



Des Moines WA
The Waterland City

South 223rd Green Street Study Report
April 2024

this page intentionally left blank



Andrew Merges, P.E., Executive MPA
Public Works Director

Khai Le, P.E.
Project Manager / Transportation & Engineering

Tyler Beekley, P.E.
Manager / Surface Water & Environmental Engineering



Terry Wright, P.E.
Senior Engineer

Bryce Corrigan, P.E.
Project Engineer

Brian Taylor, P.E.
Senior Surface Water Engineer

Sam Wilson, P.E.
Surface Water Engineer

Paul Fuesel, PLA
Senior Landscape Architect / Urban Designer

Phuong Nguyen, PLA
Senior Landscape Architect / Urban Designer

Ginger Plaster
Landscape / Urban Designer

Charles Cisneros, RPA
Senior Archaeologist / Environmental Services



Bryan K. Hawkins, P.E.
Senior Geotechnical Engineer



Samantha Murray, MA
Cultural Resources Director

7%2&217176

Preface.....	7	Public Involvement.....	46-47
Project Description.....	8	Engineering Opinion of Probable Construction Cost	48-49
Project Goals & Objectives.....	9	Funding Opportunities.....	50-52
Project Context.....	10	1H[V]Steps.....	53
Existing Conditions.....	11		
Site Context.....	12	\$3(!	
Cultural Resources Survey.....	13	Appendix A: 10% Roadway Design	
Stormwater Analysis Summary.....	14-19	S 223rd St IURP&OLIM6WRWIM6	
Tributary Basin Analysis.....	15	6UG6WIURPWIM6WRWIM6	
Tributary Basin Soil Analysis.....	16	6UG6WIURPWIM6WRODULQH9LHIM6	
Hydrologic Modeling.....	17	Appendix B: Cultural Resource Survey Assessment Report	
Proposed Water Quality Treatment Basin.....	18	Appendix C: Summary of Stormwater Funding Opportunities	
Proposed Bioretention Swale.....	19	Appendix D: Public Engagement Summary	
Utility Considerations.....	20-21	Appendix E7HFIM6QLFDOQIRUPDWLRQ5HSRUW75	
Design Principles.....	22-23		
Streetscape Elements.....	24		
Initial Conceptual Layout Plan.....	25		
Cross Sections.....	26-29		
Proposed Urban Design Concepts.....	30-41		
Downtown Arts.....	30-33		
Waterland City	34-37		
&RQWHPSRUDUIM6DFLIM61RUWIM6W.....	38-41		
Green Street Design.....	42-45		
Creating a Green Street.....	42		
6RXIM6IG6WUHHWDDIM6QHDU6WRUPIM6WHU3DUN.....	43		
Bioswales and Interpretive Signage	44		
Planting Palettes.....	45		

this page intentionally left blank

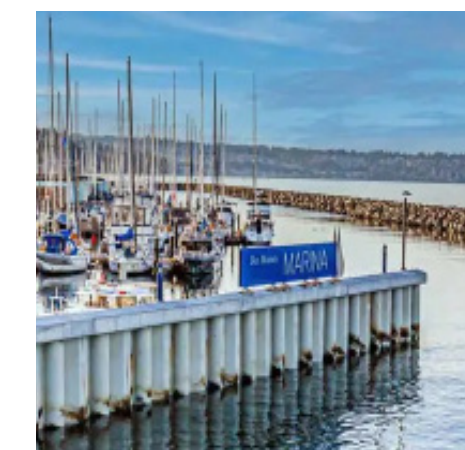
PREFACE

© LPSRUWDSM RI WKSUHOPLQDNG UHSRUMWDFVDV XGLOJ GRFHXQVRU GHFLRQDNOJ DOGVMH SURMHENMORSPHQDORQWK 6RXVKJG 6WUHFHWULGRU UHSRUMDFO&FWKHQVVRV WKSURMHFWDPVW& DVFOODVSUHOPLQDNGMD FROFHSVWMLQWHQGVREI D OLMQGRFHXQVWVVOCH XGDWHQV&LWSURMHFRM IRUZUG WIGH DGMDFHONZSLUWHHGHMORSPHQDQVDSLWSDORMHRSURMPHQVV DOGRUWDQMDGLOJXSRUW MSURYGHWWKGHMD FROWHFDQOV REMHFVWLSRSRUWLQDQDOMVDQGVNROGHUQSXRU SODFHPDNOJGHMD decisions for corridor.

this page intentionally left blank



Looking east up S. 223rd St. from 7th Ave S.



