (sole proprietor or partner). If the Contractor is a corporation, the bond(s) must be signed by the president or vice president, unless accompanied by written proof of the authority of the individual signing the bond(s) to bind the corporation (i.e., corporate resolution, power of attorney, or a letter to such effect signed by the president or vice president).

1-03.7 Judicial Review

(November 30, 2018 APWA GSP)

Delete this section and replace it with the following:

Any decision made by the Contracting Agency regarding the Award and execution of the Contract or Bid rejection shall be conclusive subject to the scope of judicial review permitted under Washington Law. Such review, if any, shall be timely filed in the Superior Court of the county where the Contracting Agency headquarters is located, provided that where an action is asserted against a county, RCW 36.01.050 shall control venue and jurisdiction.

1-04 SCOPE OF THE WORK

1-04.2 Coordination of Contract Documents, Plans, Special Provisions, Specifications, and Addenda

(November 20, 2020 Lacey GSP)

Revise the second paragraph to read:

Any inconsistency in the parts of the contract shall be resolved by following this order of precedence (e.g., 1 presiding over 2, 2 presiding over 3, 3 over 4, and so forth):

1. Contract Form,
2. Addenda (if any),
3. Proposal Form,
4. Special Provisions,
5. Technical Specifications, if included,
6. Contract Plans,
7. WSDOT Standard Specifications for Road, Bridge, and Municipal Construction,
8. City of Lacey Development Guidelines and Public Works Standards, and
9. WSDOT Standard Plans for Road, Bridge and Municipal Construction

1-04.4(1) Minor Changes
(May 30, 2019 APWA GSP)

Delete the first paragraph and replace it with the following:

Payments or credits for changes amounting to $15,000 or less may be made under the Bid item "Minor Change". At the discretion of the Contracting Agency, this procedure for Minor Changes may be used in lieu of the more formal procedure as outlined in Section 1-04.4, Changes. All "Minor Change" work will be within the scope of the Contract Work and will not change Contract Time.

1-04.5 Procedure, Protest, and Dispute by the Contractor
(January 22, 2022 APWA GSP)

Revise item 1 of the first paragraph to read:

1. Give a signed written notice of protest to the Engineer or the Engineer's field Inspectors within 5 calendar days of receiving a change order or an Engineer's Written Determination.

1-04.6 Variation in Estimated Quantities
(May 25, 2006 APWA GSP)

Supplement this Section with the following:

The quantities for "Utility Potholing", "Crushed Surfacing Top Course", "Imported Pipe Bedding", "Bank Run Gravel for Trench Backfill", "Controlled Density Fill" and "Commercial HMA" have been entered into the Proposal only to provide a common proposal for bidders. Actual quantities will be determined in the field as the work progresses, and will be paid at the original bid price, regardless of final quantity. These bid items shall not be subject to the provisions of 1-04.6 of the Standard Specifications.

1-04.6 Variations in Estimated Quantities
(July 23, 2015 APWA GSP Option B)

Revise the first paragraph to read:

Payment to the Contractor will be made only for the actual quantities of Work performed and accepted in conformance with the Contract. When the accepted quantity of Work performed under a unit item varies from the original Proposal quantity, payment will be at the unit Contract price for all Work unless the total accepted quantity of any Contract item, adjusted to exclude added or deleted amounts included in change orders accepted by both parties, increases or decreases by more than 25 percent from the original Proposal quantity, and if the total extended bid price for that item at time of award is equal to or greater than 10 percent of the total contract price at time of award. In that case, payment for contract work may be adjusted as described herein:

1-05 CONTROL OF WORK

1-05.4 Conformity with and Deviations from Plans and Stakes
Supplement this section with the following:

Roadway and Utility Surveys
(July 23, 2015 APWA GSP, Option 1)

The Engineer shall furnish to the Contractor one time only all principal lines, grades, and measurements the Engineer deems necessary for completion of the work. These shall generally consist of one initial set of:

1. Slope stakes for establishing grading;
2. Curb grade stakes;
3. Centerline finish grade stakes for pavement sections wider than 25 feet; and
4. Offset points to establish line and grade for underground utilities such as water, sewers, and storm drains.

On alley construction projects with minor grade changes, the Engineer shall provide only offset hubs on one side of the alley to establish the alignment and grade.

1-05.4(2) Survey Control and Electronic Files

(August 10, 2010 Lacey GSP)

Add the following new section:

The Contractor shall re-establish the survey control used in design by using existing survey monuments and other control points as provided by the City.

When requested by the Contractor, the City will provide an electronic version of the construction plans (drawings), for use by the Contractor at the Contractor's own risk. In all cases, the approved paper construction plans are the official contract documents. If the Contractor wishes to use the electronic version of the construction plans for the purposes of providing surveying of the proposed improvements, it shall be the Contractor's responsibility to verify that any coordinates used from the electronic file match the station and offset location given in the contract construction plans. Construction plans are diagrammatic in nature. The coordinate locations of the various graphic elements within the electronic files may not necessarily be precisely shown with respect to their coordinate position. In all cases, the location callouts in the contract construction plans shall govern.

1-05.7 Removal of Defective and Unauthorized Work

(October 1, 2005 APWA GSP)

Supplement this section with the following:

If the Contractor fails to remedy defective or unauthorized work within the time specified in a written notice from the Engineer, or fails to perform any part of the work required by the Contract Documents, the Engineer may correct and remedy such work as may be identified in the written notice, with Contracting Agency forces or by such other means as the Contracting Agency may deem necessary.

If the Contractor fails to comply with a written order to remedy what the Engineer determines to be an emergency situation, the Engineer may have the defective and unauthorized work corrected immediately, have the rejected work removed and replaced, or have work the Contractor refuses to perform completed by using Contracting Agency or other forces. An emergency situation is any situation when, in the opinion of the Engineer, a delay in its remedy could be potentially unsafe, or might cause serious risk of loss or damage to the public.
Direct or indirect costs incurred by the Contracting Agency attributable to correcting and remedying defective or unauthorized work, or work the Contractor failed or refused to perform, shall be paid by the Contractor. Payment will be deducted by the Engineer from monies due, or to become due, the Contractor. Such direct and indirect costs shall include in particular, but without limitation, compensation for additional professional services required, and costs for repair and replacement of work of others destroyed or damaged by correction, removal, or replacement of the Contractor's unauthorized work.

No adjustment in contract time or compensation will be allowed because of the delay in the performance of the work attributable to the exercise of the Contracting Agency's rights provided by this Section.

The rights exercised under the provisions of this section shall not diminish the Contracting Agency's right to pursue any other avenue for additional remedy or damages with respect to the Contractor's failure to perform the work as required.

1-05.11 Final Inspections and Operational Testing
(October 1, 2005 APWA GSP)

Delete this section and replace it with the following:

1-05.11(1) Substantial Completion Date

When the Contractor considers the work to be substantially complete, the Contractor shall so notify the Engineer and request the Engineer establish the Substantial Completion Date. The Contractor's request shall list the specific items of work that remain to be completed in order to reach physical completion. The Engineer will schedule an inspection of the work with the Contractor to determine the status of completion. The Engineer may also establish the Substantial Completion Date unilaterally.

If, after this inspection, the Engineer concurs with the Contractor that the work is substantially complete and ready for its intended use, the Engineer, by written notice to the Contractor, will set the Substantial Completion Date. If, after this inspection the Engineer does not consider the work substantially complete and ready for its intended use, the Engineer will, by written notice, so notify the Contractor giving the reasons therefore.

Upon receipt of written notice concurring in or denying substantial completion, whichever is applicable, the Contractor shall pursue vigorously, diligently and without unauthorized interruption, the work necessary to reach Substantial and Physical Completion. The Contractor shall provide the Engineer with a revised schedule indicating when the Contractor expects to reach substantial and physical completion of the work.

The above process shall be repeated until the Engineer establishes the Substantial Completion Date and the Contractor considers the work physically complete and ready for final inspection.

1-05.11(2) Final Inspection and Physical Completion Date

When the Contractor considers the work physically complete and ready for final inspection, the Contractor by written notice, shall request the Engineer to schedule a final inspection. The Engineer will set a date for final inspection. The Engineer and the Contractor will then make a final inspection and the Engineer will notify the Contractor in writing of all particulars in which the final inspection reveals the work incomplete or unacceptable. The Contractor shall immediately take such corrective measures as are necessary to remedy the listed deficiencies. Corrective work shall be pursued vigorously, diligently, and without interruption until physical completion of the listed deficiencies. This process will continue until the Engineer is satisfied the listed deficiencies have been corrected.

If action to correct the listed deficiencies is not initiated within 7 days after receipt of the written notice listing the deficiencies, the Engineer may, upon written notice to the Contractor, take whatever steps are necessary to correct those deficiencies pursuant to Section 1-05.7.

The Contractor will not be allowed an extension of contract time because of a delay in the performance of the work attributable to the exercise of the Engineer's right hereunder.

Upon correction of all deficiencies, the Engineer will notify the Contractor and the Contracting Agency, in writing, of the date upon which the work was considered physically complete. That date shall constitute the Physical Completion Date of the contract, but shall not imply acceptance of the work or that all the obligations of the Contractor under the contract have been fulfilled.

1-05.11(3) Operational Testing

It is the intent of the Contracting Agency to have at the Physical Completion Date a complete and operable system. Therefore when the work involves the installation of machinery or other mechanical equipment; street lighting, electrical distribution or signal systems; irrigation systems; buildings; or other similar work it may be desirable for the Engineer to have the Contractor operate and test the work for a period of time after final inspection but prior to the physical completion date. Whenever items of work are listed in the Contract Provisions for operational testing they shall be fully tested under operating conditions for the time period specified to ensure their acceptability prior to the Physical Completion Date. During and following the test period, the Contractor shall correct any items of workmanship, materials, or equipment which prove faulty, or that are not in first class operating condition. Equipment, electrical controls, meters, or other devices and equipment to be tested during this period shall be tested under the observation of the Engineer, so that the Engineer may determine their suitability for the purpose for which they were installed. The Physical Completion Date cannot be established until testing and corrections have been completed to the satisfaction of the Engineer.

The costs for power, gas, labor, material, supplies, and everything else needed to successfully complete operational testing, shall be included in the unit contract prices related to the system being tested, unless specifically set forth otherwise in the proposal.

Operational and test periods, when required by the Engineer, shall not affect a manufacturer's guaranties or warranties furnished under the terms of the contract.

1-05.12(1) One-Year Guarantee Period
(March 8, 2013 APWA GSP)

Add the following new section:

The Contractor shall return to the project and repair or replace all defects in workmanship and material discovered within one year after Final Acceptance of the Work. The Contractor shall start work to remedy any such defects within 7 calendar days of receiving Contracting Agency's written notice of a defect, and shall complete such work within the time stated in the Contracting Agency's notice. In case of an emergency, where damage may result from delay or where loss of services may result, such corrections may be made by the Contracting Agency's own forces or another contractor, in which case the cost of corrections shall be paid by the Contractor. In the event the Contractor does not accomplish corrections within the time specified, the work will be otherwise accomplished and the cost of same shall be paid by the Contractor.

When corrections of defects are made, the Contractor shall then be responsible for correcting all defects in workmanship and materials in the corrected work for one year after acceptance of the corrections by Contracting Agency.

This guarantee is supplemental to and does not limit or affect the requirements that the Contractor's work comply with the requirements of the Contract or any other legal rights or remedies of the Contracting Agency.

1-05.14 Cooperation with Other Contractors
(August 3, 2015 Lacey GSP)

Supplement this section with the following:
The Contractor shall coordinate residential refuse and recycling pick-up with Pacific Disposal (360) 923-0111. Construction activities shall be planned so that there is no interruption of services.

1-05.15 Method of Serving Notices
(March 25, 2009 APWA GSP)

Revise the second paragraph to read:

All correspondence from the Contractor shall be directed to the Project Engineer. All correspondence from the Contractor constituting any notification, notice of protest, notice of dispute, or other correspondence constituting notification required to be furnished under the Contract, must be in paper format, hand delivered or sent via mail delivery service to the Project Engineer's office. Electronic copies such as e-mails or electronically delivered copies of correspondence will not constitute such notice and will not comply with the requirements of the Contract.

1-05.16 Water and Power
(October 1, 2005 APWA GSP)

Add the following new section:

The Contractor shall make necessary arrangements, and shall bear the costs for power and water necessary for the performance of the work, unless the contract includes power and water as a pay item.

1-05.18 Record Drawings
(January 3, 2011 Lacey GSP Option A)

Add the following new section:

The Contractor shall furnish As-Built/Record Drawings of all changes to the original plans in accordance with the following conditions:

One set of 22”x 34” plans showing the changes to the project as installed.

Drawings shall be to scale with all notations neat in appearance.

Turn the record drawings over to the Engineer for review and approval prior to final payment.

1-06 CONTROL OF MATERIAL

1-06.1 Approval of Materials Prior to Use
(January 4, 2016 Lacey GSP)

The second sentence of first paragraph is revised to read:

The Contractor shall use the Qualified Product List (QPL), the Aggregate Source Approval (ASA) Database, or the City of Lacey Request for Approval of Material (COL RAM) form.

1-06.1(2) Request for Approval of Material (RAM)

The first paragraph is revised to read:

The COL RAM shall be used with all submittals. The COL RAM shall be prepared by the Contractor in accordance with the instructions and submitted to the engineer for approval before the material is incorporated into the Work.

Supplement this section with the following:

The Contractor shall submit sufficient information that describes the materials proposed as defined and described in these specifications and plans within 10 working days following the Notice to Proceed.

The Contractor shall submit one electronic of catalog cuts, shop drawings, and a material testing sample, as required for all items to be used in this contract for approval. The Contractor shall circle or highlight products and materials that are specific to this project, and cross out items that are not for this project.

All items not in exact compliance with the specifications must be noted as a change. The Contractor shall include an explanation, product specifications, sample articles, and any other items that will aid the Engineer in approving an item not in exact accordance with the specifications.

All submittals shall be submitted in Adobe Acrobat format and submittals that exceed 10 pages shall include a table of contents. Submittals that are not submitted in the format outlined may be rejected outright and the Contractor is required to resubmit in the correct format. The form and the submittal shall be sent in the same e-mail. Submittals that exceed 10 MB shall either be provided on a CD, a flash drive or via an internet link.

The Engineer will review submittals within 10 working days. The Contractor may request additional working days if approval or disapproval is not received in 10 working days. The Contractor may not request additional working days for failure to submit sufficient information to approve an item, or for rejection of an item not in accordance with the specifications.

Resubmittals shall be submitted within 5 working days from City's transmittal, to the contractor, of the Engineer reviewed submittal. If the submittal is "Rejected", the contractor shall resubmit the entire submittal. If the submittal is marked "Revise and Resubmit", the contractor shall submit items that are identified in the Engineer's comments.

Any material purchased or labor performed prior to such approval shall be at the Contractor's risk. The Contractor must receive all material approvals before the materials will be allowed on the project.

1-06.6 Recycled Materials
(January 4, 2016 APWA GSP)

Delete this section, including its subsections, and replace it with the following:

The Contractor shall make their best effort to utilize recycled materials in the construction of the project. Approval of such material use shall be as detailed elsewhere in the Standard Specifications.

Prior to Physical Completion the Contractor shall report the quantity of recycled materials that were utilized in the construction of the project for each of the items listed in Section 9-03.21. The report shall include hot mix asphalt, recycled concrete aggregate, recycled glass, steel furnace slag and other recycled materials (e.g. utilization of on-site material and aggregates from concrete returned to the supplier). The Contractor's report shall be provided on DOT form 350-075 Recycled Materials Reporting.

1-07 LEGAL RELATIONS AND RESPONSIBILITIES TO THE PUBLIC

1-07.1 Laws to be Observed
(October 1, 2005 APWA GSP)

Supplement this section with the following:

In cases of conflict between different safety regulations, the more stringent regulation shall apply.

The Washington State Department of Labor and Industries shall be the sole and paramount administrative agency responsible for the administration of the provisions of the Washington Industrial Safety and Health Act of 1973 (WISHA).

The Contractor shall maintain at the project site office, or other well-known place at the project site, all articles necessary for providing first aid to the injured. The Contractor shall establish, publish, and make known to all employees, procedures for ensuring immediate removal to a hospital, or doctor's care, persons, including employees, who may have been injured on the project site. Employees should not be permitted to work on the project site before the Contractor has established and made known procedures for removal of injured persons to a hospital or a doctor's care.

The Contractor shall have sole responsibility for the safety, efficiency, and adequacy of the Contractor's plant, appliances, and methods, and for any damage or injury resulting from their failure, or improper maintenance, use, or operation. The Contractor shall be solely and completely responsible for the conditions of the project site, including safety for all persons and property in the performance of the work. This requirement shall apply continuously, and not be limited to normal working hours. The required or implied duty of the Engineer to conduct construction review of the Contractor's performance does not, and shall not, be intended to include review and adequacy of the Contractor's safety measures in, on, or near the project site.

1-07.1 Laws to be Observed
(April 3, 2006 WSDOT GSP)

Supplement this section with the following:

Confined spaces are known to exist at the following locations:
All Sanitary Sewer Manholes

The Contractor shall be fully responsible for the safety and health of all on-site workers and compliant with Washington Administrative Code (WAC 296-809).

The Contractor shall prepare and implement a confined space program for each of the confined spaces identified above. The Contractors Confined Space program shall be sent to the contracting agency at least 30 days prior to the Contractor beginning work in or adjacent to the confined space. No work shall be performed in or adjacent to the confined space until the plan is submitted to the Engineer as required. The Contractor shall communicate with the Engineer to ensure a coordinated effort for providing and maintaining a safe worksite for both the Contracting Agency's and Contractor's workers when working in or near a confined space.

All costs to prepare and implement the confined space program shall be included in the bid prices for the various items associated with the confined space work.

1-07.2 State Sales Tax
(June 27, 2011 APWA GSP)

Delete this section, including its sub-sections, in its entirety and replace it with the following:

The Washington State Department of Revenue has issued special rules on the State sales tax. Sections 1-07.2(1) through 1-07.2(3) are meant to clarify those rules. The Contractor should contact the Washington State Department of Revenue for answers to questions in this area. The Contracting Agency will not adjust its payment if the Contractor bases a bid on a misunderstood tax liability.

The Contractor shall include all Contractor-paid taxes in the unit bid prices or other contract amounts. In some cases, however, state retail sales tax will not be included. Section 1-07.2(2) describes this exception.

The Contracting Agency will pay the retained percentage (or release the Contract Bond if a FHWA-funded Project) only if the Contractor has obtained from the Washington State Department of Revenue a certificate showing that all contract-related taxes have been paid (RCW 60.28.051). The Contracting Agency may deduct from its payments to the Contractor any amount the Contractor may owe the Washington State Department of Revenue, whether the amount owed relates to this contract or not. Any amount so deducted will be paid into the proper State fund.

1-07.2(1) State Sales Tax — Rule 171

WAC 458-20-171, and its related rules, apply to building, repairing, or improving streets, roads, etc., which are owned by a municipal corporation, or political subdivision of the state, or by the United States, and which are used primarily for foot or vehicular traffic. This includes storm or combined sewer systems within and included as a part of the street or road drainage system and power lines when such are part of the roadway lighting system. For work performed in such cases, the Contractor shall include Washington State Retail Sales Taxes in the various unit bid item prices, or other contract amounts, including those that the Contractor pays on the purchase of the materials, equipment, or supplies used or consumed in doing the work.

1-07.2(2) State Sales Tax — Rule 170

WAC 458-20-170, and its related rules, apply to the constructing and repairing of new or existing buildings, or other structures, upon real property. This includes, but is not limited to, the construction of streets, roads, highways, etc., owned by the state of Washington; water mains and their appurtenances; sanitary sewers and sewage disposal systems unless such sewers and disposal systems are within, and a part of, a street or road drainage system; telephone, telegraph, electrical power distribution lines, or other conduits or lines in or above streets or roads, unless such power lines become a part of a street or road lighting system; and installing or attaching of any article of tangible personal property in or to real property, whether or not such personal property becomes a part of the realty by virtue of installation.

For work performed in such cases, the Contractor shall collect from the Contracting Agency, retail sales tax on the full contract price. The Contracting Agency will automatically add this sales tax to each payment to the Contractor. For this reason, the Contractor shall not include the retail sales tax in the unit bid item prices, or in any other contract amount subject to Rule 170, with the following exception.

Exception: The Contracting Agency will not add in sales tax for a payment the Contractor or a subcontractor makes on the purchase or rental of tools, machinery, equipment, or consumable supplies not integrated into the project. Such sales taxes shall be included in the unit bid item prices or in any other contract amount.

1-07.2(3) Services

The Contractor shall not collect retail sales tax from the Contracting Agency on any contract wholly for professional or other services (as defined in Washington State Department of Revenue Rules 138 and 244).

1-07.6 Permits and Licenses

(January 2, 2018 WSDOT 1-07.6.OPT1.FR1)

Section 1-07.6 is supplemented with the following:

The Contracting Agency has obtained the below-listed permit(s) for this project. A copy of the permit(s) is attached as an appendix for informational purposes. Copies of these permits, including a copy of the Transfer of Coverage form, when applicable, are required to be onsite at all times.

Contact with the permitting agencies, concerning the below-listed permit(s), shall be made through the Engineer with the exception of when the Construction Stormwater General Permit coverage is transferred to the Contractor, direct communication with the Department of Ecology is allowed. The Contractor shall be responsible for obtaining Ecology's approval for any Work requiring additional approvals (e.g. Request for Chemical Treatment Form). The Contractor shall obtain additional permits as necessary. All costs to obtain and comply with additional permits shall be included in the applicable Bid items for the Work involved.

NAME OF DOCUMENT	PERMITTING AGENCY	PERMIT REFERENCE NO.
NPDES Construction Stormwater General Permit	Department of Ecology	NOI 40333

1-07.18 Public Liability and Property Damage Insurance

Delete this section in its entirety, and replace it with the following:

1-07.18 Insurance

(January 4, 2016 APWA GSP)

1-07.18(1) General Requirements

A. The Contractor shall procure and maintain the insurance described in all subsections of section 1-07.18 of these Special Provisions, from insurers with a current A. M. Best rating of not less than A-: VII and licensed to do business in the State of Washington. The Contracting Agency reserves the right to approve or reject the insurance provided, based on the insurer's financial condition.

B. The Contractor shall keep this insurance in force without interruption from the commencement of the Contractor's Work through the term of the Contract and for thirty (30) days after the Physical Completion date, unless otherwise indicated below.

C. If any insurance policy is written on a claim made form, its retroactive date, and that of all subsequent renewals, shall be no later than the effective date of this Contract. The policy shall state that coverage is claims made, and state the retroactive date. Claims-made form coverage shall be maintained by the Contractor for a minimum of 36 months following the Completion Date or earlier termination of this Contract, and the Contractor shall annually provide the Contracting Agency with proof of renewal. If renewal of the claims made form of coverage becomes unavailable, or economically prohibitive, the Contractor shall purchase an extended reporting period ("tail") or

execute another form of guarantee acceptable to the Contracting Agency to assure financial responsibility for liability for services performed.

D. The Contractor's Automobile Liability, Commercial General Liability and Excess or Umbrella Liability insurance policies shall be primary and non-contributory insurance as respects the Contracting Agency's insurance, self-insurance, or self-insured pool coverage. Any insurance, self-insurance, or self-insured pool coverage maintained by the Contracting Agency shall be excess of the Contractor's insurance and shall not contribute with it.

E. The Contractor shall provide the Contracting Agency and all additional insureds with written notice of any policy cancellation, within two business days of their receipt of such notice.

F. The Contractor shall not begin work under the Contract until the required insurance has been obtained and approved by the Contracting Agency.

G. Failure on the part of the Contractor to maintain the insurance as required shall constitute a material breach of contract, upon which the Contracting Agency may, after giving five business days' notice to the Contractor to correct the breach, immediately terminate the Contract or, at its discretion, procure or renew such insurance and pay any and all premiums in connection therewith, with any sums so expended to be repaid to the Contracting Agency on demand, or at the sole discretion of the Contracting Agency, offset against funds due the Contractor from the Contracting Agency.

H. All costs for insurance shall be incidental to and included in the unit or lump sum prices of the Contract and no additional payment will be made.

1-07.18(2) Additional Insured

All insurance policies, with the exception of Workers Compensation, and of Professional Liability and Builder's Risk (if required by this Contract) shall name the following listed entities as additional insured(s) using the forms or endorsements required herein:

- The Contracting Agency and its officers, elected officials, employees, agents, and volunteers

The above-listed entities shall be additional insured(s) for the full available limits of liability maintained by the Contractor, irrespective of whether such limits maintained by the Contractor are greater than those required by this Contract, and irrespective of whether the Certificate of Insurance provided by the Contractor pursuant to 1-07.18(4) describes limits lower than those maintained by the Contractor.

For Commercial General Liability insurance coverage, the required additional insured endorsements shall be at least as broad as ISO forms CG 20 10 10 01 for ongoing operations and CG 20 37 10 01 for completed operations.

1-07.18(3) Subcontractors

The Contractor shall cause each Subcontractor of every tier to provide insurance coverage that complies with all applicable requirements of the Contractor-provided insurance as set forth herein, except the Contractor shall have sole responsibility for determining the limits of coverage required to be obtained by Subcontractors.

The Contractor shall ensure that all Subcontractors of every tier add all entities listed in 1 07.18(2) as additional insureds, and provide proof of such on the policies as required by that section as detailed in 1-

07.18(2) using an endorsement as least as broad as ISO CG 20 10 10 01 for ongoing operations and CG 20 37 10 01 for completed operations.

Upon request by the Contracting Agency, the Contractor shall forward to the Contracting Agency evidence of insurance and copies of the additional insured endorsements of each Subcontractor of every tier as required in 1-07.18(4) Verification of Coverage.

1-07.18(4) Verification of Coverage

The Contractor shall deliver to the Contracting Agency a Certificate(s) of Insurance and endorsements for each policy of insurance meeting the requirements set forth herein when the Contractor delivers the signed Contract for the work. Failure of Contracting Agency to demand such verification of coverage with these insurance requirements or failure of Contracting Agency to identify a deficiency from the insurance documentation provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.

Verification of coverage shall include:

1. An ACORD certificate or a form determined by the Contracting Agency to be equivalent.
2. Copies of all endorsements naming Contracting Agency and all other entities listed in 1 07.18(2) as additional insured(s), showing the policy number. The Contractor may submit a copy of any blanket additional insured clause from its policies instead of a separate endorsement.
3. Any other amendatory endorsements to show the coverage required herein.
4. A notation of coverage enhancements on the Certificate of Insurance shall not satisfy these requirements – actual endorsements must be submitted.

Upon request by the Contracting Agency, the Contractor shall forward to the Contracting Agency a full and certified copy of the insurance policy(s). If Builders Risk insurance is required on this Project, a full and certified copy of that policy is required when the Contractor delivers the signed Contract for the work.

1-07.18(5) Coverages and Limits

The insurance shall provide the minimum coverages and limits set forth below. Contractor's maintenance of insurance, its scope of coverage, and limits as required herein shall not be construed to limit the liability of the Contractor to the coverage provided by such insurance, or otherwise limit the Contracting Agency's recourse to any remedy available at law or in equity.

All deductibles and self-insured retentions must be disclosed and are subject to approval by the Contracting Agency. The cost of any claim payments falling within the deductible or self-insured retention shall be the responsibility of the Contractor. In the event an additional insured incurs a liability subject to any policy's deductibles or self-insured retention, said deductibles or self-insured retention shall be the responsibility of the Contractor.

1-07.18(5)A Commercial General Liability

Commercial General Liability insurance shall be written on coverage forms at least as broad as ISO occurrence form CG 00 01, including but not limited to liability arising from premises, operations, stop gap liability, independent contractors, products-completed operations, personal and advertising injury, and liability assumed under an insured contract. There shall be no exclusion for liability arising from explosion, collapse or underground property damage.

The Commercial General Liability insurance shall be endorsed to provide a per project general aggregate limit, using ISO form CG 25 03 05 09 or an equivalent endorsement.

Contractor shall maintain Commercial General Liability Insurance arising out of the Contractor's completed operations for at least three years following Substantial Completion of the Work.

Such policy must provide the following minimum limits:
$1,000,000 Each Occurrence
$2,000,000 General Aggregate
$2,000,000 Products & Completed Operations Aggregate
$1,000,000 Personal & Advertising Injury each offence
$1,000,000 Stop Gap / Employers' Liability each accident

1-07.18(5)B Automobile Liability

Automobile Liability shall cover owned, non-owned, hired, and leased vehicles; and shall be written on a coverage form at least as broad as ISO form CA 00 01. If the work involves the transport of pollutants, the automobile liability policy shall include MCS 90 and CA 99 48 endorsements.

Such policy must provide the following minimum limit:
$1,000,000 Combined single limit each accident

1-07.18(5)C Workers' Compensation

The Contractor shall comply with Workers' Compensation coverage as required by the Industrial Insurance laws of the State of Washington.

1-07.23 Public Convenience and Safety

1-07.23(1) Construction Under Traffic

(May 2, 2017 APWA GSP)

Revise the third sentence of the second paragraph to read:

Accessibility to existing or temporary pedestrian push buttons shall not be impaired; if approved by the Contracting Agency activating pedestrian recall timing or other accommodation may be allowed during construction.

1-07.23(1) Construction Under Traffic

(January 5, 2015 WSDOT 1-07.23(1).OPT5.FR1)

Section 1-07.23(1) is supplemented with the following

Lane closures are subject to the following restrictions:

Disruptions to traffic flow within and adjacent to the roundabout and the intersection of Lacey Blvd SE and Sleater-Kinney SE caused by underground utility construction or pavement operations shall be limited to the hours of 8 PM to 6 AM. The Contractor shall submit a traffic control plan and coordinate with the Engineer for scheduling lane closures in the roundabout and on Lacey Blvd SE/Sleater-Kinney Rd SE. One lane of traffic must remain open at all times.

If the Engineer determines the permitted closure hours adversely affect traffic, the Engineer may adjust the hours accordingly. The Engineer will notify the Contractor in writing of any change in the closure hours.

Lane closures are not allowed on any of the following:

1. A holiday,

2. A holiday weekend; holidays that occur on Friday, Saturday, Sunday or Monday are considered a holiday weekend. A holiday weekend includes Saturday, Sunday, and the holiday.

3. After noon on the day prior to a holiday or holiday weekend, and

4. Before noon on the day after the holiday or holiday weekend.

1-07.24 Rights of Way
(July 23, 2015 APWA GSP)

Delete this section and replace it with the following:

Street Right of Way lines, limits of easements, and limits of construction permits are indicated in the Plans. The Contractor's construction activities shall be confined within these limits, unless arrangements for use of private property are made.

Generally, the Contracting Agency will have obtained, prior to bid opening, all rights of way and easements, both permanent and temporary, necessary for carrying out the work. Exceptions to this are noted in the Bid Documents or will be brought to the Contractor's attention by a duly issued Addendum.

Whenever any of the work is accomplished on or through property other than public Right of Way, the Contractor shall meet and fulfill all covenants and stipulations of any easement agreement obtained by the Contracting Agency from the owner of the private property. Copies of the easement agreements may be included in the Contract Provisions or made available to the Contractor as soon as practical after they have been obtained by the Engineer.

Whenever easements or rights of entry have not been acquired prior to advertising, these areas are so noted in the Plans. The Contractor shall not proceed with any portion of the work in areas where right of way, easements or rights of entry have not been acquired until the Engineer certifies to the Contractor that the right of way or easement is available or that the right of entry has been received. If the Contractor is delayed due to acts of omission on the part of the Contracting Agency in obtaining easements, rights of entry or right of way, the Contractor will be entitled to an extension of time. The Contractor agrees that such delay shall not be a breach of contract.

Each property owner shall be given 48 hours notice prior to entry by the Contractor. This includes entry onto easements and private property where private improvements must be adjusted.

The Contractor shall be responsible for providing, without expense or liability to the Contracting Agency, any additional land and access thereto that the Contractor may desire for temporary construction facilities, storage of materials, or other Contractor needs. However, before using any private property, whether adjoining the work or not, the Contractor shall file with the Engineer a written permission of the private property owner, and, upon vacating the premises, a written release from the property owner of each property disturbed or otherwise interfered with by reasons of construction pursued under this contract. The statement shall be signed by the private property owner, or proper authority acting for the owner of the private property affected, stating that permission has been granted to use the property and all necessary permits have been obtained or, in the case of a release, that the restoration of the property has been satisfactorily accomplished. The statement shall include the parcel number, address, and date of signature. Written releases must be filed with the Engineer before the Completion Date will be established.

1-08 PROSECUTION AND PROGRESS

Add the following new section:

1-08.0 Preliminary Matters

(May 25, 2006 APWA GSP)

Add the following new section:

1-08.0(1) Preconstruction Conference

(October 10, 2008 APWA GSP)

Prior to the Contractor beginning the work, a preconstruction conference will be held between the Contractor, the Engineer, and such other interested parties as may be invited. The purpose of the preconstruction conference will be:

To review the initial progress schedule;
To establish a working understanding among the various parties associated or affected by the work;
To establish and review procedures for progress payment, notifications, approvals, submittals, etc.;
To establish normal working hours for the work;
To review safety standards and traffic control; and
To discuss such other related items as may be pertinent to the work.

The Contractor shall prepare and submit at the preconstruction conference the following:

A breakdown of all lump sum items;
A preliminary schedule of working drawing submittals; and
A list of material sources for approval if applicable.

1-08.0(2) Hours of Work

(December 8, 2014 APWA GSP)

Except in the case of emergency or unless otherwise approved by the Engineer, the normal working hours for the Contract shall be any consecutive 8-hour period between 7:00 a.m. and 6:00 p.m. Monday through Friday, exclusive of a lunch break. If the Contractor desires different than the normal working hours stated above, the request must be submitted in writing prior to the preconstruction conference, subject to the provisions below. The working hours for the Contract shall be established at or prior to the preconstruction conference.

All working hours and days are also subject to local permit and ordinance conditions (such as noise ordinances).

If the Contractor wishes to deviate from the established working hours, the Contractor shall submit a written request to the Engineer for consideration. This request shall state what hours are being requested, and why. Requests shall be submitted for review no later than 5 prior to the day(s) the Contractor is requesting to change the hours.

If the Contracting Agency approves such a deviation, such approval may be subject to certain other conditions, which will be detailed in writing. For example:

1. On non-Federal aid projects, requiring the Contractor to reimburse the Contracting Agency for the costs in excess of straight-time costs for Contracting Agency representatives who worked during such times. (The Engineer may require designated representatives to be present during the work. Representatives who may be deemed necessary by the Engineer include, but are not limited to: survey crews; personnel from the Contracting Agency's material testing lab; inspectors; and other Contracting Agency employees or third-party consultants when, in the opinion of the Engineer, such work necessitates their presence.)

2. Considering the work performed on Saturdays, Sundays, and holidays as working days with regard to the contract time.

3. Considering multiple work shifts as multiple working days with respect to contract time even though the multiple shifts occur in a single 24-hour period.

4. If a 4-10 work schedule is requested and approved the non-working day for the week will be charged as a working day.

5. If Davis Bacon wage rates apply to this Contract, all requirements must be met and recorded properly on certified payroll

1-08.0(2)A Lacey Hours of Work

(******)

Add the following new section:

Lacey Municipal Code (LMC) Chapter 14.38.010, prohibits outside construction activities between the hours of 9:00 p.m. and 7:00 a.m. in or adjacent to residential zones of the City. A waiver to this ordinance will not be allowed, except in case of emergency, or where operations are necessary during such hours in order to promote the safety of the traveling public as shown in theses specifications or as determined by the Engineer.

The owner understands that, for the safety of the public, the Contractor and the Engineer, a portion of the work shall be completed at night when traffic volumes, water demands and wastewater flows are at a minimum. Therefore, all work within or adjacent to the roundabout and the intersection of Sleater-Kinney Rd SE and Lacey Blvd SE, including the connection to the 16" bar wrapped concrete cylinder pipe water main, shall be executed at night between the hours of 8:00 p.m. and 6 a.m. The Contractor will submit Hours of Work at Preconstruction Conference along with a proposed tentative schedule. Hours of Work shall be established at the Preconstruction Conference. Alternative work times and days may be allowed

1-08.1 Subcontracting

(May 30, 2019 APWA GSP, Option B)

Delete the ninth paragraph, beginning with "On all projects, the Contractor shall certify…".

1-08.3(2)A Type A Progress Schedule

(March 13, 2012 APWA GSP)

Revise this section to read:

The Contractor shall submit five (5) copies of a Type A Progress Schedule no later than at the preconstruction conference, or some other mutually agreed upon submittal time. The schedule may be a critical path method (CPM) schedule, bar chart, or other standard schedule format. Regardless of which

format used, the schedule shall identify the critical path. The Engineer will evaluate the Type A Progress Schedule and approve or return the schedule for corrections within 15 calendar days of receiving the submittal.

1-08.4 Prosecution of Work

(July 23, 2015 APWA GSP)

Delete this section in its entirety, and replace it with the following:

1-08.4 Notice to Proceed and Prosecution of Work

Notice to Proceed will be given after the contract has been executed and the contract bond and evidence of insurance have been approved and filed by the Contracting Agency. The Contractor shall not commence with the work until the Notice to Proceed has been given by the Engineer. The Contractor shall commence construction activities on the project site within ten days of the Notice to Proceed Date, unless otherwise approved in writing. The Contractor shall diligently pursue the work to the physical completion date within the time specified in the contract. Voluntary shutdown or slowing of operations by the Contractor shall not relieve the Contractor of the responsibility to complete the work within the time(s) specified in the contract.

When shown in the Plans, the first order of work shall be the installation of high visibility fencing to delineate all areas for protection or restoration, as described in the Contract. Installation of high visibility fencing adjacent to the roadway shall occur after the placement of all necessary signs and traffic control devices in accordance with 1-10.1(2). Upon construction of the fencing, the Contractor shall request the Engineer to inspect the fence. No other work shall be performed on the site until the Contracting Agency has accepted the installation of high visibility fencing, as described in the Contract.

1-08.4(1) Order of Work

(******)

Add the following new section:

Prior to mobilizing, the Contractor shall furnish the Contracting Agency with a schedule, sequence, and method of proceeding with the work. This schedule shall address all items herein and must be approved by the Contracting Agency prior to commencing any construction operations.

In preparing the contract schedule, the Contractor shall incorporate the following requirements:

- The City will allow the width of the trench to be ground or pulverized.
- The City will not allow the road to be completely ground or pulverized to construct the utility mains.
- The City will not allow more than 1000 linear feet of trench ahead of construction operations to be ground or pulverized.
- Once the Contractor starts on a road, the Contractor shall have the road completely paved back within 60 working days of starting on that road.
- Once the whole road has been excavated, planed or pulverized, the Contractor shall pave within 10 working days of starting the pulverization on that road.

To the maximum extent practicable, the order of work for utility Improvements along **Lacey Blvd SE**, **Golf Club Rd SE** and the intersecting roundabout shall be as follows; all utility improvements, including bypass pumping, removal of structures and obstructions, and paving operations shall be fully constructed and completed in **Lacey Blvd SE** and its intersecting streets prior to beginning work in the **roundabout**

and **Golf Club Road SE**. All utility improvements within the roundabout, including paving operations, shall be fully constructed and completed prior to beginning work in **Golf Club Road SE**. The schedule shall reflect multiple paving mobilizations as needed to meet the above requirements.

Order of Work for Sewer Main Construction

In preparing the contract schedule, the Contractor shall incorporate the following sequencing of sewer main construction. The City will require the insertion valve at **STA. 0+03.6, 50' LT** on Lacey Blvd SE as shown on Page W4 (Sheet 9) of the plan set prior to constructing the first stretch of sewer main between SSMH-1 and SSMH-2.

Order of Work for Water Main Connections

In preparing the contract schedule, the Contractor shall incorporate the following sequencing of water main connections per roadway/water main section. The City will require the order of work to be completed as outlined numerically on Page W0 (Sheet 16) of the plan set:

Lacey Blvd SE & Golf Club Blvd SE (RAB to 14th Ave SE)

1. **(NIGHT SHUTDOWN) STA 111+85.6**, The first water main connection shall be at the eastern limit of the project as shown on Page W4 (Sheet 9) of the plan set. The contractor shall cut in a tee and connect to the existing 16" bar wrapped concrete cylinder pipe water main, requiring welding per detail sheet WD2 (sheet 29). Connection shall be done at night, between the hours of 9 PM - 5 AM, with a minimum of a week notice of shut down.

2. **(NIGHT SHUTDOWN) STA 0+46.8,** The second water main connection shall be at the western portion of the Lacey Blvd SE as shown on Page W1 (Sheet 9) of the plan set. The contractor shall cut in a tee and connect to the existing 14" AC water main. Connection shall be done at night, between the hours of 8 PM - 6 AM, with a minimum of a week notice of shut down.

Golf Club Blvd SE (21st Ave SE to 26th Ave SE)

1. **STA 49+64.0**, The first water main connection between 21st Ave SE and 26th Ave SE shall be the connection to the 12" AC water main at the intersection of 21st Ave SE and Golf Club RD SE as shown on Page W13 (Sheet 18) of the plan set.

Paving Operations

In preparing the contract schedule, the Contractor shall incorporate the following hours of work for paving operations. The City will require that any paving work or work associated with preparation of paving within or adjacent to the roundabout shall be done at night, between the hours of 8 PM - 6 AM, with a minimum of a two week notice of any lane closures. All paving plans require approval by the Engineer prior to starting the work.

1-08.5 Time for Completion

(******)

This project shall be completed in accordance with the provisions of Section 1-08 of the Standard Specifications within **220 working days**. All design and submittal work for this project shall be completed within the first 14 calendar days of the contract.

The project working days may be suspended until the Contracting Agency is satisfied that the Contractor has procured the long lead items required for completion of the project and progress of work at the site can proceed to substantial completion without interruption.

The Contractor, in order to receive a suspension of the contract time as specified herein; shall within 15 calendar days after approval of the equipment drawings by the Contracting Agency, provide the Contracting Agency with copies of the purchase order(s) for equipment items deemed critical by the Contracting Agency, including but not limited to, ductile iron and brass fittings, and custom structures required for completion of the contract. Such purchase order(s) shall disclose the estimated delivery dates for such critical equipment. If the Contracting Agency receives the purchase order(s) within the prescribed time frame, the contract time will be suspended upon completion of all design and submittal work except the heretofore mentioned critical items. If the Contracting agency does not receive the purchase order(s) within the prescribed time frame, the contract time for the entire project will continue without suspension for the critical items, and liquidated damages will be sought if the project is not complete within the specified number of working days.

1-08.5 Time for Completion

(November 30, 2018 APWA GSP Option A)

Revise the third and fourth paragraphs to read:

Contract time shall begin on the first working day following the Notice to Proceed Date.

Each working day shall be charged to the contract as it occurs, until the contract work is physically complete. If substantial completion has been granted and all the authorized working days have been used, charging of working days will cease. Each week the Engineer will provide the Contractor a statement that shows the number of working days: (1) charged to the contract the week before; (2) specified for the physical completion of the contract; and (3) remaining for the physical completion of the contract. The statement will also show the nonworking days and any partial or whole day the Engineer declares as unworkable. Within 10 calendar days after the date of each statement, the Contractor shall file a written protest of any alleged discrepancies in it. To be considered by the Engineer, the protest shall be in sufficient detail to enable the Engineer to ascertain the basis and amount of time disputed. By not filing such detailed protest in that period, the Contractor shall be deemed as having accepted the statement as correct. If the Contractor is approved to work 10 hours a day and 4 days a week (a 4-10 schedule) and the fifth day of the week in which a 4-10 shift is worked would ordinarily be charged as a working day then the fifth day of that week will be charged as a working day whether or not the Contractor works on that day.

Revise the sixth paragraph to read:

The Engineer will give the Contractor written notice of the completion date of the contract after all the Contractor's obligations under the contract have been performed by the Contractor. The following events must occur before the Completion Date can be established:

5. The physical work on the project must be complete; and
6. The Contractor must furnish all documentation required by the contract and required by law, to allow the Contracting Agency to process final acceptance of the contract. The following documents must be received by the Project Engineer prior to establishing a completion date:

a. Certified Payrolls (per Section 1-07.9(5)).
b. Material Acceptance Certification Documents
c. Monthly Reports of Amounts Credited as DBE Participation, as required by the Contract Provisions.
d. Final Contract Voucher Certification
e. Copies of the approved "Affidavit of Prevailing Wages Paid" for the Contractor and all Subcontractors
f. A copy of the Notice of Termination sent to the Washington State Department of Ecology (Ecology); the elapse of 30 calendar days from the date of receipt of the Notice of Termination by Ecology; and no rejection of the Notice of Termination by Ecology. This requirement will not apply if the Construction Stormwater General Permit is transferred back to the Contracting Agency in accordance with Section 8-01.3(16).
g. Property owner releases per Section 1-07.24

1-08.9 Liquidated Damages

(March 3, 2021 APWA GSP, Option B)

Revise the second and third paragraphs to read:

Accordingly, the Contractor agrees:

1. To pay (according to the following formula) liquidated damages for each working day beyond the number of working days established for Physical Completion, and

2. To authorize the Engineer to deduct these liquidated damages from any money due or coming due to the Contractor.

Liquidated Damages Formula

LD=0.15C/T

Where:

LD = liquidated damages per working day (rounded to the nearest dollar)
C = original Contract amount
T = original time for Physical Completion

When the Contract Work has progressed to Substantial Completion as defined in the Contract, the Engineer may determine the Contract Work is Substantially Complete. The Engineer will notify the Contractor in writing of the Substantial Completion Date. For overruns in Contract time occurring after the date so established, the formula for liquidated damages shown above will not apply. For overruns in Contract time occurring after the Substantial Completion Date, liquidated damages shall be assessed on the basis of direct engineering and related costs assignable to the project until the actual Physical Completion Date of all the Contract Work. The Contractor shall complete the remaining Work as promptly as possible. Upon request by the Project Engineer, the Contractor shall furnish a written schedule for completing the physical Work on the Contract.Delete this Section and replace it with the following:

Revise the fourth paragraph to read:

Time is of the essence of the Contract. Delays inconvenience the traveling public, obstruct traffic, interfere with and delay commerce, and increase risk to Highway users. Delays also cost tax payers undue sums of money, adding time needed for administration, engineering, inspection, and supervision.

Because the Contracting Agency finds it impractical to calculate the actual cost of delays, it has adopted the following formula to calculate liquidated damages for failure to complete the physical Work of a Contract on time.

Accordingly, the Contractor agrees:
1. To pay (according to the following formula) liquidated damages for each working day beyond the number of working days established for Physical Completion, and
2. To authorize the Engineer to deduct these liquidated damages from any money due or coming due to the Contractor.

Liquidated Damages Formula

$$LD = \frac{0.15C}{T}$$

Where:

LD = liquidated damages per working day (rounded to the nearest dollar)
C = original Contract amount
T = original time for Physical Completion

Liquidated damages will not be assessed for any days for which an extension of time is granted. No deduction or payment of liquidated damages will, in any degree, release the Contractor from further obligations and liabilities to complete the entire Contract.

When the Contract Work has progressed to Substantial Completion as defined in the Contract, the Engineer may determine that the work is Substantially Complete. The Engineer will notify the Contractor in writing of the Substantial Completion Date. For overruns in Contract time occurring after the date so established, the formula for liquidated damages shown above will not apply. For overruns in Contract time occurring after the Substantial Completion Date, liquidated damages shall be assessed on the basis of direct engineering and related costs assignable to the project until the actual Physical Completion Date of all the Contract Work. The Contractor shall complete the remaining Work as promptly as possible. Upon request by the Project Engineer, the Contractor shall furnish a written schedule for completing the physical Work on the Contract.

1-09 MEASUREMENT AND PAYMENT

1-09.2(1) General Requirements for Weighing Equipment

(July 23, 2015 APWA GSP, Option 2)

Revise item 4 of the fifth paragraph to read:

4. Test results and scale weight records for each day's hauling operations are provided to the Engineer daily. Reporting shall utilize WSDOT form 422-027, Scaleman's Daily Report, unless the printed ticket contains the same information that is on the Scaleman's Daily Report Form. The scale operator must provide an AM and PM tare weight for each truck on the printed ticket.

1-09.2(5) Measurement
(May 2, 2017 APWA GSP)

Revise the first paragraph to read:

Scale Verification Checks – At the Engineer's discretion, the Engineer may perform verification checks on the accuracy of each batch, hopper, or platform scale used in weighing contract items of Work.

1-09.6 Force Account
(October 10, 2008 APWA GSP)

Supplement this section with the following:

The Contracting Agency has estimated and included in the Proposal, dollar amounts for all items to be paid per force account, only to provide a common proposal for Bidders. All such dollar amounts are to become a part of Contractor's total bid. However, the Contracting Agency does not warrant expressly or by implication that the actual amount of work will correspond with those estimates. Payment will be made on the basis of the amount of work actually authorized by Engineer.

1-09.9 Payments
(January 19, 2022 APWA GSP)

Section 1-09.9 is revised to read:

The basis of payment will be the actual quantities of Work performed according to the Contract and as specified for payment.

The Contractor shall submit a breakdown of the cost of lump sum bid items at the Preconstruction Conference, to enable the Project Engineer to determine the Work performed on a monthly basis. A breakdown is not required for lump sum items that include a basis for incremental payments as part of the respective Specification. Absent a lump sum breakdown, the Project Engineer will make a determination based on information available. The Project Engineer's determination of the cost of work shall be final.

Progress payments for completed work and material on hand will be based upon progress estimates prepared by the Engineer. A progress estimate cutoff date will be established at the preconstruction conference.

The initial progress estimate will be made not later than 30 days after the Contractor commences the work, and successive progress estimates will be made every month thereafter until the Completion Date. Progress estimates made during progress of the work are tentative, and made only for the purpose of determining progress payments. The progress estimates are subject to change at any time prior to the calculation of the final payment.

The value of the progress estimate will be the sum of the following:
Unit Price Items in the Bid Form — the approximate quantity of acceptable units of work completed multiplied by the unit price.
Lump Sum Items in the Bid Form — based on the approved Contractor's lump sum breakdown for that item, or absent such a breakdown, based on the Engineer's determination.
Materials on Hand — 100 percent of invoiced cost of material delivered to Job site or other storage area approved by the Engineer.
Change Orders — entitlement for approved extra cost or completed extra work as determined by the Engineer.

Progress payments will be made in accordance with the progress estimate less:
Retainage per Section 1-09.9(1), on non FHWA-funded projects;
The amount of progress payments previously made; and
Funds withheld by the Contracting Agency for disbursement in accordance with the Contract Documents.

Progress payments for work performed shall not be evidence of acceptable performance or an admission by the Contracting Agency that any work has been satisfactorily completed. The determination of payments under the contract will be final in accordance with Section 1-05.1.

Failure to perform any of the obligations under the Contract by the Contractor may be decreed by the Contracting Agency to be adequate reason for withholding any payments until compliance is achieved.

Upon completion of all Work and after final inspection (Section 1-05.11), the amount due the Contractor under the Contract will be paid based upon the final estimate made by the Engineer and presentation of a Final Contract Voucher Certification to be signed by the Contractor. The Contractor's signature on such voucher shall be deemed a release of all claims of the Contractor unless a Certified Claim is filed in accordance with the requirements of Section 1-09.11 and is expressly excepted from the Contractor's certification on the Final Contract Voucher Certification. The date the Contracting Agency signs the Final Contract Voucher Certification constitutes the final acceptance date (Section 1-05.12).

If the Contractor fails, refuses, or is unable to sign and return the Final Contract Voucher Certification or any other documentation required for completion and final acceptance of the Contract, the Contracting Agency reserves the right to establish a Completion Date (for the purpose of meeting the requirements of RCW 60.28) and unilaterally accept the Contract. Unilateral final acceptance will occur only after the Contractor has been provided the opportunity, by written request from the Engineer, to voluntarily submit such documents. If voluntary compliance is not achieved, formal notification of the impending establishment of a Completion Date and unilateral final acceptance will be provided by email with delivery confirmation from the Contracting Agency to the Contractor, which will provide 30 calendar days for the Contractor to submit the necessary documents. The 30 calendar day period will begin on the date the email with delivery confirmation is received by the Contractor. The date the Contracting Agency unilaterally signs the Final Contract Voucher Certification shall constitute the Completion Date and the final acceptance date (Section 1-05.12). The reservation by the Contracting Agency to unilaterally accept the Contract will apply to Contracts that are Physically Completed in accordance with Section 1-08.5, or for Contracts that are terminated in accordance with Section 1-08.10. Unilateral final acceptance of the Contract by the Contracting Agency does not in any way relieve the Contractor of their responsibility to comply with all Federal, State, tribal, or local laws, ordinances, and regulations that affect the Work under the Contract.

Payment to the Contractor of partial estimates, final estimates, and retained percentages shall be subject to controlling laws.

1-09.9 Payments

(November 20, 2020 Lacey GSP)

Section 1-09.9 is supplemented with the following:

Progress payments and the Final Contract Voucher Certification (FCVC) will be transmitted electronically to the Contractor for signature. The Contractor shall apply all signatures electronically using the software provided by the Contracting Agency. Within 21 days of execution of the Contract, the Contractor shall submit the names, email addresses, and text-message capable phone numbers for the authorized signers and shall bear the name, phone number and email of the officer providing this authorization. Delegation of authority to sign progress payments and the FCVC shall be by the officer authorized to sign the Contract.

1-09.11(3) Time Limitation and Jurisdiction
(November 30, 2018 APWA GSP)

Revise this section to read:

For the convenience of the parties to the Contract it is mutually agreed by the parties that any claims or causes of action which the Contractor has against the Contracting Agency arising from the Contract shall be brought within 180 calendar days from the date of final acceptance (Section 1-05.12) of the Contract by the Contracting Agency; and it is further agreed that any such claims or causes of action shall be brought only in the Superior Court of the county where the Contracting Agency headquarters is located, provided that where an action is asserted against a county, RCW 36.01.050 shall control venue and jurisdiction. The parties understand and agree that the Contractor's failure to bring suit within the time period provided, shall be a complete bar to any such claims or causes of action. It is further mutually agreed by the parties that when any claims or causes of action which the Contractor asserts against the Contracting Agency arising from the Contract are filed with the Contracting Agency or initiated in court, the Contractor shall permit the Contracting Agency to have timely access to any records deemed necessary by the Contracting Agency to assist in evaluating the claims or action.

1-09.13(1) General
(January 19, 2022 APWA GSP)

Revise this section to read:

Prior to seeking claims resolution through arbitration or litigation, the Contractor shall proceed in accordance with Sections 1-04.5 and 1-09.11. The provisions of Sections 1-04.5 and 1-09.11 must be complied with in full as a condition precedent to the Contractor's right to seek claim resolution through binding arbitration or litigation.

Any claims or causes of action which the Contractor has against the Contracting Agency arising from the Contract shall be resolved, as prescribed herein, through binding arbitration or litigation.

The Contractor and the Contracting Agency mutually agree that those claims or causes of action which total $1,000,000 or less, which are not resolved by mediation, shall be resolved through litigation unless the parties mutually agree in writing to resolve the claim through binding arbitration.

The Contractor and the Contracting Agency mutually agree that those claims or causes of action in excess of $1,000,000, which are not resolved by mediation, shall be resolved through litigation unless the parties mutually agree in writing to resolve the claim through binding arbitration.

1-09.13(3)A Arbitration General
(January 19, 2022 APWA GSP)

Revise the third paragraph to read:

The Contracting Agency and the Contractor mutually agree to be bound by the decision of the arbitrator, and judgment upon the award rendered by the arbitrator may be entered in the Superior Court of the county in which the Contracting Agency's headquarters is located, provided that where claims subject to arbitration are asserted against a county, RCW 36.01.050 shall control venue and jurisdiction of the Superior Court. The decision of the arbitrator and the specific basis for the decision shall be in writing. The arbitrator shall use the Contract as a basis for decisions.

1-09.13(4) Venue for Litigation
(January 19, 2022 APWA GSP)

Revise this section to read:

Litigation shall be brought in the Superior Court of the county in which the Contracting Agency's headquarters is located, provided that where claims are asserted against a county, RCW 36.01.050 shall control venue and jurisdiction of the Superior Court. It is mutually agreed by the parties that when litigation occurs, the Contractor shall permit the Contracting Agency to have timely access to any records deemed necessary by the Contracting Agency to assist in evaluating the claims or action.

1-10 TEMPORARY TRAFFIC CONTROL

1-10.1 General

(January 3, 2017 Lacey GSP)

Supplement this section with the following:

Delays to traffic shall be held to a minimum. There shall be no restrictions or interruptions to traffic on Saturdays, Sundays or Holidays. In addition, there shall be no restrictions or interruptions to traffic after 12:00 noon on the day prior to a holiday or holiday weekend.

There shall be no delay to medical, fire, police, or other emergency vehicles with flashing lights or sirens. The Contractor shall alert all flaggers and personnel of this requirement.

The Contractor shall be responsible for removing the permanent traffic signs, as deemed necessary by the Engineer, and shall install and maintain any temporary signs necessary for the safety of the public.

The Contractor shall maintain pedestrian access at all times, without having pedestrians enter the travel lane.

All lane restrictions shall be held to a minimum time and length. Lane closures shall comply with the traffic control plans and these specifications. If the Contractor wishes to deviate from the plans, the Contractor shall submit a traffic control plan to the Engineer, at no additional cost, that complies with the MUTCD, and the Traffic Control Plans, for approval by the Engineer within (5) five working days before the proposed lane closure. If the Engineer determines that lane restrictions are causing congestion, the Contractor will be required to open any lanes, as determined by the Engineer, until the congestion is eliminated.

During non-working hours, Saturdays, Sundays, and Holidays, the Contractor shall keep all lanes open to traffic throughout the limits of the project with the lane and sidewalk area completely clear of all material, tools, personnel, and equipment as directed by the Engineer.

1-10.4(3) Reinstating Unit Items with Lump Sum Traffic Control

(August 2, 2004 WSDOT GSP)

Section 1-10.4(3) is supplemented with the following:

The bid proposal contains the item "Project Temporary Traffic Control," lump sum and the additional temporary traffic control items listed below. The provisions of Section 1-10.4(1), Section 1-10.4(3), and Section 1-10.5(3) shall apply.

"Flaggers", per hour.
"Portable Changeable Message Sign", per hour.

2-01 CLEARING, GRUBBING, AND ROADSIDE CLEANUP

2-01.1 Description

(October 16, 2009 Lacey GSP)

Supplement this section with the following:

The City of Lacey is a Tree City USA, and has deemed it necessary to protect all trees to the best of their ability. Only the trees that are evaluated by a certified Arborist as being diseased or detrimental to the project shall be removed as shown in the plans. The Contractor shall conduct a site review noting all trees within the construction zone prior to submitting a bid. Ease of construction, spoils, or stockpiling needs shall not justify tree removal.

Disposal of all organic waste shall be by Disposal Method No. 2. Disposal Method No. 1 and No. 3 will not be permitted in this contract. The City of Lacey encourages recycling of organic material at a certified organic recycling center.

The Contractor shall take all precautions necessary to protect the public, property, trees, and natural vegetation from harm. Any damage to utilities or other structures on public right-of-way or private property shall be restored by the Contractor or authorized agent at the Contractor's expense.

2-01.5 Payment

(October 16, 2009 Lacey GSP)

Modify this section with the following:

The unit contract price per acre or lump sum for "Clearing and Grubbing" shall be full pay for all work described in this section including "Roadside Cleanup". If no bid item for "Clearing and Grubbing" is included in the proposal, any work described in this section shall be incidental to the project.

2-02 REMOVAL OF STRUCTURES AND OBSTRUCTIONS

2-02.1 Description

(**** Lacey)**

Supplement this section with the following:

The following items plus all materials resulting from incidental work including clearing; grubbing and roadside cleanup shall be removed from the job site, disposed of in a waste site or when noted on the plans, delivered to the City.

This work consists of but shall not be limited to the following items:

Pavement	Lane Markings (Buttons, Paint, Plastic, RPM)
Sidewalk	Concrete
Curb and Gutter	Fencing
Manholes	Refuse
Water and Sewer Pipe	Fire Hydrants
Water Valves and Fittings	Valve Boxes
Meter Boxes & Setters	Meter Vault

Sampling Station	Roadside Cleanup
Trees and Stumps	Blow-off and Air release valves

2-02.2 Video

(March 3, 2022 Lacey GSP)

Add the following new section:

The Contractor shall provide pre-construction video of the existing conditions for the construction area including all easements, streets, alleys, and driveways within the project area. Further, video shall include existing drainage, driveways, sidewalks, and other frontage improvements. The Contractor shall also provide pre-construction video of the existing conditions of each face of an existing structure (houses, garages, sheds, fences, etc.), within 30 feet of the construction area.

The Contractor shall provide a copy of the video, in electronic format, to the City prior to any construction.

All costs for providing and furnishing the pre-construction video shall be considered incidental to the Project and no other payment will be allowed.

2-02.3 Construction Requirements

(*** Lacey GSP)**

Supplement this section with the following:

Unless otherwise noted, catch basins and manholes shall be removed entirely.

Where shown on the plans, catch basins, manholes, and inlets may be removed to a point 5 feet below the subgrade and the cavity filled with gravel borrow compacted to 95% of maximum density. Where existing pipe is to be abandoned, the Contractor shall seal the pipe with commercial concrete.

The removal of an existing hydrant assembly shall consist of turning off the gate valve, removing the existing hydrant assembly, valve box and anything else that is within 2' of the finished grade. Cap or plug the existing valve after the existing hydrant assembly has been removed. The Contractor shall return the existing fire hydrant assembly to the City. If the existing hydrant is damaged due to the Contractor's negligence, the Contractor shall replace the hydrant with a new hydrant.

The removal of the existing water sampling station shall consist of turning off the gate valve, removing the existing sampling station, valve box and anything else that is within 2' of the finished grade. Cap or plug the existing valve after the existing sampling station has been removed. The Contractor shall return the existing sampling station to the City. If the existing sampling station is damaged due to the Contractor's negligence, the Contractor shall replace the hydrant with a new hydrant.

The Contractor shall remove all existing water meters, boxes and setters associated with new service connections after service lines have been switched over to new meter locations. The Contractor shall return all salvaged material to City as directed by the Engineer.

The Contractor shall use due care and caution during removal and transportation of the salvaged material so that no damage occurs to the salvaged material. Any damage caused by the Contractor shall be deducted from the amount due.

2-02.3(3) Removal of Pavement, Sidewalks, Curbs, and Gutters
(October 16, 2016 Lacey GSP)

Supplement this section with the following:

In removing pavement, sidewalks, and curbs, the Contractor shall:

1. Mark all cut lines in the field and have the Engineer approve them prior to commencing cutting operations. The Engineer reserves the right to adjust removal to the nearest construction joint.

2. Make a vertical saw cut between any existing pavement, sidewalk, or curb that is to remain and the portion to be removed.

3. All sawcuts shall be continuous and made with saws designed specifically for this purpose; no skip cutting, wheel cutting, or jack hammering will be allowed unless given prior approval by the Engineer.

4. Replace at no expense to the Contracting Agency any pavement designated to remain that is damaged during the removal of other pavement. All damaged sidewalks and curbs shall be replaced to the nearest existing joint.

5. Haul all broken–up pieces of pavement, sidewalks, and curbs to an off-project disposal site.

All transitions to existing asphalt or cement concrete driveways, parking lots, curb and gutter and walkways shall be vertically sawcut full-depth with straight, uniform edges. Existing asphalt pavement roadway edge may be cut with a wheel, provided the wheel cut is full depth and no damage occurs to the pavement which is to remain. Neither impact tools nor pavement breakers may be used for trench crossing of existing pavement. Trench crossing of existing pavement shall be vertically sawcut.

When sawcutting the existing roadway is needed to widen the road to perform excavation, the Contractor shall take extra precaution to make a neat, uniform cut, and shall sawcut pavement to full depth, regardless of number of passes necessary. Compaction of asphalt near the sawcut is critical and a vertical, neat line sawcut is required. If in the opinion of the Engineer, the cut is not satisfactory due to Contractor's workmanship or equipment, or if the sawcut becomes damaged and irregular, the Contractor shall fix the problem to the satisfaction of the Engineer, at Contractor's own expense.

Existing asphalt pavement shall be expected to have a minimum of 6 inch thickness. No additional compensation for saw cutting shall be considered unless the depth of the total pavement is greater than 12 inches.

The Contractor may grind the existing pavement in lieu of excavation and haul. Spoils from grinding can be stockpiled and used and paid for per sections 4-04.3(12), 4-04.4 and 4-04.5. If the Contractor elects to grind and stockpile the existing pavement, all costs and expenses necessary to furnish all labor, equipment, tools and materials shall be incidental to other bid items and no additional compensation will be allowed.

2-02.5 Payment
(March 18, 2015 Lacey GSP)

Delete this section and replace with the following:

"Removal of Structures and Obstructions", lump sum.

The lump sum contract price for these bid items shall be full compensation for all labor, equipment and materials necessary to complete the requirements of this section.

2-03 ROADWAY EXCAVATION AND EMBANKMENT

2-03.3(7)C Contractor-Provided Disposal Site

(October 16, 2009 Lacey GSP)

Supplement this section with the following:

The Contracting Agency has not provided a waste site for disposal of excess materials and debris.

2-03.3(14)D Compaction and Moisture Control Tests

(March 3, 2022 Lacey GSP Option A)

Supplement this section with the following:

The Contractor shall be responsible for scheduling and coordinating with the City's testing laboratory. No adjustment to the contract price or time for delays will be made if the contractor fails to schedule the needed testing.

The Contractor shall schedule a minimum of one density test for backfill for each 500 CY placed. In addition, the Contractor shall provide a minimum of one density test for every 1,000 LF (per layer) of subgrade and crushed surfacing material placed.

For materials placed in a non-structural application outside the roadway prism such as slope flattening or shoulder dressing, acceptance for compaction may be based on visual inspection to the satisfaction of the engineer.

2-03.3(14)E Unsuitable Foundation Excavation

(October 29, 2010 Lacey GSP)

Supplement this section with the following:

The Contractor shall excavate to stable material and backfill in lifts with Crushed Surfacing Base Course or Gravel Borrow as identified by the Engineer.

If the Engineer identifies additional excavation to a depth greater than what is shown in the Plans, it shall be paid for by the bid item "Unsuitable Foundation Excavation Incl. Haul". If the Contractor excavates to a depth beyond that shown in the Plans without the Engineer's approval, all costs shall be at the Contractor's expense.

2-03.4 Measurement

(October 29, 2010 Lacey GSP)

Supplement this section with the following:

The quantity of the following items to be paid for on this project shall be quantities shown on the bid proposal:

"Roadway Excavation Incl. Haul", per cubic yard.

The quantities in the bid proposal are based on a computer generated earthwork calculated on the existing ground survey. The quantities do not incorporate expansion, clearing and grubbing, or construction methodology. These values are listed for the convenience of the Contractor in determining the volume of work involved as calculated by the Engineer and are not guaranteed to be accurate. The prospective bidders shall verify these quantities prior to submitting the bid. A digital copy of the survey is available to prospective bidders from the Contracting Agency at the Contractor's request. No adjustments will be made in these quantities although the actual quantities may deviate from those listed.

2-05 TRENCH SAFETY SYSTEM

(October 16, 2009 Lacey GSP)

Add the following new section:

2-05.1 Description

This work consists of furnishing, utilizing, moving, and maintaining a trench safety system.

2-05.3 Construction Requirements

The Contractor shall comply with all applicable state laws, OSHA, WISHA requirements, and Department of Labor and Industries regulations governing trench excavation and pipe laying.

If extra excavation is used in lieu of, or in addition to shoring, cribbing, trench shields, or trench boxes, and select backfill material is required in the trench zone, then select backfill shall be used in the extra excavation zone.

2-05.4 Measurement

Trench safety system shall be paid for per lump sum regardless of the type, size and quantity used.

2-05.5 Payment

The lump sum contract price for "Trench Safety System" shall be full compensation for all labor, tools, equipment, and materials necessary to comply with the requirements stated above.

2-07 WATERING

2-07.3 Construction Requirements

(October 16, 2009 Lacey GSP)

Supplement this section with the following:

If the Contractor anticipates the use of City water, the Contractor shall apply for a water meter through the City of Lacey. Any damage rendered to the meter shall be repaired or replaced by the Contracting Agency and those costs deducted from monies due to the Contractor. All water used shall be metered and used sparingly for the entire length of the project. The Contractor will not be charged for water used on the project.

The Contractor shall use the water to keep the project site clean and to control dust during and after construction hours as determined by the Engineer.

2-07.4 Measurement
(October 16, 2009 Lacey GSP)

Delete and replace this section with the following:

The Contractor shall apply for a construction meter through the Contracting Agency. All water used shall be measured with the Contracting Agency supplied meter.

2-07.5 Payment
(October 16, 2014 Lacey GSP)

Delete and replace this section with the following:

The Contractor will not be charged for water used on this project. A construction meter will also be provided free of charge. Any costs to repair meters damaged by the Contractor shall be recovered from monies due the Contractor.

All costs to supply tank trucks, and apply water as directed by the Engineer shall be considered incidental to the project and no other payment will be allowed.

2-08 DUST CONTROL
(October 16, 2009 Lacey GSP)

Add the following new sections:

2-08.1 Description

This work consists of furnishing and applying Magnesium Chloride solution for dust control as the Engineer requires.

2-08.2 Materials

Magnesium Chloride compound shall be combined with water per the manufacturer's specifications for dust control applications.

2-08.3 Construction Requirements

The Contractor shall apply magnesium chloride solution by means of tank trucks equipped with spray bars. Spray controls shall ensure that the solution flows evenly and in the amounts required by the manufacturer's recommendation and directed by the Engineer.

2-08.4 Measurement

"Dust Control" per MGAL, shall be measured by tanks or tank trucks of known capacity or by meters approved by the Engineer. The Contractor shall supply and install any meters at no expense to the Contracting Agency.

2-08.5 Payment

"Dust Control", per MGAL.

The unit contract price per MGAL for "Dust Control" shall be full pay for all labor, materials, tools, and equipment necessary to furnish, haul, and apply the magnesium chloride solution.

2-13 PRIVATE UTILITY COORDINATION AND CONSTRUCTION
(January 3, 2016 Lacey GSP)

Add the following new sections:

2-13.1 Description
(January 3, 2016 Lacey GSP)

The Contractor shall adjust existing PSE Gas Valve Boxes to finished grade.

2-13.3(6) Gas Valve Box Adjustment
(October 29, 2010 Lacey GSP)

All existing gas valve boxes shall be adjusted to line and grade staked in the field or otherwise designated by the Engineer. The Contractor shall be responsible for coordination with Puget Sound Energy (PSE) for replacement of the existing gas valve boxes and lids if they are determined to be non-adjustable. PSE will provide new valve boxes and lids if the existing is determined to be unusable by the Engineer.

2-13.4 Measurement
(January 3, 2011 Lacey GSP)

Adjust Gas Valve Box shall be measured per each.

2-13.5 Payment
(October 29, 2010 Lacey GSP)

The unit contract price per each for "Adjust Gas Valve Box" shall be full pay for all labor, materials, tools, and equipment, necessary to remove, replace and adjust gas valve box to line and grade staked in the field. This work is dependent on Puget Sound Energy's acceptance of the bid. The Engineer reserves the right to delete this work. No extra compensation will be permitted if the Engineer elects to delete this work.

2-14 DEWATERING
(November 20, 2020 Lacey GSP)

Add the following new sections:

2-14.1 Description

This work consists of furnishing all labor, tools, equipment, and materials required for dewatering as the work and Engineer requires to maintain a dry excavation by diverting or removing both groundwater and surface water.

2-14.3 Construction Requirements

Excavations must be kept free of water. The Contractor must control surface run-off and groundwater so as to prevent entry or collection of water in excavations and to maintain the undisturbed state of the native subgrade.

The Contractor must submit the method and installation of the dewatering system to the Engineer at least 20 working days prior to installation of dewatering systems.

Disposal of the water must not cause injury to public or private property, or nuisance to the public. Sufficient pumping and power equipment in good working condition must be available at all times for all emergencies, including power outage. Competent personnel must be available at all times for the operation of the dewatering system. Water discharge must comply with required permits from the City of Lacey and/or Thurston County, state and federal agencies as appropriate, and be conducted per Section 8-01.

2-14.5 Payment

"Dewatering", by force account as provided in Section 1-09.6. "Dewatering" shall be full pay for submitting a Dewatering Plan, furnishing all labor, tools, equipment, and materials required for dewatering, all Work required during construction and to keep the work area dry during construction, and backfilling as specified. This shall also include removal of all dewatering equipment and materials, backfill and restoration, and any additional worked deemed necessary by the Engineer. To provide a common proposal for all bidders, the Contracting Agency has entered an amount in the Proposal to become a part of the Contractor's total Bid.

5-04 HOT MIX ASPHALT

5-04.1 Description

(July 18, 2018 APWA GSP)

Delete this entire section and replace it with the following:

This Work shall consist of providing and placing one or more layers of plant-mixed hot mix asphalt (HMA) on a prepared foundation or base in accordance with these Specifications and the lines, grades, thicknesses, and typical cross-sections shown in the Plans. The manufacture of HMA may include warm mix asphalt (WMA) processes in accordance with these Specifications. WMA processes include organic additives, chemical additives, and foaming.

HMA shall be composed of asphalt binder and mineral materials as may be required, mixed in the proportions specified to provide a homogeneous, stable, and workable mixture.

5-04.2 Materials

(October 30, 2018 Lacey GSP)

Delete this entire section and replace it with the following:

Materials shall meet the requirements of the following sections:

Asphalt Binder	9-02.1(4)
Cationic Emulsified Asphalt	9-02.1(6)
Anti-Stripping Additive	9-02.4
HMA Additive	9-02.5
Aggregates	9-03.8

Recycled Asphalt Pavement 9-03.8(3)B
Mineral Filler 9-03.8(5)
Recycled Material 9-03.21
Portland Cement 9-01
Sand 9-03.1(2).
(As noted in 5-04.3(5)C for crack sealing)
Joint Sealant 9-04.2
Foam Backer Rod 9-04.2(3)A

The Contract documents may establish that the various mineral materials required for the manufacture of HMA will be furnished in whole or in part by the Contracting Agency. If the documents do not establish the furnishing of any of these mineral materials by the Contracting Agency, the Contractor shall be required to furnish such materials in the amounts required for the designated mix. Mineral materials include coarse and fine aggregates, and mineral filler.

Reclaimed/recycled asphalt pavement and/or shingles (RAP and/or RAS) will not be allowed on this project.

The grade of asphalt binder shall be as required by the Contract. Blending of asphalt binder from different sources is not permitted.

Production of aggregates shall comply with the requirements of Section 3-01.
Preparation of stockpile site, the stockpiling of aggregates, and the removal of aggregates from stockpiles shall comply with the requirements of Section 3-02.

5-04.2(2) Mix Design – Obtaining Project Approval
(July 18, 2018 APWA GSP)

No paving shall begin prior to the approval of the mix design by the Engineer.

Nonstatistical evaluation will be used for all HMA not designated as Commercial HMA in the contract documents.

Commercial evaluation will be used for Commercial HMA and for other classes of HMA in the following applications: sidewalks, road approaches, ditches, slopes, paths, trails, gores, prelevel, and pavement repair. Other nonstructural applications of HMA accepted by commercial evaluation shall be as approved by the Project Engineer. Sampling and testing of HMA accepted by commercial evaluation will be at the option of the Project Engineer. The Proposal quantity of HMA that is accepted by commercial evaluation will be excluded from the quantities used in the determination of nonstatistical evaluation.

Nonstatistical Mix Design. Fifteen days prior to the first day of paving the contractor shall provide one of the following mix design verification certifications for Contracting Agency review;

- The WSDOT Mix Design Evaluation Report from the current WSDOT QPL, or one of the mix design verification certifications listed below.
- The proposed HMA mix design on WSDOT Form 350-042 with the seal and certification (stamp & sig-nature) of a valid licensed Washington State Professional Engineer.
- The Mix Design Report for the proposed HMA mix design developed by a qualified City or County laboratory that is within one year of the approval date.**

The mix design shall be performed by a lab accredited by a national authority such as Laboratory Accredita-tion Bureau, L-A-B for Construction Materials Testing, The Construction Materials

Engineering Council (CMEC's) ISO 17025 or AASHTO Accreditation Program (AAP) and shall supply evidence of participation in the AASHTO: resource proficiency sample program.

Mix designs for HMA accepted by Nonstatistical evaluation shall;

- Have the aggregate structure and asphalt binder content determined in accordance with WSDOT Standard Operating Procedure 732 and meet the requirements of Sections 9-03.8(2), except that Hamburg testing for ruts and stripping are at the discretion of the Engineer, and 9-03.8(6).
- Have anti-strip requirements, if any, for the proposed mix design determined in accordance with AASHTO T 283 or T 324, or based on historic anti-strip and aggregate source compatibility from previous WSDOT lab testing.

At the discretion of the Engineer, agencies may accept verified mix designs older than 12 months from the original verification date with a certification from the Contractor that the materials and sources are the same as those shown on the original mix design.

Commercial Evaluation Approval of a mix design for "Commercial Evaluation" will be based on a review of the Contractor's submittal of WSDOT Form 350-042 (For commercial mixes, AASHTO T 324 evaluation is not required) or a Mix Design from the current WSDOT QPL or from one of the processes allowed by this section. Testing of the HMA by the Contracting Agency for mix design approval is not required.

For the Bid Item Commercial HMA, the Contractor shall select a class of HMA and design level of Equivalent Single Axle Loads (ESAL's) appropriate for the required use.

5-04.2(2) Mix Design – Obtaining Project Approval

(January 3, 2011 WSDOT GSP)

Section 5-04.2(2) is supplemented with the following

ESAL's
The number of ESAL's for the design and acceptance of the HMA shall be 1 million.

5-04.2(2)A Changes to the Job Mix Formula

Delete this section

5-04.2(2)B Using Warm Mix Asphalt Processes

(July 18, 2018 APWA GSP)

The Contractor may elect to use additives that reduce the optimum mixing temperature or serve as a compaction aid for producing HMA. Additives include organic additives, chemical additives and foaming processes. The use of Additives is subject to the following:

- Do not use additives that reduce the mixing temperature more than allowed in Section 5-04.3(6) in the production of mixtures.
- Before using additives, obtain the Engineer's approval using WSDOT Form 350-076 to describe the proposed additive and process.

5-04.2(3) Fiber Reinforced HMA

(April 2, 2018 Lacey GSP)

Add the following new section:

Aramid fibers will be added to the HMA mix at a minimum dosage 2.1 ounces of aramid fibers per (1) ton of asphalt.

Reinforcing fibers shall be one of the following products:

1. Forti-Fi Fiber Reinforcement by Alliance Geosynthetics:

Aramid-polyolefin fiber mix at a dosage of (1) pound of product per (1) ton of asphalt.

2. ACE Fiber Reinforcement:

Pure aramid fiber with wax treatment at a dosage of 4.2 ounces of product per (1) ton of asphalt.

3. Non-aramid fiber blends will not be considered acceptable alternatives. If an alternate aramid-based fiber blend is proposed, the proposed alternate must meet the same performance testing requirements as one of the products listed above and be approved by the Engineer. Indirect Tensile Strength and Aramid dispersion State Ratio tests are required. All testing must be performed by an AASHTO accredited laboratory or nationally recognized university testing lab.

No modifications to the HMA job mix formula are required. Submit product data sheet and manufacturer's instructions and general recommendations to the Engineer for approval.

Store aramid product in a dry environment and do not allow it to be in contact with moisture.

Aramid fibers shall meet the following properties:

Property	Measure
Material	Aramid
Form	Monofilament
Length	0.75 inches (+/- 10%)
Specific Gravity	1.44
Minimum Tensile Strength	400,000 psi

Polyolefin fibers shall meet the following properties:

Property	Measure
Material	Polyolefin
Form	Serrated
Length	0.75 inches (+/- 10%)
Specific Gravity	.91

Fiber reinforcing shall be mixed with the asphalt per the fiber manufacturer's instructions. The fiber manufacturer's representative shall be on site during mixing and production. This requirement can be waived if fiber manufacturer and asphalt producer can supply evidence of manufacturer's brand of fiber being successfully produced a minimum of three times at the asphalt plant to be used for the project.

Visually observe the reinforced HMA from the at the plant. Collect a small sample from the discharge chute during the first 50 tons of production. If there are one or more undistributed fiber clips or bundles, adjust mixing operations per manufacturer's recommendations to eliminate fiber bundles. If undistributed fiber clips or bundles cannot be eliminated, cease production until a remedy is identified.

Visually observe the reinforced HMA in first three trucks and every tenth truck thereafter at the point of discharge. Observation shall include using a shovel or other device. Look for proper distribution of aramid fibers and make mixing adjustments if needed. Remove any observed fiber balls from placed

mixture and adjust operations per the manufacturer's recommendation to eliminate future fiber ball development.

Fiber Supply System

Introduce the aramid product as follows:

Batch Plant:
When a batch type plant is used, add the aramid product dosage to the aggregate in the weigh hopper. Increase the batch dry and wet mixing times to ensure the fibers are uniformly distributed prior to the injection of asphalt cement into the mixer.

Drum Plant:
1. Inject fibers through the RAP collar by placing fibers on the RAP belt or by feeding them with an automated dosing/blower tube system. Rate the feeding of fibers with the rate the plant is producing asphalt mix, and add to the mixing drum in a continuous way. If there is any evidence of fiber balls at the discharge chute, increase the mixing time and/or temperature or change the angle of the fiber feeder line to increase dry mixing time.

2. For manual feeding (allowed on Forti-Fi Fiber Reinforcement product only), place fibers on the RAP belt at intervals based on the plant production rate. Fibers should be contained in individual dosage packaging, such as a plastic bag which will quickly melt/dissolve in the drum, to protect the fibers from rain or wind while on the RAP belt and allow quick, accurate feeding by one person.

3. When using a blower tube/automated dosing system, add fibers continuously and in a steady uniform manner. Provide automated proportioning and control delivery within ±10% of the mass of the fibers required. Perform an equipment calibration to the satisfaction of the fiber manufacturer's representative to show that the fiber is being accurately metered and uniformly distributed into the mix.

Include the following with the blower tube/automated dosing system:

- Low level indicators
- No-flow indicators
- A printout of feed rate status in pounds/minute
- A section of transparent pipe in the fiber supply line for observing consistency of flow or feed.
- Manufacturer's representative's approval of fiber addition system

Mix the aramid fiber with the heated aggregate and RAP longer, if needed, to allow thorough distribution of aramid fibers at the end of the mixing process and to promote asphalt coating of individual strands of aramid fiber.

5-04.3 Construction Requirements

5-04.3(2) Paving Under Traffic
(April 2, 2018 Lacey GSP)

Delete this section and replace it with the following:

When the Roadway being paved is open to traffic, the requirements of this Section shall apply.
The Contractor shall keep intersections open to traffic at all times except when paving the intersection or paving across the intersection. During such time, and provided that there has been an advance warning to the public, the intersection may be closed for the minimum time required to place and compact the

mixture. Before closing an intersection, advance warning signs shall be placed and signs shall also be placed marking the detour or alternate route.

In hot weather, the Engineer may require the application of water to the pavement to accelerate the finish rolling of the pavement and to shorten the time required before reopening to traffic.

During paving operations, temporary pavement markings shall be maintained throughout the project. Temporary pavement markings shall be installed on the Roadway prior to opening to traffic. Temporary pavement markings shall be in accordance with Section 8-23.

The Contractor shall remove all pavement markings including paint, tape, thermoplastic and RPM's.

All costs in connection with performing the Work associated with these requirements shall be included in the unit Contract prices for the various Bid items involved in the Contract.

5-04.3(3)Equipment

5-04.3(3)A Mixing Plant
(July 18, 2018 APWA GSP)

Delete this section and replace it with the following:

Plants used for the preparation of HMA shall conform to the following requirements:

1. Equipment for Preparation of Asphalt Binder – Tanks for the storage of asphalt binder shall be equipped to heat and hold the material at the required temperatures. The heating shall be accomplished by steam coils, electricity, or other approved means so that no flame shall be in contact with the storage tank. The circulating system for the asphalt binder shall be designed to ensure proper and continuous circulation during the operating period. A valve for the purpose of sampling the asphalt binder shall be placed in either the storage tank or in the supply line to the mixer.

2. Thermometric Equipment – An armored thermometer, capable of detecting temperature ranges expected in the HMA mix, shall be fixed in the asphalt binder feed line at a location near the charging valve at the mixer unit. The thermometer location shall be convenient and safe for access by Inspectors. The plant shall also be equipped with an approved dial-scale thermometer, a mercury actuated thermometer, an electric pyrometer, or another approved thermometric instrument placed at the discharge chute of the drier to automatically register or indicate the temperature of the heated aggregates. This device shall be in full view of the plant operator.

3. Heating of Asphalt Binder – The temperature of the asphalt binder shall not exceed the maximum recommended by the asphalt binder manufacturer nor shall it be below the minimum temperature required to maintain the asphalt binder in a homogeneous state. The asphalt binder shall be heated in a manner that will avoid local variations in heating. The heating method shall provide a continuous supply of asphalt binder to the mixer at a uniform average temperature with no individual variations exceeding 25°F. Also, when a WMA additive is included in the asphalt binder, the temperature of the asphalt binder shall not exceed the maximum recommended by the manufacturer of the WMA additive.

4. Sampling and Testing of Mineral Materials – The HMA plant shall be equipped with a mechanical sampler for the sampling of the mineral materials. The mechanical sampler shall meet the requirements of Section 1-05.6 for the crushing and screening operation. The

Contractor shall provide for the setup and operation of the field testing facilities of the Contracting Agency as provided for in Section 3-01.2(2).

5. Sampling HMA – The HMA plant shall provide for sampling HMA by one of the following methods:

    a. A mechanical sampling device attached to the HMA plant.
    b. Platforms or devices to enable sampling from the hauling vehicle without entering the hauling vehicle.

5-04.3(3)B Hauling Equipment
(July 18, 2018 APWA GSP)

Delete this section and replace it with the following:

Trucks used for hauling HMA shall have tight, clean, smooth metal beds and shall have a cover of canvas or other suitable material of sufficient size to protect the mixture from adverse weather. Whenever the weather conditions during the work shift include, or are forecast to include, precipitation or an air temperature less than 45°F or when time from loading to unloading exceeds 30 minutes, the cover shall be securely attached to protect the HMA.

The contractor shall provide an environmentally benign means to prevent the HMA mixture from adhering to the hauling equipment. Excess release agent shall be drained prior to filling hauling equipment with HMA. Petroleum derivatives or other coating material that contaminate or alter the characteristics of the HMA shall not be used. For live bed trucks, the conveyer shall be in operation during the process of applying the release agent.

5-04.3(3)C Pavers
(July 18, 2018 APWA GSP)

Delete this section and replace it with the following:

HMA pavers shall be self-contained, power-propelled units, provided with an internally heated vibratory screed and shall be capable of spreading and finishing courses of HMA plant mix material in lane widths required by the paving section shown in the Plans.

The HMA paver shall be in good condition and shall have the most current equipment available from the manufacturer for the prevention of segregation of the HMA mixture installed, in good condition, and in working order. The equipment certification shall list the make, model, and year of the paver and any equipment that has been retrofitted.

The screed shall be operated in accordance with the manufacturer's recommendations and shall effectively produce a finished surface of the required evenness and texture without tearing, shoving, segregating, or gouging the mixture. A copy of the manufacturer's recommendations shall be provided upon request by the Contracting Agency. Extensions will be allowed provided they produce the same results, including ride, density, and surface texture as obtained by the primary screed. Extensions without augers and an internally heated vibratory screed shall not be used in the Traveled Way.

When specified in the Contract, reference lines for vertical control will be required. Lines shall be placed on both outer edges of the Traveled Way of each Roadway. Horizontal control utilizing the reference line will be permitted. The grade and slope for intermediate lanes shall be controlled automatically from reference lines or by means of a mat referencing device and a slope control device. When the finish of the grade prepared for paving is superior to the established tolerances and when, in the opinion of the

Engineer, further improvement to the line, grade, cross-section, and smoothness can best be achieved without the use of the reference line, a mat referencing device may be substituted for the reference line. Substitution of the device will be subject to the continued approval of the Engineer. A joint matcher may be used subject to the approval of the Engineer. The reference line may be removed after the completion of the first course of HMA when approved by the Engineer. Whenever the Engineer determines that any of these methods are failing to provide the necessary vertical control, the reference lines will be reinstalled by the Contractor.

The Contractor shall furnish and install all pins, brackets, tensioning devices, wire, and accessories necessary for satisfactory operation of the automatic control equipment.

If the paving machine in use is not providing the required finish, the Engineer may suspend Work as allowed by Section 1-08.6. Any cleaning or solvent type liquids spilled on the pavement shall be thoroughly removed before paving proceeds.

5-04.3(3)D Material Transfer Device or Material Transfer Vehicle

(April 2, 2018 Lacey GSP, Option 2)

Delete this section and replace it with the following:

Use a material transfer device (MTD) or material transfer vehicle (MTV) to deliver the HMA from the hauling equipment to the paving machine for any lift in (or partially in) the top .30 feet of the pavement unless directed otherwise by the Engineer.

Use of an MTD/V is not required in the following locations:

- Irregularly shaped and minor areas
- Within the roundabout

Where an MTD/V is required by the contract, the Engineer may approve paving without an MTD/V, at the request of the Contractor. The Engineer will determine if an equitable adjustment in cost or time is due.

The MTD/V shall mix the HMA after delivery by the hauling equipment and prior to laydown by the paving machine. Mixing of the HMA shall be sufficient to obtain a uniform temperature throughout the mixture. If a windrow elevator is used, the length of the windrow may be limited in urban areas or through intersections, at the discretion of the Engineer.

To be approved for use, an MTV:

1. Shall be self-propelled vehicle, separate from the hauling vehicle or paver.
2. Shall not be connected to the hauling vehicle or paver.
3. May accept HMA directly from the haul vehicle or pick up HMA from a windrow.
4. Shall mix the HMA after delivery by the hauling equipment and prior to placement into the paving machine.
5. Shall mix the HMA sufficiently to obtain a uniform temperature throughout the mixture.

To be approved for use, an MTD:

1. Shall be positively connected to the paver.
2. May accept HMA directly from the haul vehicle or pick up HMA from a windrow.
3. Shall mix the HMA after delivery by the hauling equipment and prior to placement into the paving machine.

4. Shall mix the HMA sufficiently to obtain a uniform temperature throughout the mixture.

5-04.3(3)E Rollers
(July 18, 2018 APWA GSP)

Delete this section and replace it with the following:

Rollers shall be of the steel wheel, vibratory, oscilatory, or pneumatic tire type, in good condition and capable of reversing without backlash. Operation of the roller shall be in accordance with the manufacturer's recommendations. When ordered by the Engineer for any roller planned for use on the project, the Contractor shall provide a copy of the manufacturer's recommendation for the use of that roller for compaction of HMA. The number and weight of rollers shall be sufficient to compact the mixture in compliance with the requirements of Section 5-04.3(10). The use of equipment that results in crushing of the aggregate will not be permitted. Rollers producing pickup, washboard, uneven compaction of the surface, displacement of the mixture or other undesirable results shall not be used.

5-04.3(4) Preparation of Existing Surfaces
(December 19, 2019 Lacey)

Delete this section and replace it with the following:

When the surface of the existing pavement or old base is irregular, the Contractor shall bring it to a uniform grade and cross-section as shown on the Plans or approved by the Engineer.

Preleveling of uneven or broken surfaces over which HMA is to be placed may be accomplished by using an asphalt paver, a motor patrol grader, or by hand raking, as approved by the Engineer.

Compaction of preleveling HMA shall be to the satisfaction of the Engineer and may require the use of small steel wheel rollers, plate compactors, or pneumatic rollers to avoid bridging across preleveled areas by the compaction equipment. Equipment used for the compaction of preleveling HMA shall be approved by the Engineer.

Before construction of HMA on an existing paved surface, the entire surface of the pavement shall be clean. All fatty asphalt patches, grease drippings, and other objectionable matter shall be entirely removed from the existing pavement. All pavements or bituminous surfaces shall be thoroughly cleaned of dust, soil, pavement grindings, and other foreign matter. All holes and small depressions shall be filled with an appropriate class of HMA. The surface of the patched area shall be leveled and compacted thoroughly. Prior to the application of tack coat, or paving, the condition of the surface shall be approved by the Engineer.

A tack coat of asphalt shall be applied to all paved surfaces on which any course of HMA is to be placed or abutted. Tack coat shall be uniformly applied to cover the existing pavement with a thin film of residual asphalt free of streaks and bare spots at a rate between 0.02 and 0.10 gallons per square yard of retained asphalt. The rate of application shall be approved by the Engineer. A heavy application of tack coat shall be applied to all joints. For Roadways open to traffic, the application of tack coat shall be limited to surfaces that will be paved during the same working shift. The spreading equipment shall be equipped with a thermometer to indicate the temperature of the tack coat material.

Equipment shall not operate on tacked surfaces until the tack has broken and cured. If the Contractor's operation damages the tack coat it shall be repaired prior to placement of the HMA.

The tack coat shall be CSS-1, or CSS-1h emulsified asphalt. The CSS-1 and CSS-1h emulsified asphalt may be diluted once with water at a rate not to exceed one part water to one part emulsified asphalt. The

tack coat shall have sufficient temperature such that it may be applied uniformly at the specified rate of application and shall not exceed the maximum temperature recommended by the emulsified asphalt manufacturer

All vegetation including root structures and moss shall be removed in their entirety within the paved areas including adjoining curbs, gutters, and sidewalks. Further, all vegetation overgrowth shall be trimmed and removed 6 inches from back of proposed HMA edge limits as directed by the Engineer.

Driveway preparation shall include saw cutting, cutting, filling, and grading the transitional area required to provide a HMA approach between the edge of pavement and driveway regardless of the existing surface treatment or width. The Engineer shall mark in the field where the asphalt or concrete shall be sawcut. Typical driveway aprons for paved/concrete driveways are 18" unless shown longer on the plans. Typical driveway aprons for gravel driveways are 48" unless shown longer in the plans. All material that must be removed from the driveway shall be hauled and disposed off the project site. All imported material required to grade and compact driveway bases shall be paid for by the unit bid item "Crushed Surfacing Top Course." All driveways shall require preparation. Temporary access shall be provided for all driveways prior to paving. There shall be no additional compensation for those driveways requiring more preparation than others.

Shoulder preparation shall include cutting, filling, and grading the shoulder to ensure a uniform, longitudinal pavement edge. Maximum distance shall be 12 inches from proposed edge of pavement surface to a maximum depth of 6 inches from edge of roadway finish grade. Backfill requirements beyond these limits shall be repaired at the Contractor's expense. All grading within drainage ditches or swales to establish or maintain existing flowlines shall also be included in shoulder preparation.

All excess asphalt joint filler shall be completely removed and all premolded and rubberized joint filler shall be removed to a minimum 1/2 inch below the surface of the existing pavement.

5-04.3(5) Producing/Stockpiling Aggregates, RAP, & RAS

Delete this section and replace it with the following:

5-04.3(5) Producing/Stockpiling Aggregates and RAP

(October 30, 2018 Lacey GSP)

If Recycled asphalt pavement (RAP) is allowed per section 5-04.2, aggregates and RAP shall be stockpiled according to the requirements of Section 3-02. Sufficient storage space shall be provided for each size of aggregate and RAP. Materials shall be removed from stockpile(s) in a manner to ensure minimal segregation when being moved to the HMA plant for processing into the final mixture. Different aggregate sizes shall be kept separated until they have been delivered to the HMA plant.

5-04.3(5)A Stockpiling RAP or RAS for High RAP/Any RAS Mixes

Delete this section

5-04.3(6) Mixing

(October 30, 2018 Lacey GSP)

Delete this section and replace it with the following:

After the required amount of mineral materials, asphalt binder, recycling agent and anti-stripping additives have been introduced into the mixer the HMA shall be mixed until complete and uniform coating of the particles and thorough distribution of the asphalt binder throughout the mineral materials is ensured.

When discharged, the temperature of the HMA shall not exceed the optimum mixing temperature by more than 25°F as shown on the reference mix design report or as approved by the Engineer. Also, when a WMA additive is included in the manufacture of HMA, the discharge temperature of the HMA shall not exceed the maximum recommended by the manufacturer of the WMA additive. A maximum water content of 2 percent in the mix, at discharge, will be allowed providing the water causes no problems with handling, stripping, or flushing. If the water in the HMA causes any of these problems, the moisture content shall be reduced as directed by the Engineer.

Storing or holding of the HMA in approved storage facilities will be permitted with approval of the Engineer, but in no event shall the HMA be held for more than 24 hours. HMA held for more than 24 hours after mixing shall be rejected. Rejected HMA shall be disposed of by the Contractor at no expense to the Contracting Agency. The storage facility shall have an accessible device located at the top of the cone or about the third point. The device shall indicate the amount of material in storage. No HMA shall be accepted from the storage facility when the HMA in storage is below the top of the cone of the storage facility, except as the storage facility is being emptied at the end of the working shift.

If Recycled asphalt pavement (RAP) is allowed per section 5-04.2, RAP utilized in the production of HMA shall be sized prior to entering the mixer so that a uniform and thoroughly mixed HMA is produced. If there is evidence of the recycled asphalt pavement not breaking down during the heating and mixing of the HMA, the Contractor shall immediately suspend the use of the RAP until changes have been approved by the Engineer. After the required amount of mineral materials, RAP, new asphalt binder and asphalt rejuvenator have been introduced into the mixer the HMA shall be mixed until complete and uniform coating of the particles and thorough distribution of the asphalt binder throughout the mineral materials, and RAP is ensured..

5-04.3(7) Spreading and Finishing

(April 2, 2018 Lacey GSP)

Delete this section and replace it with the following:

The mixture shall be laid upon an approved surface, spread, and struck off to the grade and elevation established. HMA pavers complying with Section 5-04.3(3) shall be used to distribute the mixture. Unless otherwise directed by the Engineer, the nominal compacted depth of any layer of any course shall not exceed the following:

HMA Class 1”		0.35 feet
HMA Class ¾” and HMA Class ½”		
	wearing course	0.25 feet
	other courses	0.25 feet
HMA Class ⅜”		0.17 feet

On areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impractical, the paving may be done with other equipment or by hand.

When more than one JMF is being utilized to produce HMA, the material produced for each JMF shall be placed by separate spreading and compacting equipment. The intermingling of HMA produced from more than one JMF is prohibited. Each strip of HMA placed during a work shift shall conform to a single JMF established for the class of HMA specified unless there is a need to make an adjustment in the JMF.

The Contractor shall complete the first lift over the entire length of the project, before the final lift will be allowed to be installed.

If traffic signal loops are required, these loops shall be installed prior to the final lift.

5-04.3(8) Aggregate Acceptance Prior to Incorporation in HMA
(July 18, 2018 APWA GSP)

Delete this section and replace it with the following:

For HMA accepted by nonstatistical evaluation the aggregate properties of sand equivalent, uncompacted void content and fracture will be evaluated in accordance with Section 3-04. Sampling and testing of aggregates for HMA accepted by commercial evaluation will be at the option of the Engineer.

5-04.3(9) HMA Mixture Acceptance
(July 18, 2018 APWA GSP)

Delete this section and replace it with the following:

Acceptance of HMA shall be as provided under nonstatistical, or commercial evaluation.

Nonstatistical evaluation will be used for the acceptance of HMA unless Commercial Evaluation is specified.

Commercial evaluation will be used for Commercial HMA and for other classes of HMA in the following applications: sidewalks, road approaches, ditches, slopes, paths, trails, gores, prelevel, temporary pavement, and pavement repair. Other nonstructural applications of HMA accepted by commercial evaluation shall be as approved by the Engineer. Sampling and testing of HMA accepted by commercial evaluation will be at the option of the Engineer.

The mix design will be the initial JMF for the class of HMA. The Contractor may request a change in the JMF. Any adjustments to the JMF will require the approval of the Engineer and may be made in accordance with this section.

HMA Tolerances and Adjustments
1. Job Mix Formula Tolerances – The constituents of the mixture at the time of acceptance shall be within tolerance. The tolerance limits will be established as follows:
For Asphalt Binder and Air Voids (Va), the acceptance limits are determined by adding the tolerances below to the approved JMF values. These values will also be the Upper Specification Limit (USL) and Lower Specification Limit (LSL) required in Section 1-06.2(2)D2

Property	Non-Statistical Evaluation	Commercial Evaluation
Asphalt Binder	+/- 0.5%	+/- 0.7%
Air Voids, Va	2.5% min. and 5.5% max	N/A

For Aggregates in the mixture:
a. First, determine preliminary upper and lower acceptance limits by applying the following tolerances to the approved JMF.

Aggregate Percent Passing	Non-Statistical Evaluation	Commercial Evaluation
1", ¾", ½",and 3/8" sieves	+/- 6%	+/- 8%
No. 4 sieve	+/- 6%	+/- 8%
No. 8 Sieve	+/- 6%	+/- 8%
No. 200 sieve	+/- 2.0%	+/- 3.0%

b. Second, adjust the preliminary upper and lower acceptance limits determined from step (a) the minimum amount necessary so that none of the aggregate properties are outside the control points in

Section 9-03.8(6). The resulting values will be the upper and lower acceptance limits for aggregates, as well as the USL and LSL required in Section 1-06.2(2)D2.

2. Job Mix Formula Adjustments – An adjustment to the aggregate gradation or asphalt binder content of the JMF requires approval of the Engineer. Adjustments to the JMF will only be considered if the change produces material of equal or better quality and may require the development of a new mix design if the adjustment exceeds the amounts listed below.

a. Aggregates –2 percent for the aggregate passing the 1½″, 1″, ¾″, ½″, ⅜″, and the No. 4 sieves, 1 percent for aggregate passing the No. 8 sieve, and 0.5 percent for the aggregate passing the No. 200 sieve. The adjusted JMF shall be within the range of the control points in Section 9-03.8(6).

b. Asphalt Binder Content – The Engineer may order or approve changes to asphalt binder content. The maximum adjustment from the approved mix design for the asphalt binder content shall be 0.3 percent

5-04.3(9)C Mixture Acceptance – Nonstatistical Evaluation
(July 18, 2018 APWA GSP)

Add the following new section:

HMA mixture which is accepted by Nonstatistical Evaluation will be evaluated by the Contracting Agency by dividing the HMA tonnage into lots.

5-04.3(9)C1 Mixture Nonstatistical Evaluation – Lots and Sublots
(July 18, 2018 APWA GSP)

Add the following new section:

A lot is represented by randomly selected samples of the same mix design that will be tested for acceptance. A lot is defined as the total quantity of material or work produced for each Job Mix Formula placed. Only one lot per JMF is expected. A sublot shall be equal to one day's production or 800 tons, whichever is less except that the final sublot will be a minimum of 400 tons and may be increased to 1200 tons.

All of the test results obtained from the acceptance samples from a given lot shall be evaluated collectively. If the Contractor requests a change to the JMF that is approved, the material produced after the change will be evaluated on the basis of the new JMF for the remaining sublots in the current lot and for acceptance of subsequent lots. For a lot in progress with a CPF less than 0.75, a new lot will begin at the Contractor's request after the Engineer is satisfied that material conforming to the Specifications can be produced.

Sampling and testing for evaluation shall be performed on the frequency of one sample per sublot.

5-04.3(9)C2 Mixture Nonstatistical Evaluation Sampling
(July 18, 2018 APWA GSP)

Add the following new section:

Samples for acceptance testing shall be obtained by the Contractor when ordered by the Engineer. The Contractor shall sample the HMA mixture in the presence of the Engineer and in accordance with AASHTO T 168. A minimum of three samples should be taken for each class of HMA placed on a project. If used in a structural application, at least one of the three samples shall to be tested.

Sampling and testing HMA in a Structural application where quantities are less than 400 tons is at the discretion of the Engineer.

For HMA used in a structural application and with a total project quantity less than 800 tons but more than 400 tons, a minimum of one acceptance test shall be performed. In all cases, a minimum of 3 samples will be obtained at the point of acceptance, a minimum of one of the three samples will be tested for conformance to the JMF:

- If the test results are found to be within specification requirements, additional testing will be at the Engineer's discretion.
- If test results are found not to be within specification requirements, additional testing of the remaining samples to determine a Composite Pay Factor (CPF) shall be performed.

5-04.3(9)C3 Mixture Nonstatistical Evaluation – Acceptance Testing
(July 18, 2018 APWA GSP)

Add the following new section:

Testing of HMA for compliance of Va will at the option of the Contracting Agency. If tested, compliance of Va will use WSDOT SOP 731.

Testing for compliance of asphalt binder content will be by WSDOT FOP for AASHTO T 308.

Testing for compliance of gradation will be by FOP for WAQTC T 27/T 11.

5-04.3(9)C4 Mixture Nonstatistical Evaluation – Pay Factors
(July 18, 2018 APWA GSP)

Add the following new section:

For each lot of material falling outside the tolerance limits in 5-04.3(9), the Contracting Agency will determine a Composite Pay Factor (CPF) using the following price adjustment factors:

Table of Price Adjustment Factors	
Constituent	Factor "f"
All aggregate passing: 1½″, 1″, ¾″, ½″, ⅜″ and No.4 sieves	2
All aggregate passing No. 8 sieve	15
All aggregate passing No. 200 sieve	20
Asphalt binder	40
Air Voids (Va) (where applicable)	20

Each lot of HMA produced under Nonstatistical Evaluation and having all constituents falling within the tolerance limits of the job mix formula shall be accepted at the unit Contract price with no further evaluation. When one or more constituents fall outside the nonstatistical tolerance limits in the Job Mix Formula shown in Table of Price Adjustment Factors, the lot shall be evaluated in accordance with Section 1-06.2 to determine the appropriate CPF. The nonstatistical tolerance limits will be used in the calculation of the CPF and the maximum CPF shall be 1.00. When less than three sublots exist, backup

samples of the existing sublots or samples from the Roadway shall be tested to provide a minimum of three sets of results for evaluation.

5-04.3(9)C6 Mixture Nonstatistical Evaluation – Price Adjustments
(July 18, 2018 APWA GSP)

Add the following new section:

For each lot of HMA mix produced under Nonstatistical Evaluation when the calculated CPF is less than 1.00, a Nonconforming Mix Factor (NCMF) will be determined. The NCMF equals the algebraic difference of CPF minus 1.00 multiplied by 60 percent. The total job mix compliance price adjustment will be calculated as the product of the NCMF, the quantity of HMA in the lot in tons, and the unit Contract price per ton of mix.

If a constituent is not measured in accordance with these Specifications, its individual pay factor will be considered 1.00 in calculating the Composite Pay Factor (CPF).

5-04.3(9)C7 Mixture Nonstatistical Evaluation – Retests
(July 18, 2018 APWA GSP)

Add the following new section:

The Contractor may request a sublot be retested. To request a retest, the Contractor shall submit a written request within 7 calendar days after the specific test results have been received. A split of the original acceptance sample will be retested. The split of the sample will not be tested with the same tester that ran the original acceptance test. The sample will be tested for a complete gradation analysis, asphalt binder content, and, at the option of the agency, Va. The results of the retest will be used for the acceptance of the HMA in place of the original sublot sample test results. The cost of testing will be deducted from any monies due or that may come due the Contractor under the Contract at the rate of $500 per sample.

5-04.3 (9)D Mixture Acceptance – Commercial Evaluation
(July 18, 2018 APWA GSP)

Delete this section and replace it with the following:

If sampled and tested, HMA produced under Commercial Evaluation and having all constituents falling within the tolerance limits of the job mix formula shall be accepted at the unit Contract price with no further evaluation. When one or more constituents fall outside the commercial tolerance limits in the Job Mix Formula shown in 5-04.3(9), the lot shall be evaluated in accordance with Section 1-06.2 to determine the appropriate CPF. The commercial tolerance limits will be used in the calculation of the CPF and the maximum CPF shall be 1.00. When less than three sublots exist, backup samples of the existing sublots or samples from the street shall be tested to provide a minimum of three sets of results for evaluation.