Des Moines Marina bulkhead



Overlook I Park



Farmers Market (Source: Des Moines Farmers Market)



Historic Lighthouse Lounge building



Harbormaster Building at Des Moines Marina

7K 6R\VKUG UHHQ 6WUHHW\IRFMV RQ WK MPHQW RI 6R\VKUG 6WUHHW\HCO DULQHPLHZ DULM DQG&OLIHOM 6R\VK 7KV UHSRU\QFO&HV preliminary design concepts to create a "green" corridor DOGSHGHWULSOPHODGHIORQWRQ HV ORLQHV LQIRUPHGE\ WRUP\WHUDQDOW F\WMDOHRMFH PRQLWRULQDQWNRQGH\QDHPHQW QFO&HGUH WKIROORZQ\PD MRUSURMHFW\

- Street layout IRUB\K UG WUHHW\KDCHPSKDVLV on creating a pedestrian and environmentally IULHOGO\SURPHODGH W\WLOQFO&HVDGGLWLRQDO planting areas and stormwater quality features to provide an inviting connection between downtown DOGWK\ZWHUIURQ\ WK\W\H ODULQD6WHSV
- Stormwater analysis RI WK\B\K UG WUHHW\ %LUGVHNHRI ODULQDLVWULFW\B\GWSURMHFWDUHDK\KOL\KWHGLQUHG corridor and associated stormwater drainage basin WRFRO\IP WK\IHDMELOLVDQGM\QJ RI SRWHQWLDO WRUP\ZWHUIHDW\H\H\ODUJHELROH
- Stakeholder outreach LQFO&LQD ZGH UDO\RI LQWHUHV\GLY\G\ODQ\RSV W\B\O FLO SUHVHQRDWR\SRMHFW\ VLW\RU LQIRUPDWLRQ VKDULQDQGVROLFLWDR\STOLF IHHGEDFNWKUR\ DQRQOLQH\W\W\RLGHQWLDSODFHPDNQWKHPH
- Coordination with the ongoing Marina District Redevelopment HIIRUWLOFO&LQK\H\UHQ\HVLQ RIWKH\W\HODULQD6WHSV

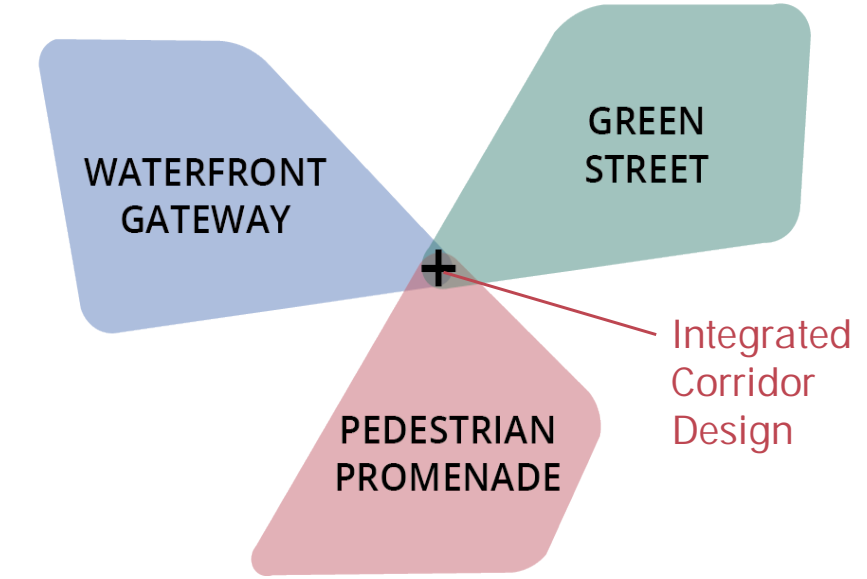


RRNQ\VVUIURP2MUORR\BDUN

RH SULPDU\RDQVRI WKLW\W\DUHWRFUHDW\Q inviting waterfront gateway WKD\H\W\H\B\Q\QHF\W\K\H\ODULQH\HZ ULM UHWDR\U\H\DOGUHV\LGHQW\LD\H\ZWK WK\H\ODULQDQOG ZWHUIURQ\MOHRIIHULOD enhanced pedestrian experience DORO\6R\VKUG 6WUHHW\W\K\W\H ODULQD6WHSVQ providing improved stormwater quality in downtown.

7K SURMHFW\H\DR\H\FRQL\H\W\K\W\H ODULQD6WHSV SURMHFW DVD FDW\DO\W\W\K\H\RI WK\ODULQD6WULF\W\H\W\DO\LD\WLRQ 7KV W\B\LGHQW\W\W\K\H\W\W\ W\MDPOH\Q\ FROQH\W\W\K ODULQD6WHSV\W\K\PSURMPHQW\W\PDN\ WK\6R\VKUG 6WUHH\Q\H\W\W\K\ZWHUIURQ\W\H\Q\W\LOQ\Q\IHU IRU SHGHWULDQ\W\W\ DO\RSURSRMV QHZ\W\H\Q\WRUP\ZWHU LQIUDW\U\W\W\W\PELOHQ\W\K\Q\H\Z\WRUP\ZWHU\IUDW\U\W\H DW\W\K\ODULQD6WHSV\ZOO\UHG\H\WK\DPR\Q\W\RI SROO\W\DO\W\ HQW\H\U\B\W\6R\G\YD U\RII IURP WK\IRU\W\Z\WRQ\%D\Q DQ\Q\DN\ WRUP\ZWHU\UHDW\PD\W\W\K\W\LF\DO\W\UD\W\Q\ HQ\U\ROPH\Q\W\DOON\U\HQ\GON\H\W\W\H\H\W\DSH

Q DGGLWLRQ\K 6R\VK UG 6WUHHW\W\ ZOO\LGHQW\LI\ new streetscape design standards for quality downtown SODFHPDNQ\ W\FROMGHU\W\UHHW\DSH\OHPHQW\W\W\DUH WUDQ\HU\DEQ\RI\W\H GR\ZWRQ\ UH\W\DO\LD\W\SRMHFW\W\R FUHDW\H\DFR\K\MDQ\G\LO\W\LO\S\ODFHIRUUH\G\HQW\DOG\W\W\RUV



- 3 attributes of the South 223rd Street Corridor Design:
- SW\W\H\Z\W\W\K\ZWHUIURQ\
 - Green stormwater quality and landscape features
 - Q\W\LO\Q\GIULHQGON\O\B\W\W\K\ODULQD6WHSV

Figure: Integrated Corridor Design Attributes

67250:55\$62959(



Des Moines Marina, Des Moines Creek, and Puget Sound source: City of Des Moines

Stormwater Analysis Process

Stormwater analysis process involves several key steps: 1. Identifying the watershed and existing infrastructure. 2. Conducting hydrologic modeling to determine runoff volumes. 3. Calculating and modeling the basin for stormwater treatment. 4. Developing preliminary design for bioretention and other treatment measures.

7KWRUPZWHUDQDOMSURFHMQFOGHG

- An analysis of the S 223rd St tributary basin and existing stormwater infrastructure
- Hydrologic modeling to determine average annual runoff volumes
- Calculations and modeling of the S 223rd St Basin for stormwater treatment
- Preliminary design for bioretention and other treatment measures

Stormwater runoff from the S 223rd St Basin is collected and conveyed to South 223rd Street, then conveyed to Puget Sound. The analysis also includes a detailed map of the basin and downstream flow paths.

67250:55\$675%875%\$1

Tributary Basin Analysis

stormwater improvement objectives:

1. Providing regional water quality treatment to the extent feasible.
2. Providing regional water quality treatment to the extent feasible.

The analysis identifies the S 223rd St tributary basin and its downstream flow path to Puget Sound. The basin area is 70.43 acres, and the flow path is shown in blue on the map.

The map shows the S 223rd St tributary basin and its downstream flow path to Puget Sound. The basin area is 70.43 acres, and the flow path is shown in blue on the map.