For each lot of HMA mix produced and tested under Commercial Evaluation when the calculated CPF is less than 1.00, a Nonconforming Mix Factor (NCMF) will be determined. The NCMF equals the algebraic difference of CPF minus 1.00 multiplied by 60 percent. The Job Mix Compliance Price Adjustment will be calculated as the product of the NCMF, the quantity of HMA in the lot in tons, and the unit Contract price per ton of mix.

If a constituent is not measured in accordance with these Specifications, its individual pay factor will be considered 1.00 in calculating the Composite Pay Factor (CPF).

5-04.3(10) HMA Compaction Acceptance
(July 18, 2018 APWA GSP)

Delete this section and replace it with the following:

HMA mixture accepted by nonstatistical evaluation that is used in traffic lanes, including lanes for intersections, ramps, truck climbing, weaving, and speed change, and having a specified compacted course thickness greater than 0.10-foot, shall be compacted to a specified level of relative density. The specified level of relative density shall be a Composite Pay Factor (CPF) of not less than 0.75 when evaluated in accordance with Section 1-06.2, using a LSL of 92.0 (minimum of 92 percent of the maximum density). The maximum density shall be determined by WSDOT FOP for AASHTO T 729. The specified level of density attained will be determined by the evaluation of the density of the pavement. The density of the pavement shall be determined in accordance with WSDOT FOP for WAQTC TM 8, except that gauge correlation will be at the discretion of the Engineer, when using the nuclear density gauge and WSDOT SOP 736 when using cores to determine density.

Tests for the determination of the pavement density will be taken in accordance with the required procedures for measurement by a nuclear density gauge or roadway cores after completion of the finish rolling.

If the Contracting Agency uses a nuclear density gauge to determine density the test procedures FOP for WAQTC TM 8 and WSDOT SOP T 729 will be used on the day the mix is placed and prior to opening to traffic.

Roadway cores for density may be obtained by either the Contracting Agency or the Contractor in accordance with WSDOT SOP 734. The core diameter shall be 4-inches minimum, unless otherwise approved by the Engineer. Roadway cores will be tested by the Contracting Agency in accordance with WSDOT FOP for AASHTO T 166.

If the Contract includes the Bid item “Roadway Core” the cores shall be obtained by the Contractor in the presence of the Engineer on the same day the mix is placed and at locations designated by the Engineer. If the Contract does not include the Bid item “Roadway Core” the Contracting Agency will obtain the cores.

For a lot in progress with a CPF less than 0.75, a new lot will begin at the Contractor’s request after the Engineer is satisfied that material conforming to the Specifications can be produced.

HMA mixture accepted by commercial evaluation and HMA constructed under conditions other than those listed above shall be compacted on the basis of a test point evaluation of the compaction train. The test point evaluation shall be performed in accordance with instructions from the Engineer. The number of passes with an approved compaction train, required to attain the maximum test point density, shall be used on all subsequent paving.

HMA for preleveling shall be thoroughly compacted. HMA that is used for preleveling wheel rutting shall be compacted with a pneumatic tire roller unless otherwise approved by the Engineer.

Test Results
For a sublot that has been tested with a nuclear density gauge that did not meet the minimum of 92 percent of the reference maximum density in a compaction lot with a CPF below 1.00 and thus subject to a price reduction or rejection, the Contractor may request that a core be used for determination of the relative density of the sublot. The relative density of the core will replace the relative density determined by the nuclear density gauge for the sublot and will be used for calculation of the CPF and acceptance of HMA compaction lot.

When cores are taken by the Contracting Agency at the request of the Contractor, they shall be requested by noon of the next workday after the test results for the sublot have been provided or made available to the Contractor. Core locations shall be outside of wheel paths and as determined by the Engineer. Traffic control shall be provided by the Contractor as requested by the Engineer. Failure by the Contractor to provide the requested traffic control will result in forfeiture of the request for cores. When the CPF for the lot based on the results of the HMA cores is less than 1.00, the cost for the coring will be deducted from any monies due or that may become due the Contractor under the Contract at the rate of $200 per core and the Contractor shall pay for the cost of the traffic control.

5-04.3(10)D HMA Compaction-Visual Evaluation

Delete this section and replace it with the following:

5-04.3(10)D HMA Nonstatistical Compaction

5-04.3(10)D1 HMA Nonstatistical Compaction – Lots and Sublots

(July 18, 2018 APWA GSP)

Add the following new section:

HMA compaction which is accepted by nonstatistical evaluation will be based on acceptance testing performed by the Contracting Agency dividing the project into compaction lots.

A lot is represented by randomly selected samples of the same mix design that will be tested for acceptance. A lot is defined as the total quantity of material or work produced for each Job Mix Formula placed. Only one lot per JMF is expected. A sublot shall be equal to one day's production or 400 tons, whichever is less except that the final sublot will be a minimum of 200 tons and may be increased to 800 tons. Testing for compaction will be at the rate of 5 tests per sublot per WSDOT T 738.

The sublot locations within each density lot will be determined by the Engineer. For a lot in progress with a CPF less than 0.75, a new lot will begin at the Contractor's request after the Engineer is satisfied that material conforming to the Specifications can be produced.

HMA mixture accepted by commercial evaluation and HMA constructed under conditions other than those listed above shall be compacted on the basis of a test point evaluation of the compaction train. The test point evaluation shall be performed in accordance with instructions from the Engineer. The number of passes with an approved compaction train, required to attain the maximum test point density, shall be used on all subsequent paving.

HMA for preleveling shall be thoroughly compacted. HMA that is used to prelevel wheel ruts shall be compacted with a pneumatic tire roller unless otherwise approved by the Engineer.

5-04.3(10)D2 HMA Compaction Nonstatistical Evaluation – Acceptance Testing

(July 18, 2018 APWA GSP)

Add the following new section:

The location of the HMA compaction acceptance tests will be randomly selected by the Engineer from within each sublot, with one test per sublot.

5-04.3(10)D3 HMA Nonstatistical Compaction – Price Adjustments

(July 18, 2018 APWA GSP)

Add the following new section:

For each compaction lot with one or two sublots, having all sublots attain a relative density that is 92 percent of the reference maximum density the HMA shall be accepted at the unit Contract price with no further evaluation. When a sublot does not attain a relative density that is 92 percent of the reference maximum density, the lot shall be evaluated in accordance with Section 1-06.2 to determine the appropriate CPF. The maximum CPF shall be 1.00, however, lots with a calculated CPF in excess of 1.00 will be used to offset lots with CPF values below 1.00 but greater than 0.90. Lots with CPF lower than 0.90 will be evaluated for compliance per 5-04.3(11). Additional testing by either a nuclear moisture-density gauge or cores will be completed as required to provide a minimum of three tests for evaluation.

For compaction below the required 92% a Non-Conforming Compaction Factor (NCCF) will be determined. The NCCF equals the algebraic difference of CPF minus 1.00 multiplied by 40 percent. The Compaction Price Adjustment will be calculated as the product of CPF, the quantity of HMA in the compaction control lot in tons, and the unit Contract price per ton of mix.

5-04.3(11)C Rejection Without Testing (Mixture or Compaction)
(July 18, 2018 APWA GSP)

Delete this section and replace it with the following:

The Engineer may, without sampling, reject any batch, load, or section of Roadway that appears defective. Material rejected before placement shall not be incorporated into the pavement. Any rejected section of Roadway shall be removed.

No payment will be made for the rejected materials or the removal of the materials unless the Contractor requests that the rejected material be tested. If the Contractor elects to have the rejected material tested, a minimum of three representative samples will be obtained and tested. Acceptance of rejected material will be based on conformance with the nonstatistical acceptance Specification. If the CPF for the rejected material is less than 0.75, no payment will be made for the rejected material; in addition, the cost of sampling and testing shall be borne by the Contractor. If the CPF is greater than or equal to 0.75, the cost of sampling and testing will be borne by the Contracting Agency. If the material is rejected before placement and the CPF is greater than or equal to 0.75, compensation for the rejected material will be at a CPF of 0.75. If rejection occurs after placement and the CPF is greater than or equal to 0.75, compensation for the rejected material will be at the calculated CPF with an addition of 25 percent of the unit Contract price added for the cost of removal and disposal.

5-04.3(12)A1 Transverse Joints
(April 2, 2018 Lacey GSP)

Delete this section and replace it with the following:

The Contractor shall conduct operations such that the placing of the top or wearing course is a continuous operation or as close to continuous as possible. Unscheduled transverse joints will be allowed and the roller may pass over the unprotected end of the freshly laid mixture only when the placement of the course must be discontinued for such a length of time that the mixture will cool below compaction temperature. When the Work is resumed, the previously compacted mixture shall be cut back to produce a slightly beveled edge for the full thickness of the course. All joints must be flush and provide a smooth transition across the meet line.

A temporary wedge of HMA constructed on a 24H:1V shall be constructed where a transverse joint as a result of paving or planing is open to traffic. The wedge shall be maintained until the paving is resumed. The HMA in the temporary wedge shall be separated from the permanent HMA by strips of heavy

wrapping paper or other methods approved by the Engineer. The wrapping paper shall be removed and the joint trimmed to a slightly beveled edge for the full thickness of the course prior to resumption of paving.

The material that is cut away shall be wasted and new mix shall be laid against the cut. Rollers or tamping irons shall be used to seal the joint.

5-04.3(12)A2 Longitudinal Joints
(April 2, 2018 Lacey GSP)

Supplement this section with the following:

Cold joints shall be allowed only at locations approved by the Engineer.

Upon Completion of paving operations, all joints shall be sealed with PG 58H-22 asphalt binder.

5-04.3(12)A2 Longitudinal Joints
(April 2, 2018 Lacey GSP)

Replace the first paragraph with the following:

This project will require Echelon paving, using side-by-side pavers in operation at the same time and slightly offset on multiple lanes to improve the longitudinal joint between pavers. Rollers behind the echelon pavers shall pass directly over the longitudinal joint while both sides are hot. Hot lap joints shall be constructed in the wearing course and shall be located at the lane lines between travel lanes. Cold joints will only be allowed at locations approved by the Engineer.

All other joints shall be an extended joint (Notched wedge) with a taper placed on the first paved lane to reduce joint air voids. An attachment shall be placed on the paver screed to form the mat edge into a tapered section. Notches on either end of the taper shall eliminate thin taper extremities. The notches shall be at least as deep as the nominal maximum aggregate size of the mix. The taper shall be spread out over 1 foot and the hot lane shall overlap the cold lane notch by about 0.5 to 1 inch. The notched wedge joint shall provide a ramp for traffic transition between the cold lane and the yet unpaved portions of the hot lane.

Upon Completion of paving operations, all joints shall be sealed with PG 58H-22 asphalt binder.

5-04.3(14) Planing Bituminous Pavement
(April 2, 2018 Lacey GSP)

Supplement this section with the following:

The planning plan must be approved by the Engineer and a pre planning meeting must be held prior to the start of any planing. See Section 5-04.3(14)B2 for information on planning submittals. Pavement planing shall be completed to the cross-slopes as shown on the Plans. The Contractor shall provide a smooth transition at the changes in cross-slopes as directed by the Engineer.

Locations of existing surfacing to be planed are as shown in the Drawings.

Where planing an existing pavement is specified in the Contract, the Contractor must remove existing surfacing material and to reshape the surface to remove irregularities. The finished product must be a prepared surface acceptable for receiving an HMA overlay.

Repair or replace any metal castings and other surface improvements damaged by planing, as determined by the Engineer.

A tapered wedge cut must also be made at transitions to adjoining pavement surfaces (meet lines) where butt joints are shown on the Drawings. Cut butt joints in a straight line with vertical faces 2 inches or more in height, producing a smooth transition to the existing adjoining pavement.

After planing is complete, planed surfaces must be swept, cleaned, and if required by the Contract, patched and preleveled.

The Engineer may direct additional depth planing. Before performing this additional depth planing, the Contractor must conduct a hidden metal in pavement detection survey as specified in Section 5-04.3(14)A.

The Contractor can stockpile the grindings for use on the project as identified in section 2-02.3(3).

5-04.3(18) Pre Planing Or Pulverizing Metal Detection Check
(October 30, 2018 Lacey GSP)

Add the following new section:

Before starting planing or pulverizing of pavements, and before any additional depth planing or pulverizing required by the Engineer, the Contractor must conduct a physical survey of existing pavement to be planed with equipment that can identify hidden metal objects.

Should such metal be identified, promptly notify the Engineer.

See Section 1-07.16(1) regarding the protection of survey monuments that may be hidden in pavement.

The Contractor is solely responsible for any damage to equipment resulting from the Contractor's failure to conduct a pre-planing metal detection survey, or from the Contractor's failure to notify the Engineer of any hidden metal that is detected.

5-04.3(19) Submittals - Paving Plan
(October 30, 2018 Lacey GSP)

Add the following new section:

The Contractor must submit a paving plan to the Engineer at least 5 Working Days in advance of the start date. These plans must show how the moving operation and traffic control are coordinated, as they will be discussed at the pre-paving briefing. When requested by the Engineer, the Contractor must provide the traffic control plan with a scale showing both the area of operation and sufficient detail of traffic beyond the area of operation where detour traffic may be required. The traffic control plan must show where flaggers are proposed.

At a minimum, the plan must include:

1. A copy of the accepted traffic control plan, see Section 1-10.2(2), detailing each day's traffic control as it relates to the specific requirements of that day's work. Briefly describe the sequencing of traffic control consistent with the proposed work sequence, and scheduling of placement of temporary pavement markings and channelizing devices after each day's work.

2. Names and locations of HMA Supplier facilities to be used, and locations of temporary parking and staging areas.

3. List of all equipment to be used for paving.

4. Description (geometric or narrative) of the scheduled sequence of work, and intended area for each day's work, must include the directions of proposed paving, sequence of adjacent lane paving, sequence of skipped lane paving, intersection scheduling and sequencing.

5. Approximate times and days for starting and ending daily operations.

5-04.3(20) Pre-Paving Briefing

(October 30, 2018 Lacey GSP)

Add the following new section:

At least 2 Working Days before the first paving operation and the first planing operation, or as scheduled by the Engineer for future paving and planing operations to ensure the Contractor has adequately prepared for notifying and coordinating as required in the Contract, the Contractor must be prepared to discuss that day's operations as they relate to other entities and to public safety and convenience, including driveway and business access, garbage truck operations, Metro transit operations and working around energized overhead wires, school and nursing home and hospital and other accesses, other contractors who may be operating in the area, pedestrian and bicycle traffic, and emergency services. The Contractor, and Subcontractors that may be part of that day's operations, must meet with the Engineer and discuss the proposed operation as it relates to the submitted paving plan, approved traffic control plan, and public convenience and safety. Such discussion includes, but is not limited to:

1. The actual times of starting and ending daily operations.

2. The sequencing and scheduling of paving operations and of planing operations, as applicable, as it relates to traffic control, to public convenience and safety, and to other con-tractors who may operate in the Project Site.

3. Notifications required of Contractor activities, and coordinating with other entities and the public as necessary.

4. Description of the sequencing of installation and types of temporary pavement markings as it relates to planning and to paving.

5. Description of the sequencing of installation of, and the removal of, temporary pavement patch material around exposed castings and as may be needed

6. Description of procedures and equipment to identify hidden metal in the pavement, such as survey monuments, monitoring wells, street car rail, and castings, before planning, see Section 5-04.3(14)B2.

7. Description of how flaggers will be coordinated with the planing, paving, and related operations.

8. When to start applying tack and coordinating with paving.

9. Description of contingency plans for that day's operations such as equipment breakdown, rain out, and Supplier shutdown of operations.

10. Number of sublots to be placed, sequencing of density testing, and other sampling and testing.

5-04.3(21) Paving Operations Supervisor

(April 2, 2018 Lacey GSP)

Add the following new section:

The Contractor shall identify a Paving Operations Supervisor (POS) at the Preconstruction Conference. The POS shall be employed by the Paving Contractor, shall have direct and immediate control of the paving operations on the Project at all times, and shall perform no other duties on the project. No part of the paving operations shall commence or continue without the physical presence of the POS on-site. The POS shall act as the main point of contact in the field to the Engineer and shall execute all requests by the Engineer promptly and immediately.

Specific duties include, but are not limited to the following:

Ensures all paving operations meet the requirements of Section 5-04.
Ensures all iron is marked and properly lowered prior to pavement planing operations.
Ensures paving schedule is communicated to the Engineer 72 hours in advance of paving operations commencing. The Engineer shall be responsible for delivering paving notices to affected business owners and residents. Any changes to the paving schedule must also be communicated to the Engineer 72 hours in advance of the change.
Ensures existing surfaces to be paved are prepared in accordance with Sec. 5-04.3(4) a minimum of two (2) hours prior to paving. Specific attention shall be given to surface cleanliness, match lines to adjoining pavement are vertical and smooth, and matching to existing driveways and rolled gutters are prepared. In the event that preparation of existing surfaces are behind schedule, paving operations may be halted and rescheduled at the Engineer's request if, in his judgment, the delay of paving shall result in a less than satisfactory end product or inconvenience to the public. All costs resulting from paving rescheduling shall be borne by the Contractor.
Ensures all tack coating is completed in accordance with Sec. 5-04.3(4).

5-04.3(22) Temporary Patching

(April 2, 2018 Lacey GSP)

Add the following new section:

All excavations within or across streets, driveways, or failure of existing pavement that will be exposed to traffic shall be temporarily patched by the end of the working day or as directed by the Engineer. The patch shall be constructed of a minimum of 0.17 feet of either Commercial HMA or as directed by the Engineer. The Contractor shall maintain all temporary patches until such time as the permanent pavement is in place.

5-04.3(24) Roadway Shoulder Final Grading

(April 2, 2018 Lacey GSP)

Add the following new section:

The Contractor shall backfill and grade a 5 foot wide or a 5:1 transition (whichever is less) flush from the new edge of pavement down to the existing shoulder grade with Crushed Rock or Topsoil Type A to match existing shoulder material and condition. The Crushed Rock shall match gradation, shape, and color to of the existing rock shoulder. Upon placing and grading either material, the Contractor shall roll and compact the transition as directed by the Engineer. The Contractor shall then hydroseed all shoulder transitions backfilled with topsoil.

5-04.3(25) HMA Wedge Curb

(April 2, 2018 Lacey GSP)

Add the following new section:

The Contractor shall construct a HMA wedge curb where shown on the plans and shall be integral to the mainline paving operation respective to being placed and compacted. HMA used for wedge curb shall be compensated with the HMA bid item per ton and no other compensation shall be allowed.

5-04.3(26) Utility Access

(November 20, 2020 Lacey GSP)

Add the following new section:

When lowering and raising valves the valve riser pipes must remain free of debris. Cap the valve riser pipe to prevent debris from entering the riser and to provide access to the operating nut.

The contractor is responsible for tracking exact locations of all valves and manholes to be lowered or raised. Before asphalt is placed over a valve, metal must be placed directly above the valve location for the purpose of locating the valve with a metal detector. Once asphalt has been placed over a valve or manhole, the location of that valve or manhole must be marked on the asphalt within 3 working days. The location marks must be maintained until the valves are raised. Channelization near valves or manholes must be complete before they are raised. All valves and manholes must be raised within 20 working days after each time they are paved over. The cost of raising new valves and manholes is incidental to the cost for that bid item. The cost for raising existing valves and manholes will only be paid once for each location, no additional compensation will be allowed if the contractor has to raise the same valve/manhole twice. See sections 7-05 and 7-12 for additional information on raising valves and manholes.

5-04.4 Measurement

(April 4, 2016 Lacey GSP)

Supplement this section with the following:

"Fiber Reinforced HMA Cl. PG " will be measured by the ton in accordance with Section 1-09.2, with no deduction being made for the weight of asphalt binder, mineral filler, or any other component of the mixture. If the Contractor elects to remove and replace mix as allowed by Section 5-04.3(11), the material removed will not be measured.

No unit of measure shall apply to the lump sum price for Preparation of Existing Surfaces.

No unit of measure shall apply to the lump sum price for Driveway and Shoulder Preparation.

5-04.5 Payment

(November 20, 2020 Lacey GSP)

Supplement this section with the following:

The unit Contract price per ton for all HMA bid items shall also include Paving Operations Supervisor (POS) and the removal of excess tack coat of asphalt from existing surfaces, including, but not limited to existing pavement markings. Pavement markings shall be restored to a pre-construction condition or better. No additional compensation shall be given to the Contractor for installing new pavement markings

if existing pavement markings cannot be restored to a pre-construction condition or better as directed by the Engineer.

If no bid item for "HMA for Pre-leveling Cl. __ PG __ " is included, all materials, equipment, and labor necessary to pre-level the existing pavement prior to paving shall be fully compensated by the bid item "HMA Cl. __ PG __ " and "Fiber Reinforced HMA Cl. PG " and no other pay shall be allowed.

The unit Contract price per ton for "Fiber Reinforced HMA Cl. PG " shall be full compensation for all costs, including fiber and anti-stripping additive, incurred to carry out the requirements of Section 5-04 except for those costs included in other items which are included in this Subsection and which are included in the Proposal.

The unit Contract price per ton for "HMA for Pavement Repair Cl PG " shall also include all costs for constructing speed humps as shown in the plans, including pavement markings if no bid item for this is included in the proposal.

"Job Mix Compliance Price Adjustment", by calculation.
"Job Mix Compliance Price Adjustment" will be calculated and paid for as described in Section 5-04.3(9)C6.

"Compaction Price Adjustment", by calculation.
"Compaction Price Adjustment" will be calculated and paid for as described in Section 5-04.3(10)D3.

"Preparation of Existing Surfaces," lump sum.
The lump sum contract price for "Preparation of Existing Surfaces" shall be full pay for all labor, materials, and equipment to comply with the plans and specifications, including but not limited to cleaning and removal of all vegetation from proposed paved surfaces or that vegetation that will interfere with paving operations prior to paving.

"Driveway and Shoulder Preparation", lump sum.
The lump sum contract price for "Driveway and Shoulder Preparation" shall be full pay for all labor, materials, and equipment to comply with the plans and specifications, including but not limited to sawcuts, cuts, fills, and grading all driveways and shoulders prior to paving.

5-04.5(1) Price Asphalt Cost Price Adjustment

(April 2, 2018 Lacey GSP)

Add the following new section:

The Contracting Agency will make an Asphalt Cost Price Adjustment, either a credit or a payment, for qualifying changes in the reference cost of asphalt binder. The adjustment will be applied to partial payments made according to Section 1-09.9 for the following bid items when they are included in the proposal:

"Fiber Reinforced HMA Cl. PG "
"HMA Cl. ___ PG ___"
"HMA for Pavement Repair Cl. ___ PG ___"

The adjustment is not a guarantee of full compensation for changes in the cost of asphalt binder. The Contracting Agency does not guarantee that asphalt binder will be available at the reference cost.

WSDOT will establish the asphalt binder reference cost twice each month and post the information on the WSDOT website at:

http://www.wsdot.wa.gov/business/construction/escalationclauses.htm.

The reference cost will be determined using posted prices furnished by Poten & Partners, Inc. If the selected price source ceases to be available for any reason, then the Contracting Agency will select a substitute price source to establish the reference cost.

The base cost established for this contract is the reference cost posted on the WSDOT website for the period immediately preceding the bid opening date.

Adjustments will be based on the most current reference cost for Western Washington. For work completed after all authorized working days are used, the adjustment will be based on the posted reference cost during which contract time was exhausted. The adjustment will be calculated as follows:

No adjustment will be made if the reference cost is within 5% of the base cost.

If the reference cost is greater than or equal to 105% of the base cost, then
Adjustment = (Current Reference Cost – (1.05 x Base Cost)) x (Q x 0.056).

If the reference cost is less than or equal to 95% of the base cost, then
Adjustment = (Current Reference Cost – (0.95 x Base Cost)) x (Q x 0.056).

Where Q = total tons of all classes of HMA paid in the current month's progress payment.

"Asphalt Cost Price Adjustment", by calculation.

"Asphalt Cost Price Adjustment" will be calculated and paid for as described in this section. For the purpose of providing a common proposal for all bidders, the Contracting Agency has entered an amount in the proposal to become a part of the total bid by the Contractor.

7-05 MANHOLES, INLETS, CATCH BASINS, AND DRYWELLS

7-05.3(1)B Raise Manhole To Grade

(January 7, 2019 Lacey GSP)

Add the following new section:
Where shown on the plans or where directed by the Engineer, existing manholes and Type 2 catch basins shall be raised to the grade as staked or as directed by the Engineer. The Contractor shall supply and install new manhole rings, frames, and covers as part of raising the manhole to grade. The finished installation shall conform to the detail shown in plans. No wood adjustment of any kind will be allowed.

Maximum distance allowed from edge of iron ring or frame of appurtenance to outside edge of pavement restoration is 18 inches. Patches larger than this or clean misses (e.g. where the Contractor excavates in the new pavement mat and does not find the iron appurtenance to raise) shall result in a credit from the Contractor to the City of $1000 for each occurrence. Further, the Contractor shall repair the pavement patch as directed by the Engineer.

7-05.3(1)D Raise Catch Basin to Grade

(January 7, 2019 Lacey GSP)

Section 7-05.3(1)D is added with the following:

Where shown on the plans or as directed by the Engineer, existing catch basins shall be raised to the grade as staked or as directed by the Engineer. The Contractor shall remove and replace adjacent curb and gutter as required. Further, the Contractor shall supply and install concrete riser sections, and new frame and grate. The finished installation shall conform to the detail shown in plans. No wood adjustment of any kind will be allowed.

Maximum distance allowed from edge of iron ring or frame of appurtenance to outside edge of pavement restoration is 18 inches. Patches larger than this or clean misses (e.g. where the Contractor excavates in the new pavement mat and does not find the iron appurtenance to raise) shall result in a credit from the Contractor to the City of $1000 for each occurrence. Further, the Contractor shall repair the pavement patch as directed by the Engineer.

7-05.3(5) Catch Basin Assembly

(January 3, 2017 Lacey GSP)

Section 7-05.3(5) is added with the following:

Contractor shall furnish and install East Jordan Iron Works Catch Basin Assembly, or approved equal, on all catch basins and storm sewer manholes unless otherwise indicated on the construction plans. Assemblies must be ductile iron and manufactured in the USA. Where a cover, grate or curb inlet is indicated in the plans, the Contractor shall furnish and install the indicated item.

7-05.3(6) Saddle Manhole w/ Cast-in-Place Base

(March 18, 2015 Lacey GSP)

Section 7-05.3(6) is added with the following:

Connections to existing sanitary sewer mains where no manhole is present may be accomplished by installing a saddle manhole with a cast-in-place base in accordance with the Contract Plans with approval of the Engineer or where directed on the plans.

The Contractor shall verify invert elevations prior to construction.

7-05.3(8) Manhole Treatment

(October 30, 2018 Lacey GSP)

Section 7-05.3(8) is added with the following:

The manhole shall be thoroughly pressure washed using a minimum of 3,000 psi in preparation for the application to remove any dirt, debris, or loose material. All manhole joints and pipe penetrations shall be watertight to prevent infiltration or ex-filtration prior to application of the product, pressure grout is required where areas of infiltration are observed. Final surface preparation shall be in accordance with the coating manufacturer's recommendations.

Manhole treatment shall require that a protective coating be applied to completely and uniformly cover the interior wall, and underside of lid at the thickness indicated by the manufacturer. Finished surface shall be smooth. All joints and penetrations shall be water tight prior to application of the product. The product shall be installed in accordance with the manufacturer's instructions by a factory certified applicator.

The Contractor shall be responsible to provide confined space entry for the coating inspector. The City shall be responsible to pay for the services of an independent NACE certified coatings inspector for the following:

1. Inspect and perform testing of all the surface preparation prior to the application of coatings.
2. Inspect and perform testing of coatings in the manhole.
3. Provide a written report to the Owner after testing is completed. The contractor is responsible to correct all deficiencies noted in the report.

The coating material shall be 125 mils Raven 405 and primer per manufacturers recommendations by Raven Lining Systems, 250 mils SprayWall by SprayRoq Protective Lining Systems or 1" of SewperCoat PG by Kerneos Inc.

A complete liner system as manufactured by Geneva Pipe & Precast Systems may be substituted where approved by the engineer. Complete liner systems shall include the base, riser sections, cone section, and telescopic lid liner. All joints shall be sealed and welded per the manufacture's recommendations.

7-05.4 Measurement

(October 30, 2018 Lacey GSP)

Supplement this section with the following:
"Connect to Existing Manhole" will be measured per each location called out in the plans.
"Manhole Treatment" will be measured per each.

7-05.5 Payment

(October 30, 2018 Lacey GSP)

Supplement this section with the following:

The unit contract price per each for manholes and catch basins shall be full pay for furnishing all labor, tools, equipment, and materials required to place the structure including excavation, haul, backfill, testing, and all accessories, such as rings, covers, grates, steps, grate inlets, trash racks, beehive grates and debris cages, removable silt trap tees, GU liners, inside drops, outside drops and all other items needed to install the manhole complete in place in accordance with the plans and these specifications in conformity with the lines and grades staked.

"Raise Manhole to Grade", per each.
The unit Contract price per each for "Raise Manhole to Grade" shall be full pay for all costs necessary to furnishing and installing the unit complete in place, including restoration of adjacent areas.

"Connect to Existing Manhole", per each.
The unit contract price per each for "Connect to Existing Manhole" shall be full pay for furnishing all labor, tools, equipment, and materials required to connect to existing manhole in place, including concrete, concrete collars and sealants. Further, all excavation, haul, backfill, testing, and accessories shall be included in the unit contract price. For purposes of payment, there will be no distinction made for the difficulty of connecting to the existing manhole or the quantity of pipes connecting to the manhole. Items not specifically identified on the plans but necessary to properly connect to manhole shall be considered incidental and no other compensation shall be allowed.

"Manhole Treatment," per each.
The unit contract price per each for "Manhole Treatment" shall be full pay for furnishing all labor, tools, equipment, and materials required to prepare and coat the manhole as required by these specifications and the manufacturer. The unit cost per each shall also include confined space entry for the coating inspector.

"Saddle Manhole____Inch Diam. Type 1", per each.
The payment for the items specified above shall be full pay for furnishing all labor, materials, tools, and equipment, necessary or incidental to furnishing and installing the unit complete in place.

7-08 GENERAL PIPE INSTALLATION REQUIREMENTS

7-08.1 Description

(December 31, 2014 Lacey GSP)

This section is revised to read:

This work includes installing culverts, storm sewers, sanitary sewers, and water mains. The contractor shall also follow Section 7-02, 7-04, 7-09 or 7-17 as it applies to the specific kind of Work.

7-08.2 Materials

(October 16, 2009 Lacey GSP)

Supplement this section with the following:

Bank Run Gravel for Trench Backfill shall be in accordance with Section 9-03.19.
Controlled Density Fill shall be in accordance with Section 2-09.3(1)E.
Imported Pipe Bedding shall be in accordance with Section 9-03.16.

7-08.3 Construction Requirements

7-08.3(1) Excavation and Preparation of Trench

(October 30, 2018 Lacey GSP)

Supplement this section with the following:

The contractor shall locate and preserve all existing utilities per RCW 19.122. Utility locations shown on the plans depict the physical features that were visible at the time of the survey. The City of Lacey is not responsible for the location of underground utilities that are marked or not marked in the field by other utility providers. Utility service laterals are not typically shown on plans or locatable and the contractor shall anticipate such services. The City will locate the meters and the mains. For service laterals, pursuant to RCW 19.122.030, the City will indicate a presence of an un-locatable service lateral and if requested can meet with the contractor or provide copies of available records. The Contractor shall have a crimping tool available during excavation to crimp any broken water services. Before commencing work, the contractor shall coordinate with One-Call services to determine the location of all utilities.

The Contractor shall pothole all apparent conflicts between existing utilities and proposed construction as approved by the Engineer. The Contractor shall notify Engineer of location and approximate time to complete prior to potholing. The Contractor shall notify the Engineer of any conflicts with the existing utilities and proposed work at least 3 days prior to proceeding with work. Potholing of the utilities shall be completed a minimum distance of 300 feet in front of pipe laying operations. No adjustment to the contract price or time will be made if the contractor fails to follow this specification. Potholing for Utility Crossings and Connections shall be performed by the Contractor using vacuum excavation truck or other device approved by the Engineer. If the Contractor potholes prior to approval no compensation shall be made for the potholing.

The Contractor shall deflect pressurized pipe at the joints no greater than the maximum allowable deflection as determined by the pipe or fitting manufacturer to avoid conflicts with crossing utilities. Vertical bends and vertical thrust blocking shall be avoided by deflecting pipe either upwards or downwards prior to the utility crossing.

7-08.3(1)A Trenches
(December 31, 2014 Lacey GSP)

Section 7-08.3(1)A is supplemented with the following to the fourth paragraph:

All material excavated from trenches shall not be piled on the roadway.

7-08.3(1)C Bedding the Pipe
(February 25, 2015 Lacey GSP)

Section 7-08.3(1)C is supplemented with the following

If native material meets the requirements of 7-08.2 the Contractor shall use all suitable native material prior to using imported pipe bedding or bank run gravel. All material shall be approved by the Engineer prior to placement. If the Contractor places imported material prior to approval, no compensation shall be made for the imported material.

7-08.3(3) Backfilling
(October 30, 2018 Lacey GSP)

Supplement this section with the following:

For backfilling trenches for longitudinal runs of pipe, the Contractor shall use all suitable native material prior to using bank run gravel and/or controlled density fill. All native backfill material shall be approved by the Engineer prior to placement. If the Contractor places imported material prior to approval, no compensation shall be made for the imported material. All backfill material shall be compacted and tested according to Section 2-03.3(14)D.

For transverse runs of pipe including the service lines within the roadway prism, the Contractor shall use controlled density fill unless approved otherwise by the Engineer. All native material shall be excavated, hauled and disposed of offsite. All exceptions shall be approved by the Engineer.

At the end of each workday, the Contractor shall install a lift of temporary asphalt cold mix or Commercial HMA on top of the trench backfill, flush with the existing pavement. No trench excavation shall be exposed to traffic without a temporary patch sealing the existing pavement surface. All costs associated with providing temporary asphalt cold mix shall be incidental to the bid item for the pipe being installed and no other compensation will be allowed. The Contractor may use Commercial HMA for temporary patching if a bid item for this work has been included in the Proposal. All costs associated with removal of temporary patches shall be incidental to the work and no other compensation will be allowed.

If approved by the Engineer, the Contractor may choose to use HMA for Pavement Repair Cl. ½" PG 58-22 for permanent pavement repair if a bid item for this work has been included in the Proposal.

7-08.3(3)A Controlled Density Fill
(December 31, 2014 Lacey GSP)

Section 7-08.3(3)A is added with the following:

The Contractor shall use controlled density fill (CDF) as shown in the Plans or directed by the Engineer.

Controlled Density Fill shall meet the following requirements:
1750# Sand,
1750# Pea Gravel,
230# Water,
141# Portland Cement,
6 ounces Water Reducing Agent per 100 lbs. cement.

The Controlled Density Fill will require 24 hours of cure time, or as directed by the Engineer. Prior to backfill, all appurtenances shall be covered with 11 mill plastic as directed by the Engineer.

7-08.3(3)B Steel Plating for Pipe Trench

(February 25, 2015 Lacey GSP)

Section 7-08.3(3)B is added with the following:

The Contractor shall install steel plating over the trench per the plans to allow for CDF to fully cure and allow vehicle traffic to pass during non-working hours. The steel plating shall remain complete over the trench until the pavement repair is complete. This process shall be coordinated so that there will be minimum inconvenience to the public. All costs for all labor, materials, and equipment to furnish, place, assemble, install, maintain and remove the steel plates and associated materials shall be included in the unit contract price per foot of pipe installed and no additional compensation shall be allowed.

7-08.3(5) Pipe Abandonment

(April 30, 2015 Lacey GSP)

Add the following new section:

The Contractor shall abandon pipes where shown on the Plans or directed by the Engineer. For abandonment, removal, handling and disposal of asbestos cement piping, refer to Section 7-09.3(19)D of these Special Provisions. All abandonments shall be done after all new utility mains and service connections are installed unless authorized by the Engineer. Abandonments shall include all excavation, pipe cutting and removal, fittings, concrete plugging, and backfilling. Some abandonments require specific fittings as indicated on the Plans. All fittings required to complete the abandonment shall be included in the cost for the abandonment. Potholing per 7-08.3(1) to verify required fittings shall be done as directed by the Engineer. Pipe abandonments shall be completed in cooperation with the engineer in order to minimize disruption of utility service to the residents. If water services will be interrupted follow the requirements of 7-09.3(19)B.

All pipes to be abandoned shall have the first 2 linear feet of abandoned pipe filled/plugged with a watertight concrete grout. The inspector shall inspect the abandonment prior to backfilling.

In the case of an abandonment associated with a connection to an existing main, no payment shall be made for the bid item “Pipe Abandonment”. The Contractor shall include all costs with these associated abandonments under the “Connect to Existing Water Main”, “Connect to Existing Reclaimed Water Main”, “Connect to Existing Gravity Sewer Main”, or “Connect to Existing Sanitary Sewer Main” pay item. In addition, payment for “Pipe Abandonment” will only be paid for the locations and quantities called out on the plans or as directed by the Engineer.

7-08.3(6) Water Main/Sanitary Sewer Service Crossings

(February 25, 2015 Lacey GSP)

Add the following new section:

Notify the Engineer if the waterline is less than 18 inches above sanitary sewer. The minimum cover as shown on the plans may be reduced as approved by the Engineer to maintain minimum vertical separation.

The Contractor shall install the longest standard length of water pipe so that the joints will fall an equal distance from any sewer crossing. In some cases where minimum separation cannot be maintained, it may be necessary to encase the water main as directed by the Engineer. No concrete shall be installed unless specifically directed by the Engineer.

Costs to cut and place water pipe as specified shall be incidental to the water pipe line and no other pay will be allowed.

7-08.3(7) Connections to Existing Mains

(October 30, 2018 Lacey GSP)

Add the following new section:

The Contractor shall be responsible for determining the scope of work for connection to existing mains.

It shall be the Contractor's responsibility to field verify the location and depth of the existing main and the fittings required in accordance with 7-08.3(1) to make the connections to the existing mains including any pipe abandonment associated with the connections to existing mains. Connect to existing mains shall be completed in cooperation with the engineer in order to minimize disruption of service to the residents. All taps shall be a minimum of 36” away from the bell joint unless otherwise approved by the engineer.

Temporary blow-off assembly required for temporary or permanent release of air, chlorination or flushing purposes shall be provided by the Contractor as a part of the connection to existing main.

In the case of a live tap connection no payment shall be made for the bid item, "Connect to Existing Water Main". The Contractor shall include all costs associated with live taps under "_____ Inch Tapping Valve With Tapping Sleeve" pay items.

Payment for "Connect to Existing _____" will only be paid for the locations and quantities called out on the plans or as directed by the Engineer. For purposes of payment, there will be no distinction made for the difficulty of connecting to the existing main or the quantity of connecting pipes or other materials needed.

7-08.3(8) Detectable Marking Tape

(January 4, 2016 Lacey GSP)

Add the following new section:

All pipeline installed under this contract will be identified by a continuous color coded tracer marker. For pressure lines it shall be buried 12 inches to 18 inches below finished grade, and for sewer lines it shall be buried 24 inches to 30 inches below finished grade. The marker shall be imprinted every 30 to 40 inches in permanent black ink indicating the type of line buried below and shall also have the word “Caution” prominently shown.

The tracer marker shall be plastic non-biodegradable and have a metallic core or backing which can be detected by a standard metal detector.

In addition to the detectable marking tape, a U.S.E coated 12 gauge tracer wire shall be taped to all mains and service lines. The wire shall be brought up and tied to all valves and meter boxes. The tracer wire shall be looped up into all valve boxes per the plans. A low voltage grease-type splice kits, or better shall be used on all tracer wire connection points. After the wire nut is used to connect the wire together an overhand knot shall be tied just outside the connection to prevent it from coming apart. All service and mainline tracer wires shall be properly connected. A tracer wire magnesium anode shall be installed at all dead ends of the tracer / locate system. On long stretches of pipe anodes may be required at a minimum spacing of 1000'. The anode type shall be Copperhead Anode Part# ANO-14, 1.5# x 1.315"Dx18.5"L or approved equal. When connecting a new main or a new service to an existing main, the new tracer wire shall be connected to the existing tracer wire if available.

Special high strength locate wire may be required for directional drilling where the wire is allowed to be pulled in with the pipe or conduit. High strength wire shall be Neptco Trace-Safe 1800 lb. strength or approved equal and shall be connected with the wire manufacturer's connections.

Continuity or locate testing of the wire will be done by the City. The contractor shall give 72 hours notice for continuity testing by the City. The testing shall be conducted prior to paving or final restoration of landscape areas. The locating device will be connected to the tracer wire at any or all Gate Valves and Services and tracer wire shall transmit an acceptable signal strength as determined by the City for a minimum of 300 feet. Contractor will locate and repair any failed connections.
The wire shall be furnished and installed by the Contractor.

Color coding of tape and wire shall be as follows:

a) Water – Blue
b) Sewer – Green
c) Reclaimed – Purple
d) Electrical conduits – Red
e) Communication Conduits - Orange

Installation of the pipeline tracer marker and 12 gauge coated copper wire is considered incidental to the construction of the pipe and conduits and no other compensation will be allowed.

7-08.3(9) Concrete Thrust Blocking

(February 25, 2015 Lacey GSP)

Add the following new section:

Install thrust blocking at bends, tees, dead ends, and crosses and as shown in the plans and as directed by the Engineer. Thrust Blocking shall be commercial concrete poured against undisturbed earth. An 11 mil plastic barrier shall be placed between all thrust blocks and fittings. The calculations for thrust blocking are as follows:

Thrust at fittings in pounds at 225 pounds per square inch of water pressure.

Pipe Diameter	90° Bend	45° Bend	22-1/2° Bend	11-1/4° Bend	Dead End or Tee
4"	3,600	2,000	1,000	500	2,600
6"	8,000	4,400	2,300	1,200	5,700
8"	14,300	7,700	4,000	2,000	10,100
10"	22,300	12,100	6,200	3,100	15,800
12"	32,000	17,400	8,900	4,500	22,700

14”	43,600	23,600	12,100	6,100	30,800
16”	57,000	30,800	15,700	7,900	40,300
18”	72,000	39,000	19,900	10,000	51,000

SAFE SOIL BEARING LOADS:

Soil	Pounds per Square Foot
Muck, Peat	0,000
Soft clay	1,000
Sand	2,000
Sand and gravel	3,000
Sand and gravel cemented with clay	4,000

Ecology blocks may be used for thrust blocking if approved by the Engineer.

Installation of thrust blocking is considered incidental to the construction of the pipe and no other compensation will be allowed.

7-08.4 Measurement

(October 30, 2018 Lacey GSP)

Supplement this section with the following:

“Imported Pipe Bedding” will be measured per ton.
“Bank Run Gravel for Trench Backfill” will be measured per ton.
“Utility Potholing”, will be measured per hour.
“Pipe Abandonment” will be measured per each, for each section called out on the Plans.
“Controlled Density Fill” will be measured by the cubic yard for the quantity of material placed.
“Connect to Existing Water Main” will be measured per each location called out in the plans.
“Welded Connect to Existing Water Main” will be measured per each location called out in the plans.
“_____ Inch Pipe Encasement” shall be measured by the linear foot of pipe casing actually installed.

7-08.5 Payment

(October 30, 2018 Lacey GSP)

Supplement this section with the following:

“Bank Run Gravel for Trench Backfill” per ton and “Imported Pipe Bedding” per ton.
The unit contract price per ton for "Bank Run Gravel for Trench Backfill" and “Imported Pipe Bedding” shall be full compensation for all labor, material and equipment to furnish, place and compact the backfill. Native material used for backfill shall be considered incidental to the pipe installation and no additional compensation shall be allowed.

Payment shall be based on actual amount of imported bedding or bank run gravel for trench backfill used. The Engineer reserves the right to adjust the bid proposal quantity as required.

There will be no additional compensation made for the removal and wasting of trench excavation that is unsuitable for backfill.

If no bid item for “Bank Run Gravel for Trench Backfill” or “Imported Pipe Bedding” is included, any work described in these sections shall be included in the unit contract price per foot of pipe installed and no additional compensation shall be allowed.

“Utility Potholing”, per hour shall be full compensation for all labor, material and equipment necessary to excavate, backfill, and restore the utility location(s) required by the Engineer and determine its vertical and horizontal location. Utility potholing will only be paid for work approved by the Engineer in advance.

If no bid item for “Utility Potholing” is included, any work described in this section shall be incidental to the project.

“Pipe Abandonment”, per each.
The unit contract price per each for “Pipe Abandonment” shall be full pay for providing all labor, tools, equipment and materials necessary to abandon the specified piping including the plug material.

If no bid item for “Pipe Abandonment” is included, any work described in this section shall be incidental to the project.

“Controlled Density Fill”, per cubic yard.
If no bid item for “Controlled Density Fill” is included, any work described in this section shall be incidental to the project.

“Connect to Existing Water Main”, per each.
The unit contract price for "Connect to Existing Water Main" shall be full pay for providing all labor, tools, equipment, and materials necessary to connect to the existing main. For purposes of payment, there will be no distinction made for the difficulty of connecting to the existing main or the quantity of connecting pipes or other materials needed. If no such item exists all costs shall be incidental to the project and no additional compensation shall be allowed.

“Welded Connect to Existing Water Main”, per each.
The unit contract price for "Welded Connect to Existing Water Main" shall be full pay for providing all labor, tools, equipment, and materials necessary to connect to the existing main as shown on the plans and in these specifications. For purposes of payment, there will be no distinction made for the difficulty of connecting to the existing main or the quantity of connecting pipes or other materials needed. If no such item exists, all costs for pipe, couplings, adaptors, crosses, tees, bends, reducers, caps, plugs, restrained joint fittings, bend markers, and other fittings not specifically identified on the plans shall be incidental to the project and no additional compensation shall be allowed.

The unit contract price per linear foot of “_____ Inch Pipe Encasement” shall be full compensation for all labor, material, tools and equipment to furnish, place, assemble, and install pipe casement, complete in place, including but not limited to pipe, all fittings including casing spacers, end seals and other fittings not shown on the Plans, joint materials, special requirements, commercial concrete or controlled density fill, and dewatering.

7-09 WATER MAINS

7-09.1 Description

(January 3, 2017 Lacey GSP)

Supplement this section with the following:

Various transition couplings, flanged coupling adapters, transition couplings with follower flanges and gaskets, and other miscellaneous couplings and fittings may be required for performance under this project.

It shall be the Contractor's responsibility to determine what specific couplings, adapters, and fittings that will be used to make connections shown on the plans. The Engineer has shown specific existing material types, and nominal sizes using the best information available. The Engineer has not determined the specific dimensions of existing materials. The Contractor shall submit a sketch showing configuration and materials of the proposed connection for review and approval.

Where vertical bends or pipe ends are required, the pipe and fittings shall be restrained on each side of the bend for a distance as recommended by the manufacturer.

7-09.2 Materials

(March 3, 2022 Lacey GSP)

Supplement this section with the following:

All pipe for water mains shall have flexible gasket joints and shall comply with one of the following two types unless otherwise specified on the plans:

Ductile iron pipe conforming to AWWA C 151 Standard Thickness Class 52 and have a cement mortar lining conforming to AWWA C 104. All pipes shall be joined using non-restrained joints that shall be rubber gaskets, push on type or mechanical joint, conforming to AWWA C 111.

PVC C900 pipe conforming to the latest revision of the following specifications, blue or white PVC Compound ASTM D1784 Class 12454B, Gasket ASTM F477, Manufacturing ASTM D2241. Pipe shall be certified NSF and meet requirements of Dimension Ratio 14.

All pipe, 12 inches or larger in diameter shall be ductile iron pipe unless PVC is approved by the Engineer.

Pipe restraints shall not be used as a substitute for thrust blocking unless approved by the engineer.

When restrained fittings are called out on the plans the pipe must be restrained a minimum of 2 joints either side of the fitting (90°, tee, etc.), minimum 25’ each direction, or as directed by the engineer.

Ductile iron pipe, use restrained joint pipe with “Field Lok” type gaskets rated to 350 p.s.i and tested in accordance with ANSI/AWWA C111/A21.11, TR Flex as furnished by U.S. Pipe , Piranha as furnished by Romac, or Gripper Gasket LLC.

PVC pipe 10 inches or less in diameter, use PVC C900/RJ Restrained Joint Pipe Certa-Lok by CertainTeed Corporation, Eagle Loc 900 by JM Eagle or Diamond Lok-21 by Diamond Plastics. The plastic pipe shall conform to the latest revision of the following specifications, PVC Compound ASTM D1784 Class 12454, Gasket ASTM F477, Manufacturing ASTM D2241. Pipe shall be certified NSF and meet requirements of Dimension Ratio 14.

PVC pipe larger than 10 inches in diameter, the pipe shall be restrained using bell joint restraint devices that have a working pressure of at least 200 psi with a minimum safety factor of 2:1 and shall be EBAA Iron, Inc., MEGALUG series 2800, Uni-Flange Series 1390, Romac Industries, Inc., U.S. Gripper, or approved equal.

PE Pipe: All 2 inch and smaller diameter pipe shall be NSF Approved, PE3408 blue polyethylene pipe manufactured from virgin materials. Pipe shall meet the following specifications:

- ANSI/AWWA C901
- ASTM D1248, ASTM D 3350, ASTM D 2239, ASTM D 3035 and ASTM D 2737,

- Pressure Class 200, SIDR - 7(Standard Inside Dimension Ration-Pressure Rated),
- Cell classification 345464C,

Pipe shall be manufactured by Interstate Plastics, Philips Driscopipe, Eagle Pacific, Superlon Plastics, U.S. Poly or approved equal.

All fittings for ductile iron pipe or PVC pipe shall be ductile iron compact fittings conforming to AWWA C 153 or conforming to AWWA C 110 and C 111. All shall be cement mortar lined conforming to AWWA C 104. Plain end fittings shall be ductile iron if mechanical joint retainer glands are installed on the plain ends. All fittings shall be flanged or restrained mechanical joint.

Mechanical joint fittings shall be equipped with a mechanical joint restraint device. The mechanical joint restraint device shall have a working pressure of at least 250 psi with a minimum safety factor of 2:1 and shall be EBAA Iron, Inc., MEGALUG, Ford Uni-Flange Series 1400, Romac Industries, Inc., U.S. Gripper, or approved equal.

All pipe shall be new and in good condition with no visible signs of UV damage, fading or other defects.

7-09.3(19)B Maintaining Service

(December 31, 2014 Lacey GSP)

Supplement this section with the following:

Where existing water services must be interrupted, the Contractor shall notify the Engineer as to the date, time and duration of the interruption, a minimum of 72 hours (3 working days) prior to the interruption. The Contractor shall field verify pipe diameter and fittings prior to requesting a service interruption. The City will notify customers involved or affected by the water service interruption. The Contractor shall make every effort to schedule water main construction with a minimum interruption of water service. Water service can not be interrupted before 9:00 am.

7-09.3(19)D Asbestos Cement Water Main

(April 30, 2015 Lacey GSP)

Add the following new section:

Cutting, tapping, connecting to, or abandoning an Asbestos Cement Water Main shall be in accordance with the rules and regulations set forth by the Washington State Department of Labor and Industries, and as directed by the Engineer. All costs of complying with current regulations shall be included in the unit contract price for "Connect to Existing Water Main", "Pipe Abandonment", and "_____ Inch Tapping Valve With Tapping Sleeve" as applicable.

Remove Asbestos Cement Water Pipe
The Contractor shall remove asbestos cement water pipe from the site as shown in the Plans. Costs for removal of any fittings and appurtenances attached to the AC pipe shall be incidental to the pay item "Remove Asbestos Cement Water Pipe". State certified hazardous removal specialists or sub-contractor must be hired to perform the removal. The Contractor shall notify Department of Labor and Industries and the Olympic Air Pollution Control Authority and acquire all required permits, and shall coordinate with the Engineer, prior to beginning the removal work. It shall be the Contractor's responsibility to furnish all necessary safety equipment and protective clothing and to protect the adjacent environment in accordance with applicable environmental and safety laws and regulations. Removed pipe, conduits and debris shall be properly handled, transported, and disposed. The Contractor shall submit to the Engineer documentation from certified hazard disposal site showing the chain of custody where asbestos cement pipe is disposed.

Abandon Asbestos Cement Water Pipe
Asbestos Cement Pipe with less than 4 feet of cover from finished grade or where shown on the plans or as directed by the Engineer shall be abandoned in-place per 7-08.3(5).

Asbestos Handling and Disposal
Prior to performance of any contract work, the Contractor shall obtain all permits from, and provide notification to, the Washington State Department of Labor and Industries, the U.S. EPA, the local air pollution control agency, and other permitting and regulatory agencies with jurisdiction over the work involving asbestos as the law requires.

Prior to commencing asbestos related work, the Contractor shall provide the Engineer with written verification of approvals and notifications that have been given and/or obtained from the required jurisdictional agencies, and the Contractor's schedule for all work involving asbestos removal. The schedule shall include the sequencing and scheduling of asbestos related work, and coordination with subcontractors. The Contractor shall notify the Engineer when all approvals have been received and notifications have been made, as required by the agencies involved.

The Contractor shall ensure the safety of all workers, visitors to the site, and the general public in accordance with all applicable laws, rules, and regulations.

The Contractor shall designate a Washington State Certified Asbestos Supervisor (CAS) to personally supervise the asbestos removal and to ensure that the handling and removal of asbestos is accomplished by certified asbestos workers, pursuant to Washington State Department of Labor and Industries standards. The Contractor shall ensure that the removal and disposal of asbestos meets the requirements of EPA regulation 40 CFR Part 61, local health department regulations, and all other applicable regulations.

7-09.3(24) Disinfection of Water Mains

(April 2, 2018 Lacey GSP)

Modify this section with the following:

The Contractor shall provide extra safeguards to prevent contamination, rocks, sand or foreign matter from accumulating in the pipe.