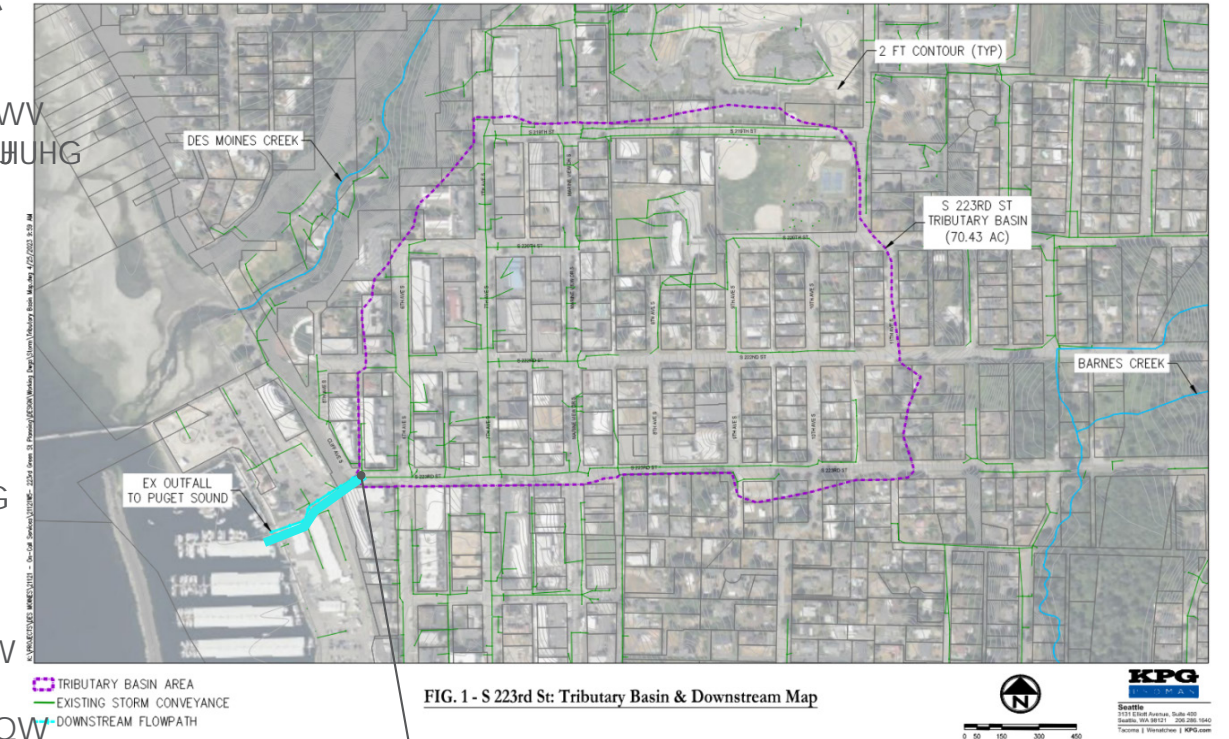


FIG. 1 - S 223rd St: Tributary Basin & Downstream Map

Collected and conveyed to South 223rd Street, then conveyed to Puget Sound

877&2165\$216

Aerial Utilities

R DGGUHVSRMHRDVOVDOGWKIDHVWKHMURGHVLUHES WKHWA
 WKHEVWLODHULDOLWDMHSURSRVHVEH UHORFDWVHGHUWRG
 IDFLOLWVHVLWDOROWKIFRUULGROFOEWKIROORZOJW BQ
 (QHUX BPFVWBR)LEHLSWLFHO DOGRWHOWLBYONQWHUQHW
 DOGRPPDLFDWLRSDRYGHUVHVIDFLOLWROG EH ORFDWHDGO
 XGHUWRGGRWEDQNDOROWKVRWKHULQKRI D OLOKHUHLV
 VSDFHZWKLOVKHIVWLOLKWRIW IRUWKHVGHUWRGIDFLOLWLVFRRUGLQDWD
 KH HFDWLOLPHDVGGHSWKOOQHGHVREH FRRUGLQDVMK WKH
 RWKHUSURSRVHGWLOLWSDGHV

Existing Water, Sewer, Gas, and Drainage Utilities

7K DWHUWHP LVRZHG DOGPDLOWDLOEG.LOJ &RWA'DWHU
 LWULFW QLWLDMDUFGRHVQRVQGLFDVON:DWHLWULFWDSLWDO
 SURMHFWKQWK6RXVKJG 6WUHSURMHVDHDLQJ ADOGHMD
 PHWHHSODFHPHDOVPLQHUORFDWVFRUGLQDVMKWKWULFWOO
 be required.