Unless otherwise approved by the Engineer, the method for disinfecting water mains shall be by dry Calcium Hypochlorite conforming to ANSI/
AWWA B300 and NSF/ANSI 61 as defined in Section 7-09.3(24)D of the WSDOT Standard Specifications and AWWA C651-14 Sec. 4.1.3 and Sec. 4.3. If adhesives are used to secure chlorine tablets to the pipe interior, they must meet the requirements of NSF/ANSI 61 and AWWA C651-14 Sec. 4.3.3.

Pipe and fittings used in connections to existing mains shall be less than one pipe length (generally less than 20 ft), and spray disinfected, swabbed or immersed for disinfection as per AWWA C651-14 Sec. 4.10 and 4.11 (1% chlorine solution).

Bacteriological testing shall be done by the City per AWWA C651-14 Sec. 5.1 Option A or B. Option B may not be able to be used if the pressure in the line is too low to allow the sample tap to run continuously for 15 minutes without opening the system valve. Bacteriological testing must be scheduled with the Engineer at least 3 days in advance and can not be done on Fridays. Results are typically provided within four (4) working days but may take up to (7) working days. If the samples fail to produce

acceptable results, the main shall be re-chlorinated by the continuous-feed or slug method until satisfactory results are obtained per AWWA C651-14.

The Contractor shall flush the new main. Flushing mains shall require the assistance of City utility personnel and shall be coordinated with the Engineer 3 working days in advance.

7-09.3(24)A Flushing
(December 31, 2014 Lacey GSP)

Modify this section by deleting the first sentence of the fourth paragraph and replacing it with the following:

The Contractor shall be responsible for disposal of treated water flushed from mains and shall neutralize the wastewater for protection of aquatic life in the receiving water and their associated surface and ground water tributaries, before disposal into any natural drainage channel, i.e., receiving water, waters of the State, including wetlands.

7-09.4 Measurement
(April 30, 2015 Lacey GSP)

Supplement this section with the following:

"Blow-off Assembly for Extendable Main" shall be measured per each.
"Remove Asbestos Cement Water Pipe" shall be measured per linear foot.

7-09.5 Payment
(October 30, 2018 Lacey GSP)

Supplement this section with the following:

The pay item in quotes is revised to read, "_____ Inch Water Main."
The unit contract price for "_____ Inch Water Main" per linear foot shall be full pay for furnishing all labor, materials, tools and equipment, necessary to install the water main, complete in-place, including but not limited to pipe, couplings, adaptors, crosses, tees, bends, reducers, caps, plugs, restrained joint fittings, bend markers, and other fittings not specifically identified on the plans. Further, all excavation, bedding, backfilling with native material, compacting, temporary patching, formed thrust blocking, testing, flushing, and disinfecting shall also be included in the unit contract price. Items not specifically identified on the plans but necessary to properly install the water main shall be considered incidental to the water main and no other compensation shall be allowed.

"Blow-Off Assembly for Extendable Main", per each.
The unit contract price per each for "Blow-Off Assembly for Extendable Main" shall be full pay for furnishing all labor, materials, tools and equipment, necessary to the cap on the new water main, thread and install required valves, valves boxes, brass pipe, bends, couplings and other fittings not specifically called out on the plans.

Temporary blow-off assembly required for temporary or permanent release of air, chlorination or flushing purposes shall be provided by the Contractor as a part of the new water main. The unit contract price for "__ inch Water Main" shall be full pay for providing all labor, tools, equipment, and materials necessary to abandon the pipe including temporary blow-off assembly.

The payment for bid item “Remove Asbestos Cement Water Pipe” shall be full pay for disposal, certified labor, materials, tools, equipment, including safety and protective equipment to protect labor necessary to remove, transport, and dispose of asbestos cement water pipe, fitting and appurtenances to an approved disposal site. The cost of all permits required for the removal and disposal of this material is included in this bid item.

7-12 VALVES FOR WATER MAINS

7-12.2 Materials

(April 2, 2018 Lacey GSP)

Supplement this section with the following:

All valves shall be non-rising stem, resilient wedge gate valves conforming to AWWA C515 unless otherwise specified and shall be American AVK, Clow, EJ Flowmaster, Kennedy, M & H, Mueller, Waterous Series 2500. The minimum cover over the valve, measured from the valve operator nut to finished grade, shall be 20 inches. Gate valves 14 inches and larger that are unable to provide 20 inches of cover over the valve shall be factory equipped with a bevel gear actuator for horizontal installation as directed by the engineer. The bevel gear actuator shall be rated for buried installations.

Butterfly valves shall meet all the requirements of AWWA C504 Class 150B and shall be Allis Chalmers, Kennedy, Linseal III, M&H, Mueller, Pratt Groundhog.

Valves shall be bolted to the tee and the cross with flanged ends. Joint materials for flanges shall be 1/8 inch thick one piece, cloth inserted rubber gaskets conforming to AWWA C107-78.

Bolts for all flanged and mechanical joints shall be high strength, low alloy steel bolts only, meeting the current provisions of American National Standard ANSI/AWWA C111/A 21.11 for rubber gasket joints for cast iron or ductile iron pipe and fittings.

Valve boxes shall be East Jordan Iron Works #248 or Olympic Foundry VB-950, 6-3/4 inch OD with recessed handle type iron cover marked "LACEY WATER."

Tapping sleeves shall be stainless steel with ductile iron flange and shall be Romac "SST" or approved equal.

Two inch air and vacuum release valve shall be a two inch ARI D-040. Fiberglass enclosure shall be Vent Guard Model No. AVG1824, Beige in color, manufactured by Hot Box, Inc. (800) 736-0238. An insulation pouch shall be placed over the air release assembly. The 18” x 24” insulation pouch shall be beige in color with the opening on the 18” side, and manufactured by DeKorra Products LLC

Valve insertions shall be Romac InsertaValve or Hydra-Stop Insta-Valve Plus and be completed by an experienced installer.

7-12.3(3) Raise Valve Box to Grade

(November 20, 2020 Lacey GSP)

Add the following new section:

Where shown on the plans or where directed by the Engineer, existing valve boxes shall be raised to the grade as staked or otherwise designated by the Engineer. The Contractor shall supply and install new

valve boxes and covers as part of raising valve boxes to grade. The finished installation shall conform to the detail shown in plans.

All new and existing valve boxes located in any unpaved area shall have a concrete pad poured or placed entirely around each valve box. The pad shall be a minimum of 36 inches by 36 inches for each valve box. The concrete shall be commercial concrete or better with a minimum thickness of 8 inches.

Maximum distance allowed from edge of iron ring or frame of appurtenance to outside edge of pavement restoration is 18 inches. Patches larger than this or clean misses (e.g. where the Contractor excavates in the new pavement mat and does not find the iron appurtenance to raise) shall result in a credit from the Contractor to the City of $1000 for each occurrence. Further, the Contractor shall repair the pavement patch as directed by the Engineer.

See Section 5-04.3(26) Utility Access for additional requirements.

7-12.3(4) Valve Insertion

(December 31, 2014 Lacey GSP)

Add the following new section:

The valve insertions shall be a Romac InsertaValve or Hydra-Stop Insta-Valve Plus Valve Assembly and Sleeve. The water main material type is expected to be asbestos concrete. Prior to valve insertion, the Contractor shall ensure that there is enough cover over the pipe for a valve box to be installed flush to existing surface. No interruption of water service shall be allowed.

7-12.5 Payment

(April 2, 2018 Lacey GSP)

Supplement this section with the following:

“Raise Valve Box to Grade,” per each.
"_____ Inch Gate Valve," per each.
The payment for the various items specified above shall be full pay for furnishing all labor, materials, tools, and equipment necessary to install the unit complete in place on the water main, including trenching, concrete pads and concrete or asphalt restoration of adjacent areas, disinfecting, testing, blocking of valve, valve box and marker post.

"_____ Inch Air and Vacuum Release Valve," per each.
The unit contract price for per each for “__ Inch Air and Vacuum Release Valve” shall be full pay for furnishing all labor, materials, tools and equipment, necessary to install the air/vacuum release valve, complete in-place, including but not limited to pipe, valves, couplings, adaptors, bends, reducers, box and concrete foundation, and other fittings not specifically identified on the plans.

"_____ Inserted Valve,” per each.
The unit contract price per each for “"_____ Inserted Valve” shall be full pay for furnishing all labor, materials, tools and equipment, necessary to install the inserted valve, complete in-place, including but not limited to the pipe sleeve, pipe tap, valve, valve box, excavation and backfill, including concrete pads and other materials required to install the inserted valve not specifically identified in the plans.

7-14 HYDRANTS

7-14.2 Materials

(March 3, 2022 Lacey GSP)

Modify this section with the following:

Fire hydrants shall be Waterous Pacer, Mueller Centurion, M & H Reliant Style 129S, Kennedy K-81, or EJIW 5CD250 conforming to AWWA C 502. The valve opening shall be 5 1/4-inch diameter. Hydrants shall be mechanical joint, 4-1/2 feet standard bury with two 2-1/2 inch outlets and one pumper port, and shall have a 1.25-inch pentagonal operating nut (counter clockwise opening). All hydrants shall be outfitted with a 4-1/2" NST by 5" Storz adapter with cap.

Some locations may require other than the 4-1/2 feet standard bury. Contractor shall be responsible for determining actual required bury and provide proper standpipe height.

Blow-off Hydrants shall be Eclipse MainGuard Model No. 78. Pipe and fittings for blow-off hydrant installation shall conform to the requirements of Section 7-15. The factory 2.5" cap shall be replaced with a plastic/nylon style cap with 2.5" NST thread.

7-14.3(1) Setting Hydrants

(December 31, 2014 Lacey GSP)

Supplement this section with the following:

A 6 foot wide cleared area, centered along the pipe, shall extend from the edge of pavement to 3 foot past the new hydrant, not to exceed the right-of-way line. The clearing may include trimming of trees and shrubs to an overhead height of 10 feet as directed by the Engineer. Upon completion of fire hydrant installation, the cleared area shall be graded and restored as directed by the Engineer.

7-14.5 Payment

(December 31, 2014 Lacey GSP)

Supplement this section with the following:

The unit contract price for all items in this section shall also include, but not be limited to, trench excavation and backfill, gravel backfill, fill and grading 3' around hydrant and between hydrant and edge of roadway, painting, extensions, fittings, ductile iron spool, Storz adapter, Megalug restraining joints, and blue hydrant marker.

"Blow-Off Hydrant Assembly", per each.
The unit contract price per each for "Blow-Off Hydrant Assembly" shall be full pay for furnishing all labor, materials, tools and equipment, necessary to the cap on the new water main, thread and install required valves, valves boxes, brass pipe, bends, couplings and other fittings not specifically called out on the plans.

7-15 SERVICE CONNECTIONS

7-15.2 Materials

(November 20, 2020 Lacey GSP)

Supplement this section with the following:

Service pipe from the main to the new meter shall be the appropriate size shown in the table below.

Meter Size	Pipe Diameter
5/8" Single Meter	1-1/2"
5/8" Double Meter	1-1/2"
1"	1-1/2"
2"	2"
3"	3"

One and one-half and two inch diameter service lines shall be NSF Approved, PE4710 blue polyethylene pipe manufactured from virgin materials. Pipe shall meet the following specifications:

- ANSI/AWWA C901
- ASTM D1248, ASTM D 3350, ASTM D 2239, ASTM D 3035 and ASTM D 2737,
- Pressure Class 200, SIDR - 7(Standard Inside Dimension Ration-Pressure Rated),
- Cell classification 345464C,

Pipe shall be manufactured by Interstate Plastics, Philips Driscopipe, Eagle Pacific, Superlon Plastics, U.S. Poly or approved equal.

Service pipe from the new 5/8" meter to the old 5/8" meter location shall be minimum 1" diameter polyethylene plastic pipe minimum pressure Class 200. Service pipe greater than 100 ft. in length from new meter to old meter location shall be 1-1/2" diameter until it is connected to existing service line. The Contractor shall identify the diameter of the existing service line to remain in-place at the old meter location and provide the required fittings necessary for the transition.

Service Saddle shall be ductile iron with double stainless steel straps or bands. All clamps or bands shall have rubber gaskets and I.P. threaded outlets (Ford FS202, Romac 202S or approved equal.)

1-1/2" Corporation Stop shall be all brass, "ball valve" type, male iron pipe thread inlet by pack joint outlet conforming to AWWA C800, Ford FB1101, Mueller E25029, AY McDonald 74704B-1.5" or approved equal. 2" Corporation Stop shall be Ford FB 11017G, Mueller H9969, AY McDonald 74704B-2" or approved equal.

1-1/2" Curb Stop shall be all brass, "ball valve" type, pack joint inlet by female iron pipe thread outlet conforming to AWWA C800, Ford B61, Mueller E25171, AY McDonald 76101-1.5" or approved equal. 2" Curb Stop shall be Ford FOB61-777, Mueller B20283, AY McDonald 76101-2" or approved equal.

"U" Branch Piece for 5/8" double meter shall be all brass, 1" male iron pipe thread inlet by two ¾" male iron pipe outlets conforming to AWWA C800 (Ford U88-43-7.5, Mueller MH15364GFWD, AY McDonald 708UMM 1"x3/4"x7.5" or approved equal.

Stainless steel inserts shall be used with all pack joint fittings. Further, all bushings, reducers, nipples, couplings, adaptors, and fittings required to make service connections shall be all brass conforming to AWWA C800 manufactured by Ford or approved equal.

Meter setters shall be all copper, Ball valve style with locking wing and check valve. The Contractor shall remove and reinstall the existing meter in the new setter after testing of new water main and service line. The Contractor shall use care in removing and reinstalling the existing meter. All fittings and meters shall be kept clean and free of dirt or foreign material and sprayed with a light bleach / chlorine solution prior to installation. Services shall be flushed at the customer hose bib after final meter

installation to clear the service line, remove air and to verify good flow. All costs for replacing a broken meter due to the Contractor's neglect shall be borne by the Contractor.

Meter Size	Meter Setter
5/8" Single Meter	Ford VH 72-15W or Mueller B2404-R2EF15 or AY McDonald AY-720-215WCD
5/8" Double Meter	Ford VH 72-15W (2 ea) or Mueller B2404-R2AG15 (2ea) or AY McDonald AY-720-215WCD (2ea)
1" Meter	Ford VBH 74-15W or Mueller B2404-R2AG15 or AY McDonald AY-720-415WCDD
1-1/2" Meter	Ford VBH 76-15HB or Mueller B2423-29900015-15 with high by-pass or AY McDonald AY-720R615WDFF
2" Meter	Ford VBH 77-15HB or Mueller B2423-29900015-2 with high by-pass or AY McDonald AY-720R715WDFF

Meter boxes shall be placed in non-traffic or non-parking areas whenever possible. Meter boxes and lids shall be Christy Fibrelyte. Covers with reader doors in them will not be allowed. Meter boxes may be placed in traffic/parking areas if shown on the plans or as directed by the engineer. In these areas the meter boxes shall be Old Castle or Christy reinforced concrete with a steel H20 traffic rated cover marked water.

Meter Size	Meter Box	Meter Box
5/8" Single Meter	Christy Fibrelyte FL30T-12	Christy Fibrelyte FL30-D with "City of Lacey" in the lid
5/8" Double Meter	Christy Fibrelyte FL36T-12	Christy Fibrelyte FL36-D with "City of Lacey" in the lid
1" Meter	Christy Fibrelyte FL36T-12	Christy Fibrelyte FL36-D with "City of Lacey" in the lid
1-1/2" Meter	Christy Fibrelyte FL36T-18	Christy Fibrelyte FL36-D with "City of Lacey" in the lid
2" Meter	Christy Synertech SYN2436T-18	Christy Synertech SYN2436T with "City of Lacey" in the lid

Imported service line bedding shall meet the requirements of Section 9-03.16. See Section 7-08 "Imported Pipe Bedding" for measurement and payment of service line bedding.

7-15.3 Construction Requirements

(December 31, 2014 Lacey GSP)

Supplement this section with the following:

The Contractor shall locate and verify the size and type of existing services. The approximate locations of the existing services are shown on the Plans. Existing services may be located on private property, close to buildings, in backyards, or other complex construction locations.

The Contractor shall notify private property owners 24 hours prior to any scheduled water outage. In addition, the Contractor shall knock on the door of the house affected one hour before the outage and notify the homeowner of the outage. Disruption of existing services shall be minimized.

Service line from the new water main to the new meter setter, including the new meter setter, shall be bedded with imported service line bedding. The service line from the new meter setter to the connection to the existing service line shall be bedded with suitable native material as directed by the Engineer.

The Contractor shall take special care with the work on private property. The Contractor shall verify with the Engineer and/or Property Owner final service line route that will minimize damage to landscaping or improvements, and restore all damaged items to a condition equal to or better than the original condition. For service lines crossing under sidewalks, driveways, or landscaped areas, the Contractor shall layout new service line routes prior to excavation for approval by the Engineer. Service line routes should minimize removal of asphalt, concrete, and mature landscaping.

7-15.3(2) Connection to New Water Main

(January 3, 2017 Lacey GSP)

Add the following new section:

Service lines between the new water main and the existing service line past the existing meter setter shall be installed prior to testing and disinfecting the new water main. Disinfect fittings and pipe prior to installation.

Installation/replacement of a service to a new water main shall include the following:

- install new service line to new meter setter and box,
- install new service line from new meter setter to existing meter service,
- verify each individual existing water service is disconnected,
- remove old service to include; meter, meter box, setter, and any associated appurtenances,
- reinstall existing meter in new meter setter,
- connect new service line to existing service line on the property side of the old service (no jumpers will be allowed at existing setters).
- coordinate with the customer to flush the service line at the customer's outside faucet and verify all faucets are functioning

If after abandoning the old water main(s) it is determined that a customer is without water and a service was not shown on the plans at that particular location, the Contractor shall within 24 hours install a new service connection as directed by the Engineer.

7-15.3(3) Connection to Existing Water Mains

(January 3, 2017 Lacey GSP)

Add the following new section:

Disinfect fittings and pipe prior to installation.

Connection of a service to an existing water main shall include the following:

- locate, excavate, and connect to the existing water main,
- install new service (with or without meters as identified on the plans),

- verify each individual existing water service is disconnected (unless meter credit is noted),
- remove old service to include; meter, meter box, setter, and any associated appurtenances (unless meter credit is noted),
- install a service line from the new service to the existing service line on the property side of the old service (unless meter credit is noted).

If after abandoning the old water main(s) it is determined that a customer is without water and a service was not shown on the plans at that particular location, the Contractor shall within 24 hours install a new service connection as directed by the Engineer.

7-15.3(4) Pushing or Drilling of Water Service Pipe

(January 3, 2017 Lacey GSP)

Add the following new section:

For service lines crossing existing pavement roadway or as directed by the Engineer new service lines shall be pushed or drilled using approved methods. The Contractor may elect to push or bore service lines beneath existing pavement or mature landscaping as approved by the Engineer. .

All pushed or bored lines shall be cased in a PVC or steel sleeve of appropriate size to accept water service line. The Contractor shall "window" existing utilities at expected crossing conflicts to ensure clearance while pushing the service line. The Contractor shall be responsible for any damages including but not limited to existing underground utilities during construction activities.

If shown on the plans or directed by the Engineer, the Contractor shall make a maximum of three (3) attempts to successfully push or directional drill each service line. If after three attempts per service line, the soil conditions do not allow for service line install, the Contractor shall be allowed to open-cut excavate the service line route and install the service line.

All costs for pushing or boring operations shall be incidental to and included in the unit or lump sum prices of the Contract and no additional payment will be made.

7-15.3(5) Repair of Existing Water Service

(January 3, 2017 Lacey GSP)

Add the following new section:

If while pushing or excavating, an existing service line is broke. The Contractor shall follow the course of action as stated below:

- Immediately call or notify the Engineer
- Crimp service line if possible,
- If needed, assist the Engineer or City of Lacey Water repair crew to throttle down the water main,
- Disinfect all fittings and pipe prior to installation. Excavate and repair broken service line while under the direct supervision of the Engineer or wait for assistance from the City of Lacey Water repair crew,
- Flush repaired service line at setter with the assistance of the Engineer until water flow becomes clean, inspect and flush setter and meter, reconnect old service line to meter setter (if applicable) and resume service to residence. Flush hose bib at residence or building until air is removed and water runs clear.

7-15.3(6) Irrigation and Electrical Systems Testing and Repair

(December 31, 2014 Lacey GSP)

Add the following new section:

The Contractor shall operationally test existing irrigation and landscape electrical systems prior to construction at individual residences. If it is found through the baseline tests that an existing system does not operate correctly, the Contractor shall demonstrate the discrepancy to the Engineer and the problem(s) will be documented. The Contractor shall take precaution to avoid cutting or breaking of lines and services during service line installation. If a line is cut or broke, the Contractor shall immediately repair and test the system prior to continuing on with other service line installations.

Upon completion of the service line installation, the Contractor shall once again test the existing systems and compare to the baseline tests conducted prior to work within the yard. Any discrepancies between the baseline test and the final tests shall be repaired prior to continuing on with other service line installations.

7-15.3(7) Residential Lawn and Landscape Repair

(December 31, 2014 Lacey GSP)

Add the following new section:

The Contractor shall limit damage of existing lawn and landscaping during service and service line installation. All damage shall be repaired equal to or better than the existing condition as shown in the preconstruction video. All costs for restoration with the exception of Topsoil Type A and Bark or Wood Chip Mulch shall be included in the unit price per single or double meter service.

7-15.3(8) Sampling Station

(April 30, 2015 Lacey GSP)

Add the following new section:

The Contractor shall connect the existing sampling stations where shown on the plans or where directed by the Engineer. The finished installation shall conform to the detail shown in plans.

7-14.4 Measurement

(******)

Supplement this section with the following:

"Sampling Station", will be measured per each.
"Re-plumb Water", will be measured per each.
"Water Service Connection", will be measured per each

7-15.5 Payment

(October 16, 2016 Lacey GSP)

Supplement this section with the following:

"___Inch Single Meter Service Connected to New Water Main", per each.
"___Inch Double Meter Service Connected to New Water Main", per each.

The unit contract price for the above bid items shall be full compensation for all labor, material, and equipment to furnish and install the meter service(s) complete including, but not be limited to, service saddle, tapping the pipe, corporation stops, service lines, meter, meter setter or tandem setter, pressure reducing valve(s), meter box, and all miscellaneous couplings, fittings, and adapters to install the service

lines and connect to the existing service. Furthermore, pushing, boring, or directional drilling of new service line including encasement, repair of broken utility and service lines, and lawn and landscape restoration per service install is included.

Progress payment of 50% shall be allowed once service line(s) is installed up to existing meter setter(s) and water main and service lines are flushed and tested. Complete and final payment shall be allowed once residence(s) has full use of new system and repair of lawn and landscaping is completed.

For purposes of payment, there will be no distinction made for the difficulty of disconnecting the old meter and reconnecting to the new meter or the length of service line required for each new meter service.

"Sampling Station", per each.
The payment for the items specified above shall be full pay for furnishing all labor, materials, tools, and equipment, and disposing of removed materials necessary or incidental to reconnecting the unit complete in place as shown on the detail in the plans.

"Re-plumb Water Service", per each
The payment for "Re-plumb Water Service" shall be full compensation for all labor, material, equipment and permits/fees necessary to rotate and re-plumb the existing service. This work shall include creating new connection point(s) under the building and extending the new service to one foot outside of the existing foundation. Work shall include but is not limited to pipe, fittings, connections, drilling the foundation and repairing/grouting the foundation, trenching, and backfilling. For purposes of payment, there will be no distinction made for the difficulty of turning plumbing required for each sewer or water service.

"Water Service Connection", per each
The unit contract price per each for "Water Service Connection" shall be full pay for furnishing all labor, materials, tools, and equipment, necessary or incidental to connecting the new water service line to the existing service line as shown on the plans. This work shall include, but not be limited to, any trenching, piping and all miscellaneous couplings, fittings, and adapters required to for connection to the existing service, jointing, testing, and other items necessary for the service to be installed complete in-place. For purposes of payment, there will be no distinction made for the type or length of pipe required, type of service (domestic, fire, or irrigation), nor the level of difficulty of disconnecting the old service and reconnecting to the new service line required for each new service.

7-17 SANITARY SEWERS

7-17.1 Description

(October 29, 2010 Lacey GSP)

Supplement this section with the following:

Various transition couplings, flanged coupling adapters, transition couplings with follower flanges and gaskets, and other miscellaneous couplings and fittings may be required for performance under this project.

It shall be the Contractor's responsibility to determine what specific couplings, adapters, and fittings that will be used to make connections shown on the plans. The Engineer has shown specific existing material types, and nominal sizes using the best information available. The Engineer has not determined the specific dimensions of existing materials.

7-17.2 Materials

(November 20, 2020 Lacey GSP)

Delete this section and replace with the following:

Gravity Sewer Pipe - Pipe used for gravity sewer shall meet the requirements of WSDOT Section 9-05.12(1) Solid Wall PVC Sanitary Sewer Pipe. All pipe shall be white or green in color.

PVC Pressure Pipe – All pipe less than 4 inches in diameter shall be Schedule 80 PVC, ASTM D1784. All pipe 4 through 12 inches in diameter, shall be PVC C900 DR 14, meeting the requirements of WSDOT Section 9-30.1. A combination of solvent weld and PVC threaded schedule 80 fittings may be required to properly plumb the pump discharge piping to and through the valve vault. All pipe shall be grey, green or white in color. No sewer pipe installed in this project shall be blue.

HDPE (High density Polyethylene Pipe) Pressure Pipe- All HDPE pipe shall be Hi density ASTM D 3350, SDR 11 4710 socket welded or butt fusion welded and be sized by inside pipe diameter (see table below). IPS HDPE pipe shall be used; however, in cases where the required inside diameter of the pipe cannot be obtained using IPS HDPE, ductile iron pipe size (DIPS HDPE) pipe may be required. All HDPE pipe used for sewer shall be green or black with a green stripe manufactured on the pipe.

Table: Typical Sizes And Dimensions For Iron Pipe Size (IPS) PE3408
High Density Polyethylene (HDPE) Pipe

PRESSURE RATING		DR 11 (160 PSI)		
NOMINAL SIZE	ACTUAL O.D.	MINIMUM WALL THICKNESS	AVERAGE I.D.	WEIGHT LB/LF
2”	2.375”	0.216”	1.917”	0.639
3”	3.500”	0.318”	2.825”	1.387
4”	4.500”	0.409”	3.633”	2.294
5”	5.375”	0.489”	4.339”	3.272
5”	5.563”	0.506”	4.491”	3.505
6”	6.625”	0.602”	5.348”	4.971
7”	7.125”	0.648”	5.752”	5.750
8”	8.625”	0.784”	6.963”	8.425
10”	10.750”	0.977”	8.678”	13.089
12”	12.750”	1.159”	10.239”	18.412
14”	14.000”	1.273”	11.302”	22.199
16”	16.00”	1.455”	12.916”	28.994
18”	18.00”	1.636”	14.531”	36.696
20”	20.00”	1.818”	16.145”	45.304
22”	22.00”	2.000”	17.760”	54.818
24”	24.00”	2.182”	19.375”	65.237
26”	26.00”	2.364”	20.989”	76.563
28”	28.00”	2.545”	22.604”	88.795
30”	30.00”	2.727”	24.218”	101.934

Note:
Average inside diameter calculated using nominal OD and minimum wall plus 4% for use in estimating fluid flows. Actual ID will vary.

Pipe Restraint - Where pipe is specified as restrained joint pipe 4 inches through 10 inches in diameter, use PVC C900/RJ Restrained Joint Pipe Certa-Lok by CertainTeed Corporation, Eagle Loc 900 by JM Eagle or Diamond Lok-21 by Diamond Plastics. The plastic pipe shall conform to the latest revision of

the following specifications, PVC Compound ASTM D1784 Class 12454, Gasket ASTM F477, Manufacturing ASTM D2241. Pipe shall be certified NSF and meet requirements of Dimension Ratio 14.

Pipe Restraint - Where specified as restrained joint pipe larger than 10 inches in diameter, the pipe shall be restrained using bell joint restraint devices that have a working pressure of at least 200 psi with a minimum safety factor of 2:1 and shall be EBAA Iron, Inc., MEGALUG series 2800, Uni-Flange Series 1390, Romac Industries, Inc., U.S. Gripper, or approved equal.

Ductile Iron Pipe - All ductile iron pipe shall conform to ANSI/AWWA C151/A21.51. Thickness class 52 specifications. Ductile iron pipe for sewer shall be ordered as bare pipe without cement lining and without outside coating. The pipe shall be lined on the inside to a minimum of 35 mils thick with Protecto 401 or 15 mills thick with 3M ScotchKote 134 fusion bonded epoxy. The pipe shall be coated on the outside to a minimum of 20 mils thick with Ceramawrap Ceramic Epoxy or 15 mils thick with 3M ScotchKote 134 fusion bonded epoxy. Coatings shall be applied according to the manufacturers' requirements by a certified applicator of the product. Coatings shall not be applied to pipe, fittings or valves in the field by the contractor.

Ductile Iron Fittings for sewer mains - All ductile iron pipe fittings shall be compact ductile iron style and shall be ordered bare (without cement lining or outer coating) and then be coated with epoxy rated for sewer by a professional coating firm. Coatings applied by the fitting manufacturer shall be excepted pending approval of the coating material submitted. Coatings/linings shall be Protecto 401, Ceramawrap or 3M ScotchKote 134 per the Ductile iron pipe specifications shown above. Mechanical joint (MJ) fittings shall be installed with an approved mechanical joint restraint device. The mechanical joint restraint device shall have a working pressure of at least 250 psi with a minimum safety factor of 2:1 and conform to ANSI A21.10 and AWWA C110. Products shall be EBAA Iron, Inc., MEGALUG Series 2000PV, Romac Industries, Inc., U.S. Gripper, or approved equal.

Eccentric Plug Valves for sewer mains – Valves 3" through 12" shall have a round full port opening (100% pipe area), comply with AWWA C517 specifications and be constructed of cast or ductile iron. Flanged valves shall be drilled to ANSIB16.1, Class 125 specifications and mechanical Joint valves shall comply with ANSI/AWWA C111/A21.11 specifications. Valves shall be eccentric quarter turn with resilient encapsulated plug, have 95% nickel seat, u-cup stem seal and permanently lubricated stainless steel bearings. Valves shall be 175psi working pressure. 3" and 4" valves shall be standard ¼ turn operation. Valves 6" and larger shall have a totally enclosed, sealed and permanently lubricated worm gear actuator with stainless shaft. Valves for buried service shall have a gear box and be designed for underground applications. Buried valves shall be fitted with standard 2" square hub operator. 3" and 4" valves installed in vaults shall be supplied with hand lever bar to attach to hub. Valves 6" and larger in vaults shall be supplied with hand wheel operator attached to gear box. Plug valves for sewer service shall be coated by the manufacturer on the inside and outside with the manufacturers epoxy coating rated for sewer. Valves shall conform to AWWA C509-80 and be Crispin 800 series, Pratt -Ballcentric, or Milliken - Millcentric.

PVC Ball Valves – 2" and smaller PVC ball valves shall be Schedule 80 PVC or Poly true union valves with red handle. Cepex, Spears, KBI or approved equal. Valves shall be threaded FIPT x FIPT Style.

Valves shall be bolted to tees and the crosses with flanged ends. Joint materials for flanges shall be 1/8 inch thick one piece, cloth inserted rubber gaskets conforming to AWWA C107-78, rated for sewer service. Bolts, nuts and hardware for all flanged and mechanical joints in the wetwell and valve vault shall be 316 stainless steel only, meeting the current provisions of American National Standard ANSI/AWWA C111/A 21.11 for rubber gasket joints for cast iron or ductile iron pipe and fittings.

Valve boxes shall be EJ Ironworks or Olympic Foundry VB-950, 6-3/4 inch OD with recessed handle type iron cover marked "CITY OF LACEY SEWER".

All pipe shall be new and in good condition with no visible signs of UV damage, fading or other defects.

7-17.3(2) Cleaning and Testing

7-17.3(2)A General
(March 3, 2022 Lacey GSP)

The first sentence shall be deleted and replaced with the following:

All sewer force mains and appurtenances shall be tested in sections of convenient length under a hydrostatic pressure of not less than 175 psi for 15 minutes.

Supplement this section with the following:

All pipe installed shall be tested in accordance with WSDOT Section 7-09.3(23).

All sanitary sewer pipe, including laterals, shall be high-velocity cleaned, televised and approved prior to paving. Hydrant flushing lines is not an acceptable method of cleaning. If rocks or other debris are found in manholes, the Contractor shall re-clean the sewer pipe.

7-17.3(2)H Television Inspection
(March 3, 2022 Lacey GSP)

Delete this section and replace with the following:

The television inspection shall be completed with a CCTV color camera recorded in standard DVD format. CCTV inspection crawler shall be equipped with a flow depth indicator, such as a 1-inch steel bar or ball, to measure the magnitude of pipe vertical fluctuation. If multiple television inspections of the same pipe are required, they shall be completed in the same direction each time.

Television inspection shall meet related Pipeline Assessment and Certification Program (PACP) codes developed by NASSCO, Inc. Television inspection of pipelines shall be performed by experienced personnel trained in identifying structural and operational defects, obstacles and service connections by closed circuit color television. Personnel shall be PACP-trained and certified field technicians. No sags or bellies in the pipe shall be greater than ½ inch in depth.

The Contractor shall supply one paper copy and one electronic copy of the pipe inspection form for each pipe reach televised. Two copies of electronic video files shall be provided in DVD format. The Contractor shall submit DVDs and written reports for review within three (3) working days after line televising. The written report must note any areas that are not in compliance with the plans and specifications. Acceptance of the line will be made after the television inspection video and report has been reviewed and approved by the Engineer. Allow the Engineer (5) working days to review the video and report before scheduling paving.

Acceptance of the line will be made after the television inspection DVD has been reviewed and approved by the Engineer.

The cost incurred in making all television inspections shall be included in the unit contract price per foot of pipe installed and no additional compensation shall be allowed.

7-17.3(5) Lawn and Landscape Repair
(September 23, 2013 Lacey GSP)

Section 7-15.3(5) is added with the following:

The Contractor shall limit damage of existing lawn and landscaping during service and service line installation. All damage shall be repaired equal to or better than the existing condition as shown in the preconstruction video. All costs for restoration shall be included in the unit price per service.

7-17.4 Measurement

(October 30, 2018 Lacey GSP)

Section 7-17.4 is supplemented with the following:

“Side Sewer Connection” shall be measured per each.
“Pig Launch Port Assembly” shall be measured per each.
"___ Inch Plug Valve” shall be measured per each.
“Connect to Existing Sewer System” shall be measured per each location called out on the plans.

7-17.5 Payment

(October 30, 2018 Lacey GSP)

Section 7-17.5 is supplemented with the following:

"___ Inch Diameter Sewer Pipe", per linear foot.
The unit contract price per linear foot for "___ Inch Diameter Sewer Pipe", shall be full compensation for all labor, material, and equipment to furnish, place, assemble, and install sewer line, complete in place, including all wyes, tees, caps, plugs, clean outs, special fittings, joint materials, commercial concrete, bend markers, adjustment of inverts to manholes, dewatering, bypass pumping, cleaning, televising inspection and testing. Further, all excavation, hauling, disposal, compaction, temporary patching and other required earthwork shall be included.

"___ Inch Diameter Force Main Sewer Pipe", per linear foot.
The unit contract price per linear foot for "___ Inch Diameter Force Main Sewer Pipe" ,shall be full compensation for all labor, material, and equipment to furnish, place, assemble, and install force main sewer pipe, complete in place, including tees, bends, caps, reducers, special fittings, thrust blocking, dewatering, testing, cleaning, and connection to existing system. Further, all excavation, hauling, disposal, compaction, temporary patching and other required earthwork shall be included.

“Side Sewer Connection”, per each.
The unit contract price for “Side Sewer Connection” shall be full pay for furnishing all labor, materials, tools, and equipment, necessary or incidental to furnishing and installing the unit complete in place on the sewer main, including trenching and temporary patching, but not be limited to, all miscellaneous couplings, fittings, wyes, the 6” sewer lateral, the cleanout and adapters to install the service lines and connect to the existing service, jointing and testing, and other items necessary for the unit to be installed complete in-place. For purposes of payment, there will be no distinction made for the difficulty of disconnecting the old service and reconnecting to the new service or the length of service line required for each new service.

“Connect to Existing Sewer System”, per each.
The unit contract price per each for “Connect to Existing Sewer System” shall be full pay for furnishing all labor, tools, equipment, and materials required to connect to existing system in place, including but not be limited to concrete, concrete collars and sealants. Further, all excavation, haul, backfill, testing, accessories, and removal of manholes shall be included in the unit contract price. For purposes of payment, there will be no distinction made for the difficulty of connecting to the existing sewer system or the quantity of connecting pipes or other materials needed. Items not specifically identified on the plans

but necessary to properly connect to system shall be considered incidental and no other compensation shall be allowed.

"Pig Launch Port Assembly," per each.
The unit contract price per each for "Pig Launch Port Assembly," shall be full compensation for all labor, material, and equipment to furnish and install manholes, valves boxes, pipe supports, covers, caps, and other appurtenances not otherwise compensated for by other bid items. Further, all excavation, hauling, disposal, compaction and other required earthwork shall be included.

"_____ Inch Plug Valve," per each.
The payment for "_____ Inch Plug Valve", shall be full pay for furnishing all labor, materials, tools, and equipment, necessary or incidental to furnishing and installing the unit complete in place on the sewer main, including trenching, jointing, testing, blocking of valve, valve box and other items necessary for the valve to be installed complete in-place.

All costs to furnish and install concrete pads shall be incidental to the unit contract price for each item and no other pay shall be allowed.

-7-23 SANITARY SEWER BYPASS PUMPING

7-23.1 General

(October 29, 2010 Lacey GSP)

The Contractor is required to furnish all materials, labor, equipment, power, and maintenance, etc. to implement a temporary pumping system for the purpose of diverting the existing sanitary sewer flow around the work area as needed for the duration of the project. The bypass system as supplied by the contractor shall meet the requirements of all codes and regulatory agencies having jurisdiction, these general specifications and the technical specifications.

The design, installation, and operation of the temporary pumping system shall be the Contractor's responsibility. The Contractor shall employ the services of a subcontractor who can demonstrate to the engineer that he specializes in the design and operation of temporary bypass pumping systems. The subcontractor shall provide at least five (5) references of projects of a similar size and complexity as this project performed by his firm within the past five years.

7-23.1(1) Bypass Pumping Plan

(October 29, 2010 Lacey GSP)

The Contractor shall submit a detailed description of the proposed pumping system and the bypass pumping contractor's references for review and approval at the pre-construction conference. A separate pre-bypass pumping meeting will be conducted within 4 weeks of submittal of the bypass pumping plan and at minimum 2 weeks prior to the bypass pumping, at which time the Contracting Agency will notify the Contractor of any deficiencies or corrections that are required. Re-submittal of the corrected bypass pumping plan is required. Provided the corrected bypass pumping plan is satisfactory, an additional pre-bypass pumping meeting will not be required.

The Contractor shall submit to the Contracting Agency detailed plans and descriptions outlining all provisions and precautions to be taken by the Contractor regarding handling of existing wastewater flows. This plan must be specific and complete, including such items as schedules, locations, elevations, capacities of equipment, materials, and all other incidental items necessary and/or required to ensure proper protection of the facilities, including protection of the access and bypass pumping locations from damage due to the discharge flows, and compliance with the requirements and conditions specified in

these Contract Documents. Work on or abandonment of the gravity sanitary sewer system or existing lift station shall not begin until all provisions and requirements have been approved by the Contracting Agency.

The bypass pumping plan shall include but not be limited to the following details:

1. Staging areas for pumps
2. Sewer plugging method and types of plugs
3. Size and location of manholes or access points for suction and discharge hose or piping
4. Calculations for selection of bypass pumping pipe size
5. Number, size, material, location and method of installation of suction piping
6. Number, size, material, method of installation and location of installation of discharge piping
7. Bypass pump sizes, capacity, solids handling capacity and number of each size to be on site and power requirements
8. Calculations of static lift, friction losses, and flow velocity (pump curves showing pump operating range) shall be submitted
9. Standby power generator size, location (if used)
10. Downstream discharge plan
11. Method of protecting discharge manholes or structures from erosion and damage
12. Thrust and restraint block sizes and locations
13. Sections showing suction and discharge pipe depth, embedment, select fill and special backfill
14. Method of noise control for each pump and/or generator
15. Any temporary pipe supports and anchoring requirements
16. Design plans and computation for access to bypass pumping locations indicated on the drawings
17. Schedule for installation of and maintenance of bypass pumping lines
18. List of spare parts and support equipment to be maintained on site
19. Secondary containment type and size, and plan for deployment
20. Methods for monitoring and assuring equipment is operating per plan
21. Alarm Response Plan which shall include contacting City of Lacey Shop
22. Contingency plan for spill, leak, or other discharge

7-23.2 Equipment

(October 29, 2010 Lacey GSP)

All pumps used shall be fully automatic self-priming units that do not require the use of foot valves or vacuum pumps in the priming system. The pumps may be electric or diesel powered. All pumps used must be constructed to allow dry running for long periods of time to accommodate the cyclical nature of effluent flows. Pumps shall be capable of pumping solids with a nominal spherical dimension of three (3) inches without clogging.

The Contractor shall provide the necessary stop/start controls for each pump.

The Contractor shall include one stand-by pump of each size to be maintained on site. Back up pumps shall be online, isolated from the primary pumping system by a valve.

The pumps shall be contained inside a temporary portable secondary containment structure(s) to contain any fuel or sewage that may spill during the normal course of operation.

Discharge Piping – In order to prevent the accidental spillage of flows, all discharge systems shall be temporarily constructed of rigid pipe with positive, restrained joints. Under no circumstances will "irrigation" type piping or glued PVC pipe be allowed. Discharge hose will only be allowed in short sections and by specific permission from the Engineer.

Noise levels of equipment shall meet Washington State noise level requirements. Contractor shall make the necessary provisions to control the noise of the temporary pumping equipment such that the noise generated by the equipment is limited to 55 dBA during the day (7 AM to 10 PM) and 45 dBA at night (10 PM to 7 AM) at property lines. Depending on the pumping equipment that is used, meeting this requirement may require the use of sound attenuating enclosures as well as other provisions and measures.

7-23.3 System Requirements

7-23.3(1) Design Requirements

(October 29, 2010 Lacey GSP)

Bypass pumping systems shall have sufficient capacity to pump a peak flow of 1,500 GPM. The Contractor shall provide all pipeline plugs, pumps of adequate size to handle peak flow, and temporary discharge piping to ensure that the total flow of the gravity collection system can be safely diverted around the project area. Bypass pumping systems will be required to be operated 24 hours per day.

Temporary sewer bypass systems shall be designed by a registered Professional Engineer in the State of Washington. Engineer shall have demonstrated experience in the design of pumping systems of comparable size and complexity.

The Contractor shall have adequate standby equipment available and ready for immediate operation and use in the event of an emergency or breakdown. One standby pump for each size pump utilized shall be installed at the mainline flow bypassing locations, ready for use in the event of primary pump failure.

Bypass pumping system shall be capable of bypassing the flow around the work area and be sized to handle any amount of flow up to full available flow as defined by the Contracting Agency into the work area as necessary for satisfactory performances of work.

The Contractor shall make all arrangements for bypass pumping during the time when the gravity sewer main is shut down for any reason. System shall overcome any existing force main pressure on discharge.

7-23.3(2) Performance Requirements

(******)

It is essential to the operation of the existing system being bypassed that no interruptions in the flow occur throughout the duration of the project. To this end, the Contractor shall provide, maintain, and operate all temporary facilities such as dams, plugs, pumping equipment (both primary and back-up units as required), conduits, all necessary power, and all other labor and equipment necessary to intercept the incoming flow before it reaches the point where it would interfere with his work, carry it past the work area and return it to the existing wastewater collection system downstream of his work.

The design, installation and operation of the temporary pumping system shall be the Contractor's responsibility. The bypass system shall meet the requirements of all codes and regulatory agencies having jurisdiction. It shall be the responsibility of the Contractor to schedule and perform the work in a manner that does not cause or contribute to incidents of overflows, releases or spills of sewage from the sanitary sewer system or the bypass pumping operation.

The Contractor shall provide all necessary means to safely convey the sewage past the work area. The Contractor will not be permitted to stop or impede the main flows under any circumstances.

The Contractor shall divert the flow around the work area in a manner that will not cause damage to, or surcharging of Contracting Agency's system and will protect public and private property from damage and flooding.

During all bypass pumping operations, the Contractor shall protect the Contracting Agency's system (Pumping Station, Conveyance System, etc.) as applicable from damage inflicted by any equipment. The Contractor shall be responsible for all physical damage to the Contracting Agency's system caused by human or mechanical failure.

The Contractor shall protect water resources, wetlands, and other natural resources.

7-23.3(3) Field Quality Control and Maintenance

7-23.3(3)A Tests

(October 29, 2010 Lacey GSP)

The Contractor shall perform leakage and pressure tests of the bypass pumping discharge piping using clean water prior to the actual operation. The Engineer shall be given three working days notice prior to testing.

7-23.3(3)B Inspection

(October 29, 2010 Lacey GSP)

Contractor shall inspect the bypass pumping system on a continuous basis to ensure the system is working correctly. Contractor shall monitor pump power source fuel levels and make arrangements for timely refueling as needed.

7-23.3(3)C Maintenance Service

(******)

Contractor shall ensure the temporary pumping system is properly maintained and a responsible operator shall be on hand at all times when pumps are operating. When feasible, the bypass system shall be equipped with a monitoring system that shall be programmed by the Contractor with a minimum of two contact phone numbers in case of a sewage emergency. In the event of a failure of the bypass pumping system, the Contractor shall respond to the incident within 1 hour of the start of an incident. In case of a sewage emergency, the Contractor shall immediately call the City of Lacey Maintenance Service Center to contact our wastewater staff at **(360) 491-5644** during business hours or at **(360) 704-2740** during nights/weekends as well as contact the City Inspector assigned to the project. This call is meant to serve as a courtesy to the Operations and Maintenance Department and will not release the Contractor of their responsibility to respond to the sewage emergency.

7-23.3(3)D Extra Materials

(October 29, 2010 Lacey GSP)

Spare parts for pumps and piping shall be kept on site as required by the bypass pumping plan.

Adequate hoisting equipment for each pump and accessories shall be maintained on the site.

7-23.3(4) Spills

(October 29, 2010 Lacey GSP)

Contractor is fully responsible for any damage that may result from an inadequate or improper installation, maintenance or operation, or failure of any kind of the sewer bypass pumping system.

In the event of a spill, the Contractor shall contact the LOTT Spill Reporting Group at (360) 528-5700 and the City of Lacey Maintenance Center at (360) 491-5644..

Spills or leaks of sewage to surface waters or drainage courses is prohibited. In the event of sewage spills, the Contractor shall immediately take whatever actions are deemed necessary to stop and remedy the results of the spill. Should the Contractor not take immediate action, the Owner will be entitled to take whatever actions are deemed necessary to stop, contain, and decontaminate a spill, at the Contractor's expense.

Costs incurred by the Contractor or Owner, including penalties imposed on the Owner as a result of any sewage spill caused by the Contractor, its employees, or subcontractors, shall be borne in full by the Contractor, including legal fees and other expenses to the Contractor or Owner resulting directly or indirectly from the spill.

7-23.3(5) Installation and Removal

(October 29, 2010 Lacey GSP)

Contractor is responsible for locating any existing utilities in the area selected for the bypass pipelines. The Contractor shall locate bypass pipelines to minimize any disturbance to project execution and shall obtain approval of the pipeline locations from the Contracting Agency as noted in the bypass pumping plan. All costs associated with relocating utilities and obtaining all approvals shall be paid by the Contractor.

If the system has to be drained to affect the work, such as for a cut-over or connection, Contractor shall provide the necessary temporary pumping and/or storage equipment to drain or remove the sewage from the excavation and/or system.

The Contractor shall remove manhole sections or make connections to the existing conveyance system and construct temporary bypass pumping structures only at the access location indicated on the Plans and is required to provide adequate suction conduit.

Plugging or blocking of flows shall incorporate a primary and secondary plugging device. When plugging or blocking is no longer needed for performance and acceptance or work, it is to be removed in a manner that permits the sewage flow to slowly return to normal without surge, to prevent surcharging or causing other major disturbances downstream.

When working inside a manhole or wet well, the Contractor shall exercise caution and comply with OSHA requirements when working in the presence of sewer gases, combustible or oxygen-deficient atmospheres, and confined spaces.

The temporary bypass pump discharge pipeline shall be located off streets and sidewalks and on shoulders of the roads where possible without causing delay to the project. When the bypass pipeline crosses local streets and private driveways that are in service, the Contractor shall employ traffic rated crossing devices or place the bypass pipelines in trenches and cover with temporary pavement. Upon completion of the bypass pumping operations, and after receipt of written permission from the Contracting Agency, the Contractor shall remove all the bypass pumping system piping, restore all property to pre-construction condition, and restore all pavement. The Contractor is responsible for obtaining any approvals for placement of the temporary pipeline from the Contracting Agency.

7-23.4 Measurement
(October 29, 2010 Lacey GSP)

"Bypass Pumping", by force account.

7-23.5 Payment
(October 29, 2010 Lacey GSP)

Payment will be made in accordance with Section 1-04.1, for the following bid item that is included in the proposal.

"Bypass Pumping", by force account as provided in Section 1-09.6. "Bypass Pumping" shall be full pay for submitting a Bypass Pumping Plan, furnishing all labor, tools, equipment, and materials, and equipment to furnish, place, assemble, install and operate the bypass pumping system complete in place, including pumps, piping, valves, control systems, generators, permits, testing, wyes, tees, special fittings, joint materials, operators and all other work to provide and operate a complete and operating bypass pumping system. Further, all labor, equipment, and materials required for decommissioning, disassembly and removal from the site shall be included. To provide a common proposal for all bidders, the Contracting Agency has entered an amount in the Proposal to become a part of the Contractor's total Bid

8-01 EROSION CONTROL AND WATER POLLUTION CONTROL

8-01.3 Construction Requirements

8-01.3(1) General
(May 28, 2020 WSDOT GSP)

Section 8-01.3(1) is supplemented with the following:

The Contractor shall identify the ESC Lead at the preconstruction discussions and in the TESC Plan. The ESC Lead shall have, for the life of the Contract, a current Certificate of Training in Construction Site Erosion and Sediment Control from a course approved by the Washington State Department of Ecology. The ESC Lead must be onsite or on call at all times throughout construction. The ESC Lead shall be listed on the Emergency Contact List required under Section 1-05.13(1).

The ESC Lead shall implement the TESC Plan. Implementation shall include, but is not limited to:

1. Installing, adaptively managing, and maintaining temporary erosion and sediment control BMPs to assure continued performance of their intended function. Damaged or inadequate BMPs shall be corrected immediately.

2. Updating the TESC Plan to reflect current field conditions.

3. Inspecting and reporting on all areas disturbed by construction activities, all on-site erosion and sediment control BMPs, and all storm water discharge points every calendar week and within 24 hours of runoff events in which storm water discharges from the site or as directed by the Engineer.

4. Submit to the Engineer no later than the end of the next working day following the inspection a TESC Inspection Report that includes:

a. When, where, and how BMPs were installed, maintained, modified, and removed.

b. Observations of BMP effectiveness and proper placement.

c. Recommendations for improving future BMP performance with upgraded or replacement BMPs when inspections reveal TESC BMP deficiencies.

d. Identify for each discharge point location whether there is compliance with state water quality standards in WAC 173-201A for turbidity and pH.

Inspection of temporarily stabilized, or inactive sites may be reduced to once every calendar month if allowed by the Engineer.

8-01.3(9)A2 Silt Fence
(October 16, 2014 Lacey GSP)

Supplement this section with the following:

If the Engineer determines that site conditions dictate additional silt fence throughout the duration of the project, the Contractor shall immediately install additional silt fence as directed by the Engineer.

8-01.3(9)D Inlet Protection
(November 20, 2020 Lacey GSP)

Delete the first paragraph and replace with the following:

All catch basins and inlets within 500 ft of the project limits, downstream or affected by construction activities shall have inlet protection and as required by the Engineer. Inlet protection devices shall be installed prior to beginning clearing, grubbing, or earthwork activities.

8-01.4 Measurement
(April 30, 2015 Lacey GSP)

Supplement this section with the following:

All items required for erosion control shall be included in the lump sum bid item "Erosion/Water Pollution Control" unless a specific bid item is included in the proposal.

Modify this section with the following:

No specific unit of measure shall apply to the lump sum item "ESC Lead"

8-01.5 Payment
(November 20, 2020 Lacey GSP)

Modify this section with the following:

The lump sum contract price for "ESC Lead" shall be full compensation for all labor, material, tools, and equipment necessary to meet the requirements of Section 8-01.3(1)B to include conduct site inspections, stormwater sampling, report preparation, report submittal, lab work, and personnel certification.

Delete "Erosion/Water Pollution Control", by force account and add the following bid item:
"Erosion/Water Pollution Control", lump sum.
The lump sum contract price for "Erosion/Water Pollution Control" shall be full compensation for all labor, material, and equipment necessary to implement, install, maintain and remove all erosion and water

pollution control items including removal and disposal of sediment, stabilization and rehabilitation of soil disturbed by these activities, and any additional Work deemed necessary by the Engineer to control erosion and water pollution and all Work required for compliance with the Construction Stormwater General Permit (CSWGP) including annual permit fees. The requirements for the ESC Lead shall also be included in this lump sum bid item if no bid item is included in the proposal. The Contractor shall bear full responsibility for erosion/water pollution control in all sources of material, disposal sites, and haul roads.

8-02 ROADSIDE RESTORATION

8-02.1 Description

(October 16, 2009 Lacey GSP)

Supplement this section with the following:

This work shall consist of installing a thick organic muck pond liner in the bottom of the wet pond as shown in the plans.

8-02.2 Materials

(October 29, 2010 Lacey GSP)

Supplement this section with the following:

8-02.3(4) Topsoil

(November 20, 2020 Lacey GSP)

Supplement this section with the following:

The Contractor shall thoroughly scarify the subgrade by tilling, disking or harrowing after the subgrade elevation has been established as indicated on the Plans. If the construction includes a roundabout, the Contractor shall scarify the existing subgrade a minimum of 24 inches deep in the center island of the roundabout to break up the base material of the existing road prior to installation of the topsoil.

Topsoil shall be placed at 12” depth in planter strips, and 18” depth in medians, and a minimum of 42” inches below the top of curb in the roundabout island unless otherwise shown in the Plans.

Final grading shall include raking, floating, dragging, and rolling to remove all surface irregularities and to provide a firm, smooth surface with positive drainage. Imported topsoil shall not be placed more than 3 days prior to permanent seeding.

8-02.3(5) Roadside Seeding, Lawn and Planting Area Preparation

(November 20, 2020 Lacey GSP)

Section 8-02.3(5) is supplemented with the following:

Planting area preparation will be required in all landscaped areas. Planting area preparation shall include removal of existing vegetation, construction debris, all visible rocks or other detrimental material from planter strips located within the project limits before adding soil amendments to the imported topsoil for the roadside planting areas, uniformly tilling the soil amendments into the top 8”-12” of soil, using a rototiller or similar machine, grading the blended soils, and then thoroughly watering down.

Planting area preparation in the roadside includes preserving and protecting existing trees. Where noted on plan, Engineer shall identify and mark existing trees to be saved. Following marking, Contractor shall provide and place Engineer approved high visibility orange plastic fence around critical root zones of each marked tree or tree groupings. Do not begin construction activity on the roadsides until all plastic mesh fencing is in place, and approved by the Engineer.

Identify existing trees that are to be removed, that were not removed during roadway construction, prior to starting planting. Obtain approval to remove existing trees from Engineer. Contractor to provide, install and maintain tree protection throughout project duration.

All planting area preparation shall be conducted under favorable weather conditions only. Soil shall not be worked when excessively dry or wet. Engineer reserves the right to stop any work taking place when conditions are considered detrimental to soil structure or plant growth.

All planting areas shall be weed free and approved by the Engineer before starting rototilling (with soil amendments distributed over designated surface areas) and after rototilling has been completed. All beds shall then be approved by the Engineer for fine grading, before starting any planting operations.

All planting surface areas shall be left with a firm, uniform surface, free of weeds and undulations or other irregularities. Remove all rocks, clods, and debris from all planting surfaces, unless otherwise specified on the plans or directed by the Engineer.

Preliminary grading shall be done in such a manner as to anticipate the finished grades after placement of topsoil, soil amendments and bark mulch (if specified). Excess soil shall be removed or redistributed before application of soil mix, fertilizer, and mulch. Where soil is to be replaced by plants and mulch, allowance shall be made so that when finish grading has begun, there shall be no deficiency in the specified depth of mulched planting beds.

The Contractor shall bear final responsibility for proper surface drainage of the site and the features thereon. Any discrepancy in the drawings or specifications, obstructions on the site, or prior work done by another party which the Contractor feels precludes establishing proper drainage, shall be brought immediately to the attention of the Engineer in writing for correction or relief of said responsibility.

8-02.3(7) Layout of Planting, Lawn and Seeding Areas

(January 3, 2017 Lacey GSP)

Delete this section and replace with the following:

All location layout and staking will be the responsibility of the Contractor.

Tree and plant locations shown shall be considered approximate unless otherwise noted or shown with specific distance. Tree locations may be adjusted, with prior Engineer approval, so that the tree does not interfere with sightline requirements, street signs, irrigation, overhead utilities, or any other apparatuses such as utilities.

Do not locate or plant any tree within 15 feet of a streetlight. Do not locate or plant any tree within 3 feet of a utility vault, 2.5 feet of back-of-sidewalks or back-of-curbs, and 15 feet of a fire hydrant.

In mixed planting areas, trees shall be planted first, followed by the larger shrubs, low shrubs, and then groundcover material.

The Contractor shall layout all trees and plants in the approximate location for approval by the Engineer. All coordination shall be done with the Engineer.

8-02.3(8) Planting

(March 3, 2022 Lacey GSP)

Supplement this section with the following:

The Contractor shall make required field adjustments as directed by the Engineer without additional cost and to avoid obstructions. Plants not properly planted or temporarily heeled-in will be rejected and shall be removed from the site.

Maintenance shall begin following the installation of each plant and shall continue until project acceptance. Work includes, but is not limited to, watering, weeding, cultivating, tightening, and repairing guys, removal of dead materials, resetting plants to proper grades or upright positions and other operations necessary to ensure proper growth and survival of all plant material.

If it is discovered that Common horsetail (Equisetum Arvense) has been imported with plant material, the Contractor shall remove the tree or shrub in its entirety including the rootball and surrounding soil, and replace the tree or shrub in-kind.

Before excavation, plants to be installed shall be placed as indicated on Planting Plan. The Engineer shall check locations of all plants in the field and shall indicate the exact position before actual planting operation proceeds.

Set trees and shrubs in center of pits, plumb and straight. Plant at such a level that after settlement, the crown of the plant will be slightly above finish grade.

Set plants in backfill mixture to such depth that the top of the plant ball will be slightly above finished grade. Backfill the remainder of the hole and soak thoroughly. Water the backfill until saturated to the full depth of the hole.

A mound of earth shall be formed as directed around each tree and shrub so as to produce a shallow basin to retain water, the diameter to exceed the diameter of the root spread at planting. Plants shall be watered in place during and after backfilling.

Prune plants only at time of planting and according to standard horticultural practice to preserve the natural character of the plant. All pruning shall be done under supervision of Engineer. Remove all dead wood, suckers, and broken or badly bruised branches, unless plants are deemed to be unacceptable and rejected by the Engineer. Use only clean, sharp tools.

Immediately after planting operations are complete, all planting beds and plant pits shall be dressed off so as to achieve a neat and presentable appearance. Planting operations shall be identical for all plants to be planted. Refer to Plans, specifications and directions from Engineer.

If applicable, Contractor shall plant trees, shrubs, and groundcover material in non-irrigated areas between October 1, and January 31.

Plant bare root and live cutting material during winter dormancy (November 30 and February 1) unless otherwise directed by the Engineer. Install live cuttings the same day as harvest or cutting from parent material.

Notify the Engineer a minimum of 48-hours before beginning any roadside planting-related work.

8-02.3(9) Seeding, Fertilizing and Mulching

(November 20, 2020 Lacey GSP)

Supplement this section with the following:

The Contractor shall provide water or irrigation to all seeded areas as often as conditions dictate depending on weather and soil conditions. Water will be provided as described in Section 2-07.

Seed shall be broadcast with approved hydraulic seeding equipment, in combination with wood cellulose fiber mulch, soil stabilizer and fertilizer distributed uniformly over designated areas. Half of seed shall be sown with sower moving in one direction, the other half with sower moving at right angles to first sowing. Hydroseeding operator shall remove all seed mulch in its entirety from adjoining paving, structures and plants

Fertilizer shall be applied over the surface of plant basin. Install fertilizer tablets as specified.

All trees shall have an application of beneficial mycorrhizal fungi applied at time of planting in accordance with the manufacturer's recommendations.

8-02.3(9)A Dates For Application of Seed

(November 20, 2020 Lacey GSP)

Delete the second paragraph of this section and replace with the following:

In areas receiving automatic irrigation, seeding may occur between May 15 and September 1. Actual planting shall be performed only when weather and soil conditions are suitable and in accordance with locally accepted practice and/or approved by the Engineer.

8-02.4 Measurement

(April 4, 2016 Lacey GSP)

Supplement this section with the following:

Topsoil, compost and mulch will be measured by the cubic yard.

Tree stakes, fertilizer, headers, planting area preparation, planting area weed control, and tree protection will be incidental to the "unit costs" of plantings as specified.

The measurements for each plant will be made for the size and type of plant shown in the plans.

8-02.5 Payment

(October 16, 2016 Lacey GSP)

This section with the following:

Payment will be per each for all plant bid items included in the bid proposal under the Botanical and Common Name for each plant. The unit contract price per each for each plant shall be for full compensation for all labor, material and equipment necessary to install and maintain all items as specified complete. Price shall also include but not be limited to preparation, delivery, planting, protecting, pruning, rebar ties, tree stakes, guying, wrapping, rubber tree tie, fertilizer, pre-emergent and post-emergent herbicides, and geotextile root control system as shown in the Plans.

Excavation for the roadside planting areas will be considered incidental to the bid item for topsoil placement.

The following bid items shall be full pay for furnishing all labor, materials, tools and equipment, necessary to scarify the subgrade, install, rake, remove debris such as rocks and organic material and shape the material as shown in the plans:

"Topsoil Type A", per cubic yard,
"Fine Compost", per cubic yard,
"Medium Compost", per cubic yard,
"Coarse Compost", per cubic yard,
"Soil Amendment", per cubic yard,
"Bark or Wood Chip Mulch" per cubic yard.

The unit contract price per acre for "Seeding, Fertilizing, and Mulching", shall be full compensation for all labor, material, tools and equipment necessary to place, protect, irrigate and maintain all items as specified.

The Contractor shall receive payment of 60 percent of the unit contract price, per acre, upon the completion of the initial hydroseeding. Payment shall be increased to 100 percent of the unit contract price, per acre, upon the point where the first mowing is required, as determined by the Engineer. All partial payments shall be limited to the actual area of weed free healthy vigorous growth.

Partial payments shall not constitute acceptance of the area, nor shall the ownership or title transfer to the Contracting Agency. Areas found not acceptable at any stage shall be rejected and replaced at the Contractor's expense. Previous partial payments made for areas rejected will be deducted from future payments due the Contractor.

8-04 CURBS, GUTTERS, AND SPILLWAYS

8-04.3 Construction Requirements

(October 16, 2009 Lacey GSP)

Supplement this section with the following:

This work shall be constructed as shown in the plans. Gutter Pans at catch basin grates shall meet WSDOT Standard Plan F-10.16-00 Cement Concrete Curb and Gutter Pan.

8-04.4 Measurement

(October 16, 2009 Lacey GSP)

Supplement this section with the following:

Cement concrete valley gutters will be measured per linear foot.
Modified cement concrete traffic curbs will be measured per linear foot.
Extruded Curb will be measured per linear foot.
Concrete Scupper shall be measured per each.

8-04.5 Payment

(October 16, 2009 Lacey GSP)

Supplement this section with the following:

"Cement Concrete Valley Gutter", per linear foot.
"Modified Cement Concrete Traffic Curb", per linear foot.
"Extruded Curb", per linear foot.
"Concrete Scupper" shall be measured per each

The unit contract per linear foot price for shall be full pay for all labor, equipment and materials to construct the items in accordance with the Plans.

8-05 LAWN AND LANDSCAPE RESTORATION

(October 16, 2014 Lacey GSP)

Add the following new section:

8-05.1 Description

The Contractor shall take every precaution to preserve and protect existing lawn and landscape areas. Only those landscaped areas necessary for construction shall be disturbed. All lawn areas and landscaping damaged or removed shall be repaired as directed by the Engineer. Lawn areas damaged or removed shall be restored with sod as directed by the Engineer.

8-05.3 Construction Requirements

The Contractor shall repair any vegetation, fencing, culverts, ditch sections, or any other objects or structures that are not covered by a specific bid item. Restoration shall return anything damaged by construction to their original condition or to a condition superior to the original condition. The Contractor shall be responsible to evaluate the site prior to bidding this project to determine the areas to be affected by the particular construction method or machinery proposed to be used.

8-05.4 Measurement

No unit of measure shall apply to the lump sum price for Lawn and Landscape Restoration.

8-05.5 Payment

"Lawn and Landscape Restoration", lump sum.
The lump sum contract price for "Lawn and Landscape Restoration" shall be full pay for all labor, materials, and equipment to restore the project site to condition equal to, or superior to the original condition.

If no bid item for "Lawn and Landscape Restoration" is included, any work described in this section shall be incidental to the project.

8-13 MONUMENT CASES

8-13.3 Construction Requirements

(October 16, 2009 Lacey GSP)

Supplement this section with the following:

The concrete shall be placed on firm undisturbed earth and unyielding foundation. The monument shall be constructed following the completion of all asphalt paving. All monuments shall be installed as shown in the Plans and as staked by the Engineer. Case and cover shall be supplied by the Contractor.

The Contractor shall request monument caps 5 working days in advance of monument installation work. The Engineer will punch the bronze plug marker upon completion of the installation. The Contractor shall notify the Engineer 72 hours prior to installation, so the Engineer can aid in the placement.

8-13.3(1) Surface Monument

(October 29, 2010 Lacey GSP)

Add the following new section:

The Contractor shall construct and install cast-in-place surface monuments as shown in the Plans and as staked by the Engineer. The Contractor shall request monument caps 5 working days in advance of monument installation work.

The concrete shall be placed on undisturbed earth, or firm and unyielding foundation. The monument shall be constructed following the completion of all asphalt paving. The Engineer will punch the bronze plug marker upon completion of the installation. The Contractor shall notify the Engineer 72 hours prior to installation, so the Engineer can aid in the placement of the marker cap.

8-13.4 Measurement

(October 29, 2010 Lacey GSP)

Supplement this section with the following:

Surface monuments shall be measured by the unit for each surface monument furnished and set.

8-13.5 Payment

(October 29, 2010 Lacey GSP)

Modify this section with the following:

"Surface Monument", per each.

The unit contract price per each shall be full compensation for all labor, equipment, tools, and materials required to complete the work as specified.

8-14 CEMENT CONCRETE SIDEWALKS

8-14.1 Description

(March 31, 2015 Lacey GSP)

Supplement this section with the following:

Where applicable in this section "concrete sidewalks" shall read "concrete sidewalks and driveways" unless a bid item is provided. Depth shall be as shown in the Plans. The minimum driveway depth shall be 6 inches. The Contractor shall match color, texture, and material of existing sidewalks and driveways.

All ADA requirements will be strictly enforced including ramps and slopes as shown in the plans. Sidewalk and Bus Pads shall not exceed 2% cross slope.

If a sign is to be installed in concrete, the Contractor shall place a breakaway sleeve in the concrete as shown on the Plans and as directed by the Engineer. The sleeve shall be cleared of all debris. The sign shall be installed by others.

8-14.1(1) Textured Concrete

(March 31, 2015 Lacey GSP)

Add the following new section:

For approval of the Contractor's mix design, the attainment of the required compressive strength at 28days will be a minimum of 4000 psi as determined from the results of testing two 6 inch by 12 inch cylinders tested in accordance with WSDOT Test Methods 801 and 811. Once a mix design has been approved, it shall not be varied during the project.

Colors shall be blended to achieve a final non-uniform color. The Contractor shall provide a 3x3 foot test panel with the proposed colors and textures for each of the applications for approval. The Engineer will evaluate these panels with existing concrete completed throughout the City to ensure a consistent color and texture. Once a pattern and color have been approved, they shall not be varied during the project.

Reinforcement shall be securely fastened and supported.

Concrete shall be pigmented throughout the mix with the base color. Powdered release agent shall then be applied to give desired highlights. Release agents shall be heavy-duty quality suitable for high automobile traffic areas. Concrete shall then be stamped with inconsistencies in the pattern. After a curing period of 4 days, the concrete shall be pressure washed to remove remaining release agent.

Upon initial curing, the Contractor shall use a high pressure water blaster to clean the surface and allow it to dry.

A weatherproofing concrete sealer and a clear acrylic sealer with moss control shall then be applied to the finished surface of the textured concrete in accordance to the manufacturer's specifications.

8-14.2(4) Concrete Paving Pattern C – Islands/Medians

(March 31, 2015 Lacey GSP)

Add the following new section:

Concrete mix shall be Class 4000. The concrete shall have a thickness as shown in the Plans. The exact width may vary in the medians. Depending upon the manufacturer submitted, the intent is to have one pattern width inside the median that does not exceed 2 feet and the long edge of brick shall be parallel to the traveled way.

Paving Pattern Type: Running Bond Brick

Colors: Base Color – Brick Red

Release Agent Color: Deep Charcoal

8-14.3(5) Ramp Detectable Warning Retrofit

(March 31, 2015 Lacey GSP)

Supplement this section with the following:

Detectable warning patterns for use with ramp and landing retrofits shall be preformed thermoplastic manufactured sheets. They shall be heat applied and not require a mechanical fastener to adhere to the existing surface. Detectable warning panels and thermoplastic retrofits shall be "Standard Interstate Yellow" in color and be integrally pigmented into the product by the manufacturer. Retrofits shall also include required grinding of concrete curb and sidewalk to provide a flush transition from the roadway to the ramp to bring existing ramps up to current ADA requirements.

8-14.3(5)A New Ramp Detectable Warning

(March 31, 2015 Lacey GSP)

Add the following new section:

Detectable warning panels shall meet state and federal guidelines for ADA truncated dome detectable warning on curb ramps. The panels shall be constructed of reinforced high strength (minimum 9000 psi) concrete or a glass and carbon reinforced composite, which shall be colorfast and UV Stable. The panels shall be a slip resistant per ASTM D 2047 modified greater than 0.80 wet or dry and water resistant detectable warning panels and thermoplastic retrofits shall be "Standard Interstate Yellow" in color and be integrally pigmented into the product by the manufacturer.

8-14.4 Measurement

(April 2, 2018 Lacey GSP)

Supplement this section with the following:

Cement concrete sidewalks shall be measured by the square yard of finished surface outside of the ramp pay limits and will not include the surface area of the curb ramps (i.e. the sidewalk quantities indicated on the Plans are for informational purposes only and include the ramp area). Cement Concrete sidewalks shall include cement concrete bike ramps, and bus pads.

Measurement of the Cement Concrete Curb Ramps will include the 12:1 ramp regardless of length, landing, and detectible warning pattern and will be measured per each for the ramp. Sidewalk will not be measured or paid for within the ramp area. Median refuge areas shall be measured as (2) each Cement Concrete Curb Ramps.

"Ramp Detectable Warning Retrofit" shall be measured per each for each existing ramp retrofitted.

Textured concrete for "Concrete Paving Pattern __-___" per square yard, shall be measured by finished surface at the depth specified including the concrete sealer.

8-14.5 Payment

(April 2, 2018 Lacey GSP)

Supplement this section with the following:

The unit contract price for "Cement Conc. Sidewalk" per square yard shall be full pay for furnishing all materials, equipment, and labor to construct the sidewalk, and bus pads complete in-place, to include forms, and concrete. Further, the Contractor shall make all excavations including haul and disposal, regardless of depth required, for constructing the sidewalk to the lines and grades shown, and shall include all costs associated with maintaining pedestrian access through the construction area with crushed surfacing top course or other material as approved by the Engineer.

The unit contract price for "Cement Conc. Curb Ramp", per each shall be full pay for furnishing all materials, equipment, and labor to construct the ramp or median refuge area as shown in the Plans

regardless of type complete in-place, to include forms, concrete, and detectable warning pattern tiles. Further, the Contractor shall make all excavations including haul and disposal, regardless of depth required for constructing the ramp or median refuge area to the lines and grades shown, and shall include all costs associated with maintaining pedestrian access through the construction area with crushed surfacing top course or other material as approved by the Engineer.

The unit contract price for "Ramp Detectable Warning Retrofit", per each shall be full pay for furnishing all materials, equipment, and labor to retrofit an existing concrete ramp or asphalt landing, complete in-place, to include surface preparation, concrete grinding, with a detectible warning thermoplastic application and other work.

The unit contract price for "Concrete Paving Pattern _____", per square yard for cement concrete paving surfaces regardless of the pattern type required and shall be full pay for furnishing all materials, tools, equipment, labor, forms, clean-up, pattern stamps, base colors, color hardener, curing solutions, weatherproofing sealers, surface retarder, and all items required to complete the concrete work as specified. Payment for test samples and removal of test samples shall be incidental. Concrete samples, whether approved or not, shall not be removed from the project site unless otherwise approved by the Engineer.

8-18 MAILBOX SUPPORT

8-18.3 Construction Requirements

(October 16, 2009 Lacey GSP)

Supplement this section with the following:

It shall be the Contractor's responsibility to coordinate relocation with the local Postmaster and ensure that the mailboxes are restored to a condition equal to or better than the existing conditions prior to construction. The Contractor shall ensure that mail service is not interrupted during construction.

8-18.4 Measurement

(January 4, 2016 Lacey GSP)

Delete this section.

8-18.5 Payment

(January 4, 2016 Lacey GSP)

Delete this section and replace with following:

All costs in connection with temporary or permanent relocation of mailboxes shall be included in the contract price per lump sum for "Lawn and Landscape Restoration", and no additional compensation shall be allowed.

8-22 PAVEMENT MARKING

8-22.2 Material

(October 16, 2016 Lacey GSP)

Modify this section with the following:

Material for all plastic lines shall be Type A – Liquid hot applied thermoplastic at 120 mil thickness.

Material used for all plastic stop lines, plastic yield line, plastic entry line, plastic crosswalk lines, circulating lane line, plastic traffic arrows, plastic traffic letters, plastic legends, plastic symbols, and all plastic lines within the circulating lanes of the roundabout shall be Type B – Pre-formed fused thermoplastic at 120 mil thickness.

8-22.3 Construction Requirements

(March 3, 2022 Lacey GSP)

Supplement this section with the following:

Stop Line shall be a solid white line 24 inches wide or as shown in the plans.

Yield Line symbol (Sharks Teeth) shall be a triangle 24 inches wide and 36 inches tall or as shown in the plans.

Entry Lane Line shall be used to supplement the Yield Line Symbol for roundabouts on each approach. Entry Lane Line shall be a 24 inch wide dashed line with a 3 foot solid line and a 4 foot gap. The Entry Lane Line will be considered a Crosswalk Line for bidding purposes.

Circulating Lane Line is the wide lane line within the circulating portion of the roundabout. Where the plans identify a dashed circulating lane line this shall be an 8 inch wide dashed line with a 3 foot solid line and a 4 foot gap. The Circulating Lane Line will be considered a Wide Lane Line for bidding purposes.

The roundabout symbol identified with the traffic arrow shall be considered part of the Traffic Arrow.

Crosswalk Line is a series of solid white lines, 24 inches, and a minimum of 6 feet long or as shown in the plans. All Crosswalk lines shall be parallel to the direction of travel conforming to details in the plans and Standard Plans.

Parking Delineation Symbols shall be a 4 inch cross or tee.

Pavement must be dry prior to placing preformed thermoplastic pavement marking material. Preformed thermoplastic cannot be applied to a wet or damp surface or during precipitation. Once precipitation has stopped, the preformed thermoplastic can be applied to bituminous asphalt if the road surface has been dried thoroughly with all moisture removed.

Before preformed thermoplastic is placed, test the pavement to determine if moisture is present using a propane fueled heat gun. The moisture test must be observed by the Engineer before work begins. If moisture is present use a propane fueled heat gun to remove the moisture by passing heat over the area continuously. If the area is able to be dried and no moisture remains proceed with the application. If the area is unable to be dried, do not apply the material at that time. Any material installed that does not comply with this specification will be considered defective and no payment will be made.

8-22.4 Measurement

(April 2, 2018 Lacey GSP)

Modify this section with the following:

The measurement for the following items shall be as follows:

“Plastic Yield Line Symbol” per each, shall be each triangle.
“Plastic Crosswalk Line”, per linear foot.
“Plastic Parking Delineation Symbol”, per each.

No unit of measure shall apply to the lump sum price for “Remove Pavement Marking”.

8-22.5 Payment

(January 4, 2016 Lacey GSP)

Supplement this section with the following items:

“Plastic Yield Line Symbol” per each
“Plastic Crosswalk Line”, per linear foot.
“Plastic Parking Delineation Symbol”, per each.

The lump sum price for “Remove Pavement Marking” shall be full pay to remove all pavement markings that conflict with the proposed channelization or HMA overlay as shown on the Plans and as directed by the Engineer. Pavement marking shall include raised pavement markers, plastic and painted lines, arrows, letters, and symbols as required.

8-23 TEMPORARY PAVEMENT MARKINGS

8-23.4 Measurement

(October 16, 2016 Lacey GSP)

Delete this and replace with the following:

No specific unit of measure shall apply to temporary pavement markings.

8-23.5 Payment

(October 16, 2016 Lacey GSP)

Delete this and replace with the following:

All costs for installation, maintenance and removal of temporary pavement markings shall be incidental to and included in the unit or lump sum prices of the Contract and no additional payment will be made.

8-50 MISCELLANEOUS

Add the following new sections:

8-50.1 METER VAULT STRUCTURE AND MECHANICAL

(******)

8-50(1)1 Description

This work shall consist of furnishing and installing the meter vault and all standard plumbing appurtenances in accordance with the plans, details and these specifications.

8-50(1).2 Materials
(******)

Meter Vault

The meter vault shall be precast concrete, of the dimensions shown to meet the requirements of the details shown on sheet WD3 (22 of 50) of the plans. The vault shall be less than 4 feet in depth and manufactured by Oldcastle Precast or approved equal. The meter vault shall be equipped with an access hatch and ladder with up safety post a shown on the plans.

8-50(1).3 Construction Requirements
(******)

The meter vault shall be constructed below ground with the vault lid sitting flush with the final grade. The meter assembly shall be constructed in accordance with the details shown on sheet WD# (22 of 50) of the plans. Before constructing the vault in place, the area must be cleared of vegetation, including removing any the existing hedge that may obstruct the vault hatch. Coordinate with the Engineer on the final location.

The existing meter vault at 4101 Sleater-Kinney Rd SE, shall remain in place and in service until the new vault and meter assembly has been tested and is ready to be placed in service.

8-50(1).4 Measurement
(******)

No unit of Measurement shall apply to the lump sum price for “Meter Vault Structure and Mechanical”.

8-50(1).5 Payment
(******)

Payment will be made in accordance with Section 1-04.1, for the following bid items:

Meter Vault Structure and Mechanical” , per lump sum
The unit contract price per lump sum for “Meter Vault Structure and Mechanical” shall be full compensation for all labor, materials and equipment required to provide and install the new concrete vault, lid, hatch, ladder, piping, fittings, valve assemblies, subassemblies and all other equipment appurtenant to the meter vault, as shown on the plans, details and described in these specifications in place.

8-50.2 PROJECT CLOSEOUT
(April 2, 2018 Lacey GSP)

Description

This work shall consist of completing all miscellaneous items of work in accordance with the Plans and these Specifications that are required to achieve Completion and Final Acceptance, as identified by the Engineer and the Contracting Agency. This work may include but is not limited to punch list items, record drawings, O&M Manuals, training, material acceptance documents, copies of the approved “Affidavit of Prevailing Wages Paid” for the Contractor and all Subcontractors, and any other work required in these Plans and Specifications that has not been completed.

Measurement

No unit of measurement shall apply to the lump sum price for "Project Closeout".

Payment

"Project Closeout", lump sum.
The unit contract price per lump sum for "Project Closeout" includes all compensation for all costs of completing the miscellaneous items of work identified by the Contracting Agency prior to final acceptance of the Project. A fixed lump sum price has been included in the Proposal for this work. Any additional costs anticipated or incurred by the Contractor for the work shall be included in the various lump sum and unit price bid items as found in the Proposal. Neither partial payment, nor additional compensation shall be allowed

9-03 AGGREGATES

Add the following new Section:

9-03.16 Imported Pipe Bedding
(April 30, 2015 Lacey)

Bedding material for pressure mains and services shall be clean sand/gravel mixture free from organic matter and conforming to the following gradation:

Sieve Size	Percent Passing
3/4" square	100
3/8" square	70-100
U.S. No. 4	55-100
U.S. No. 10	35-95
U.S. No. 20	20-80
U.S. No. 40	10-55
U.S. No. 100	0-10
U.S. No. 200	0-3

Bedding material for gravity mains and stubs/or laterals shall be clean sand/gravel mixture free from organic matter and conforming to the following gradation:

Sieve Size	Percent Passing
3/8" square	85-100
U.S. No. 4	10-30
U.S. No. 8	0-10
U.S. No. 16	0-5

All percentages are by weight

9-03.21 Recycled Materials
(April 30, 2015 Lacey)

Section 9-03.21 is supplemented with the following:

Recycled materials will not be used unless approved by the Engineer.

9-14 EROSION CONTROL AND ROADSIDE PLANTING

9-14.2(1) Topsoil Type A

(March 3, 2022 Lacey GSP)

Supplement this section with the following:

Topsoil Type A shall be composed of a three way winter mix consisting of 2 parts soil, 2 parts compost, 3 parts sand.

Soil shall be classified as gravelly sand, well-graded sand, poorly graded sand, or silty sand.

Compost shall be a weed free well decomposed, humus-like material derived from the decomposition of grass clippings, leaves, branches, wood, and other organic materials. Compost shall be produced at a permitted solid waste composting facility. Composts containing shavings, cedar sawdust, or straw will not be permitted.

Sand shall consist of 100 percent passing the 3/8 inch sieve, minimum 95 percent passing the #4 sieve, and maximum of 5 percent passing the #100 sieve.

Topsoil shall meet the following requirements:

Screen Size (approximate particle size)	5/8" maximum
Maturity measure (C:N ratio)	30:1
Total Nitrogen	0.5% minimum
PH range	5.5-8.0
Foreign matter by dry weight	1% maximum

The Contractor shall provide a sample of the topsoil and a laboratory analysis with recommendations from the laboratory for desired additives for the Engineers approval. The Contractor shall incorporate any additives recommended by the laboratory.

9-14.2 Seed

(November 20, 2020 Lacey)

Supplement this section with the following:

There shall be several types of mixes used on this project. The list of approved seed varieties are specifically identified list below. They shall be applied at the given rates. Source identified seed shall be fourth generation or earlier. Non-Source Identified seed shall meet or exceed Washington State Department of Agriculture Certified Seed Standards. Seeds shall be certified "Weed Free", indicating there are no noxious or nuisance weeds in the seed.

Lawn Mix - shall be applied at 200 pounds per acre and the maximum weed seed shall be no more than 0.5%. Grass seed of the following composition, proportion, and quality shall be applied as follows:

Kind and Variety of Seed	Percent By Weight	Minimum Pure Seed	Minimum Germination
Equal Mix 3-Perennial Ryegrasses	60%	98%	90%
One Chewing Fine Fescue	20%	98%	90%
One Creeping Red Fescue	20%	98%	90%

Approved Seed Type:

Perennial Ryegrasses

Fiesta 4	Manhattan 5	Grand Slam GLD	Karma
SR 4650	Karma	Banfield	Sideways
Thrive	Wicked	Pavilion	Dasher 3
Tetradark			

Creeping Red Fescue

Salsa	Cindy	Jasper	Salem

Chewing Fescue

Tiffany	Shadow II	Treazure E	Longfellow
Weekend	Tamara	Enjoy	Victory

9-14.3 Fertilizer

(October 16, 2009 Lacey)

Supplement this section with the following:

Fertilizer for seeded areas shall be 1 pound nitrogen from ammonium sulfate, 0.5 pound water insoluble organic nitrogen, 2 pounds of phosphorous, and 2 pounds of potassium per 1,000 square feet, or a 10-20-20 turf fertilizer mix at 435 pounds per acre with 60 pounds of water insoluble organic nitrogen per acre.

Fertilizer for Trees and Shrubs shall be granular, tablet, or spikes applied at a rate recommended by the manufacturer for the size of the plant or as directed by the Engineer. Fertilizer shall be a 20-10-5 plant mix with 7% water soluble organic nitrogen and 13% water insoluble organic nitrogen or as approved by the Engineer.

Mycorrhizal fungi amendment shall be applied to all trees at a rate recommended by the manufacturer for the size of the tree.

9-14.5(3) Bark or Wood Chip Mulch

(November 20, 2020 Lacey GSP)

Supplement this section with the following:

Bark mulch shall be a pathogen-free medium-grind Hemlock or Douglas Fir bark mulch. The Contractor shall submit a sample to the Engineer for approval prior to use.

9-14.6(8) Sod

(October 16, 2009 Lacey)

Supplement this section with the following:

Sod shall be high quality commercial turf produced on a commercial turf farm. The turf farm shall be registered with the American Sod Producers Association. Turf shall closely match texture and color of existing turf to be repaired.

9-21 RAISED PAVEMENT MARKING

9-21.1 Raised Pavement Markers Type 1

(March 3, 2022 Lacey GSP)

Modify this section with the following:

Markers Type 1 shall be thermoplastic markers. Only the models and manufacturers identified in the Qualified Products List (QPL) will be accepted.

9-21.2 Raised Pavement Markers Type 2

(March 3, 2022 Lacey GSP)

Supplement this section with the following:

Markers Type 2 shall have an abrasion resistant coating. Only the models and manufacturers identified in the Qualified Products List (QPL) will be accepted.

E
PREVAILING WAGE RATES

PREVAILING WAGE RATES

The following wage rates are in effect for this project.

State of Washington
Department of Labor and Industries
Washington State Prevailing Wage Rates For Public Works Contracts

Thurston County Rates For All Trades

Effective: February 22, 2023, including any corrections issued by Labor and Industries prior to bid.

Wage Rates and the Benefit Code Key may be found at:
https://secure.lni.wa.gov/wagelookup/

Supplemental to State Wage Rates may be found at:
http://www.wsdot.wa.gov/Design/ProjectDev/WageRates/default.htm

A copy is also available for viewing at the City of Lacey Public Works Engineering office located at 420 College St SE, Lacey, WA 98503. If requested, a hard copy will be mailed to you.

APPENDIX A
COL RAM FORMS

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PROJECT:	**SUBMITTAL NO.**
LACEY CONTRACT NO. PW___-20____	Date sent to City:

Request for Approval of Material, Product or Shop Drawing

Contractor:	Subcontractor:

No. of Pages	Item: Material, Product or Shop Drawing	Specification Reference

☐ This item is as specified **OR** ☐ This item is a substitution/or equal
Material/Product Substitution Request shall be submitted

☐ Supplier/Subcontractor certifies material/product conforms to contract.

Review Priority: ☐ 1 ☐ 2 ☐ 3 Requested Due Date:

Notes to Engineer:

City of Lacey Engineer:	Date Approved by City:
☐ Rejected	New Submittal Required.
☐ Revise and Resubmit	See Engineer's comments.
☐ Conditionally Approved	See items included in Engineer's comments.
☐ Conditionally Approved	No exceptions noted.

Review of the materials, products or plans do not relieve the contractor from compliance with requirements of the contract documents and does not necessarily constitute acceptance for materials, products or plans to be incorporated in the work. This review is for general conformance of the project's conceptual design and general compliance with the project's plans and specifications.

Date City Transmitted to Contractor:	Date Contractor Transmitted to Subcontractor/Supplier:

Date Received by City of Lacey:	Reviewed by: (Name/Company)

Engineer's Comments:

1.

PROJECT: A	SUBMITTAL NO. C
LACEY CONTRACT NO. PW___-20____ B	

Request for Approval of Material, Product or Shop Drawing

Contractor: D	Subcontractor: E

No. of Pages	Item: Material, Product or Shop Drawing	Specification Reference
F	G	H

Section 1

☐ This item is as specified I1 **OR** ☐ This item is a substitution/or equal Material/Product Substitution Request shall be submitted I2

☐ Supplier/Subcontractor certifies material/product conforms to contract.

Review Priority: ☐ 1 K ☐ 2 ☐ 3 Requested Due Date: L

Notes to Engineer:

M

City of Lacey Engineer: R	Date City Transmitted to Contractor: S
☐ Rejected	New Submittal Required.
☐ Revise and Resubmit	See Engineer's comments.
☐ Conditionally Approved	See items included in Engineer's comments.
☐ Conditionally Approved	No exceptions noted.

Q

Review of the materials, products or plans do not relieve the contractor from compliance with requirements of the contract documents and does not necessarily constitute acceptance for materials, products or plans to be incorporated in the work. This review is for general conformance of the project's conceptual design and general compliance with the project's plans and specifications.

Date Received by Contractor: T	Date Returned to Subcontractor/Supplier: U

Section 3

Date Received by City of Lacey: N	Reviewed by: (Name/Company) O

Engineer's Comments:

1. P

Section 2

Section 1

The **Project Manager** shall fill in items **A** and **B**. The "Request for Approval of Material, Products or Shop Drawing" form shall be included in the specifications.

A Project Manager enters in the project title that matches the plans and specifications.

B Project Manager enters in PW project number that matches the plans and specifications.

The **Contractor** shall fill out the "Request for Approval of Material, Product or Shop Drawing" form for all materials or products that will be installed and Shop Drawing that will be used in the project. The form and the submittal shall be sent in the same e-mail. Submittals that exceed 10 MB shall either be provided on a CD, a flash drive or an internet link.

The products and materials that are specific to the project shall be circled or highlighted. If a submittal includes products or materials that are not project specific then these items shall be crossed out. Project Submittals that exceed 10 pages shall be submitted in Adobe Acrobat format and include a table of contents. Submittals that are not submitted in this format may be rejected outright and the contractor will be required to resubmit in the correct format.

The contractor shall enter in items **C**, **D**, **E**, **F**, **G**, **H**, **I**, **J**, **K**, **L**, and **M**.

C Contractor enters in the submittal number. The first "Request for Approval of Material, Product or Shop Drawing" submittal number shall be 1.0, the second shall be 2.0, the third shall be 3.0, etc.

When a "Request for Approval of Material, Product or Shop Drawing" requires resubmitting, the next submittal shall be the first part of the submittal number and then 0.1. Example: If submittal 9.0 requires resubmitting, then the resubmittal shall be 9.1. If a second resubmittal is required, then the next resubmittal shall be 9.2.

D Contractor shall fill in their name.

E Contractor shall fill in the subcontractor that is requesting approval. If only the General Contractor is requesting approval, then NA (not applicable) shall be entered.

F The number of pages for each specific material, product or shop drawing shall be entered.

G The specific material, product or shop drawing shall be entered. Material or product will be the trade name of the product or the name it is most easily recognized by. Materials or products that are similar (i.e. pipe fittings) can be bundled into one submittal.

H The specification that pertains to the specific material, product or shop drawing shall be entered. This information is critical in comparing the material, product or shop drawing to the specifications. You may also list Plan Sheet number or Special Provision page in this area.

I The Contractor shall check if the items submitted are either specified (I1) or that the submitted item is a substitution or equal (I2). If the product is a substitute or equal, then a Material/Product Substitution Request shall be submitted.

J The Contractor shall check that supplier and/or subcontractor certifies the bid item.

K The Contractor shall check if the submittal for approval is a high (1), average (2) or low (3) priority. The City of Lacey will review priority submittals as quickly as possible. Note: The majority of the submittals shall be checked as priority 2 or 3. Priority 1 submittals shall be critical or long lead items.

L A due date can be entered by the contractor. The City of Lacey will endeavor to review and return the request for approval by the requested due date.

M Any additional notes that the Contractor finds would assist the City of Lacey in reviewing the submittal can be entered in here.

Section 2

The **City of Lacey Engineer** shall fill in items **N**, **O** and **P**.

N Enter the date that the City of Lacey received the "Request for Approval of Material, Product or Shop Drawing" from the Contractor.

O Enter the name and company of the person that reviewed the submittal.

P Any comments regarding changes needed, resubmittals requirements, conditional approval, etc. shall be entered.

Section 3

The **City of Lacey Engineer** shall fill in items **Q**, **R**, and **S**.

Q Either "Rejected: New Submittal Required.", "Review and Resubmit: See Engineer's comments.", "Conditionally Approved: See items included in Engineer's comments:", or "Conditionally Approved: No exceptions noted" shall be checked".

R Enter the name of the Engineer sending the submittal back to the Contractor. The Engineering sending the form back may not necessarily be the Engineer completing the review.

S Enter the date that the City of Lacey transmits the "Request for Approval of Material, Product or Shop Drawing" to the Contractor.

The **Contractor** shall enter in items **T** and **U** for their own records. If there is a discrepancy between the **S** "Date City Transmitted to Contractor" and **T,** the Contractor shall notify the City of Lacey within 3 working days.

T Contractor enters the date that they received the completed "Request for Approval of Material or Shop Drawing".

U Contractor enters the date that that they return the completed "Request for Approval of Material or Shop Drawing" to the Subcontractor/Supplier.

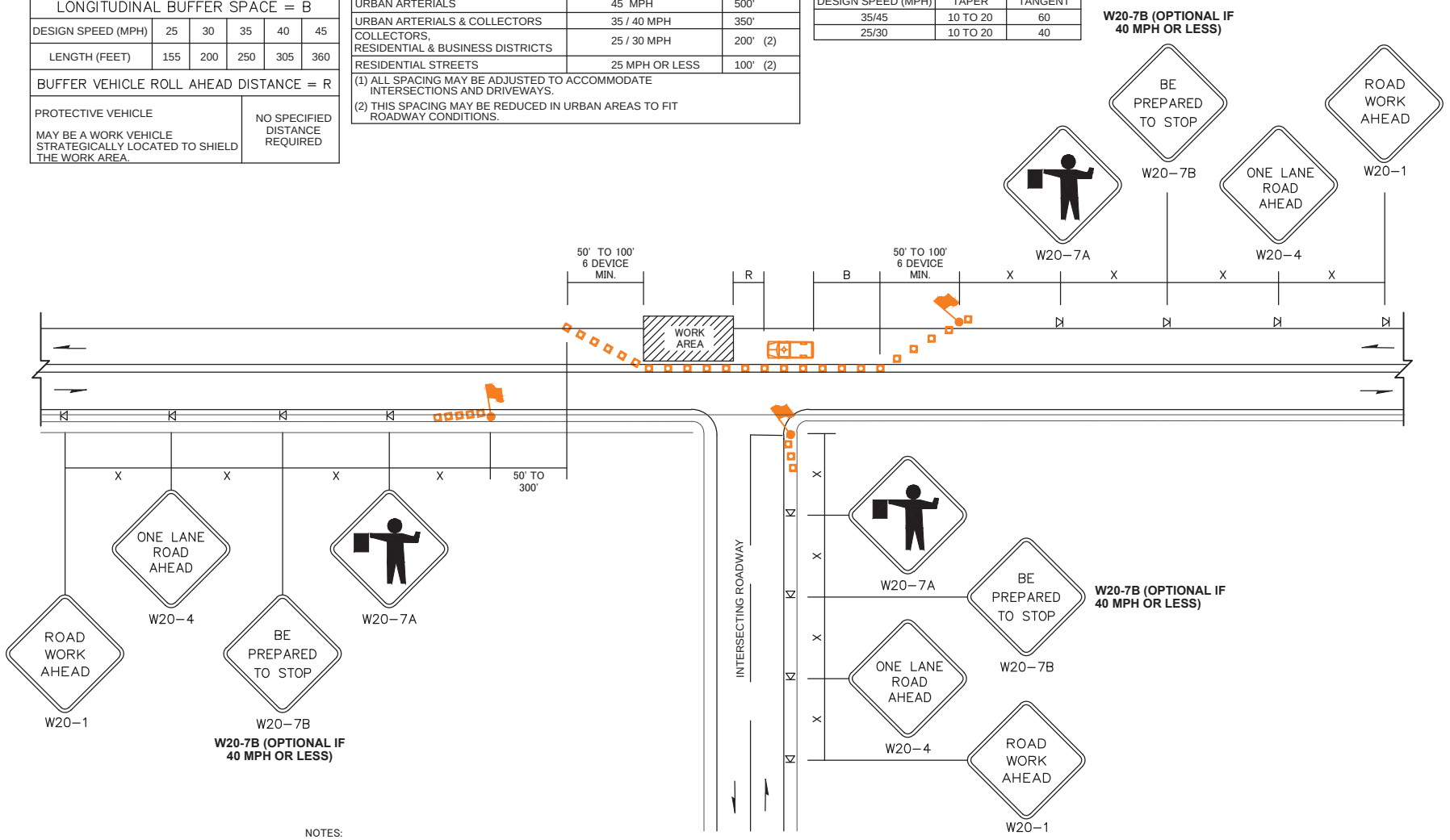
BUFFER DATA					
LONGITUDINAL BUFFER SPACE = B					
DESIGN SPEED (MPH)	25	30	35	40	45
LENGTH (FEET)	155	200	250	305	360
BUFFER VEHICLE ROLL AHEAD DISTANCE = R					
PROTECTIVE VEHICLE MAY BE A WORK VEHICLE STRATEGICALLY LOCATED TO SHIELD THE WORK AREA.					NO SPECIFIED DISTANCE REQUIRED

SIGN SPACING = X (1)	DESIGN SPEED (MPH)	FEET
URBAN ARTERIALS	45 MPH	500'
URBAN ARTERIALS & COLLECTORS	35 / 40 MPH	350'
COLLECTORS, RESIDENTIAL & BUSINESS DISTRICTS	25 / 30 MPH	200' (2)
RESIDENTIAL STREETS	25 MPH OR LESS	100' (2)

(1) ALL SPACING MAY BE ADJUSTED TO ACCOMMODATE INTERSECTIONS AND DRIVEWAYS.

(2) THIS SPACING MAY BE REDUCED IN URBAN AREAS TO FIT ROADWAY CONDITIONS.

CHANNELIZATION DEVICE SPACING (FEET)		
DESIGN SPEED (MPH)	TAPER	TANGENT
35/45	10 TO 20	60
25/30	10 TO 20	40



NOTES:

1. ALL SIGNS ARE BLACK ON ORANGE.
2. EXTENDING THE CHANNELIZING DEVICE TAPER ACROSS SHOULDER IS RECOMMENDED.
3. NIGHT WORK REQUIRES ADDITIONAL ROADWAY LIGHTING AT FLAGGING STATIONS. SEE THE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION.
4. SEE SPECIAL PROVISIONS FOR WORK HOUR RESTRICTIONS.
5. REFER TO THE MUTCD FOR SIGN DIMENSIONS.

LEGEND

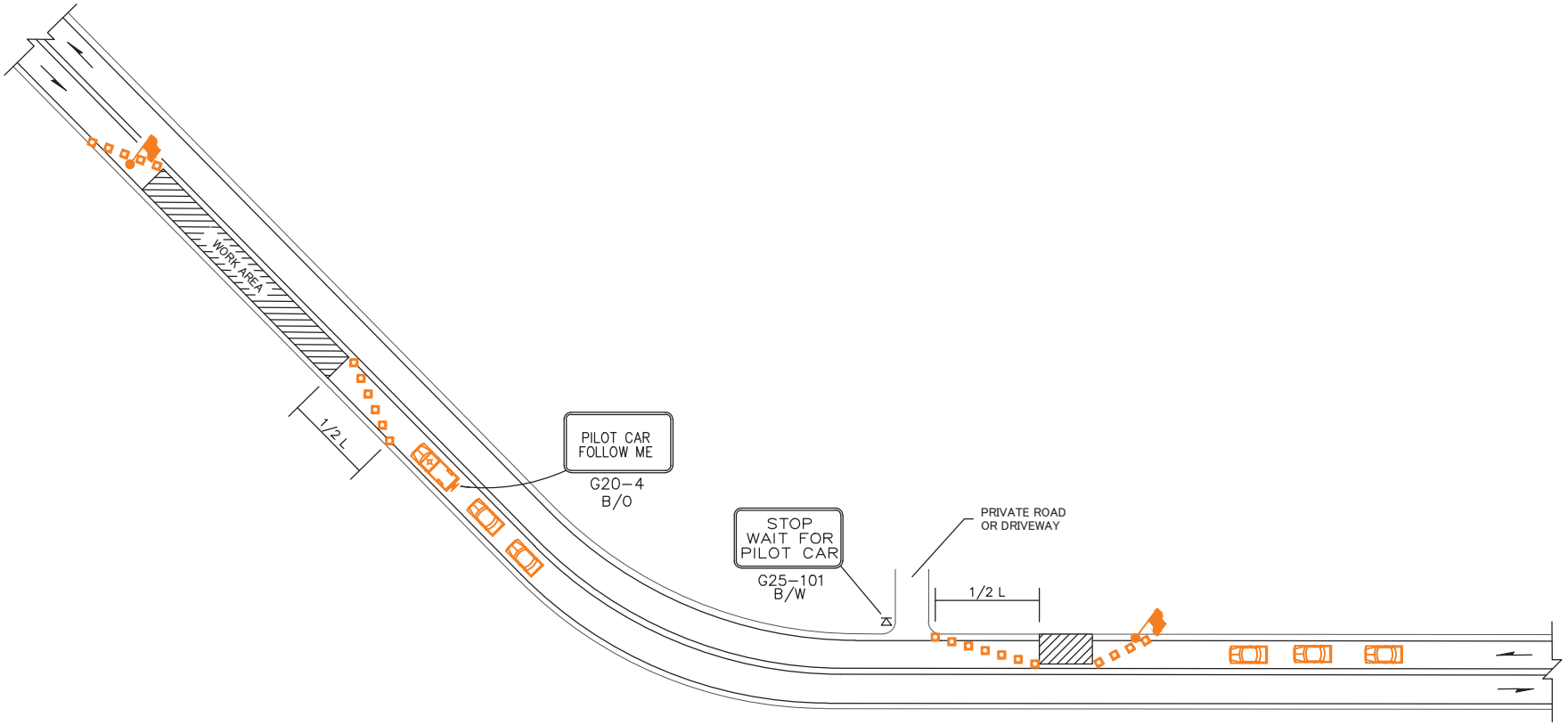
- **FLAGGING STATION**
- **TEMPORARY SIGN LOCATION**
- **CHANNELIZING DEVICES**
- **PROTECTIVE VEHICLE**

ONE-LANE TWO-WAY TRAFFIC CONTROL WITH FLAGGERS

TC-1

MINIMUM TAPER LENGTH = L (feet)				
LANE WIDTH (feet)	DESIGN SPEED (MPH)			
	25	30	35	40
10	105	150	205	270
11	115	165	225	295
12	125	180	245	320

CHANNELIZATION DEVICE SPACING (feet)		
DESIGN SPEED (MPH)	TAPER	TANGENT
35/45	30	60
25/30	20	40



LEGEND

- FLAGGING STATION
- TEMPORARY SIGN LOCATION
- CHANNELIZING DEVICES
- PILOT VEHICLE
- MOTORIST VEHICLE

NOTES:

1. REFER TO SHEET TC1 FOR ADDITIONAL SIGNING AND FLAGGING DETAILS NOT SHOWN.
2. CHANNELIZING DEVICES ARE RECOMMENDED ALONG CENTERLINE TO SEPARATE TRAFFIC FROM WORK OPERATION. DEVICES ARE REQUIRED AT TAPERS TO SHIFT TRAFFIC MOVEMENT BETWEEN LANES AND TO PROTECT FLAGGING STATIONS.
3. SIGN G25-101 IS RECOMMENDED FOR NON-STOP SIGN CONTROLLED APPROACHES SUCH AS PRIVATE ROADS AND DRIVEWAYS. THIS SIGN IS NOT REQUIRED TO BE ALUMINUM SUBSTRATE AND CAN BE MADE OF ALTERNATIVE MATERIALS.
4. REFER TO THE MUTCD FOR SIGN DIMENSIONS.

PILOT CAR OPERATION

TC-2

MINIMUM LANE CLOSURE TAPER LENGTH = L (feet)					
LANE WIDTH (feet)	DESIGN SPEED (MPH)				
	25	30	35	40	45
10	105	150	205	270	450
11	115	165	225	295	495
12	125	180	245	320	540

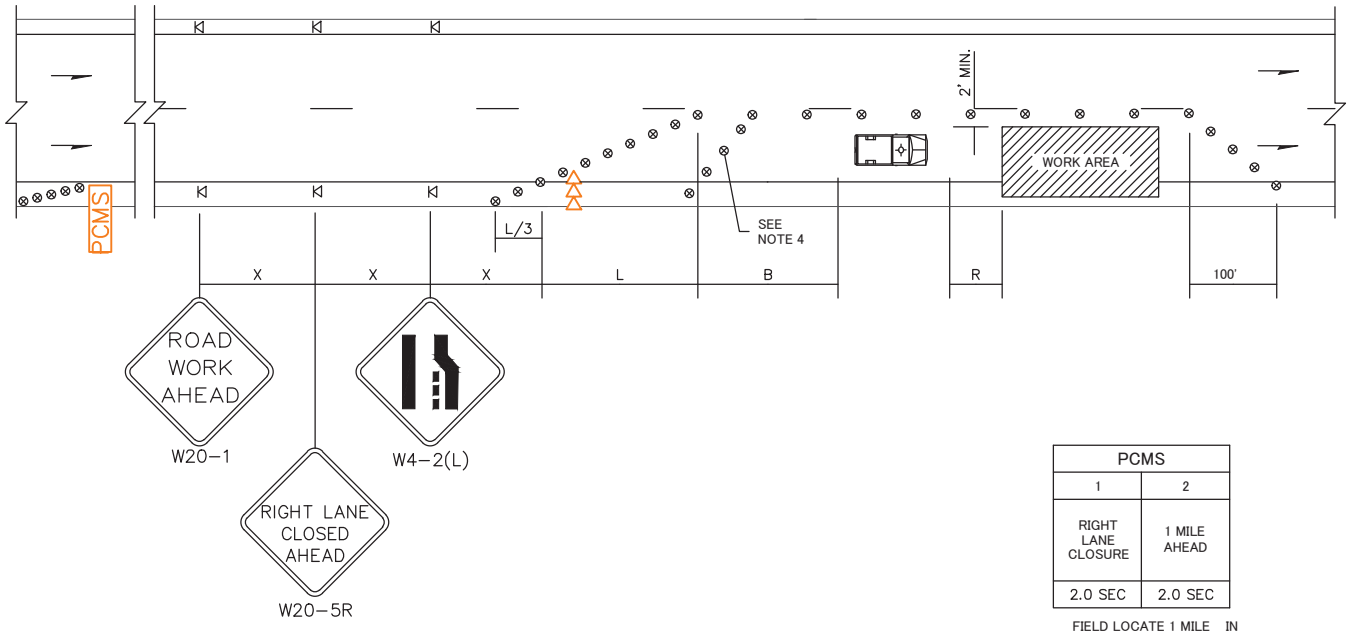
MINIMUM SHOULDER TAPER LENGTH = L/3 (feet)					
SHOULDER WIDTH (feet)	DESIGN SPEED (MPH)				
	25	30	35	40	45
8'	40	40	60	90	120
10'	40	60	90	90	150
USE A MINIMUM 3 DEVICES TAPER FOR SHOULDER LESS THEN 8'.					