5HFHQWVWKLWULFWV EHHQLOFUHDMVKSLSH MHV WROFRDWH
 WKRZWRD HV ORLQVUDHDWVRZ WRDOWLDPLOQGHQFRDWH
 FRPPHFLDGHMORSPHOVULQODOOVKLWULFWG ROHBRG WDM
 DWHUWDOURVWVWUHHWRP WKHEWLORIAH DW 6RXVKVK
 6WUHVW WK DOOREDMWHHDMURLUV FROWUKVHG
 DVVAVUHQORFDWVRO 6RXVKVK BOM 6RXVKQ WK
 LWULFWRPSOHWHVKA DOOROROFUWHMURLUDVWVKDPH
 WWHVDFRPPRGDWVHVH WRZVK DOGSURYGHLOFUHDMOH AZ
 Source: <https://kcw54.org/2146/History>

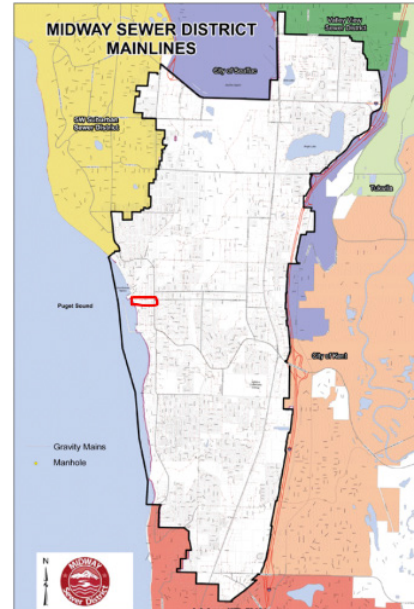
7K MZU MP LVRZHG DOGPDLOWDLOEG. LOJ &RWA'DWHU
 ,PSRPHQW DH ORVQMSDWG RV DHTV WLU DEOLMVRZMU DV
 ADOGHMD SRHMV RRODMRO ZOCH LPSRQWRVPLQLPLHMZU
 service impacts.

7K 36(DV XVLQMDORZWKQWKSURMHFWPLVBOGHUWRGLOWK
 DHULDIDFLOLWDEGWKQHZGUDLQDWHHP ZOOLNONHTUHFOM
 limits.

7K GUDLQDWHHP ZOOGHUR DFRPSOHVHFRQWUKVWDFKH
 WKGHMJHGSURMHFWRODVMKGHVLEHGLQWKSUHFHGLQMFWLROV



Water District 54 Service Area, project area highlighted in red



Midway Sewer District, project area highlighted in red

877&2165\$216



Utility undergrounding completed in Des Moines Theater alley at S 223rd St



Overhead utility lines at S 223rd St and 6th Ave S intersection



Overhead utility lines just east of S 223rd St and 7th Ave S intersection



Overhead utility lines at Overlook I Park

6.1.3.5.1 & 3.6

The following high-level layout plan illustrates the proposed alignment of the roadway geometry for South 223rd Street, as well as key streetscape elements to be integrated along the corridor. The proposed layout was informed by the cultural resource survey, stormwater design principles, and City goals for the South 223rd Street corridor.

Roadway Classification

The existing roadway is currently classified as a local street. However, the City of Des Moines classifies South 223rd Street as a Neighborhood Collector. Based on this designation, we would expect typical volumes between 3,000 and 5,000 vehicles per day. For the design of South 223rd Street, the design principles for a collector as outlined in the City of Des Moines Street Geometric Design Manual are used because they are appropriate for creating pedestrian-friendly downtown streets.

The design of South 223rd Street will include two vehicle travel lanes, 8' wide parallel parking on both sides of the street for a portion of the roadway, 20' wide angle parking on one side of the street for another portion, a minimum 4' buffer for pedestrians from the travel lanes, and a minimum 10' wide shared-use sidewalk on both sides. The design will also include a future connection to Marina Steps, proposed space for bioswales, alley access, on-street parking, and a gateway feature.