SIGN SPACING = X (1)	DESIGN SPEED (MPH)	FEET
URBAN ARTERIALS	45 MPH	500'
URBAN ARTERIALS & COLLECTORS	35 / 40 MPH	350'
COLLECTORS, RESIDENTIAL & BUSINESS DISTRICTS	25 / 30 MPH	200' (2)
RESIDENTIAL STREETS	25 MPH OR LESS	100' (2)

(1) ALL SPACING MAY BE ADJUSTED TO ACCOMMODATE, AT-GRADE INTERSECTIONS AND DRIVEWAYS.
(2) THIS SPACING MAY BE REDUCED IN URBAN AREAS TO FIT ROADWAY CONDITIONS.

BUFFER DATA					
LONGITUDINAL BUFFER SPACE = B					
	25	30	35	40	45
LENGTH (feet)	155	200	250	305	360

CHANNELIZATION DEVICE SPACING (feet)		
DESIGN SPEED (MPH)	TAPER	TANGENT
35/45	30	60
25/30	20	40



PCMS	
1	2
RIGHT LANE CLOSURE	1 MILE AHEAD
2.0 SEC	2.0 SEC

FIELD LOCATE 1 MILE IN ADVANCE OF LANE CLOSURE SIGNING.

NOTES:

1. SEE SPECIAL PROVISIONS FOR WORK HOUR RESTRICTIONS.
2. EXTEND DEVICE TAPER AT L/3 ACROSS SHOULDER.
3. DEVICES SHALL NOT ENCROACH INTO THE ADJACENT LANE.
4. USE TRANSVERSE DEVICES IN CLOSED LANE EVERY 1000' (FT) (RECOMMENDED).
5. DEVICE SPACING FOR THE DOWNSTREAM TAPER SHALL BE 20' (FT).
6. ALL SIGNS ARE BLACK ON ORANGE.
7. REFER TO THE MUTCD FOR SIGN DIMENSIONS.

LEGEND

- **TEMPORARY SIGN LOCATION**
- **TRAFFIC SAFETY DRUM**
- **SEQUENTIAL ARROW SIGN**
- **PROTECTIVE VEHICLE**
- PCMS **PORTABLE CHANGEABLE MESSAGE SIGN**

SINGLE-LANE CLOSURE FOR MULTI-LANE ROADWAYS

TC-3

MINIMUM LANE CLOSURE TAPER LENGTH = L (feet)					
LANE WIDTH (feet)	DESIGN SPEED (MPH)				
	25	30	35	40	45
10	105	150	205	270	450
11	115	165	225	295	495
12	125	180	245	320	540

MINIMUM SHOULDER TAPER LENGTH = L/3 (feet)					
SHOULDER WIDTH (feet)	DESIGN SPEED (MPH)				
	25	30	35	40	45
8'	40	40	60	90	120
10'	40	60	90	90	150
USE A MINIMUM 3 DEVICES TAPER FOR SHOULDER LESS THEN 8'.					

SIGN SPACING = X (1)	DESIGN SPEED (MPH)	FEET
URBAN ARTERIALS	45 MPH	500'
URBAN ARTERIALS & COLLECTORS	35 / 40 MPH	350'
COLLECTORS, RESIDENTIAL & BUSINESS DISTRICTS	25 / 30 MPH	200' (2)
RESIDENTIAL STREETS	25 MPH OR LESS	100' (2)

(1) ALL SPACING MAY BE ADJUSTED TO ACCOMMODATE INTERCHANGE RAMPS, AT-GRADE INTERSECTIONS AND DRIVEWAYS.

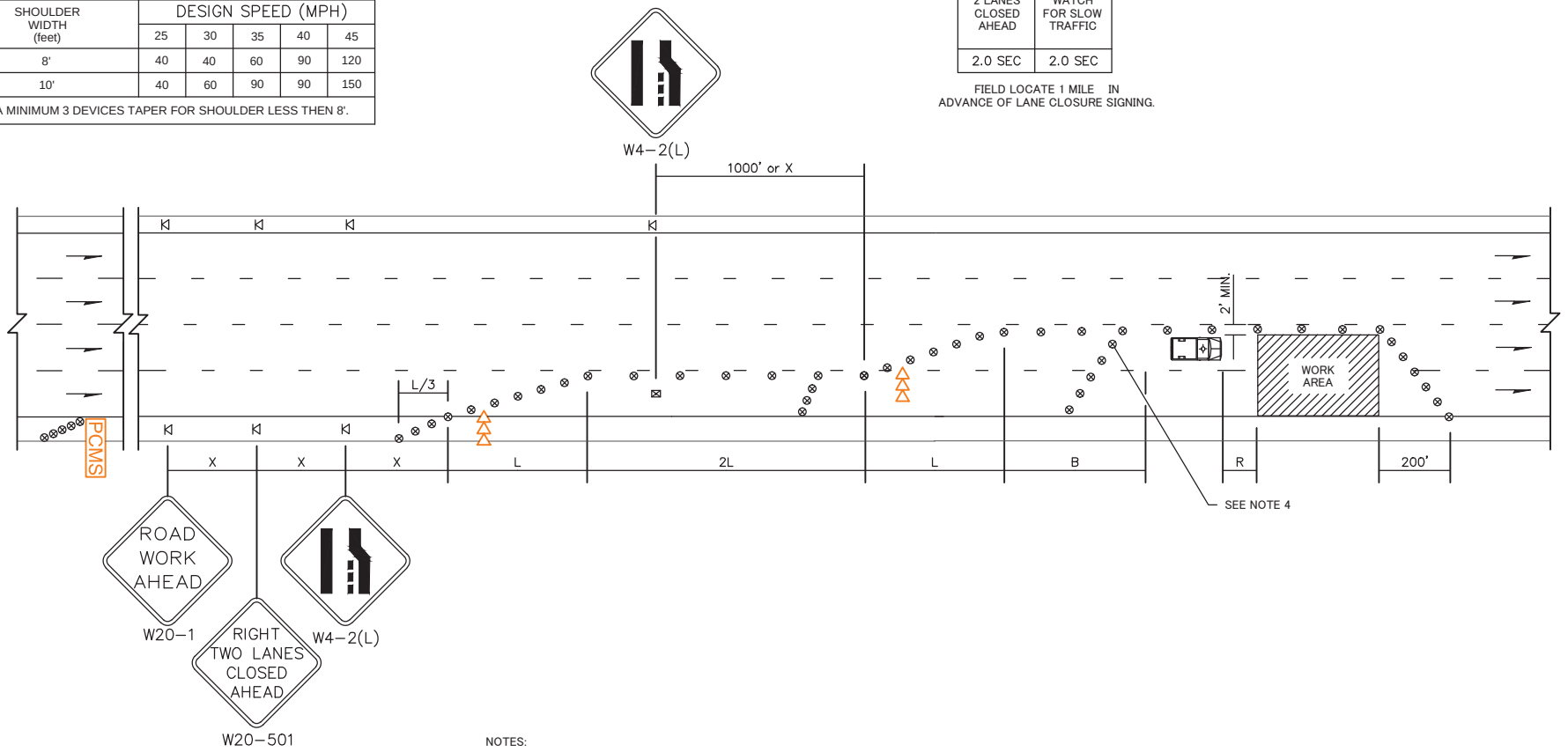
(2) THIS SPACING MAY BE REDUCED IN URBAN AREAS TO FIT ROADWAY CONDITIONS.

CHANNELIZATION DEVICE SPACING (feet)		
DESIGN SPEED (MPH)	TAPER	TANGENT
35/45	30	60
25/30	20	40

BUFFER DATA					
LONGITUDINAL BUFFER SPACE = B					
DESIGN SPEED (MPH)	25	30	35	40	45
LENGTH (feet)	155	200	250	305	360

PCMS	
1	2
2 LANES CLOSED AHEAD	WATCH FOR SLOW TRAFFIC
2.0 SEC	2.0 SEC

FIELD LOCATE 1 MILE IN ADVANCE OF LANE CLOSURE SIGNING.



LEGEND

- ⊗ **TRAFFIC SAFETY DRUM**
- ⋈ **TEMPORARY SIGN LOCATION**
- ▷▷▷ **SEQUENTIAL ARROW SIGN**
- **PROTECTIVE VEHICLE**
- PCMS **PORTABLE CHANGEABLE MESSAGE SIGN**
- ⊠ **TEMPORARY SIGN LOCATION (5' (FT) MOUNTING HEIGHT)**

NOTES:

1. SEE SPECIAL PROVISIONS FOR WORK HOUR RESTRICTIONS.
2. EXTEND DEVICE TAPER AT L/3 ACROSS SHOULDER.
3. DEVICES SHALL NOT ENCROACH INTO THE ADJACENT LANES.
4. USE TRANSVERSE DEVICES IN CLOSED LANE EVERY 1000' (FT) (RECOMMENDED).
5. DEVICE SPACING FOR THE DOWNSTREAM TAPER SHALL BE 20' (FT).
6. ALL SIGNS ARE BLACK ON ORANGE.
7. REFER TO THE MUTCD FOR SIGN DIMENSIONS.

DOUBLE-LANE CLOSURE FOR MULTI-LANE ROADWAYS

TC-4

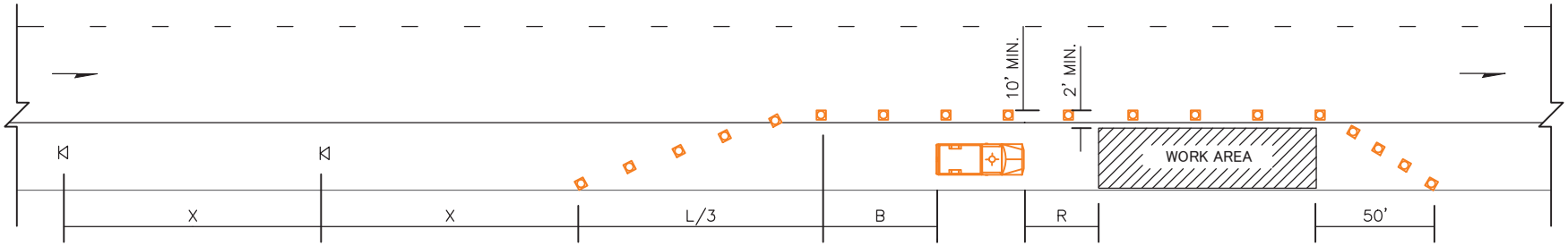
SIGN SPACING = X (1)	DESIGN SPEED (MPH)	FEET
URBAN ARTERIALS	35 / 40 MPH	350'
URBAN ARTERIALS, RESIDENTIAL & BUSINESS DISTRICTS	25 / 30 MPH	200' (2)
RESIDENTIAL STREETS	25 MPH OR LESS	100' (2)

(1) ALL SPACING MAY BE ADJUSTED TO ACCOMMODATE INTERSECTIONS AND DRIVEWAYS.

(2) THIS SPACING MAY BE REDUCED IN URBAN AREAS TO FIT ROADWAY CONDITIONS.

MINIMUM SHOULDER TAPER LENGTH = L/3 (FEET)					
SHOULDER WIDTH (feet)	DESIGN SPEED MPH				
	25	30	35	40	45
8'	40	40	60	90	120
10'	40	60	90	90	150
USE A 3 DEVICES TAPER FOR SHOULDERS LESS THEN 8'					

CHANNELIZATION DEVICE SPACING (FEET)		
DESIGN SPEED MPH	TAPER	TANGENT
35/40	30	60
25/30	20	40



W20–1

W21–5

BUFFER DATA					
LONGITUDINAL BUFFER SPACE = B					
DESIGN SPEED (MPH)	25	30	35	40	45
LENGTH (FEET)	155	200	250	305	360
BUFFER VEHICLE ROLL AHEAD DISTANCE = R					
PROTECTIVE VEHICLE MAY BE A WORK VEHICLE STRATEGICALLY LOCATED TO SHIELD THE WORK AREA.	NO SPECIFIED DISTANCE REQUIRED				

LEGEND

- **TEMPORARY SIGN LOCATION**
- **CHANNELIZING DEVICES**
- **PROTECTIVE VEHICLE**

NOTES:

1. DEVICE SPACING FOR THE DOWNSTREAM TAPER SHALL BE 20' (FT).
2. ALL SIGNS ARE BLACK ON ORANGE.
3. REFER TO THE MUTCD FOR SIGN DIMENSIONS.

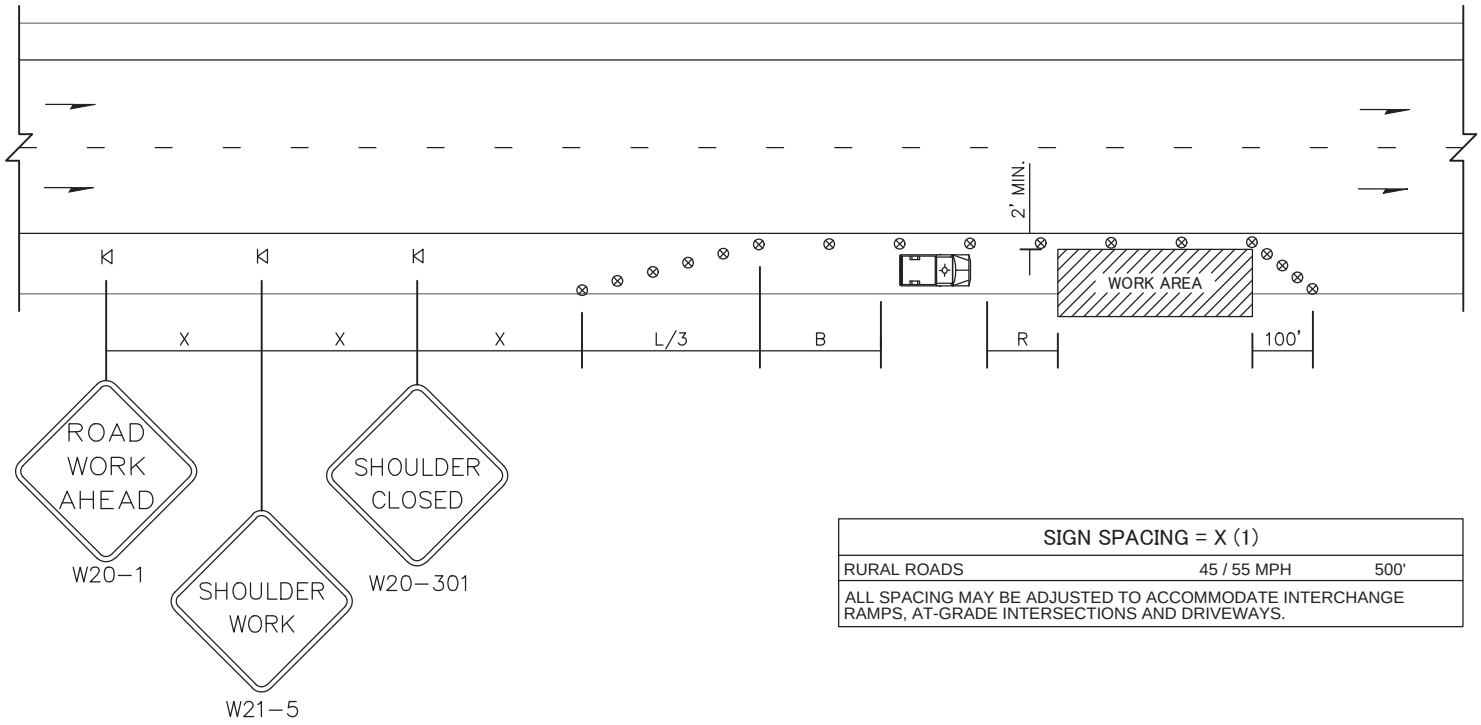
SHOULDER CLOSURE – LOW SPEED (40 MPH OR LESS)

TC–5

MINIMUM SHOULDER TAPER LENGTH = L/3 (feet)						
SHOULDER WIDTH (feet)	DESIGN SPEED					
	25	30	35	40	45	50
8'	-	-	-	-	120	130
10'	-	-	-	-	150	170
USE A MINIMUM 3 DEVICES TAPER FOR SHOULDER LESS THEN 8'.						

CHANNELIZATION DEVICE SPACING (feet)		
MPH	TAPER	TANGENT
50/70	40	80
35/45	30	60

BUFFER DATA						
LONGITUDINAL BUFFER SPACE = B						
DESIGN SPEED (MPH)	25	30	35	40	45	50
LENGTH (feet)	-	-	-	-	360	425



SIGN SPACING = X (1)		
RURAL ROADS	45 / 55 MPH	500'
ALL SPACING MAY BE ADJUSTED TO ACCOMMODATE INTERCHANGE RAMPS, AT-GRADE INTERSECTIONS AND DRIVEWAYS.		

LEGEND

- **TEMPORARY SIGN LOCATION**
- **TRAFFIC SAFETY DRUM**
- **PROTECTIVE VEHICLE**

NOTES:

1. NO ENCROACHMENT IN TRAVELED LANE. IF ENCROACHMENT IS NECESSARY, LANE SHALL BE CLOSED.
2. DEVICE SPACING FOR THE DOWNSTREAM TAPER SHALL BE 20' (FT) O.C.
3. ALL SIGNS ARE BLACK ON ORANGE.
4. REFER TO THE MUTCD FOR SIGN DIMENSIONS.

SHOULDER CLOSURE - HIGH SPEED

TC-6

MINIMUM TAPER LENGTH = L (FEET)					
LANE WIDTH (FEET)	DESIGN SPEED (MPH)				
	25	30	35	40	45
10	105	150	205	270	450
11	115	165	225	295	495
12	125	180	245	320	540

BUFFER DATA					
LONGITUDINAL BUFFER SPACE = B					
DESIGN SPEED (MPH)	25	30	35	40	45
LENGTH (feet)	155	200	250	305	360
BUFFER VEHICLE ROLL AHEAD DISTANCE = R					
PROTECTIVE VEHICLE MAY BE A WORK VEHICLE STRATEGICALLY LOCATED TO SHIELD THE WORK AREA.	NO SPECIFIED DISTANCE REQUIRED				

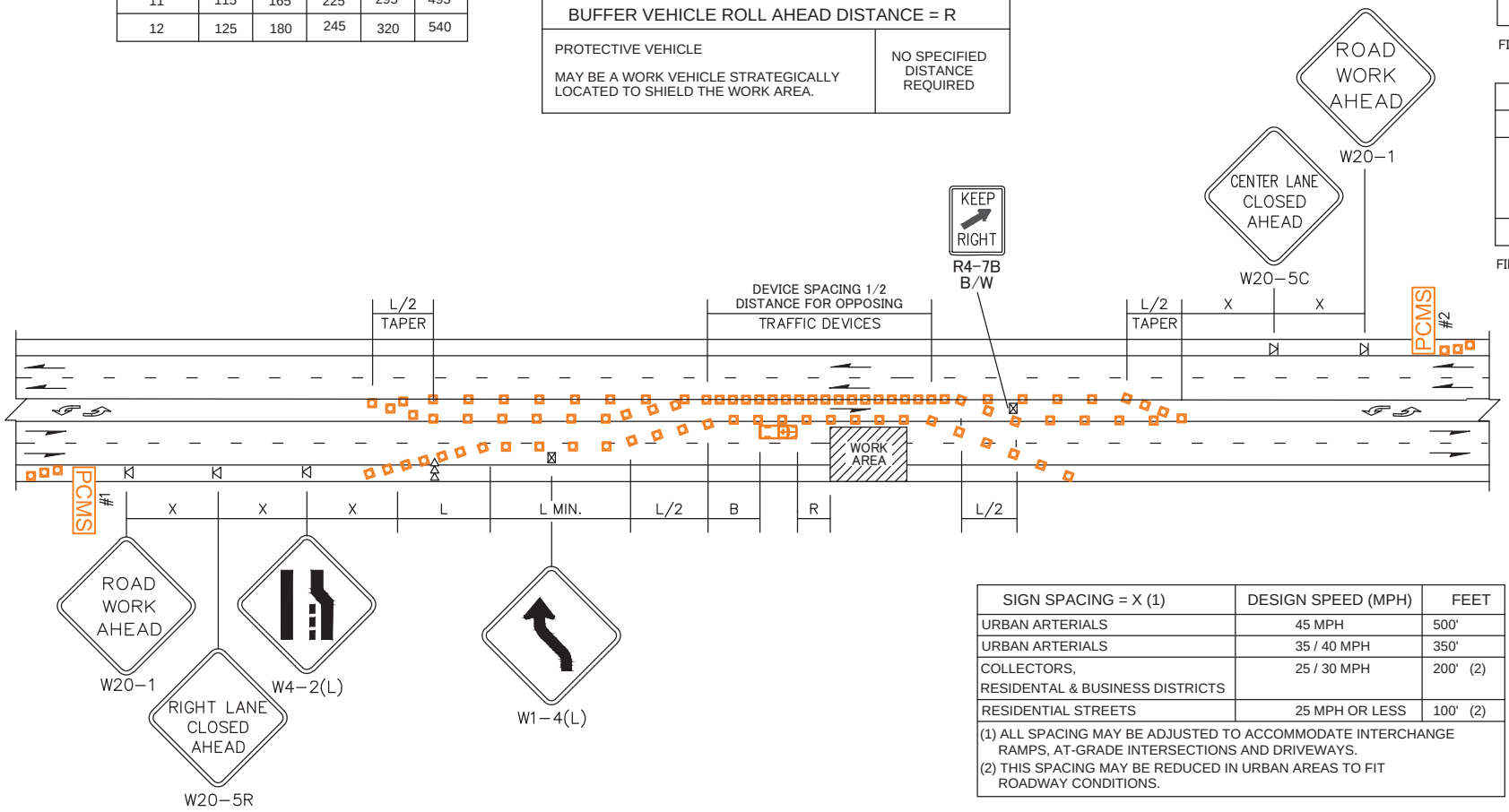
CHANNELIZATION DEVICE SPACING (FEET)		
DESIGN SPEED (MPH)	TAPER	TANGENT
35/45	30	60
25/30	20	40

PCMS #1	
1	2
RIGHT LANE CLOSURE	1 MILE AHEAD
2.0 SEC	2.0 SEC

FIELD LOCATE IN ADVANCE OF TEMPORARY SIGNS.

PCMS #2	
1	2
CENTER LANE CLOSED	NNO LEFT TURNING
2.0 SEC	2.0 SEC

FIELD LOCATE IN ADVANCE OF TEMPORARY SIGNS.



SIGN SPACING = X (1)	DESIGN SPEED (MPH)	FEET
URBAN ARTERIALS	45 MPH	500'
URBAN ARTERIALS	35 / 40 MPH	350'
COLLECTORS, RESIDENTAL & BUSINESS DISTRICTS	25 / 30 MPH	200' (2)
RESIDENTIAL STREETS	25 MPH OR LESS	100' (2)

(1) ALL SPACING MAY BE ADJUSTED TO ACCOMMODATE INTERCHANGE RAMPS, AT-GRADE INTERSECTIONS AND DRIVEWAYS.
(2) THIS SPACING MAY BE REDUCED IN URBAN AREAS TO FIT ROADWAY CONDITIONS.

LEGEND

- **TEMPORARY SIGN LOCATION**
- **CHANNELIZING DEVICES**
- **SEQUENTIAL ARROW SIGN**
- **PROTECTIVE VEHICLE**
- PCMS **PORTABLE CHANGEABLE MESSAGE SIGN**
- **TEMPORARY SIGN LOCATION (5' MOUNTING HEIGHT)**

NOTES:

1. SEE SPECIAL PROVISIONS FOR WORK HOUR RESTRICTIONS.
2. RECOMMEND EXTENDING DEVICE TAPER (L/3) ACROSS SHOULDER.
3. FOR POSTED SPEED LIMITS OF 30 MPH OR LESS, USE SIGN W1-3 IN LIEU OF SIGN W1-4.
4. ALL SIGNS ARE BLACK ON ORANGE UNLESS OTHERWISE DESIGNATED.
5. REFER THE MUTCD FOR SIGN DIMENSIONS.

RIGHT LANE CLOSURE WITH SHIFT
5 LANE ROADWAY
TC–10

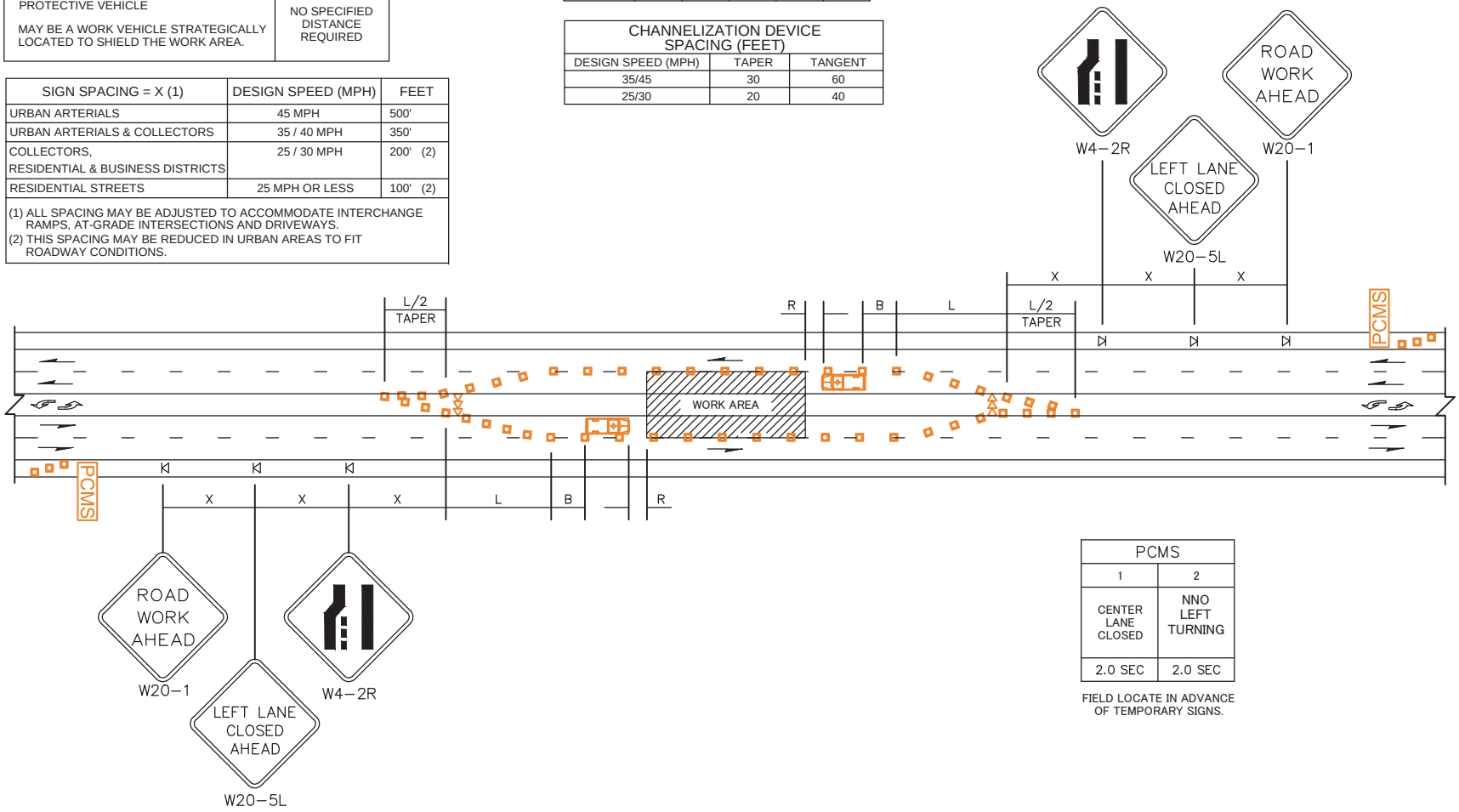
BUFFER DATA					
LONGITUDINAL BUFFER SPACE = B					
DESIGN SPEED (MPH)	25	30	35	40	45
LENGTH (FEET)	155	200	250	305	360
BUFFER VEHICLE ROLL AHEAD DISTANCE = R					
PROTECTIVE VEHICLE MAY BE A WORK VEHICLE STRATEGICALLY LOCATED TO SHIELD THE WORK AREA.	NO SPECIFIED DISTANCE REQUIRED				

MINIMUM TAPER LENGTH = L (FEET)					
LANE WIDTH (FEET)	DESIGN SPEED (MPH)				
	25	30	35	40	45
10	105	150	205	270	450
11	115	165	225	295	495
12	125	180	245	320	540

CHANNELIZATION DEVICE SPACING (FEET)		
DESIGN SPEED (MPH)	TAPER	TANGENT
35/45	30	60
25/30	20	40

SIGN SPACING = X (1)	DESIGN SPEED (MPH)	FEET
URBAN ARTERIALS	45 MPH	500'
URBAN ARTERIALS & COLLECTORS	35 / 40 MPH	350'
COLLECTORS, RESIDENTIAL & BUSINESS DISTRICTS	25 / 30 MPH	200' (2)
RESIDENTIAL STREETS	25 MPH OR LESS	100' (2)

(1) ALL SPACING MAY BE ADJUSTED TO ACCOMMODATE INTERCHANGE RAMPS, AT-GRADE INTERSECTIONS AND DRIVEWAYS.
(2) THIS SPACING MAY BE REDUCED IN URBAN AREAS TO FIT ROADWAY CONDITIONS.



PCMS	
1	2
CENTER LANE CLOSED	NNO LEFT TURNING
2.0 SEC	2.0 SEC

FIELD LOCATE IN ADVANCE OF TEMPORARY SIGNS.

LEGEND

- **TEMPORARY SIGN LOCATION**
- **CHANNELIZING DEVICES**
- **SEQUENTIAL ARROW SIGN**
- **PROTECTIVE VEHICLE**
- PCMS **PORTABLE CHANGEABLE MESSAGE SIGN**

NOTES

1. SEE SPECIAL PROVISIONS FOR WORK HOUR RESTRICTIONS.
2. ALL SIGNS ARE BLACK ON ORANGE.
3. REFER TO THE MUTCD FOR SIGN DIMENSIONS.

LEFT LANE AND CENTER TURN LANE CLOSURE – 5 LANE ROADWAY

TC-11

BUFFER DATA					
LONGITUDINAL BUFFER SPACE = B					
DESIGN SPEED (MPH)	25	30	35	40	45
LENGTH (FEET)	155	200	250	305	360
BUFFER VEHICLE ROLL AHEAD DISTANCE = R					
PROTECTIVE VEHICLE MAY BE A WORK VEHICLE STRATEGICALLY LOCATED TO SHIELD THE WORK AREA.	NO SPECIFIED DISTANCE REQUIRED				

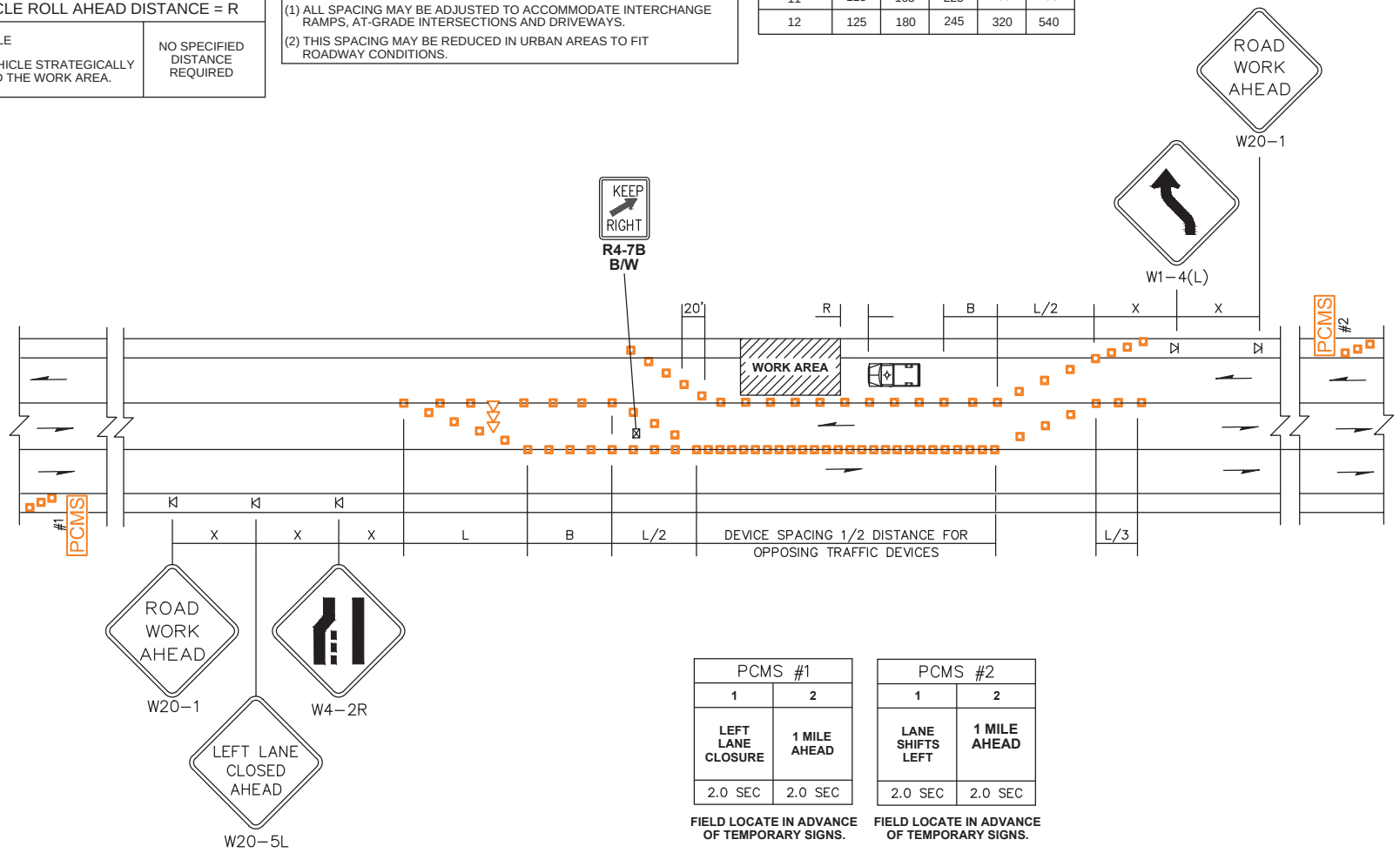
SIGN SPACING = X (1)	DESIGN SPEED (MPH)	FEET
URBAN ARTERIALS	45 MPH	500'
URBAN ARTERIALS & COLLECTORS	35 / 40 MPH	350'
COLLECTORS, RESIDENTAL & BUSINESS DISTRICTS	25 / 30 MPH	200' (2)
RESIDENTIAL STREETS	25 MPH OR LESS	100' (2)

(1) ALL SPACING MAY BE ADJUSTED TO ACCOMMODATE INTERCHANGE RAMPS, AT-GRADE INTERSECTIONS AND DRIVEWAYS.

(2) THIS SPACING MAY BE REDUCED IN URBAN AREAS TO FIT ROADWAY CONDITIONS.

MINIMUM TAPER LENGTH = L (FEET)						
LANE WIDTH (FEET)	DESIGN SPEED (MPH)					
	25	30	35	40	45
10	105	150	205	270	450
11	115	165	225	295	495
12	125	180	245	320	540

CHANNELIZATION DEVICE SPACING (FEET)		
DESIGN SPEED (MPH)	TAPER	TANGENT
35/45	30	60
25/30	20	40



PCMS #1	
1	2
LEFT LANE CLOSURE	1 MILE AHEAD
2.0 SEC	2.0 SEC

FIELD LOCATE IN ADVANCE OF TEMPORARY SIGNS.

PCMS #2	
1	2
LANE SHIFTS LEFT	1 MILE AHEAD
2.0 SEC	2.0 SEC

FIELD LOCATE IN ADVANCE OF TEMPORARY SIGNS.

LEGEND

- TEMPORARY SIGN LOCATION
- CHANNELIZING DEVICES
- SEQUENTIAL ARROW SIGN
- PROTECTIVE VEHICLE
- PCMS — PORTABLE CHANGEABLE MESSAGE SIGN
- TEMPORARY SIGN LOCATION (5' MOUNTING HEIGHT)

NOTES

1. SEE SPECIAL PROVISIONS FOR WORK HOUR RESTRICTIONS.
2. FOR SPEED LIMIT OF 30 MPH OR LESS, USE SIGN W1-3 IN LIEU OF SIGN W1-4.
3. RECOMMENDED EXTENDING DEVICE TAPER (L/3) ACROSS SHOULDER.
4. ALL SIGNS ARE BLACK ON ORANGE UNLESS OTHERWISE DESIGNATED.
5. REFER TO THE MUTCD FOR SIGN DIMENSIONS.

LANE SHIFT
THREE LANE ROADWAY
TC-12

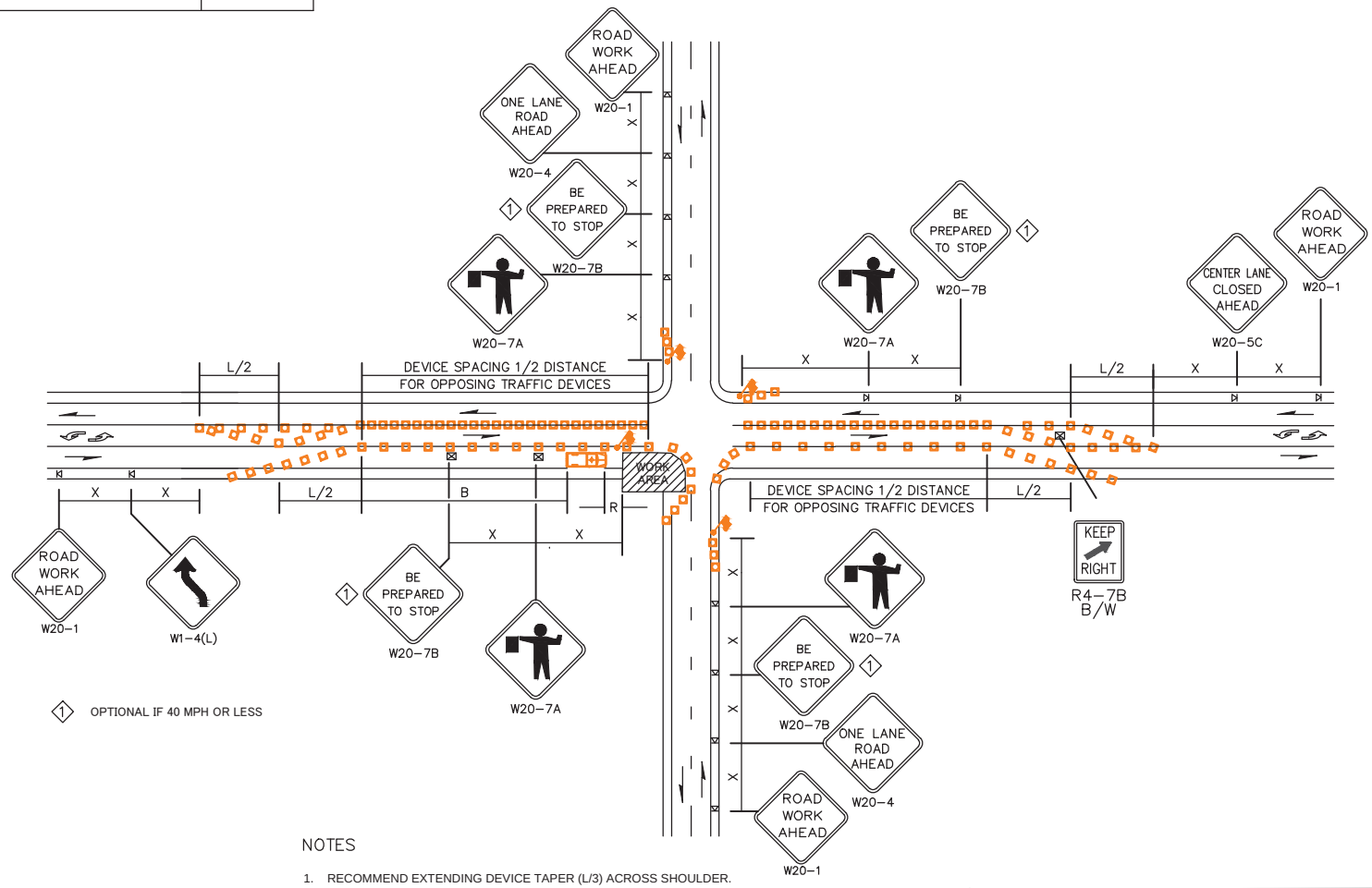
BUFFER DATA					
LONGITUDINAL BUFFER SPACE = B					
DESIGN SPEED (MPH)	25	30	35	40	45
LENGTH (FEET)	155	200	250	305	360
BUFFER VEHICLE ROLL AHEAD DISTANCE = R					
PROTECTIVE VEHICLE MAY BE A WORK VEHICLE STRATEGICALLY LOCATED TO SHIELD THE WORK AREA.	NO SPECIFIED DISTANCE REQUIRED				

SIGN SPACING = X (1)	DESIGN SPEED (MPH)	FEET
URBAN ARTERIALS	45 MPH	500'
URBAN ARTERIALS, COLLECTORS, RESIDENTIAL & BUSINESS DISTRICTS	35 / 40 MPH 25 / 30 MPH	350' 200' (2)
RESIDENTIAL STREETS	25 MPH OR LESS	100' (2)

(1) ALL SPACING MAY BE ADJUSTED TO ACCOMMODATE INTERCHANGE RAMPS, AT-GRADE INTERSECTIONS AND DRIVEWAYS.
(2) THIS SPACING MAY BE REDUCED IN URBAN AREAS TO FIT ROADWAY CONDITIONS.

MINIMUM TAPER LENGTH = L (FEET)					
LANE WIDTH (FEET)	DESIGN SPEED (MPH)				
	25	30	35	40	45
10	105	150	205	270	450
11	115	165	225	295	495
12	125	180	245	320	540

CHANNELIZATION DEVICE SPACING (FEET)		
DESIGN SPEED (MPH)	TAPER	TANGENT
35/45	30	60
25/30	20	40



LEGEND

- FLAGGING STATION
- TEMPORARY SIGN LOCATION
- CHANNELIZING DEVICES
- PROTECTIVE VEHICLE - RECOMMENDED
- TEMPORARY SIGN LOCATION (5' MOUNTING HEIGHT)

NOTES

1. RECOMMEND EXTENDING DEVICE TAPER (L/3) ACROSS SHOULDER.
2. IF A SIGNAL IS PRESENT, IT SHALL BE SET TO "RED FLASH MODE" OR TURNED OFF DURING FLAGGING OPERATIONS AND A UNIFORMED POLICE OFFICER IS REQUIRED.
3. FOR SPEED LIMIT OF 30 MPH OR LESS USE SIGN W1-3 IN LIEU OF SIGN W1-4.
4. MAINTAIN A MINIMUM OF ONE ACCESS POINT FOR EACH BUSINESS WITHIN WORK AREA LIMITS.
5. ALL SIGNS ARE BLACK ON ORANGE UNLESS OTHERWISE DESIGNATED.
6. REFER TO THE MUTCD FOR SIGN DIMENSIONS.

INTERSECTION LANE CLOSURE
THREE LANE ROADWAY
TC-14

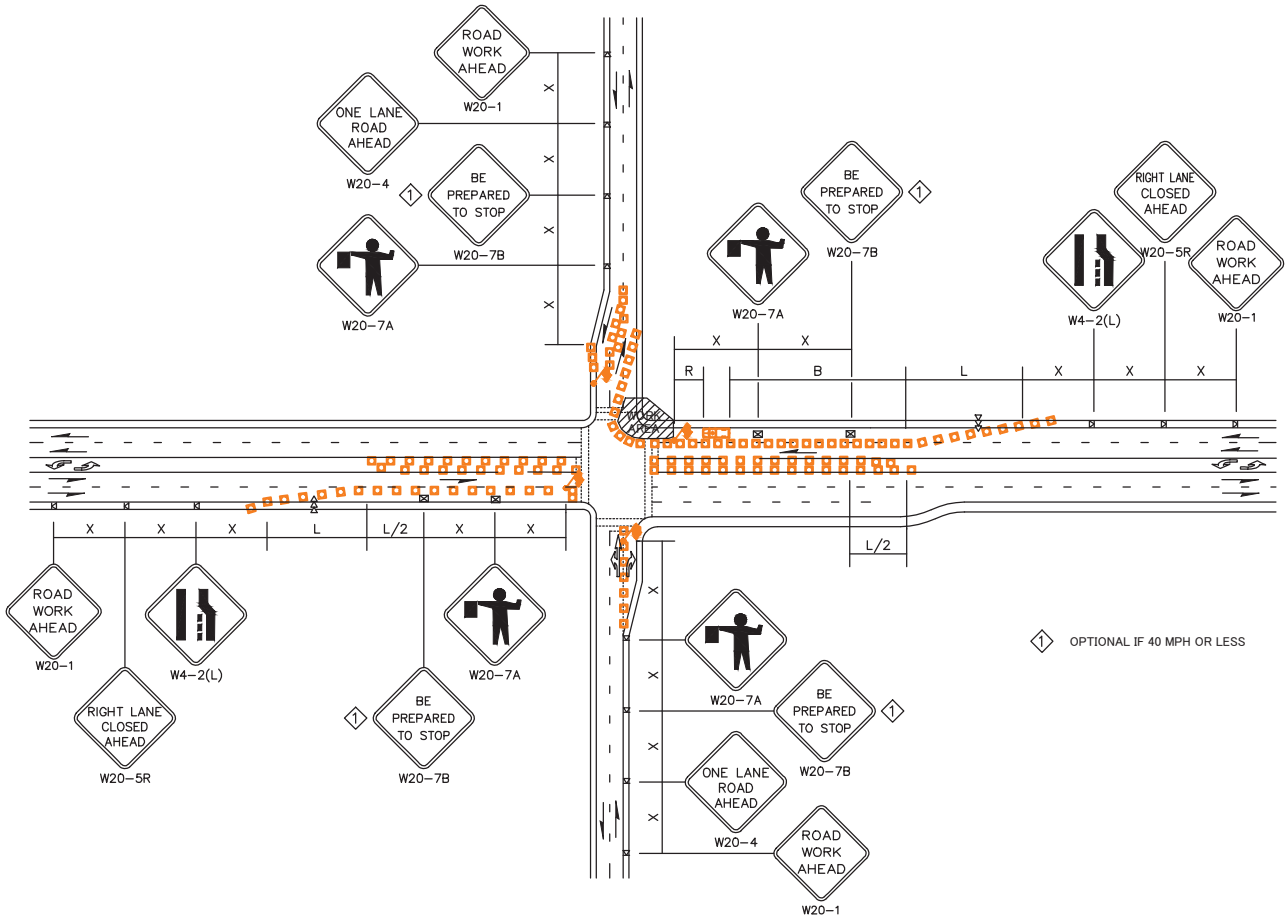
BUFFER DATA					
LONGITUDINAL BUFFER SPACE = B					
DESIGN SPEED (MPH)	25	30	35	40	45
LENGTH (feet)	155	200	250	305	360
BUFFER VEHICLE ROLL AHEAD DISTANCE = R					
PROTECTIVE VEHICLE MAY BE A WORK VEHICLE STRATEGICALLY LOCATED TO SHIELD THE WORK AREA.	NO SPECIFIED DISTANCE REQUIRED				

SIGN SPACING = X (1)	DESIGN SPEED (MPH)	FEET
URBAN ARTERIALS	45 MPH	500'
URBAN ARTERIALS & COLLECTORS	35 / 40 MPH	350'
COLLECTORS, RESIDENTIAL & BUSINESS DISTRICTS	25 / 30 MPH	200' (2)
RESIDENTIAL STREETS	25 MPH OR LESS	100' (2)

(1) ALL SPACING MAY BE ADJUSTED TO ACCOMMODATE INTERCHANGE RAMPS, AT-GRADE INTERSECTIONS AND DRIVEWAYS.
(2) THIS SPACING MAY BE REDUCED IN URBAN AREAS TO FIT ROADWAY CONDITIONS.

MINIMUM TAPER LENGTH = L (FEET)						
LANE WIDTH (FEET)	DESIGN SPEED (MPH)					
	25	30	35	40	45	
10	105	150	205	270	450	
11	115	165	225	295	495	
12	125	180	245	320	540	

CHANNELIZATION DEVICE SPACING (FEET)		
DESIGN SPEED (MPH)	TAPER	TANGENT
35/45	30	60
25/30	20	40



LEGEND

- FLAGGING STATION
- TEMPORARY SIGN LOCATION
- CHANNELIZING DEVICES
- SEQUENTIAL ARROW SIGN
- PROTECTIVE VEHICLE - RECOMMENDED
- TEMPORARY SIGN LOCATION (5' MOUNTING HEIGHT)

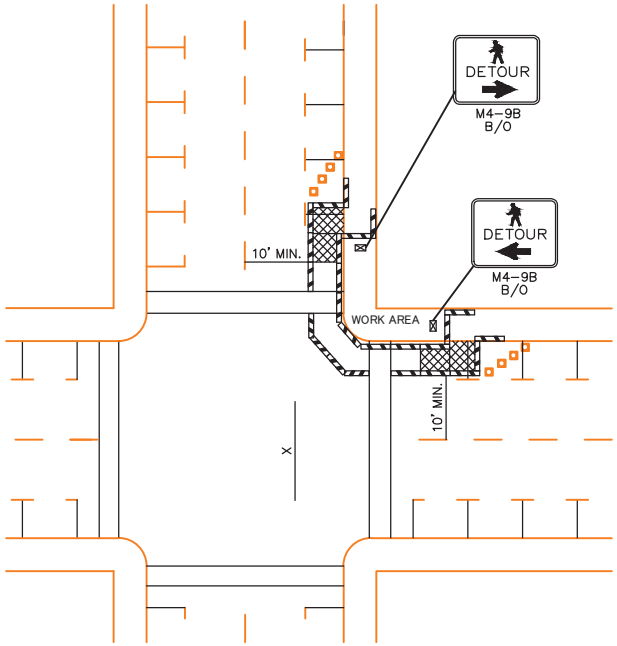
NOTES

1. RECOMMEND EXTENDING DEVICE TAPER (L/3) ACROSS SHOULDER.
2. IF A SIGNAL IS PRESENT, IT SHALL BE SET TO "RED FLASH MODE" OR TURNED OFF DURING FLAGGING OPERATIONS AND A UNIFORMED POLICE OFFICER IS REQUIRED.
3. MAINTAIN A MINIMUM OF ONE ACCESS POINT FOR EACH BUSINESS WITHIN WORK AREA LIMITS.
4. ALL SIGNS ARE BLACK ON ORANGE.
5. REFER TO THE MUTCD FOR SIGN DIMENSIONS.

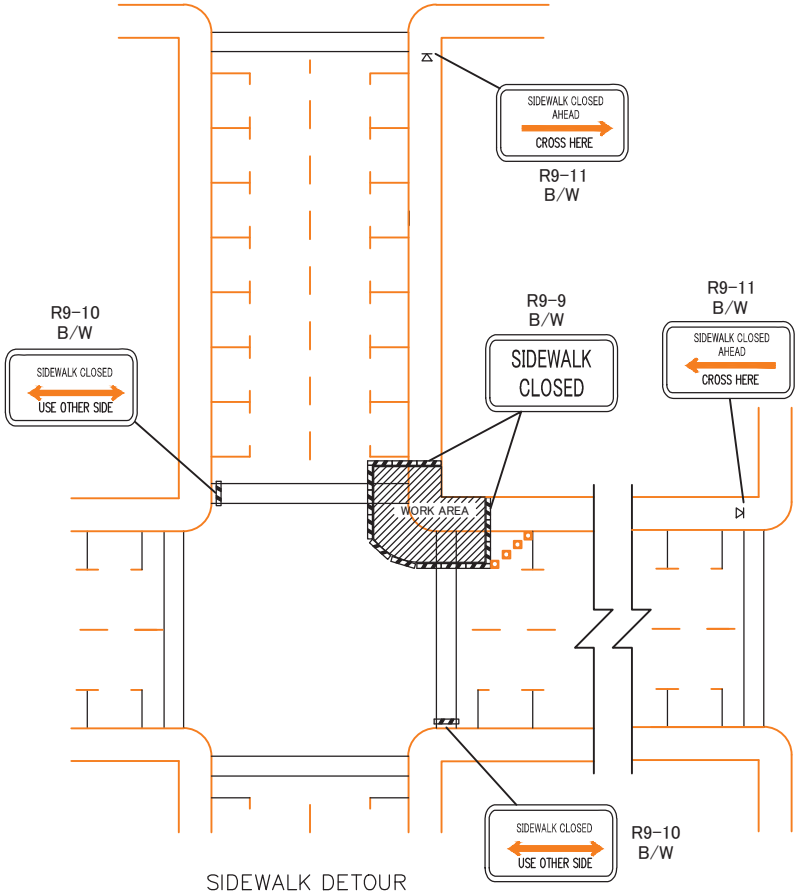
INTERSECTION LANE CLOSURE
FIVE LANE ROADWAY
TC-15

NO PARKING R8-3 R/W

INSTALL ON TYPE 2 BARRICADES THROUGHOUT THE WORK AREA
24 HOURS PRIOR TO IMPLEMENTING TRAFFIC CONTROL.
PRIOR NOTIFICATION OF LOCAL LAW ENFORCEMENT REQUIRED.



SIDEWALK DIVERSION



SIDEWALK DETOUR

LEGEND

- TEMPORARY SIGN LOCATION
- CHANNELIZING DEVICES
- PEDESTRIAN CHANNELIZING DEVICES
- TEMPORARY PEDESTRIAN RAMP FOR SIDEWALKS

NOTES

1. CONTROLS SHOWN ARE FOR PEDESTRIAN TRAFFIC ONLY.
2. A 60" PATH WIDTH SHOULD BE MAINTAINED (48" IS THE MINIMUM).
3. CONTACT AND COORDINATE IMPACTED TRANSIT AGENCIES PRIOR TO IMPLEMENTING ANY CLOSURES.
4. SEE SHEET TC-52 FOR TEMPORARY PEDESTRIAN RAMP DETAILS.
5. ADA PEDESTRIAN FACILITIES MUST BE MAINTAINED. SEE STANDARD SPECIFICATION 1-10.2(1)B.
6. TEMPORARY PEDESTRIAN PUSH BUTTONS SHALL BE PLACED ON THE DIVERTED PATH WHEN EXISTING BUTTONS ARE NOT ACCESSIBLE TO PEDESTRIANS.
7. REFER TO THE MUTCD FOR SIGN DIMENSIONS.

INTERSECTION PEDESTRIAN TRAFFIC CONTROL

TC-16

MINIMUM LANE CLOSURE TAPER LENGTH = L (FEET)					
LANE WIDTH (FEET)	DESIGN SPEED (MPH)				
	25	30	35	40	45
10	105	150	205	270	450
11	115	165	225	295	495
12	125	180	245	320	540

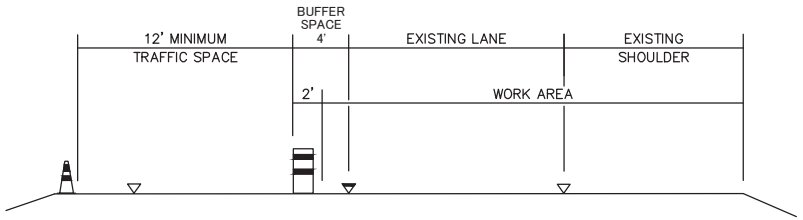
SIGN SPACING = X (1)	DESIGN SPEED (MPH)	FEET
URBAN ARTERIALS	45 / 55 MPH	500'
URBAN ARTERIALS AND COLLECTORS	35 / 40 MPH	350'
COLLECTORS, RESIDENTIAL & BUSINESS DISTRICTS	25 / 30 MPH	200' (1)
RESIDENTIAL STREETS	25 MPH OR LESS	100' (1)

(1) THIS SPACING MAY BE REDUCED IN URBAN AREAS TO FIT ROADWAY CONDITIONS.

MINIMUM SHOULDER TAPER LENGTH = L/3 (FEET)					
SHOULDER WIDTH (FEET)					
	25	30	35	40	45
8'	40	40	60	90	120
10'	40	60	90	90	150
USE A MINIMUM 3 DEVICES TAPER FOR SHOULDER LESS THEN 8'.					

BUFFER DATA					
LONGITUDINAL BUFFER SPACE = B					
DESIGN SPEED (MPH)	25	30	35	40	45
LENGTH (feet)	155	200	250	305	360
BUFFER VEHICLE ROLL AHEAD DISTANCE = R					
PROTECTIVE VEHICLE	NO SPECIFIED DISTANCE REQUIRED				

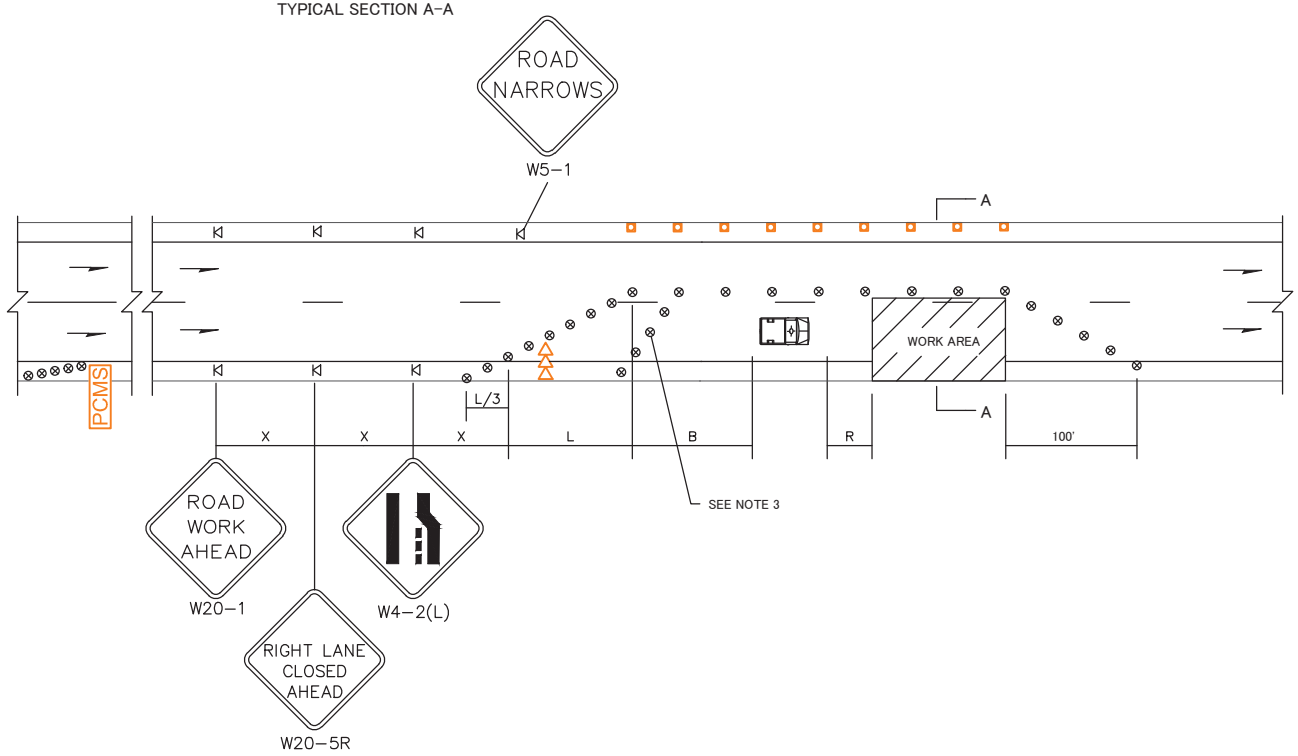
CHANNELIZATION DEVICE SPACING (FEET)		
DESIGN SPEED (MPH)	TAPER	TANGENT
35/45	30	60
25/30	20	40



TYPICAL SECTION A-A

PCMS	
1	2
RIGHT LANE CLOSURE	1 MILE AHEAD
2.0 SEC	2.0 SEC

FIELD LOCATE 1 MILE IN ADVANCE OF LANE CLOSURE SIGNING.



LEGEND

- **TEMPORARY SIGN LOCATION**
- **CHANNELIZING DEVICES**
- **TRAFFIC SAFETY DRUM**
- **SEQUENTIAL ARROW SIGN**
- **PROTECTIVE VEHICLE**
- PCMS **PORTABLE CHANGEABLE MESSAGE SIGN**

NOTES

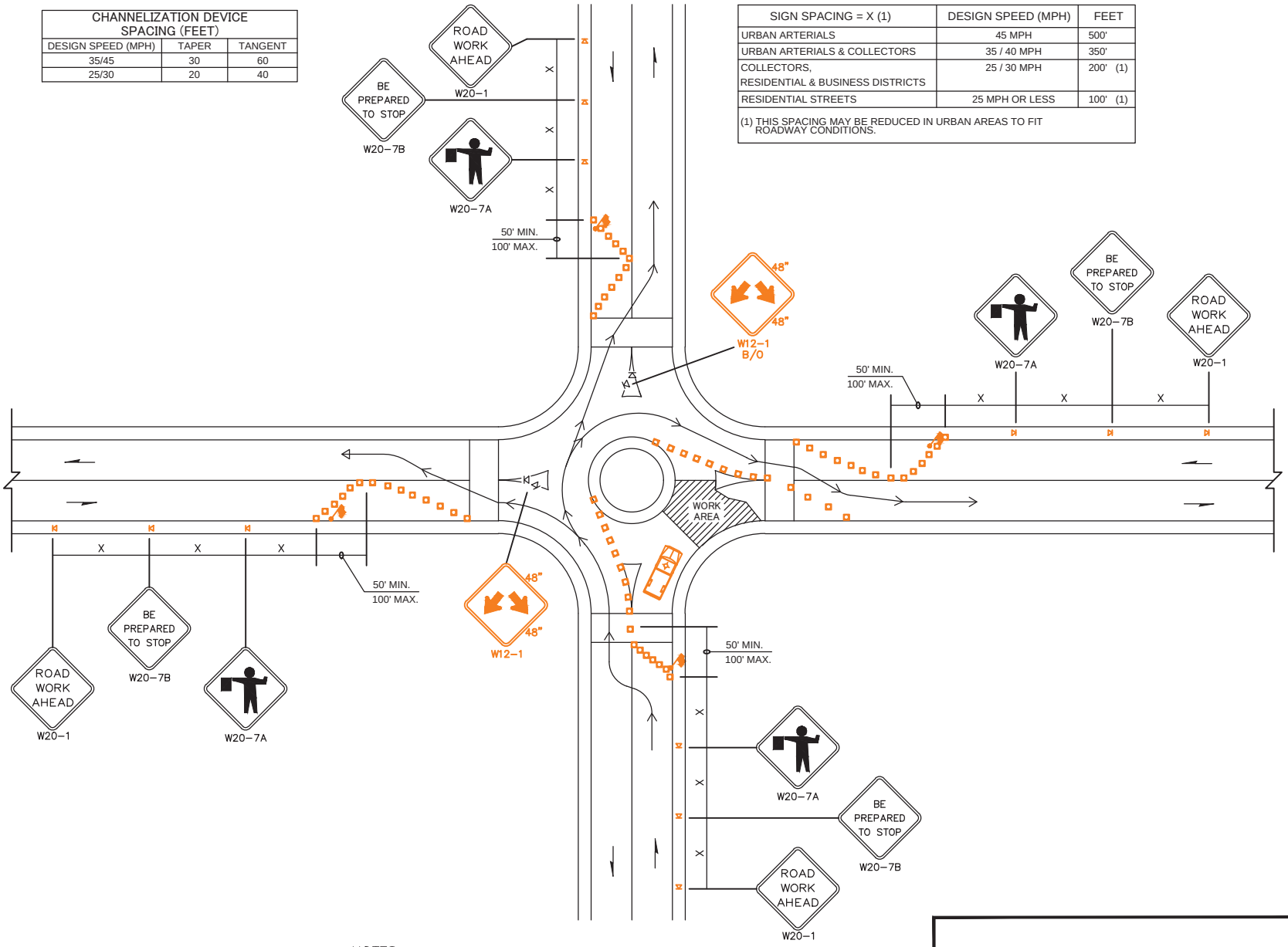
1. SEE SPECIAL PROVISIONS FOR WORK HOUR RESTRICTIONS.
2. RECOMMEND EXTENDING DEVICE TAPER (L/3) ACROSS SHOULDER.
3. USE TRANSVERSE DEVICES IN CLOSED LANE EVERY 1000' (RECOMMENDED).
4. ALL SIGNS ARE BLACK ON ORANGE.
5. RECOMMEND ADVANCE NOTICE FOR ANY OVER WIDTH LOADS PRIOR TO LANE CLOSURE FOR ALTERNATE ROUTES IF APPLICABLE.
6. REFER TO THE MUTCD FOR SIGN DIMENSIONS.

SINGLE-LANE CLOSURE WITH SHIFT

TC-17

CHANNELIZATION DEVICE SPACING (FEET)		
DESIGN SPEED (MPH)	TAPER	TANGENT
35/45	30	60
25/30	20	40

SIGN SPACING = X (1)	DESIGN SPEED (MPH)	FEET
URBAN ARTERIALS	45 MPH	500'
URBAN ARTERIALS & COLLECTORS	35 / 40 MPH	350'
COLLECTORS, RESIDENTIAL & BUSINESS DISTRICTS	25 / 30 MPH	200' (1)
RESIDENTIAL STREETS	25 MPH OR LESS	100' (1)
(1) THIS SPACING MAY BE REDUCED IN URBAN AREAS TO FIT ROADWAY CONDITIONS.		



LEGEND

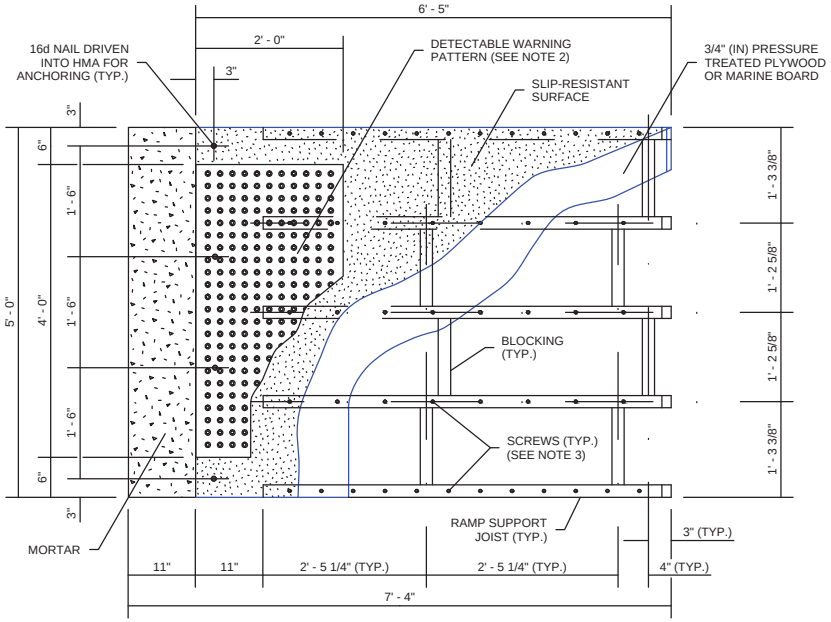
- FLAGGING STATION
- TEMPORARY SIGN LOCATION
- CHANNELIZING DEVICES
- PROTECTIVE VEHICLE - RECOMMENDED

NOTES

1. NIGHT WORK REQUIRES ADDITIONAL ROADWAY LIGHTING AT FLAGGING STATIONS, SEE STANDARD SPECIFICATIONS FOR ADDITIONAL DETAILS.
2. PROTECTIVE VEHICLE RECOMMENDED - MAY BE A WORK VEHICLE.
3. TYPICAL APPLICAITON SHOWN, ADJUST FOR SITE CONDITIONS.
4. REFER TO THE MUTCD FOR SIGN DIMENSIONS.

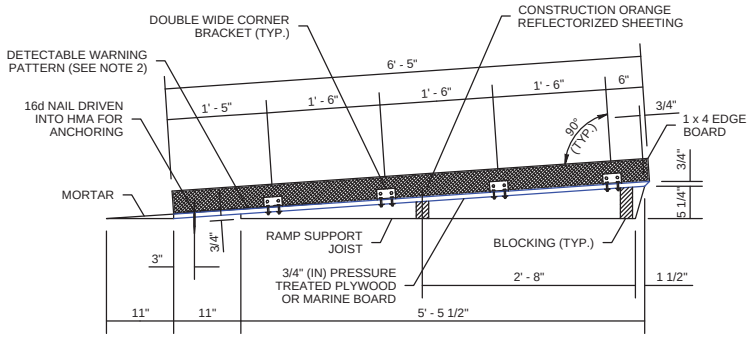
TYPICAL ROUNDABOUT FLAGGING OPERATION

TC–18



TOP VIEW

RAMP DETAIL

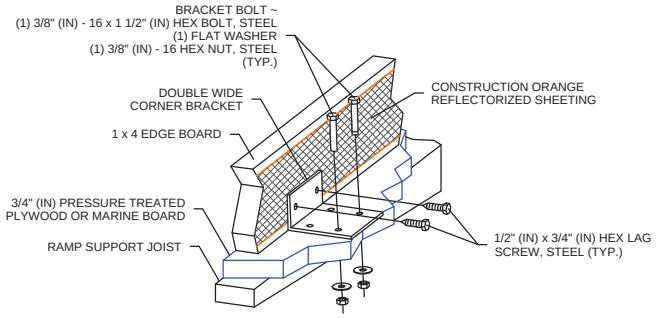


SIDE VIEW

RAMP AND EDGE BOARD

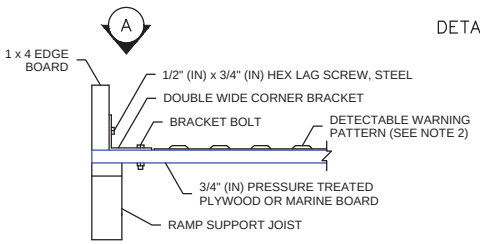
NOTES

1. THIS DESIGN ASSUMES OPTIMAL CONDITIONS AND A STANDARD CURB HEIGHT OF 6" (IN). INSTALLED RAMPS SHALL BE NO STEEPER THAN 12H : 1V, AND SHALL HAVE A CROSS-SLOPE OF 2% OR LESS. USE SHIMS OR GROUT AS REQUIRED TO ADJUST FOR EXISTING CONDITIONS AND TO PREVENT ROCKING. SHIMS SHALL BE NO HIGHER THAN 1" (IN), AND SHALL BE SECURED TO THE RAMP. FOR CURBS SHORTER THAN 6" (IN), INSTALL A RAMP ON THE SIDEWALK, NO STEEPER THAN 12H : 1V, MADE OF GROUT OR AS APPROVED BY THE ENGINEER. ADJUSTMENTS TO THE RAMP DIMENSIONS SHOWN MAY BE REQUIRED TO MATCH EXISTING CONDITIONS.
2. THE DETECTABLE WARNING PATTERN SHALL BE INSTALLED ONLY WHEN THE INTENT IS TO GUIDE PEDESTRIANS DIRECTLY ACROSS THE ROADWAY (CROSSWALK). SEE **STANDARD PLAN F-40.10** FOR DETAILS.
3. SCREWS SHALL BE USED TO SECURE THE RAMP SURFACE. SPACING SHALL BE IN ACCORDANCE WITH THE CURRENT BUILDING CODE.
4. USE A SLIP-RESISTANT TREATMENT FOR THE SURFACE OF RAMP.
5. ALL FASTENERS SHALL BE GALVANIZED.
6. DO NOT INSTALL A HAND RAILING IF USING THE EDGE BOARD OPTION.



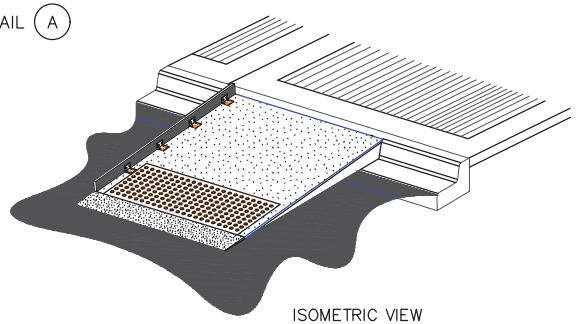
PERSPECTIVE VIEW

DETAIL (A)



END VIEW

EDGE BOARD ATTACHMENT DETAIL

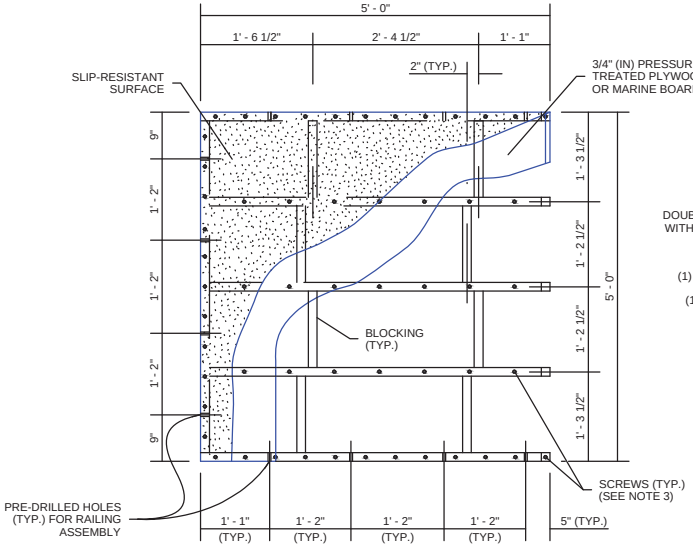


ISOMETRIC VIEW

TEMPORARY PEDESTRIAN RAMP WITH EDGE BOARD

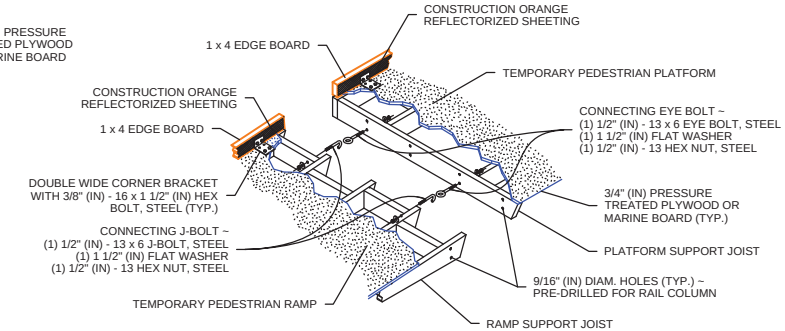
TEMPORARY PEDESTRIAN RAMP WITH EDGE BOARD

TC-52



TOP VIEW

PLATFORM DETAIL

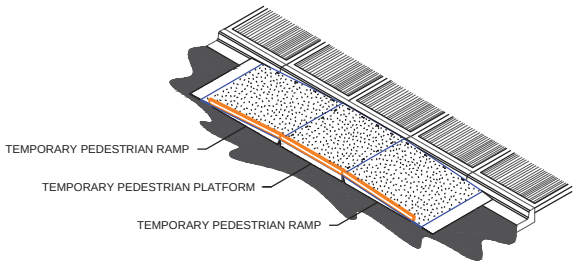


ISOMETRIC VIEW

DETAIL (A)

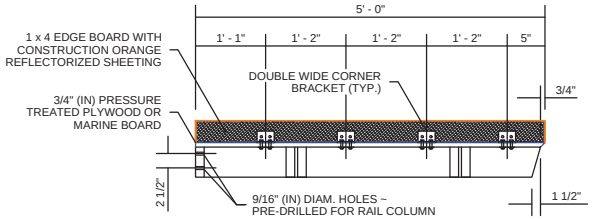
NOTES

1. ALL HOLES SHOWN SHALL BE DRILLED TO FACILITATE RE-USE AND FLEXIBLE EXPANSION.
2. SEE **SHEET REFERENCE NO. TC-52**, FOR TEMPORARY PEDESTRIAN RAMP DETAILS.
3. THIS DESIGN ASSUMES OPTIMAL CONDITIONS AND A STANDARD CURB HEIGHT OF 6" (IN). INSTALLED RAMPS SHALL BE NO STEEPER THAN 12H : 1V, AND SHALL HAVE A CROSS-SLOPE OF 2% OR LESS. USE SHIMS OR GROUT AS REQUIRED TO ADJUST FOR EXISTING CONDITIONS AND TO PREVENT ROCKING. SHIMS SHALL BE NO HIGHER THAN 1" (IN), AND SHALL BE SECURED TO THE RAMP AND/OR PLATFORM. FOR CURBS SHORTER THAN 6" (IN), INSTALL A RAMP ON THE SIDEWALK, NO STEEPER THAN 12H : 1V, MADE OF GROUT OR AS APPROVED BY THE ENGINEER. ADJUSTMENTS TO THE PLATFORM DIMENSIONS SHOWN MAY BE REQUIRED TO MATCH EXISTING CONDITIONS.
4. SCREWS SHALL BE USED TO SECURE THE RAMP SURFACE. SPACING SHALL BE IN ACCORDANCE WITH THE CURRENT BUILDING CODE.
5. USE A SLIP-RESISTANT TREATMENT FOR SURFACE OF RAMP.
6. ALL FASTENERS SHALL BE GALVANIZED.

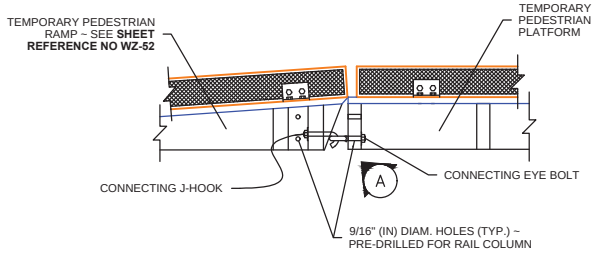


ISOMETRIC VIEW

DUAL RAMP

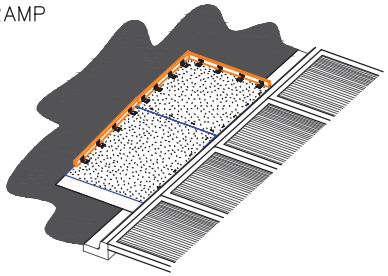


ELEVATION



SIDE VIEW

CONNECTION DETAIL



ISOMETRIC VIEW

SINGLE RAMP

TEMPORARY PEDESTRIAN PLATFORM WITH EDGE BOARD

TC-53

APPENDIX C
CSWPPP

Construction Stormwater General Permit (CSWGP)

Stormwater Pollution Prevention Plan (SWPPP)

for

Golf Club Water & Wastewater Improvements

Prepared for:

Department of Ecology

Southwest Regional Office

Permittee / Owner	Developer	Operator / Contractor
City of Lacey	City of Lacey	TBD

Lacey Blvd SE & Golf Club Road SE

Update as necessary.

Certified Erosion and Sediment Control Lead (CESCL)

Name	Organization	Contact Phone Number
TBD	TBD	TBD

SWPPP Prepared By

Name	Organization	Contact Phone Number
Jason Kashani	City of Lacey	360-438-2642

SWPPP Preparation Date

Aug / 05 / 2022

Project Construction Dates

Activity / Phase	Start Date	End Date
Permit	TBD	TBD

Table of Contents

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List of Tables

List of Appendices

List of Acronyms and Abbreviations

Acronym / Abbreviation	Explanation
303(d)	Section of the Clean Water Act pertaining to Impaired Waterbodies
BFO	Bellingham Field Office of the Department of Ecology
BMP(s)	Best Management Practice(s)
CESCL	Certified Erosion and Sediment Control Lead
CO_2	Carbon Dioxide
CRO	Central Regional Office of the Department of Ecology
CSWGP	Construction Stormwater General Permit
CWA	Clean Water Act
DMR	Discharge Monitoring Report
DO	Dissolved Oxygen
Ecology	Washington State Department of Ecology
EPA	United States Environmental Protection Agency
ERO	Eastern Regional Office of the Department of Ecology
ERTS	Environmental Report Tracking System
ESC	Erosion and Sediment Control
GULD	General Use Level Designation
NPDES	National Pollutant Discharge Elimination System
NTU	Nephelometric Turbidity Units
NWRO	Northwest Regional Office of the Department of Ecology
pH	Power of Hydrogen
RCW	Revised Code of Washington
SPCC	Spill Prevention, Control, and Countermeasure
su	Standard Units
SWMMEW	Stormwater Management Manual for Eastern Washington
SWMMWW	Stormwater Management Manual for Western Washington
SWPPP	Stormwater Pollution Prevention Plan
TESC	Temporary Erosion and Sediment Control
SWRO	Southwest Regional Office of the Department of Ecology
TMDL	Total Maximum Daily Load
VFO	Vancouver Field Office of the Department of Ecology
WAC	Washington Administrative Code
WSDOT	Washington Department of Transportation
WWHM	Western Washington Hydrology Model

1.0 Project Information

Project/Site Name: Golf Club Road Water & Wastewater Improvements
Street/Location: Golf Club Road / Lacey Blvd
City: Lacey State: WA Zip code: 98503
Subdivision:
Receiving waterbody:

1.1 Existing Conditions

Total acreage (including support activities such as off-site equipment staging yards, material storage areas, borrow areas).

Total acreage: 6 acres

Disturbed acreage: 4 acres

Existing structures: Paved roadways with underground utilities

Landscape topography: Flat slopes

Drainage patterns: [Insert text here]

Existing Vegetation: Trees, shrubs and manicured landscaping outside of roadway

Critical Areas (wetlands, streams, high erosion risk, steep or difficult to stabilize slopes): Chambers Lake

List of known impairments for 303(d) listed or Total Maximum Daily Load (TMDL) for the receiving waterbody: [Insert text here]

Table 1 includes a list of suspected and/or known contaminants associated with the construction activity.

List all known or suspected contaminants associated with this site in Table 1. Include contaminants previously remediated.

Table 1 – Summary of Site Pollutant Constituents

Constituent (Pollutant)	Location	Depth	Concentration
[Insert Text]	[Insert Text]	[Insert Text]	[Insert Text]

1.2 Proposed Construction Activities

Description of site drainage including flow from and onto adjacent properties. Must be consistent with Site Map in Appendix A:
Paved roadways that flow to shoulders and swales with intermittent catchbasins and drywells.

Contaminated Site Information:
Proposed activities regarding contaminated soils or groundwater (example: on-site treatment system, authorized sanitary sewer discharge):
No contamination anticipated

Golf Club Rad Water & Wastewater Improvements project is an underground utility project that will replace existing water and wastewater infrastructure within Golf Club Rd SE and Lacey Blvd SE from Sleater-Kinny to 26th Ave SE as shown on the Site Map in Appendix A. The construction activities that will be associated with this project are trench excavation for utility construction, with replacement of existing impervious surface with like material without expanding the roadway prism. The project plans to remove a total of 8 trees that have grown over some existing water and sewer service lines. Once the trees have been removed and the service lines have been reconnected to the new utility mains, landscape will be restored with topsoil, seeding and mulching.

2.0 Construction Stormwater Best Management Practices (BMPs)

The SWPPP is a living document reflecting current conditions and changes throughout the life of the project. These changes may be informal (i.e. hand-written notes and deletions). Update the SWPPP when the CESCL has noted a deficiency in BMPs or deviation from original design.

2.1 The 13 Elements

2.1.1 Element 1: Preserve Vegetation / Mark Clearing Limits

This project is an underground utility project where water and wastewater infrastructure will be constructed within the existing roadway prism. Clearing is not intended to be a construction activity that will occur with this project. Any other land disturbing activities that will occur will only be tree removal and trenching where connections to existing sewer and water service lines are to be connected to. Construction limits are shown on the plans and any landscaped areas will be fully restored.

2.1.2 Element 2: Establish Construction Access

Construction Access shall be determined by the Contractor once a staging/stockpile area has been selected. The Contractor shall install stabilized construction entrances at the locations selected by the Contractor's ESC Lead and per the details shown on the approved TESC plans.

- Stabilized Contruction Entrance (BMP C105)

Alternate construction access BMP's are included in Appendix B as a quick reference tool for the onsite inspector in the event that the BMP(s) listed above are deemed ineffective or inappropriate during construction to satisfy the requiremenets set forth in the General NPDES Permit (Appendix E). To avoid potential erosion and sediment control issues that may cause violetion(s) of the NPDES Construction Stormwater permit (as provided in Appendix E), the Certified Erosion and Sediment Control Lead will promptly initiate the implementation of one or more of the alternative BMP's listed in Appendix B after the first sign that existing BMP's are ineffective or failing.

2.1.3 Element 3: Control Flow Rates

This project is an underground utility improvement project which will improve infrastructure within the existing roadway prism. There are no planned grading operations planned as part of this project. Most of the disturbed areas of this project will be within surfaces that are already impervious and should remain below the existing grade so as not to generate any new stormwater runoff. As such, there should be no increase in stormwater discharge flow rates discharges from the project site will be controlled. The specific BMP's for flow control that shall be used on this project include.

- N/A – No grading or land disturbing activities will occur outside of impervious areas as part of this project.

Alternate flow control BMP's are included in Appendix B as a quick reference tool for the onsite inspector in the event that the BMP(s) listed above are deemed ineffective or inappropriate during construction to satisfy the requiremenets set forth in the General NPDES Permit (Appendix E). To avoid potential erosion and sediment control issues that may cause violetion(s) of the NPDES Construction Stormwater permit (as provided in Appendix E), the Certified Erosion and Sediment Control Lead will promptly initiate the implementation of one or more of the alternative BMP's listed in Appendix B after the first sign that existing BMP's are ineffective or failing.

2.1.4 Element 4: Install Sediment Controls

All stormwater runoff from disturbed areas shall pass through an appropriate sediment removal BMP before leaving the construction site or prior to being discharged to an infiltration facility. The specific BMP's to be used for controlling sediment on this project include:

- Storm Drain Inlet Protection (BMP C220)

Install Storm Drain Inlter Protection at locations shown and per the details and notes on the approved Temporary erosion and Sediment Control Plans.

In addition, sediment wil be removed from paved areas in and adjacent to construction work areas manually or using mechanical sweepers, as needed, to minimize tracking of sediments on vehicle tires away from the site and to minimize washoff of sediments from adjacent streets in runoff.

Alternate sediment control BMP's are included in Appendix B as a quick reference tool for the onsite inspector in the even the BMP(s) listed abouve are deemed ineffective or inappropriate during construction to satisfy the requirements set forth in the General NPDES Permit (Appendix E). To avoid potential erosion and sediment control issues that may cause violetion(s) of the NPDES Construction Stormwater permit (as provided in Appendix E), the Certified Erosion and Sediment Control Lead will promptly initiate the implementation of one or more of the alternative BMP's listed in Appendix B after the first sign that existing BMP's are ineffective or failing.

2.1.5 Element 5: Stabilize Soils

Exposed and unworked soils shall be stabilized with the application of effective BMP's to prevent erosion throughout the life of the project. The specific BMP's for soil stabilization that shall be used on this project include:

- Temporary and Permanent Seeding (BMP C120)
- Mulching BMP (C121)
- Plastic Covering (BMP C123)

The project site is located west of the Cascade Mountain Crest. From October 1 through April 30, no soils shall remain exposed and unworked for more than 2 days. From May 1 to Septamber 30, no sopils shall remain exposed and unworked for more than 7 days. Soils shall be stabilized at the end of the shift before a holiday or weekend if needed based on the weather forecast. These stabilization requirements apply to all soils onsite, weather at final grade or not. The local permitting authority may adjust these time limits if it can be shown that a development site's erosion and runoff porential justifies a different standard.

From October 1 through April 30, clearing, grading and other soil-disturbing activities shall only be permitted if shown to the satisfaction of the local permitting authority that the transportation of sediment from the construction site to receiving waters will be prevented.

In general, cut and fill slopes will be stabilized as soon as possible, and soil stockpiles will be temporarily covered with plastic sheeting or seeded and mulched. All stockpiled soils shall be stabilized from erosion, protected with sediment trapping measures and where possible, be located away from storm drain inlets, waterways, and drainage channels.

Alternate soil stabilization BMP's are included in Appendix B as a quick reference tool for the onsite inspector in the event that the BMP(s) listed above are deemed ineffective or inappropriate during construction to satisfy the requiremenets set forth in the General NPDES Permit (Appendix E). To avoid potential erosion and sediment control issues that may cause violetion(s) of the NPDES Construction Stormwater permit (as provided in Appendix E), the Certified Erosion and Sediment Control Lead will promptly initiate the implementation of one or more of the alternative BMP's listed in Appendix B after the first sign that existing BMP's are ineffective or failing.

West of the Cascade Mountains Crest

Season	Dates	Number of Days Soils Can be Left Exposed
During the Dry Season	May 1 – September 30	7 days
During the Wet Season	October 1 – April 30	2 days

Soils must be stabilized at the end of the shift before a holiday or weekend if needed based on the weather forecast.

2.1.6 Element 6: Protect Slopes

There are no steep slopes that are part of this project. All construction takes place within the public right of way where slopes generally between 1% to 5%.

- N/A – No steep slopes are part of this project.

Alternate slope protection BMP's are included in Appendix B as a quick reference tool for the onsite inspector in the event that the BMP(s) listed above are deemed ineffective or inappropriate during construction to satisfy the requiremenets set forth in the General NPDES Permit (Appendix E). To avoid potential erosion and sediment control issues that may cause violetion(s) of the NPDES Construction Stormwater permit (as provided in Appendix E), the Certified Erosion and Sediment Control Lead will promptly initiate the implementation of one or more of the alternative BMP's listed in Appendix B after the first sign that existing BMP's are ineffective or failing.

2.1.7 Element 7: Protect Drain Inlets

All storm drain inlets and culverts made operational during construction shall be protected to prevent unfiltrered or untreated water from entering the drainage conveyance system. However, the first priority is to keep all access roads clean of sediment and keep street wash water

separate from entering storm drains until treatment can be provided. The following inlet protection measures will be applied on this project.

- Storm Dtain inlet Protection (BMP C220)

Inlet projection is the last component of a treatment train and protection of drain inlets include additional sediment and erosion control measures. Inlet protection devices will be cleaned (or removed and replaced), when sediment has filled the device by one third (1/3) or as specified by the manufacturer.

Inlets will be inspected weekly at a minimum and daily during storm events.

Alternate inlet protection BMP's are included in Appendix B as a quick reference tool for the onsite inspector in the event that the BMP(s) listed above are deemed ineffective or inappropriate during construction to satisfy the requiremenets set forth in the General NPDES Permit (Appendix E). To avoid potential erosion and sediment control issues that may cause violetion(s) of the NPDES Construction Stormwater permit (as provided in Appendix E), the Certified Erosion and Sediment Control Lead will promptly initiate the implementation of one or more of the alternative BMP's listed in Appendix B after the first sign that existing BMP's are ineffective or failing.

2.1.8 Element 8: Stabilize Channels and Outlets

Provide stabilization, including armoring material, adequate to prevent erosion of outlets, adjacent stream banks, slopes, and downstream reaches, will be installed at the outlets of all conveyance systems.

Where site runoff is to be conveyed in channels, discharged to a stream or, discharged to a natural drainage point. Efforts will be taken to prevent downstream erosion. The specific BMP's for channel and outlet stabilization that shall be used on this project include:

- N/A – No conveyance channels will be installed during construction of this project.

This project site is located west of the Cascade Mountain Crest. As such, all temporary on-site conveyance channels shall be designed, constructed and stabilized to prevent erosion from the expected peak 10-minute flow rate from a Type 1A, 10-year, 24-hour frequency storm for the developed condition. Alternatively, the 10-year, 1-hour peak flow rate predicted by an approved continuous runoff simulation model, increased by a factor of 1.6, may be used. Stabilization including armoring material, adequate to prevent erosion of outlets, adjacent streambanks, slopes and downstream reaches shall be provided at the outlets of all conveyance systems.

Alternate channel and outlet stabilization BMP's are included in Appendix B as a quick reference tool for the onsite inspector in the event that the BMP(s) listed above are deemed ineffective or inappropriate during construction to satisfy the requiremenets set forth in the General NPDES Permit (Appendix E). To avoid potential erosion and sediment control issues that may cause violetion(s) of the NPDES Construction Stormwater permit (as provided in

Appendix E), the Certified Erosion and Sediment Control Lead will promptly initiate the implementation of one or more of the alternative BMP's listed in Appendix B after the first sign that existing BMP's are ineffective or failing.

2.1.9 Element 9: Control Pollutants

The following pollutants are anticipated to be present on-site:

Table 2 – Pollutants

Pollutant (and source, if applicable)
[List pollutants here]

All pollutants, including waste materials and demolition debris, that occur onsite shall be handled and disposed of in a manner that does not cause comtamination of stormwater. Good housekeeping and preventative measures will be taken to ensure that the site will be kept clean, well organized, and free of debris. BMP's to be implemented to control specific sources of pollutants are discussed below.

Will maintenance, fueling, and/or repair of heavy equipment and vehicles occur on-site?
☐ Yes ☐ No

Maintenance, fueling, and/otr repair of heavy equipment and vehicle required to occur on-site shall follow the requirements listed below. If the Contractor cheeses to store fueling tanks or petroleum product storage containers onsite, they will amend this SWPPP to provide total volume of fuel stored onsite, the capacity of the secont containment for each tank, and provide a Spill Prevention, Control, and Countermeasures (SPCC) Plan which complies with Federal regulations of the Clean Waater Act (CWA).

Vehicles, construction equipments, and petroleum product storage/dispensing:

- All vehicles, equipemt and petroleum product storage/dispensing areas will be inspected regularly to detect any leaks or spills, and to identify maintenance needs to prevent leaks or spills.
- On-site fueling tanks and petroleum product storage containers shall include secondary containment.

- Spill prevention measures, such as drip pans, will be used when conducting maintenance and repair of vehicles or equipment.
- In order to perform emergency repairs on-site, temporary plastic will be placed beneath and, if raining, over the vehicle.
- Contaminated surfaces shall be cleaned immediately following any discharge ofr spill incident.

Will wheel wash or tire bath system BMP's be used during construction?
☐ Yes ☐ No

Will pH-modifying sources be present on-site
☐ Yes ☐ No

Table 1 – pH-Modifying Sources

	Pollutant (and source, if applicable)
☐	None
☐	Bulk cement
☐	Cement kiln dust
☐	Fly ash
☐	Other cementitious materials
☒	New concrete washing or curing waters
☒	Waste streams generated from concrete grinding and sawing
☐	Exposed aggregate processes
☐	Dewatering concrete vaults
☒	Concrete pumping and mixer washout waters
☐	Recycled concrete
☐	Recycled concrete stockpiles
☐	Other (i.e., calcium lignosulfate)

Describe how you will handle and dispose of all pollutants, including waste materials and demolition debris, in a manner that does not cause contamination of stormwater.

Describe how you will cover, contain, and protect from vandalism all chemicals, liquid products, petroleum products, and other polluting materials.

Describe how you will manage known contaminants to prevent their discharge with stormwater to waters of the State (i.e. treatment system, off-site disposal).

Demolition

List and describe BMPs: [Insert text here]

Installation Schedules: [Insert text here]

Inspection and Maintenance plan: [Insert text here]

Responsible Staff: [Insert text here]

Will maintenance, fueling, and/or repair of heavy equipment and vehicles occur on-site?
Yes No

If yes, describe spill prevention and control measures in place while conducting maintenance, fueling, and repair of heavy equipment and vehicles.

If yes, also provide the total volume of fuel on-site and capacity of the secondary containment for each fuel tank. Secondary containment structures shall be impervious.

List and describe BMPs: [Insert text here]

Installation Schedules: [Insert text here]

Inspection and Maintenance plan: [Insert text here]

Responsible Staff: [Insert text here]

Will wheel wash or tire bath system BMPs be used during construction?
Yes No

If yes, provide disposal methods for wastewater generated by BMPs.

If discharging to the sanitary sewer, include the approval letter from your local sewer district under Correspondence in Appendix C.

List and describe BMPs: [Insert text here]

Installation Schedules: [Insert text here]

Inspection and Maintenance plan: [Insert text here]

Responsible Staff: [Insert text here]

Will pH-modifying sources be present on-site?
Yes No If yes, check the source(s).

Table 3 – pH-Modifying Sources

	None
	Bulk cement
	Cement kiln dust
	Fly ash
	Other cementitious materials
	New concrete washing or curing waters
	Waste streams generated from concrete grinding and sawing
	Exposed aggregate processes
	Dewatering concrete vaults
	Concrete pumping and mixer washout waters
	Recycled concrete
	Other (i.e. calcium lignosulfate) [please describe]

Describe BMPs you will use to prevent pH-modifying sources from contaminating stormwater.

List and describe BMPs: [Insert text here]

Installation Schedules: [Insert text here]

Inspection and Maintenance plan: [Insert text here]

Responsible Staff: [Insert text here]

Adjust pH of stormwater if outside the range of 6.5 to 8.5 su.

Obtain written approval from Ecology before using chemical treatment with the exception of CO_2 or dry ice to modify pH.

Concrete trucks must not be washed out onto the ground, or into storm drains, open ditches, streets, or streams. Excess concrete must not be dumped on-site, except in designated concrete washout areas with appropriate BMPs installed.

2.1.10 Element 10: Control Dewatering

Dewatering is not expected to be part of this project. Should dewatering be necessary, all water from open cut excavation, tunneling, foundation work, trench, or underground vaults shall be discharged into a controlled conveyance sytem prior to discharge to a sediment trap or sediment pond. Channels will be stabilized per Element #8. Highly turbid dewatering water from soils known or suspected to be contaminated, or from use of construction equipement, will require additional monitoring and treatment as required for the specific pollutants based on the receiving waters into which the discharge is occurring. Such monitoring is the responsibility of the contractor.

However, the dewatering of soils known to be free of contamination will trigger BMP's to trap sediment and reduce turbidity. At a minimum, geotextile fabric socks/bags/cells will be used to filter this material. Other BMP's to be used for sediment trapping and turbidity reduction include the following:

- Water Bars (BMP C203)
- Vegetative Filtration (BMP C236)
- Sediment Trap (BMP C240)
- Infiltration
- Transport off-site in a vehicle (vacuum truck for legal disposal)
- Ecology-approved on-site chemical treatment or other suitable treatment technologies
- Sanitary or combined sewer discharge with local sewer district approval (last resort)
- Use of a sediment bag, with outfall to a ditch or swale for small volumes of localized dewatering.

Alternate dewatering control BMP's are included in Appendix B as a quick reference tool for the onsite inspector in the event that the BMP(s) listed above are deemed ineffective or inappropriate during construction to satisfy the requiremenets set forth in the General NPDES Permit (Appendix E). To avoid potential erosion and sediment control issues that may cause violetion(s) of the NPDES Construction Stormwater permit (as provided in Appendix E), the Certified Erosion and Sediment Control Lead will promptly initiate the implementation of one or more of the alternative BMP's listed in Appendix B after the first sign that existing BMP's are ineffective or failing.

2.1.11 Element 11: Maintain BMPs

All temporary and permanent Erosion and Sediment Control (ESC) BMPs shall be maintained and repaired as needed to ensure continued performance of their intended function.

Maintenance and repair shall be conducted in accordance with each particular BMP specification (see *Volume II of the SWMMWW or Chapter 7 of the SWMMEW*).

Visual monitoring of all BMPs installed at the site will be conducted at least once every calendar week and within 24 hours of any stormwater or non-stormwater discharge from the site. If the site becomes inactive and is temporarily stabilized, the inspection frequency may be reduced to once every calendar month.

All temporary ESC BMPs shall be removed within 30 days after final site stabilization is achieved or after the temporary BMPs are no longer needed.

Trapped sediment shall be stabilized on-site or removed. Disturbed soil resulting from removal of either BMPs or vegetation shall be permanently stabilized.

Additionally, protection must be provided for all BMPs installed for the permanent control of stormwater from sediment and compaction. BMPs that are to remain in place following completion of construction shall be examined and restored to full operating condition. If sediment enters these BMPs during construction, the sediment shall be removed and the facility shall be returned to conditions specified in the construction documents.

2.1.12 Element 12: Manage the Project

The project will be managed based on the following principles:

- Projects will be phased to the maximum extent practicable and seasonal work limitations will be taken into account.
- Inspection and monitoring:
    - Inspection, maintenance and repair of all BMPs will occur as needed to ensure performance of their intended function.
    - Site inspections and monitoring will be conducted in accordance with Special Condition S4 of the CSWGP. Sampling locations are indicated on the Site Map. Sampling station(s) are located in accordance with applicable requirements of the CSWGP.
- Maintain an updated SWPPP.
    - The SWPPP will be updated, maintained, and implemented in accordance with Special Conditions S3, S4, and S9 of the CSWGP.

As site work progresses the SWPPP will be modified routinely to reflect changing site conditions. The SWPPP will be reviewed monthly to ensure the content is current.

Check all the management BMPs that apply at your site:

Table 5 – Management

	Design the project to fit the existing topography, soils, and drainage patterns
	Emphasize erosion control rather than sediment control
	Minimize the extent and duration of the area exposed
	Keep runoff velocities low
	Retain sediment on-site
	Thoroughly monitor site and maintain all ESC measures
	Schedule major earthwork during the dry season
	Other (please describe)

Optional: Fill out Table 6 by listing the BMP associated with specific construction activities. Identify the phase of the project (if applicable). To increase awareness of seasonal requirements, indicate if the activity falls within the wet or dry season.

Table 6 – BMP Implementation Schedule

Phase of Construction Project	Stormwater BMPs	Date	Wet/Dry Season
[Insert construction activity]	[Insert BMP]	[MM/DD/YYYY]	[Insert Season]

Phase of Construction Project	Stormwater BMPs	Date	Wet/Dry Season
[Insert construction activity]	[Insert BMP]	[MM/DD/YYYY]	[Insert Season]

2.1.13 Element 13: Protect Low Impact Development (LID) BMPs

Describe LIDs.

Permittees must protect all Bioretention and Rain Garden facilities from sedimentation through installation and maintenance of erosion and sediment control BMPs on portions of the site that drain into the Bioretention and/or Rain Garden facilities. Restore the facilities to their fully functioning condition if they accumulate sediment during construction. Restoring the facility must include removal of sediment and any sediment-laden Bioretention/Rain Garden soils, and replacing the removed soils with soils meeting the design specification.

Permittees must maintain the infiltration capabilities of Bioretention and Rain Garden facilities by protecting against compaction by construction equipment and foot traffic. Protect completed lawn and landscaped areas from compaction due to construction equipment.

Permittees must control erosion and avoid introducing sediment from surrounding land uses onto permeable pavements. Do not allow muddy construction equipment on the base material or pavement. Do not allow sediment-laden runoff onto permeable pavements.

Permittees must clean permeable pavements fouled with sediments or no longer passing an initial infiltration test using local stormwater manual methodology or the manufacturer's procedures.

Permittees must keep all heavy equipment off existing soils under LID facilities that have been excavated to final grade to retain the infiltration rate of the soils.

Describe how you will protect LID facilities from sedimentation, protect soils from compaction, and maintain the infiltration capabilities.

Describe how you will clean permeable pavements fouled with sediments.

[Insert text here]

3.0 Pollution Prevention Team

Table 7 – Team Information

Title	Name(s)	Phone Number
Certified Erosion and Sediment Control Lead (CESCL)	[Insert Name]	[Insert Number]
Resident Engineer		
Emergency Ecology Contact		
Emergency Permittee/ Owner Contact		
Non-Emergency Owner Contact		
Monitoring Personnel		

Ecology Regional Office	[Insert Regional Office]	[Insert General Number]

4.0 Monitoring and Sampling Requirements

Monitoring includes visual inspection, sampling for water quality parameters of concern, and documentation of the inspection and sampling findings in a site log book. A site log book will be maintained for all on-site construction activities and will include:

- A record of the implementation of the SWPPP and other permit requirements
- Site inspections
- Stormwater sampling data

Create your own Site Inspection Form or use the Construction Stormwater Site Inspection Form found on Ecology's website. https://www.ecology.wa.gov/Regulations-Permits/Permits-certifications/Stormwater-general-permits/Construction-stormwater-permit

File a blank form under Appendix D.

The site log book must be maintained on-site within reasonable access to the site and be made available upon request to Ecology or the local jurisdiction.

Numeric effluent limits may be required for certain discharges to 303(d) listed waterbodies. See CSWGP Special Condition S8 and Section 5 of this template.

Complete the following paragraph for sites that discharge to impaired waterbodies for fine sediment, turbidity, phosphorus, or pH:

The receiving waterbody, insert waterbody name, is impaired for: insert impairment. All stormwater and dewatering discharges from the site are subject to an **effluent limit** of 8.5 su for pH and/or 25 NTU for turbidity.

4.1 Site Inspection

Site inspections will be conducted at least once every calendar week and within 24 hours following any discharge from the site. For sites that are temporarily stabilized and inactive, the required frequency is reduced to once per calendar month.

The discharge point(s) are indicated on the Site Map (see Appendix A) and in accordance with the applicable requirements of the CSWGP.

4.2 Stormwater Quality Sampling

4.2.1 Turbidity Sampling

Requirements include calibrated turbidity meter or transparency tube to sample site discharges for compliance with the CSWGP. Sampling will be conducted at all discharge points at least once per calendar week.

Method for sampling turbidity:

Check the analysis method you will use:

Table 8 – Turbidity Sampling Method

	Turbidity Meter/Turbidimeter (required for disturbances 5 acres or greater in size)
	Transparency Tube (option for disturbances less than 1 acre and up to 5 acres in size)

The benchmark for turbidity value is 25 nephelometric turbidity units (NTU) and a transparency less than 33 centimeters.

If the discharge's turbidity is 26 to 249 NTU **or** the transparency is less than 33 cm but equal to or greater than 6 cm, the following steps will be conducted:

1. Review the SWPPP for compliance with Special Condition S9. Make appropriate revisions within 7 days of the date the discharge exceeded the benchmark.
2. Immediately begin the process to fully implement and maintain appropriate source control and/or treatment BMPs as soon as possible. Address the problems within 10 days of the date the discharge exceeded the benchmark. If installation of necessary treatment BMPs is not feasible within 10 days, Ecology may approve additional time when the Permittee requests an extension within the initial 10-day response period.
3. Document BMP implementation and maintenance in the site log book.

If the turbidity exceeds 250 NTU **or** the transparency is 6 cm or less at any time, the following steps will be conducted:

1. Telephone or submit an electronic report to the applicable Ecology Region's Environmental Report Tracking System (ERTS) within 24 hours. https://www.ecology.wa.gov/About-us/Get-involved/Report-an-environmental-issue
    - Central Region (Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, Yakima): (509) 575-2490
    - Eastern Region (Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman): (509) 329-3400
    - Northwest Region (King, Kitsap, Island, San Juan, Skagit, Snohomish, Whatcom): (425) 649-7000
    - Southwest Region (Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Lewis, Mason, Pacific, Pierce, Skamania, Thurston, Wahkiakum,): (360) 407-6300
2. Immediately begin the process to fully implement and maintain appropriate source control and/or treatment BMPs as soon as possible. Address the problems within 10 days of the date the discharge exceeded the benchmark. If installation of necessary treatment BMPs is not feasible within 10 days, Ecology may approve additional time when the Permittee requests an extension within the initial 10-day response period
3. Document BMP implementation and maintenance in the site log book.
4. Continue to sample discharges daily until one of the following is true:
    - Turbidity is 25 NTU (or lower).
    - Transparency is 33 cm (or greater).

- Compliance with the water quality limit for turbidity is achieved.
    - 1 - 5 NTU over background turbidity, if background is less than 50 NTU
    - 1% - 10% over background turbidity, if background is 50 NTU or greater
- The discharge stops or is eliminated.