Design Vehicle

The design vehicle for this section of South 223rd Street is a single-unit truck. The design speed is 35 mph. The design will be based on the City of Des Moines Street Geometric Design Manual.

Roadway Geometry

The roadway geometry for this section of South 223rd Street will include two vehicle travel lanes, 8' wide parallel parking on both sides of the street for a portion of the roadway, 20' wide angle parking on one side of the street for another portion, a minimum 4' buffer for pedestrians from the travel lanes, and a minimum 10' wide shared-use sidewalk on both sides. The design will also include a future connection to Marina Steps, proposed space for bioswales, alley access, on-street parking, and a gateway feature.

The design will also include a future connection to Marina Steps, proposed space for bioswales, alley access, on-street parking, and a gateway feature.

Intersection Geometry

The intersection lane alignments are parallel with no skew across intersections. All corners have 25' radii and are designed to accommodate the SU design vehicle. The intersections will be raised to provide maximum ADA compliance, allowing the crosswalks to match the grade of sidewalk without ramps and landings.

Roadway Cross Section

The general cross section of this corridor will include the following: two vehicle travel lanes, 8' wide parallel parking on both sides of street for portion of the roadway, 20' wide angle parking on one side of street for another portion, a minimum 4' buffer for pedestrians from the travel lanes, and a minimum 10' wide shared-use sidewalk on both sides. The design will also include a future connection to Marina Steps, proposed space for bioswales, alley access, on-street parking, and a gateway feature.

Downtown Context-Sensitive Design Considerations

Given the corridor's physical location within the Marina District, the following factors considered in developing the design include the following:

- Pedestrian and bicycle safety, comfort, and connectivity
- Connection to the Marina Steps
- Connection to neighborhoods east of Marine View Drive and all along north-south street
- Connection to housing, adjacent businesses, and related services
- On-street parking where appropriate for businesses, residents, visitors, balanced with space for regional stormwater facilities
- Consideration of how future redevelopment will relate to the corridor
- Alleyway activation and connection
- Unique identity of Des Moines
- Green stormwater infrastructure (bioswales) to reduce the amount of pollutants entering Puget Sound

6.1.3.5.1 & 3.6

The following high-level layout plan illustrates the proposed alignment of the roadway geometry for South 223rd Street, as well as key streetscape elements to be integrated along the corridor. The proposed layout was informed by the cultural resource survey, stormwater design principles, and City goals for the South 223rd Street corridor.