4.2.2 pH Sampling

pH monitoring is required for “Significant concrete work” (i.e. greater than 1000 cubic yards poured concrete or recycled concrete over the life of the project).The use of engineered soils (soil amendments including but not limited to Portland cement-treated base [CTB], cement kiln dust [CKD] or fly ash) also requires pH monitoring.

For significant concrete work, pH sampling will start the first day concrete is poured and continue until it is cured, typically three (3) weeks after the last pour.

For engineered soils and recycled concrete, pH sampling begins when engineered soils or recycled concrete are first exposed to precipitation and continues until the area is fully stabilized.

If the measured pH is 8.5 or greater, the following measures will be taken:

1. Prevent high pH water from entering storm sewer systems or surface water.
2. Adjust or neutralize the high pH water to the range of 6.5 to 8.5 su using appropriate technology such as carbon dioxide (CO_2) sparging (liquid or dry ice).
3. Written approval will be obtained from Ecology prior to the use of chemical treatment other than CO_2 sparging or dry ice.

Method for sampling pH:

Check the analysis method you will use:

Table 8 – pH Sampling Method

	pH meter
	pH test kit
	Wide range pH indicator paper

5.0 Discharges to 303(d) or Total Maximum Daily Load (TMDL) Waterbodies

5.1 303(d) Listed Waterbodies

The 303(d) status is listed on the Water Quality Atlas: https://ecology.wa.gov/Water-Shorelines/Water-quality/Water-improvement/Assessment-of-state-waters-303d

Circle the applicable answer, if necessary:

Is the receiving water 303(d) (Category 5) listed for turbidity, fine sediment, phosphorus, or pH?

Yes No

List the impairment(s):

[Insert text here]

The receiving waterbody, insert waterbody name, is impaired for: insert impairment. All stormwater and dewatering discharges from the site are subject to an **effluent limit** of 8.5 su for pH and/or 25 NTU for turbidity.

If yes, discharges must comply with applicable effluent limitations in S8.C and S8.D of the CSWGP.

Describe the method(s) for 303(d) compliance:

List and describe BMPs:

[Insert text here]

5.2 TMDL Waterbodies

Waste Load Allocation for CWSGP discharges:

[Insert text here]

Describe the method(s) for TMDL compliance:

List and describe BMPs:

[Insert text here]

Discharges to TMDL receiving waterbodies will meet in-stream water quality criteria at the point of discharge.

The Construction Stormwater General Permit Proposed New Discharge to an Impaired Water Body form is included in Appendix F.

6.0 Reporting and Record Keeping

6.1 Record Keeping

This section does not need to be filled out. It is a list of reminders for the permittee.

6.1.1 Site Log Book

A site log book will be maintained for all on-site construction activities and will include:

- A record of the implementation of the SWPPP and other permit requirements
- Site inspections
- Sample logs

6.1.2 Records Retention

Records will be retained during the life of the project and for a minimum of three (3) years following the termination of permit coverage in accordance with Special Condition S5.C of the CSWGP.

Permit documentation to be retained on-site:

- CSWGP
- Permit Coverage Letter
- SWPPP
- Site Log Book

Permit documentation will be provided within 14 days of receipt of a written request from Ecology. A copy of the SWPPP or access to the SWPPP will be provided to the public when requested in writing in accordance with Special Condition S5.G.2.b of the CSWGP.

6.1.3 Updating the SWPPP

The SWPPP will be modified if:

- Found ineffective in eliminating or significantly minimizing pollutants in stormwater discharges from the site.
- There is a change in design, construction, operation, or maintenance at the construction site that has, or could have, a significant effect on the discharge of pollutants to waters of the State.

The SWPPP will be modified within seven (7) days if inspection(s) or investigation(s) determine additional or modified BMPs are necessary for compliance. An updated timeline for BMP implementation will be prepared.

6.2 Reporting

6.2.1 Discharge Monitoring Reports

Select and retain applicable paragraph.

Cumulative soil disturbance is less than one (1) acre; therefore, Discharge Monitoring Reports (DMRs) will not be submitted to Ecology because water quality sampling is not being conducted at the site.

Or

Cumulative soil disturbance is one (1) acre or larger; therefore, Discharge Monitoring Reports (DMRs) will be submitted to Ecology monthly. If there was no discharge during a given monitoring period the DMR will be submitted as required, reporting "No Discharge". The DMR due date is fifteen (15) days following the end of each calendar month.

DMRs will be reported online through Ecology's WQWebDMR System.

To sign up for WQWebDMR go to:
https://www.ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Water-quality-permits-guidance/WQWebPortal-guidance

6.2.2 Notification of Noncompliance

If any of the terms and conditions of the permit is not met, and the resulting noncompliance may cause a threat to human health or the environment, the following actions will be taken:

1. Ecology will be notified within 24-hours of the failure to comply by calling the applicable Regional office ERTS phone number (Regional office numbers listed below).
2. Immediate action will be taken to prevent the discharge/pollution or otherwise stop or correct the noncompliance. If applicable, sampling and analysis of any noncompliance will be repeated immediately and the results submitted to Ecology within five (5) days of becoming aware of the violation.
3. A detailed written report describing the noncompliance will be submitted to Ecology within five (5) days, unless requested earlier by Ecology.

Specific information to be included in the noncompliance report is found in Special Condition S5.F.3 of the CSWGP.

Anytime turbidity sampling indicates turbidity is 250 NTUs or greater, or water transparency is 6 cm or less, the Ecology Regional office will be notified by phone within 24 hours of analysis as required by Special Condition S5.A of the CSWGP.

- Central Region at (509) 575-2490 for Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, or Yakima County

- Eastern Region at (509) 329-3400 for Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, or Whitman County
- Northwest Region at (425) 649-7000 for Island, King, Kitsap, San Juan, Skagit, Snohomish, or Whatcom County
- Southwest Region at (360) 407-6300 for Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Lewis, Mason, Pacific, Pierce, Skamania, Thurston, or Wahkiakum

Include the following information:

1. Your name and / Phone number
2. Permit number
3. City / County of project
4. Sample results
5. Date / Time of call
6. Date / Time of sample
7. Project name

In accordance with Special Condition S4.D.5.b of the CSWGP, the Ecology Regional office will be notified if chemical treatment other than CO_2 sparging is planned for adjustment of high pH water.

Appendix/Glossary

A. Site Map

The site map must meet the requirements of Special Condition S9.E of the CSWGP

B. BMP Detail

Insert BMPs specification sheets here.
Download BMPs from the Ecology Construction Stormwater website at:
https://www.ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Stormwater-permittee-guidance-resources/Stormwater-manuals

C. Site Inspection Form

Create your own or download Ecology's template:
https://www.ecology.wa.gov/Regulations-Permits/Permits-certifications/Stormwater-general-permits/Construction-stormwater-permit

D. Construction Stormwater General Permit (CSWGP)

Download CSWGP: https://www.ecology.wa.gov/Regulations-Permits/Permits-certifications/Stormwater-general-permits/Construction-stormwater-permit

APPENDIX D
BAR WRAPPED CONCRETE CYLINDER PIPE PRODUCT INFORMATION

Bar-Wrapped CCP: Concrete Cylinder Pipe

Product Information & Standard Designs

Expect More From The Leader

AMERON® INTERNATIONAL

CCP, A COMPOSITE STRUCTURE THAT COMBINES THE ADAPTABILITY OF STEEL WITH THE DURABILITY AND CORROSION INHIBITING PROPERTIES OF CONCRETE AND CEMENT MORTAR.

AND, IT'S CUSTOM DESIGNED TO YOUR SYSTEM NEEDS.

Concrete Cylinder Pipe (CCP) consists of a steel cylinder lined with concrete or cement mortar, then helically wrapped with a mild steel bar and coated with dense cement mortar. An easily assembled watertight joint is provided by using bell and spigot steel joint rings welded to the ends of the cylinder and sealed with a confined round rubber gasket.

Since introducing the product in 1942, Ameron has supplied more than 5,300 miles of CCP for piping systems in the United States and throughout the world. Principal uses have been for the transmission and distribution of water in municipal, industrial and agricultural systems. CCP can be used to convey any liquid not corrosive to concrete, including seawater and sewage in force mains.

CCP is designed and manufactured in accordance with AWWA Standard C303 and AWWA Manual M9, and is normally supplied in standard diameters of 12 to 60 inches for operating pressures up to 400 psi. Larger diameters up to 72 inches and designs for greater operating pressures have been manufactured and successfully installed.

QUALITY ASSURANCE

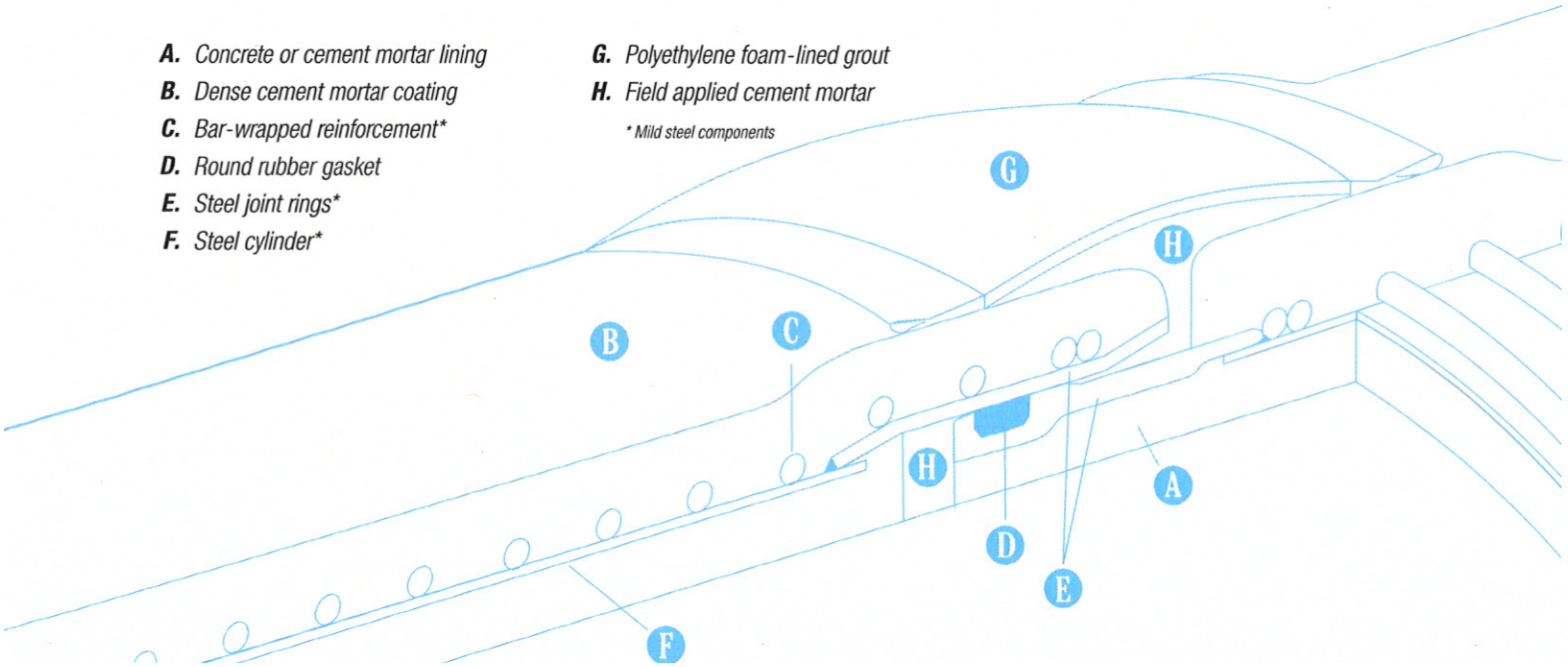
The national standard for bar-wrapped concrete cylinder pipe is AWWA C303. This standard requires that every manufacturer maintain a quality assurance program, and that all materials used to manufacture the pipe conform to ASTM standards. Welding procedures and welding inspection, as well as the welding operators and welders, must be qualified under nationally recognized standards. Quality assurance checks must be completed at every manufacturing process, including tests on the steel, the welds, the pipe lining and coating, and hydrostatic testing of the cylinders.

Ameron's customers have requested well developed standards and consistently high quality products. So, in addition to maintaining our own quality assurance department, we require that Lloyd's Register, the world's premier classification society, annually audit each of our plants certifying that they are in compliance to the national standard.

The combination of Ameron's commitment to its customers, the AWWA C303 Specification and the Lloyd's Register audit verify to you, that when Ameron's bar-wrapped concrete cylinder pipe is delivered to your jobsite, it conforms to your specifications an is a pipe product of consistently superior value.

A. *Concrete or cement mortar lining*
B. *Dense cement mortar coating*
C. *Bar-wrapped reinforcement**
D. *Round rubber gasket*
E. *Steel joint rings**
F. *Steel cylinder**
G. *Polyethylene foam-lined grout*
H. *Field applied cement mortar*

** Mild steel components*



OPTIMUM DESIGN

CCP is designed to resist internal hydrostatic pressure by a combination of the steel cylinder and helically wound bar. Thus, the pipe can be custom designed to provide the exact amount of steel needed for pipeline operating conditions by selecting the optimum combination of steel cylinder thickness, and bar diameter and spacing. This flexibility in design can result in substantial cost savings

SIGNIFICANCE OF BAR WRAPPING

After the lining is cured, the steel cylinder is helically wrapped with a continuous mild steel bar applied at a tensile stress of 8,000 to 10,000 psi. The bar wrapping provides the balance of steel required to resist tensile hoop forces. In addition, the bar wrapping reinforces the mortar coating and locks it tightly against the steel cylinder so that cylinder, bar and coating act as a composite structure. This composite construction greatly increases the pipe's rigidity, beam strength, and resistance to impact and vacuum.

CARRYING CAPACITY

The field studies have proven that a Hazen-Williams coefficient, C, design value of 140, will be maintained over the service life of your project.

CORROSION PROTECTION

The cement mortar coating maintains the steel elements in a highly alkaline environment, typically pH of 12.5 or greater. In this alkaline environment, galvanic corrosion is inhibited. The cured, shop-applied mortar coating must pass a water-absorption test that limits the average absorption value for any ten consecutive tests to 9% with no individual test exceeding a value of 11%. This dense mortar coating, along with the rich cement slurry which is applied to coat the portion of the bar bearing against the cylinder, provides a corrosion inhibiting and passivating environment for the steel cylinder and the bar wrap.

FIELD ASSEMBLY

The self-centering steel bell and spigot joint sealed with a confined rubber ring and the long laying length permit CCP to be installed rapidly and economically. Laying rates of 30 to 50 pipe sections per day per crew are readily attained. The reliability of the joint sealed with a confined rubber gasket has been proved by more than 50 years of trouble-free performance.

CUSTOMIZED PIPELINE DESIGN

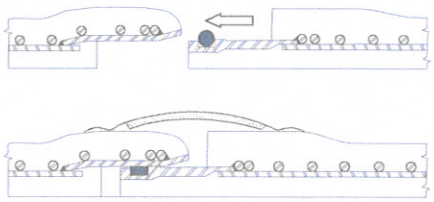
Ameron provides a complete engineering package for each CCP project, including pipe design calculations, pipeline layout drawings and fabrication details for each component. As part of a custom-designed system, each component is numbered to identify its position in the pipeline.

RESTRAINT OF THRUST

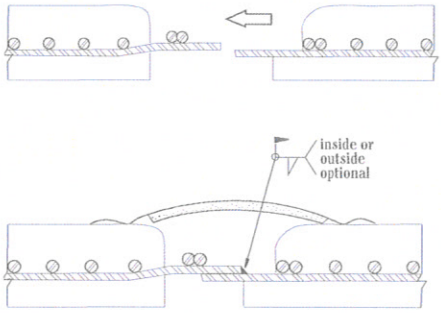
Hydraulic thrust in the pipeline can be resisted by appropriately field welding the joint of assembled pipe sections to develop the required longitudinal restraint.

FIELD PRESSURE TAPPING

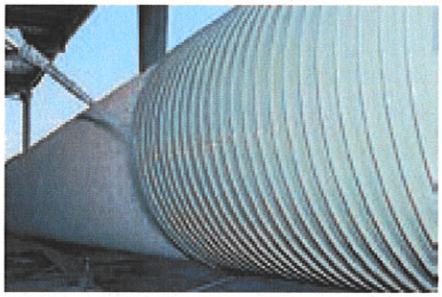
CCP can be economically tapped while in service with commercially available equipment and procedures, permitting the installation of a full range of outlets in anv diameter pipe



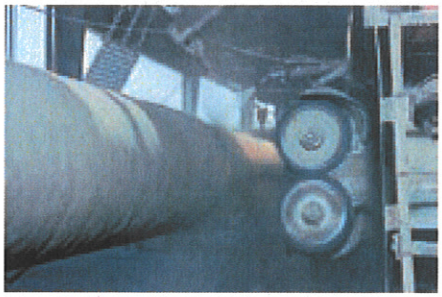
Standard CCP joint



CCP lap welded joint



Bar wrapping



Mortar coating

A 42-inch-diameter concrete cylinder pipe is installed for the Paradise Valley Project in Arizona. The CCP is manufactured locally at Ameron's plant in Phoenix.

Ameron's concrete cylinder pipe is installed for the Ramona Pipeline project in San Diego, California.

PIPE DIAMETER RANGE	MINIMUM CYLINDER THICKNESS	
inches	gage*	inches**
12-21	16	0.060
24-33	14	0.075
36-39	13	0.090
42-48	12	0.105
51-60	10	0.134
63-66	8	0.164
69-72	3/16"	0.188

Figure 1

* U.S. standard gage
** Nominal thickness

PIPE DESIGN

The design of concrete cylinder pipe conforms to AWWA Standard C303 and AWWA Manual M9.

HYDROSTATIC DESIGN

The average circumferential stress in the steel cylinder and bar reinforcement of the pipe at design pressure is limited to 36,000 psi, the specified minimum yield strength of the steel used in the cylinder. The following procedure represents a minimum

2 to 1 safety factor.

The total cross-sectional area of the circumferential steel reinforcement (steel cylinder plus bar reinforcement) is:

$$A_s = A_y + A_b = \frac{6[S.F.]\, P_d\, D_y}{S}$$

where A_s = total cross-sectional area of circumferential steel, in^2/LF of pipe wall

A_y = cross-sectional area of circumferential steel in the cylinder, in2/ LF of pipe wall

A_b = cross-sectional area of circumferential steel in the bar reinforcement, in2/LF of pipe wall

S.F. = Safety Factor; 2.0

P_d = design pressure, psi

D_y = inside diameter of steel cylinder, in.

S = minimum yield stress, 36,000 psi

The actual yield strength of the steel used to manufacture the cylinders is typically greater than 36,000 psi, resulting in an actual Safety Factor greater than 2 to 1 in the pipe.

The required circumferential steel area for a given diameter and pressure class of pipe can be provided by several combinations of steel cylinder thicknesses, and bar diameters and spacing. Any combination which satisfies the following criteria may be selected.

Ameron supplies this 48-inch-diameter concrete cylinder pipe for the second phase of the Cross Basin Pipeline in Placer County, located in Northern California.

- Minimum steel cylinder gage thicknesses shall be as shown in *Figure 1.*
- Minimum yield strength of steel = 36,000 psi.
- Minimum diameter of bar reinforcement shall be 7/32 in.
- Minimum area of bar reinforcement shall be 0.23 square inches per foot of pipe wall or numerically equal to 1 percent of the pipe diameter in inches.
- Maximum center-to-center spacing of bar reinforcement shall not exceed 2 inches.
- Design clear space between bars shall not be less than 1.3 times the diameter of the bar used.

EXTERNAL LOAD DESIGN

CCP is a semi-rigid pipe designed as a composite wall steel and concrete structure. External loads of buried CCP pipelines are resisted by the ring flexural strength of the pipe (pipe stiffness) and by the passive lateral earth pressure on the sides of the pipe. The composite wall construction of CCP contributes significantly to its rigidity and, consequently, to its external load carrying capacity.

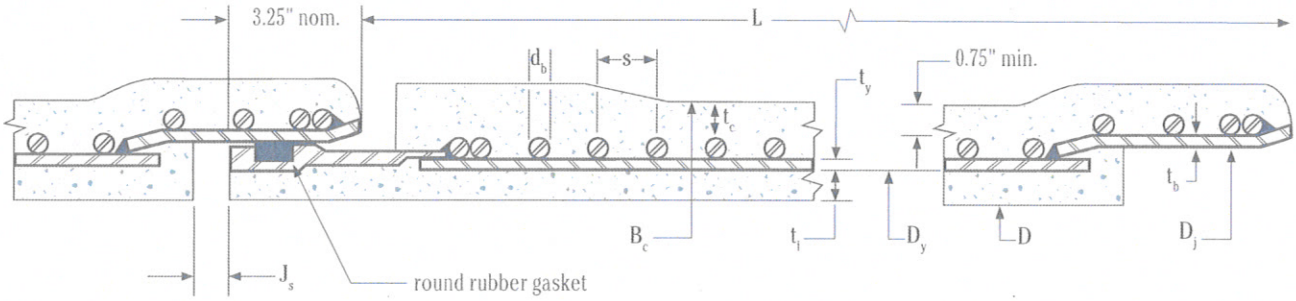
Recommended bedding and backfilling procedures are included in Ameron's Installation Guide Specifications and AWWA Manual M9. Ameron's sales engineers can help determine your project's specific pipe design and earth cover load with their laptop design engineering program.

STANDARD DESIGNS

Standard designs for concrete cylinder pipe are shown in the following tables, based on a safety factor of 2.0 and a minimum yield of 36,000 psi for the steel. The steel cylinder thicknesses and bar diameters may vary provided the total steel area, A_s, is equal to or greater than shown. The standard designs provide an allowance for transient pressure 1.5 times the design pressure in the pipe.

The Manchester pipeline in Calgary, Canada, required more than 4,100 linear feet of Ameron 42-inch-diameter CCP for the first phase of its feeder line.

PIPE DIMENSIONS



A_b = Area of steel bar reinforcement, in.²/LF
A_y = Area of steel cylinder, in.²/LF
A_s = Total area of steel, in.²/LF
B_c = Outside diameter of pipe barrel, ft
d_b = Bar diameter, in.
D = Inside diameter of pipe, in.
D_y = Inside diameter of steel cylinder, in.
D_j = Joint diameter, in.
J_s = Interior joint space
L = Standard laying length, ft
P_d = Design pressure, psi
s = Bar spacing, center-to-center, in.
t_b = Bell thickness, in.
t_c = Minimum cement mortar coating thickness over steel bar, in. (0.75" minimum)
t_l = Nominal concrete or cement mortar lining thickness, in.
t_y = Cylinder thickness, in.
W_p = Weight of pipe, lb/LF for class 150

PIPE INSIDE DIAMETER D	STANDARD LAYING LENGTH L	OUTSIDE DIAMETER STEEL CYLINDER D_y+2t_y	JOINT DIAMETER D_j	OUTSIDE DIAMETER PIPE BARRELL B_c	INTERIOR JOINT SPACE—J_s			DEFLECTED JOINT		BEVELED JOINT	
					NOMINAL	MINIMUM	MAXIMUM	MAXIMUM DEFLECTION	MINIMUM RADIUS	MAXIMUM BEVEL	MINIMUM RADIUS
in.	ft	in.	in.	ft	in.	in.	in.	degrees	ft	degrees	ft
12	32	13.38	13.88	1.28	0.25	0.25	1.00	3.09	594	5.00	367
14	32	15.25	15.75	1.44	0.25	0.25	1.00	2.72	675	5.00	367
16	36	17.38	17.88	1.61	0.25	0.25	1.00	2.40	861	5.00	412
18	36	19.78	20.28	1.82	0.25	0.25	1.00	2.11	979	5.00	412
20	40	21.78	22.28	1.98	0.25	0.25	1.00	1.92	1195	5.00	458
21	40	22.78	23.28	2.07	0.25	0.25	1.00	1.84	1247	5.00	458
24	40	25.75	26.25	2.31	0.50	0.25	1.25	2.18	1052	5.00	458
27	40	28.78	29.28	2.57	0.50	0.25	1.25	1.95	1176	5.00	458
30	40	31.88	32.38	2.82	0.50	0.25	1.25	1.76	1303	5.00	458
33	40	34.88	35.38	3.07	0.50	0.25	1.25	1.61	1425	5.00	458
36	40	37.88	38.38	3.32	0.50	0.25	1.25	1.49	1539	5.00	457
39	40	40.88	41.38	3.57	0.50	0.25	1.25	1.38	1662	5.00	457
42	40	43.88	44.38	3.82	0.50	0.25	1.25	1.29	1778	5.00	457
45	40	46.88	47.38	4.07	0.50	0.25	1.25	1.20	1911	5.00	457
48	40	49.88	50.38	4.33	0.50	0.25	1.25	1.13	2030	5.00	457
51	40	52.88	53.38	4.58	0.50	0.25	1.25	1.07	2144	5.00	457
54	40	55.88	56.38	4.83	0.50	0.25	1.25	1.01	2271	5.00	457
57	40	58.88	59.38	5.08	0.50	0.25	1.25	0.97	2377	5.00	457
60	40	61.88	62.38	5.33	0.50	0.25	1.25	0.92	2497	5.00	456
63	40	64.88	65.38	5.58	0.50	0.25	1.25	0.88	2618	5.00	456
66	40	67.88	68.38	5.85	0.50	0.25	1.25	0.84	2738	5.00	456
69	40	70.88	71.38	6.09	0.50	0.25	1.25	0.80	2858	5.00	456
72	40	73.88	74.38	6.37	0.50	0.25	1.25	0.77	2978	5.00	456

Custom designs and pipe dimensions for greater pressures and larger diameters are available upon request.

STANDARD DESIGNS

72" to 57" Diameter

72" Diameter

t_l=0.75" t_c=0.75" W_p=730 lb/LF

PRESSURE P_d	STEEL AREAS A_s	A_y	A_b	CYLINDER t_y	BAR d_b	s
psi	in²/LF	in²/LF	in²/LF	in	in	in
100	3.43	2.25	1.18	0.188	0.500	2.00
125	3.43	2.25	1.18	0.188	0.500	2.00
150	3.67	2.25	1.42	0.188	0.500	1.66
175	4.28	2.25	2.03	0.188	0.500	1.16
200	4.89	3.00	1.89	0.250	0.500	1.25
225	5.50	3.00	2.50	0.250	0.625	1.47
250	6.10	3.74	2.36	0.312	0.625	1.56
275	6.70	4.50	2.20	0.375	0.562	1.35
300	7.30	5.26	2.04	0.438	0.500	1.15

69" Diameter

t_l=0.75" t_c=0.75" W_p=690 lb/LF

PRESSURE P_d	STEEL AREAS A_s	A_y	A_b	CYLINDER t_y	BAR d_b	s
psi	in²/LF	in²/LF	in²/LF	in	in	in
100	2.94	2.25	0.69	0.188	0.375	1.92
125	2.94	2.25	0.69	0.188	0.375	1.92
150	3.52	2.25	1.27	0.188	0.438	1.42
175	4.11	2.25	1.86	0.188	0.500	1.27
200	4.69	3.00	1.69	0.250	0.438	1.07
225	5.28	3.00	2.28	0.250	0.625	1.61
250	5.85	3.74	2.11	0.312	0.625	1.74
275	6.43	4.50	1.93	0.375	0.562	1.54
300	7.01	4.50	2.51	0.375	0.625	1.47
325	7.59	5.26	2.33	0.438	0.563	1.28
350	8.15	6.00	2.15	0.500	0.625	1.71

66" Diameter

t_l=0.75" t_c=0.75" W_p=650 lb/LF

PRESSURE P_d	STEEL AREAS A_s	A_y	A_b	CYLINDER t_y	BAR d_b	s
psi	in²/LF	in²/LF	in²/LF	in	in	in
100	2.91	2.25	0.66	0.188	0.375	2.00
125	2.91	2.25	0.66	0.188	0.375	2.00
150	3.37	2.25	1.12	0.188	0.438	1.61
175	3.93	2.25	1.68	0.188	0.500	1.40
200	4.49	3.00	1.49	0.250	0.438	1.21
225	5.04	3.00	2.04	0.250	0.500	1.15
250	5.59	3.74	1.85	0.312	0.500	1.27
275	6.15	4.50	1.65	0.375	0.438	1.09
300	6.71	4.50	2.21	0.375	0.563	1.35
325	7.26	5.26	2.00	0.438	0.500	1.18
350	7.82	5.26	2.56	0.438	0.625	1.44

63" Diameter

t_l=0.75" t_c=0.75" W_p=610 lb/LF

PRESSURE P_d	STEEL AREAS A_s	A_y	A_b	CYLINDER t_y	BAR d_b	s
psi	in²/LF	in²/LF	in²/LF	in	in	in
100	2.60	1.97	0.63	0.164	0.312	1.46
125	2.91	2.25	0.66	0.188	0.375	2.00
150	3.22	2.25	0.97	0.188	0.438	1.86
175	3.76	2.25	1.51	0.188	0.500	1.56
200	4.29	3.00	1.29	0.250	0.438	1.40
225	4.83	3.00	1.83	0.250	0.500	1.29
250	5.35	3.74	1.61	0.312	0.500	1.46
275	5.89	3.74	2.15	0.312	0.562	1.38
300	6.41	4.50	1.91	0.375	0.438	0.94
325	6.94	5.26	1.68	0.438	0.500	1.40
350	7.47	5.26	2.21	0.438	0.562	1.35
375	7.98	6.00	1.98	0.500	0.625	1.86

60" Diameter

t_l=0.75" t_c=0.75" W_p=570 lb/LF

PRESSURE P_d	STEEL AREAS A_s	A_y	A_b	CYLINDER t_y	BAR d_b	s
psi	in²/LF	in²/LF	in²/LF	in	in	in
100	2.57	1.97	0.60	0.164	0.312	1.53
125	2.86	2.26	0.60	0.188	0.312	1.53
150	3.08	2.25	0.83	0.188	0.375	1.61
175	3.59	2.26	1.33	0.188	0.438	1.36
200	4.09	3.00	1.09	0.250	0.438	1.66
225	4.60	3.00	1.60	0.250	0.500	1.47
250	5.10	3.74	1.36	0.312	0.500	1.73
275	5.61	3.74	1.87	0.312	0.562	1.59
300	6.11	4.50	1.61	0.375	0.500	1.46
325	6.62	4.50	2.12	0.375	0.625	1.74
350	7.12	5.26	1.86	0.438	0.562	1.60
375	7.61	6.00	1.61	0.500	0.500	1.46
400	8.12	6.00	2.12	0.500	0.625	1.74

57" Diameter

t_l=0.75" t_c=0.75" W_p=540 lb/LF

PRESSURE P_d	STEEL AREAS A_s	A_y	A_b	CYLINDER t_y	BAR d_b	s
psi	in²/LF	in²/LF	in²/LF	in	in	in
100	2.18	1.61	0.57	0.134	0.312	1.61
125	2.54	1.97	0.57	0.164	0.312	1.61
150	2.93	2.26	0.67	0.188	0.375	1.98
175	3.41	2.26	1.61	0.188	0.438	1.56
200	3.89	3.00	0.89	0.250	0.375	1.49
225	4.38	3.00	1.38	0.250	0.500	1.71
250	4.85	3.74	1.11	0.312	0.438	1.63
275	5.34	3.74	1.60	0.312	0.500	1.48
300	5.81	4.50	1.31	0.375	0.500	1.80
325	6.30	4.50	1.80	0.375	0.562	1.66
350	6.78	4.50	2.28	0.375	0.625	1.61
375	7.25	5.25	2.00	0.438	0.562	1.49
400	7.72	6.00	1.72	0.500	0.500	1.37

STANDARD DESIGNS

54" to 21" Diameter

54" Diameter

t_l=0.75" t_c=0.75" W_p=500 lb/LF

PRESSURE P_d	STEEL AREAS A_s	A_y	A_b	CYLINDER t_y	BAR d_b	s
psi	in²/LF	in²/LF	in²/LF	in	in	in
100	2.15	1.61	0.54	0.134	0.312	1.70
125	2.32	1.61	0.71	0.134	0.375	1.87
150	2.78	1.97	0.81	0.164	0.375	1.64
175	3.24	2.26	0.98	0.188	0.438	1.84
200	3.70	2.63	1.07	0.219	0.438	1.68
225	4.15	3.00	1.15	0.250	0.438	1.57
250	4.61	3.00	1.61	0.250	0.500	1.46
275	5.06	3.74	1.32	0.312	0.500	1.78
300	5.53	3.74	1.78	0.312	0.500	1.32
325	5.97	4.50	1.47	0.375	0.500	1.60
350	6.43	4.50	1.93	0.375	0.625	1.91
375	6.89	4.50	2.39	0.375	0.625	1.54
400	7.33	5.26	2.08	0.438	0.625	1.77

51" Diameter

t_l=0.75" t_c=0.75" W_p=470 lb/LF

PRESSURE P_d	STEEL AREAS A_s	A_y	A_b	CYLINDER t_y	BAR d_b	s
psi	in²/LF	in²/LF	in²/LF	in	in	in
100	2.12	1.61	0.51	0.134	0.312	1.80
125	2.19	1.61	0.58	0.134	0.312	1.57
150	2.63	1.97	0.66	0.164	0.312	1.39
175	3.06	2.25	0.81	0.188	0.438	2.22
200	3.50	2.25	1.25	0.188	0.438	1.44
225	3.93	3.00	0.93	0.250	0.438	1.95
250	4.36	3.00	1.36	0.250	0.500	1.73
275	4.79	3.74	1.05	0.312	0.438	1.73
300	5.23	3.74	1.48	0.312	0.500	1.59
325	5.65	4.50	1.15	0.375	0.438	1.58
350	6.08	4.50	1.58	0.375	0.500	1.49
375	6.52	4.50	2.02	0.375	0.562	1.48
400	6.95	4.50	2.45	0.375	0.625	1.50

42" Diameter

t_l=0.75" t_c=0.75" W_p=370 lb/LF

PRESSURE P_d	STEEL AREAS A_s	A_y	A_b	CYLINDER t_y	BAR d_b	s
psi	in²/LF	in²/LF	in²/LF	in	in	in
100	1.68	1.26	0.42	0.105	0.250	1.40
125	1.82	1.26	0.56	0.105	0.312	1.64
150	2.18	1.61	0.57	0.134	0.312	1.60
175	2.54	1.97	0.57	0.164	0.312	1.60
200	2.90	1.97	0.94	0.164	0.375	1.42
225	3.26	2.26	1.01	0.188	0.438	1.80
250	3.62	2.63	0.99	0.219	0.375	1.33
275	3.98	3.00	0.98	0.250	0.438	1.85
300	4.34	3.00	1.34	0.250	0.500	1.76
325	4.69	3.74	0.95	0.312	0.438	1.90
350	5.05	3.74	1.30	0.312	0.500	1.81
375	5.40	4.13	1.27	0.344	0.500	1.85
400	5.75	4.50	1.25	0.375	0.500	1.88

39" Diameter

t_l=0.75" t_c=0.75" W_p=340 lb/LF

PRESSURE P_d	STEEL AREAS A_s	A_y	A_b	CYLINDER t_y	BAR d_b	s
psi	in²/LF	in²/LF	in²/LF	in	in	in
100	1.47	1.08	0.39	0.090	0.250	1.51
125	1.69	1.26	0.43	0.105	0.250	1.36
150	2.03	1.61	0.42	0.134	0.250	1.39
175	2.37	1.61	0.76	0.134	0.375	1.74
200	2.70	1.97	0.74	0.164	0.375	1.80
225	3.04	2.26	0.78	0.188	0.375	1.70
250	3.37	2.26	1.12	0.188	0.438	1.62
275	3.71	2.25	1.46	0.188	0.375	0.91
300	4.04	3.00	1.04	0.250	0.438	1.74
325	4.37	3.00	1.37	0.250	0.500	1.71
350	4.70	3.74	0.95	0.312	0.438	1.90
375	5.03	3.74	1.29	0.312	0.438	1.40
400	5.37	3.74	1.62	0.312	0.438	1.11

30" Diameter

t_l=0.75" t_c=0.75" W_p=250 lb/LF

PRESSURE P_d	STEEL AREAS A_s	A_y	A_b	CYLINDER t_y	BAR d_b	s
psi	in²/LF	in²/LF	in²/LF	in	in	in
100	1.20	0.90	0.30	0.075	0.250	1.96
125	1.32	0.90	0.42	0.075	0.250	1.40
150	1.58	1.26	0.32	0.105	0.250	1.84
175	1.85	1.26	0.59	0.105	0.312	1.56
200	2.11	1.61	0.50	0.134	0.312	1.84
225	2.37	1.61	0.76	0.134	0.375	1.74
250	2.63	1.97	0.66	0.164	0.312	1.39
275	2.89	1.97	0.92	0.164	0.375	1.43
300	3.15	2.26	0.89	0.188	0.375	1.48
325	3.41	2.26	1.16	0.188	0.438	1.56
350	3.66	3.00	0.66	0.250	0.312	1.39
375	3.92	3.00	0.92	0.250	0.375	1.44
400	4.18	3.00	1.18	0.250	0.438	1.53

27" Diameter

t_l=0.75" t_c=0.75" W_p=215 lb/LF

PRESSURE P_d	STEEL AREAS A_s	A_y	A_b	CYLINDER t_y	BAR d_b	s
psi	in²/LF	in²/LF	in²/LF	in	in	in
100	1.17	0.90	0.27	0.075	0.219	1.67
125	1.19	0.90	0.29	0.075	0.219	1.56
150	1.43	0.90	0.54	0.075	0.219	0.84
175	1.67	1.26	0.41	0.105	0.250	1.45
200	1.90	1.26	0.64	0.105	0.312	1.42
225	2.14	1.61	0.53	0.134	0.312	1.73
250	2.38	1.61	0.77	0.134	0.375	1.73
275	2.61	1.97	0.64	0.164	0.312	1.43
300	2.85	1.97	0.88	0.164	0.375	1.51
325	3.08	2.26	0.82	0.188	0.375	1.61
350	3.31	2.26	1.06	0.188	0.438	1.71
375	3.54	2.63	0.92	0.219	0.375	1.44
400	3.77	3.00	0.77	0.250	0.375	1.72

48" Diameter

t_l=0.75" t_c=0.75" W_p=430 lb/LF

PRESSURE P_d	STEEL AREAS A_s	A_y	A_b	CYLINDER t_y	BAR d_b	s
psi	in²/LF	in²/LF	in²/LF	in	in	in
100	1.74	1.26	0.48	0.105	0.312	1.91
125	2.09	1.61	0.48	0.134	0.312	1.91
150	2.48	1.97	0.51	0.164	0.312	1.80
175	2.89	1.97	0.92	0.164	0.375	1.44
200	3.30	2.26	1.04	0.188	0.438	1.73
225	3.71	2.26	1.46	0.188	0.438	1.24
250	4.11	3.00	1.11	0.250	0.438	1.62
275	4.52	3.38	1.15	0.281	0.438	1.58
300	4.93	3.74	1.18	0.312	0.438	1.53
325	5.34	3.74	1.59	0.312	0.438	1.13
350	5.73	4.50	1.23	0.375	0.438	1.47
375	6.14	4.50	1.64	0.375	0.500	1.44
400	6.55	4.50	2.05	0.375	0.562	1.45

45" Diameter

t_l=0.75" t_c=0.75" W_p=400 lb/LF

PRESSURE P_d	STEEL AREAS A_s	A_y	A_b	CYLINDER t_y	BAR d_b	s
psi	in²/LF	in²/LF	in²/LF	in	in	in
100	1.71	1.26	0.45	0.105	0.250	1.31
125	2.06	1.61	0.45	0.134	0.250	1.31
150	2.33	1.61	0.72	0.134	0.375	1.83
175	2.72	1.97	0.75	0.164	0.375	1.77
200	3.10	2.15	0.95	0.179	0.375	1.40
225	3.49	2.26	1.23	0.188	0.312	0.75
250	3.86	3.00	0.86	0.250	0.375	1.53
275	4.25	3.00	1.25	0.250	0.438	1.45
300	4.63	3.75	0.88	0.313	0.375	1.51
325	5.01	3.74	1.27	0.312	0.438	1.43
350	5.40	3.75	1.65	0.313	0.438	1.10
375	5.77	4.50	1.27	0.375	0.438	1.43
400	6.15	4.50	1.65	0.375	0.500	1.43

36" Diameter

t_l=0.75" t_c=0.75" W_p=315 lb/LF

PRESSURE P_d	STEEL AREAS A_s	A_y	A_b	CYLINDER t_y	BAR d_b	s
psi	in²/LF	in²/LF	in²/LF	in	in	in
100	1.44	1.08	0.36	0.090	0.250	1.64
125	1.62	1.26	0.36	0.105	0.250	1.64
150	1.88	1.26	0.62	0.105	0.312	1.47
175	2.19	1.61	0.59	0.134	0.312	1.57
200	2.50	1.97	0.54	0.164	0.312	1.71
225	2.82	1.97	0.85	0.164	0.375	1.56
250	3.12	2.26	0.87	0.188	0.375	1.53
275	3.44	2.26	1.18	0.188	0.438	1.53
300	3.75	2.33	1.42	0.194	0.500	1.66
325	4.05	3.00	1.05	0.250	0.438	1.72
350	4.36	3.00	1.36	0.250	0.500	1.73
375	4.66	3.38	1.29	0.281	0.438	1.40
400	4.97	3.74	1.22	0.312	0.438	1.48

33" Diameter

t_l=0.75" t_c=0.75" W_p=280 lb/LF

PRESSURE P_d	STEEL AREAS A_s	A_y	A_b	CYLINDER t_y	BAR d_b	s
psi	in²/LF	in²/LF	in²/LF	in	in	in
100	1.23	0.90	0.33	0.075	0.250	1.78
125	1.59	1.26	0.33	0.105	0.250	1.78
150	1.73	1.26	0.47	0.105	0.250	1.24
175	2.02	1.61	0.41	0.134	0.250	1.43
200	2.31	1.61	0.70	0.134	0.312	1.31
225	2.59	1.97	0.62	0.164	0.312	1.47
250	2.88	1.97	0.91	0.164	0.375	1.46
275	3.16	2.26	0.91	0.188	0.375	1.46
300	3.45	2.26	1.19	0.188	0.438	1.51
325	3.74	2.26	1.48	0.188	0.375	0.89
350	4.01	3.00	1.01	0.250	0.438	1.79
375	4.30	3.00	1.30	0.250	0.500	1.82
400	4.58	3.00	1.58	0.250	0.500	1.49

24" Diameter

t_l=0.75" t_c=0.75" W_p=190 lb/LF

PRESSURE P_d	STEEL AREAS A_s	A_y	A_b	CYLINDER t_y	BAR d_b	s
psi	in²/LF	in²/LF	in²/LF	in	in	in
100	1.14	0.90	0.24	0.075	0.219	1.88
125	1.14	0.90	0.24	0.075	0.219	1.88
150	1.28	0.90	0.38	0.075	0.250	1.55
175	1.49	1.08	0.42	0.090	0.250	1.42
200	1.70	1.26	0.44	0.105	0.250	1.33
225	1.92	1.26	0.66	0.105	0.312	1.40
250	2.12	1.61	0.52	0.134	0.312	1.78
275	2.34	1.61	0.73	0.134	0.375	1.82
300	2.54	1.97	0.57	0.164	0.312	1.60
325	2.75	1.97	0.79	0.164	0.375	1.69
350	2.97	1.97	1.00	0.164	0.438	1.81
375	3.17	2.25	0.92	0.188	0.375	1.44
400	3.38	2.26	1.13	0.188	0.438	1.60

21" Diameter

t_l=0.75" t_c=0.75" W_p=165 lb/LF

PRESSURE P_d	STEEL AREAS A_s	A_y	A_b	CYLINDER t_y	BAR d_b	s
psi	in²/LF	in²/LF	in²/LF	in	in	in
100	0.95	0.72	0.23	0.060	0.219	1.97
125	0.95	0.72	0.23	0.060	0.219	1.97
150	1.13	0.90	0.23	0.075	0.219	1.95
175	1.32	0.90	0.42	0.075	0.250	1.40
200	1.51	1.08	0.43	0.090	0.250	1.38
225	1.69	1.26	0.43	0.105	0.250	1.36
250	1.88	1.26	0.62	0.105	0.312	1.48
275	2.06	1.61	0.46	0.134	0.250	1.29
300	2.25	1.61	0.64	0.134	0.312	1.43
325	2.44	1.61	0.83	0.134	0.375	0.60
350	2.62	1.97	0.65	0.164	0.312	1.41
375	2.81	1.97	0.84	0.164	0.375	1.58
400	2.99	1.97	1.03	0.164	0.375	1.29

STANDARD DESIGNS

20" to 12"* Diameter

20" Diameter

t_l=0.75" t_c=0.75" W_p=160 lb/LF

PRESSURE P_d	STEEL AREAS A_s	A_y	A_b	CYLINDER t_y	BAR d_b	s
psi	in²/LF	in²/LF	in²/LF	in	in	in
100	0.95	0.72	0.23	0.060	0.219	1.97
125	0.95	0.72	0.23	0.060	0.219	1.97
150	1.13	0.90	0.23	0.075	0.219	1.97
175	1.26	0.90	0.36	0.075	0.250	1.63
200	1.44	1.08	0.30	0.090	0.219	1.51
225	1.62	1.26	0.36	0.105	0.250	1.65
250	1.80	1.26	0.54	0.105	0.312	1.71
275	1.98	1.26	0.72	0.105	0.312	1.28
300	2.15	1.61	0.54	0.134	0.312	1.69
325	2.33	1.61	0.72	0.134	0.375	1.83
350	2.50	1.97	0.53	0.164	0.312	1.72
375	2.68	1.97	0.71	0.164	0.375	1.86
400	2.86	1.97	0.89	0.164	0.375	1.49

18" Diameter

t_l=0.75" t_c=0.75" W_p=140 lb/LF

PRESSURE P_d	STEEL AREAS A_s	A_y	A_b	CYLINDER t_y	BAR d_b	s
psi	in²/LF	in²/LF	in²/LF	in	in	in
100	0.95	0.72	0.23	0.060	0.219	1.97
125	0.95	0.72	0.23	0.060	0.219	1.97
150	0.98	0.72	0.26	0.060	0.219	1.74
175	1.20	0.90	0.30	0.075	0.219	1.51
200	1.31	0.90	0.41	0.075	0.250	1.44
225	1.47	1.26	0.30	0.105	0.219	1.51
250	1.63	1.26	0.37	0.105	0.250	1.59
275	1.79	1.26	0.53	0.105	0.312	1.72
300	1.95	1.44	0.52	0.120	0.312	1.77
325	2.11	1.61	0.51	0.134	0.312	1.81
350	2.28	1.61	0.67	0.134	0.312	1.37
375	2.44	1.79	0.64	0.150	0.312	1.43
400	2.59	1.97	0.63	0.164	0.312	1.47

16" Diameter

t_l=0.50" t_c=0.75" W_p=115 lb/LF

PRESSURE P_d	STEEL AREAS A_s	A_y	A_b	CYLINDER t_y	BAR d_b	s
psi	in²/LF	in²/LF	in²/LF	in	in	in
100	0.95	0.72	0.23	0.060	0.219	1.97
125	0.95	0.72	0.23	0.060	0.219	1.97
150	0.95	0.72	0.23	0.060	0.219	1.97
175	1.01	0.72	0.29	0.060	0.219	1.56
200	1.15	0.90	0.25	0.075	0.219	1.82
225	1.29	0.90	0.39	0.075	0.250	1.50
250	1.43	1.08	0.35	0.090	0.219	1.28
275	1.58	1.08	0.50	0.090	0.250	1.19
300	1.72	1.26	0.46	0.105	0.250	1.29
325	1.86	1.26	0.60	0.105	0.312	1.53
350	2.00	1.44	0.56	0.120	0.250	1.04
375	2.14	1.61	0.53	0.134	0.312	1.73
400	2.28	1.61	0.67	0.134	0.375	1.97

14" Diameter

t_l=0.50" t_c=0.75" W_p=100 lb/LF

PRESSURE P_d	STEEL AREAS A_s	A_y	A_b	CYLINDER t_y	BAR d_b	s
psi	in²/LF	in²/LF	in²/LF	in	in	in
100	0.95	0.72	0.23	0.060	0.219	1.97
125	0.95	0.72	0.23	0.060	0.219	1.97
150	0.95	0.72	0.23	0.060	0.219	1.97
175	0.95	0.72	0.23	0.060	0.219	1.97
200	1.01	0.72	0.29	0.060	0.219	1.57
225	1.13	0.90	0.23	0.075	0.219	1.94
250	1.26	0.90	0.36	0.075	0.250	1.64
275	1.38	0.90	0.48	0.075	0.312	1.89
300	1.51	0.90	0.61	0.075	0.312	1.50
325	1.63	1.26	0.37	0.105	0.250	1.59
350	1.75	1.26	0.49	0.105	0.312	1.85
375	1.88	1.26	0.62	0.105	0.312	1.48
400	2.00	1.61	0.39	0.134	0.250	1.51

**Also available in 12" diameters*

This Ameron 66-inch-diameter concrete cylinder pipe is part of the cooling water system for the 1,000 megawatt Harquahala Generating Station, located 50 miles west of Phoenix, Arizona.

A full range of special pipe and fittings is available to satisfy project requirements. They are custom fabricated at the pipe manufacturing facility and delivered with the pipe to the construction site in proper sequence for installation in the pipeline. The design and manufacture of steel fitting: and special pipe conform to the applicable section of AWWA Standard C303; their dimensions conform to AWWA Standard C208. Flanges for service rating to 300 psi conform to AWWA Standard C207. Flanges for service rating greater than 300 psi conform to ANSI Standard B16.5.

Virtually any size and shape can be supplied with various end configurations including rubber gasket, lap weld, buttstrap, flanged, mechanical couplings and plain ends.

CHANGES IN DIRECTION

Long-radius curves and minor changes in pipeline direction are achieved by joint deflection of standard pipe or by the use of pipe sections with ends beveled up to 5 degrees. For shorter radius curves, fabricated elbows are provided.

SPECIAL PIPE

Special pipe has the same design as standard pipe that is modified to incorporate short lengths, beveled ends and built-in outlets for manholes, air valves, blowoffs and other connections. The steel cylinder at the outlet opening is reinforced with either a steel collar, a wrapper plate or a crotch plate, depending on cylinder thickness, pipe and outlet diameters, and operating conditions.

FITTINGS

Fittings include elbows, reducers, and connections to mainline valves and appurtenances. They are fabricated from steel plate or sheet and lined and coated with cement mortar. The cylinder diameter for the mainline portion of the fitting is equal to the cylinder diameter of standard pipe.

FITTING DESIGN

The design thickness of the steel cylinder used in a fitting is:

$$t_y = \frac{[S.F.]\, P_d\, D_y}{2S}$$

where S.F.=Safety Factor; 2.0
P_d = design pressure, psi
D_y = inside diameter of steel cylinder, in.
S = 36,000 psi

Fittings are designed to be equal in strength to the a djacent standard pipe sections. The minimum steel cylinder thicknesses used in fittings are shown in *Figure 2.*

DOUBLE-GASKET SPIGOT PIPE

The reliability and durability of our standard, single, rubber-gasket joints have been proven for more than 50 years. However, in special applications, Ameron's double gasket spigot pipe (see *Figure 3*) can be specified and used for the following:

- Field testing a field joint prior to laying the next pipe section
- Field testing the pipe joints after the completion of the backfill
- In areas where water is not readily available for field hydrostatic testing
- For subaqueous installations
- For pipe installations in or near seismically active areas
- In high-fill areas with the possibility of long-term settlement
- In areas where the added protection of an additional gasket is required

Special pipe can be furnished with various end configurations to meet project requirements.

The versatility of concrete cylinder pipe provides for a full range of custom fabricated special pipe and fittings.

Field pressure tapping

FITTING DIAMETER RANGE	MINIMUM THICKNESS OF SHEET OR PLATE
inches	inches
12-21	0.1345
24-36	0.1793
39-48	0.2500
51-60	0.3125
63-72	0.3750

Figure 2

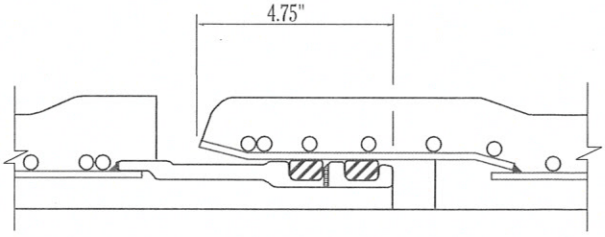


Figure 3: A double gasket spigot pipe

AMERON'S OBJECTIVES

We believe the growth of our businesses will be based on how well we identify customers needs and satisfy them over the long term with products and services of superior value.

We also believe that satisfied, repeat customers are the lifeblood of any successful business and must be nurtured and cared for in the most professional and courteous manner.

Our customers should expect and receive:

- Strong commitment from us to the markets we serve.
- Products and services of consistently superior value.
- Professional and dedicated technical services provided promptly where needed.
- Well-trained, knowledgeable and motivated direct sales people and representatives.
- Professionally prepared, well-documented sales proposals, product literature, technical data and other support materials.
- Fast, courteous response in any transaction.
- Consistent, on-time delivery of products and services.

- **Water Transmission Group Headquarters**
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  Fontana Plant
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  FAX (909) 356-1343

  Lakeside Plant
  Lakeside, CA
  (619) 561-6363
  FAX (619) 443-4540

  South Gate Plant
  South Gate, CA
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  FAX (213) 563-1397

  Tracy Plant
  Tracy, CA
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NSF MEMBER NASTT

APPENDIX E
EXAMPLE OF WELDED CONNECTION TO WATERMAIN

TRENCH EXPOSING BAR WRAPPED CONCRETE CYLINDER PIPE (CCP)

CEMENT MORTAR COATING (CMC) REMOVED FROM CCP EXPOSING BARS (EXIT RODS)

CLOSE UP OF STEEL PIPE AND BARS

CEMENT MORTAR COATING (CMC) REMOVED FROM CCP EXPOSING BARS (EXIT RODS)

PRESSURE TESTING WELDS

ASSEMBLY NEAR COMPLETE

WELDED CONNECTION TO WATERMAIN
WITH VALVE COMPLETE IN PLACE