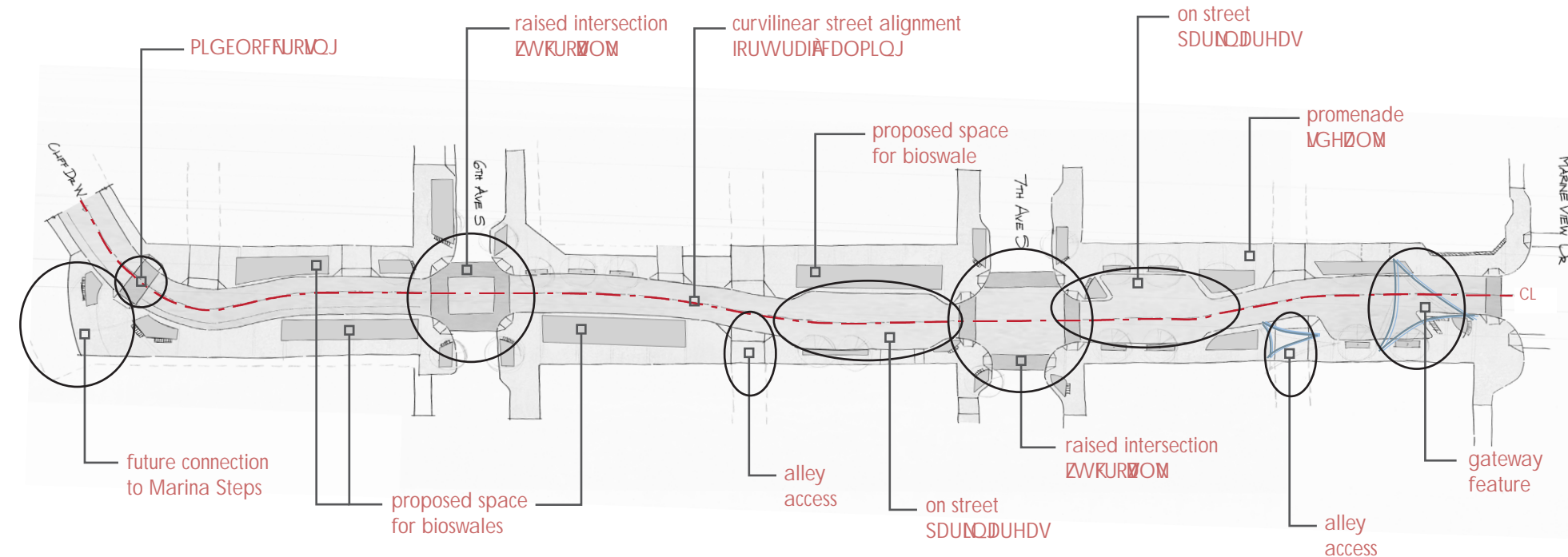


Figure: Layout plan illustrating types of streetscape elements

67576&\$0176

7K SURSRMG GHMD IRU 6RWKUG 6WUHHG FUHDWCHZSODFHPDNJHQOQFHPHQWV
 DORQWQRUVVOCRWKMGHRI WKWUHHFARVKGHVGZOG EHLPSURMGZVKZGHUMGHZOM
 DOGODOGQFDSHCKXHUDDPHQLWVROHVWRUHDVDSHGHWULSDORPHODGHZQWUHHSDUNQJ
 ZOCH SURYGHGZUH QHHGHGOCZUH LVGRHVQRVQVWHUIHVKWIKELRZOHO ODRW 7K
 SURPHQDGMUHGMSDWVZOCFRQGHFWUHWBROHDORQDULQ9LHZULM WRVKODULQD
 6VHSVOCZWHUIUROSMEDCELROHV DORQWFRUULGRUP D OLOHWRUPZVHSDUNVW
 ZOCDWHSRROOMDOPWRUPZWHUORRI SULRUWRUHDFKQJ3W 6RQG DOGHQOQFHWK
 FUDFWHUHQGSHGHWULDQHSULHQRORVKG6WUHHWFRUULGRU



Amenity Areas

The proposed promenade incorporates “amenity areas” which could include design elements such as: pedestrian-scaled lighting, bicycle parking, benches, trash receptacles, interpretive signs, street trees are included in this zone, and nodes can be developed to allow for outdoor dining or improved biodiversity along the corridor, and the promenade sidewalks as a shared use path.

Landscaped Areas and Bioswales

The proposed design includes a combination of landscaped areas with street trees and bioswales that combine to form a linear stormwater management system. Lower “urban heat island” temperatures, improved biodiversity along the corridor, and an interesting experience for the promenade sidewalks as a shared use path.

Bicycle Route and Facilities

South 223rd Street is designated as a bicycle route. The waterfront, historic district, and marina area to the back of sidewalk that include bike lanes, planters, utility vaults, and streetlights.

Buffer Areas

Provide a minimum 4’ wide buffer area that separates pedestrians on the sidewalk from the street, and from way lanes and utility vaults.

Pedestrian Promenade

Create a promenade atmosphere integrating the buffer, amenity, and way lanes into the area to the back of sidewalk that include bike lanes, planters, utility vaults, and streetlights.

Back of Walk Areas

The area to the back of sidewalk that include bike lanes, planters, utility vaults, and streetlights.

On-Street Parking

Parallel or angle parking is provided where appropriate.

17&21&378&73\$

7K LQLWEROFHSWEDRWVSDOXOGVROWKIKOHO DOLOPHOQVWZWKDGLWLRQDGHWVDSHOPHODVOPHOLWIKV DVSHGHWULDO
 OLVLQMDWLQORGHVSEOLF DUWOWDOODSODVWUHDVOCQHZWUHHWUHHVKV LQLWEROFHSWEDRWV UHAGHRMU WKFRM RI WK
 SURMHFWWRDUULMDWVWKGHMD

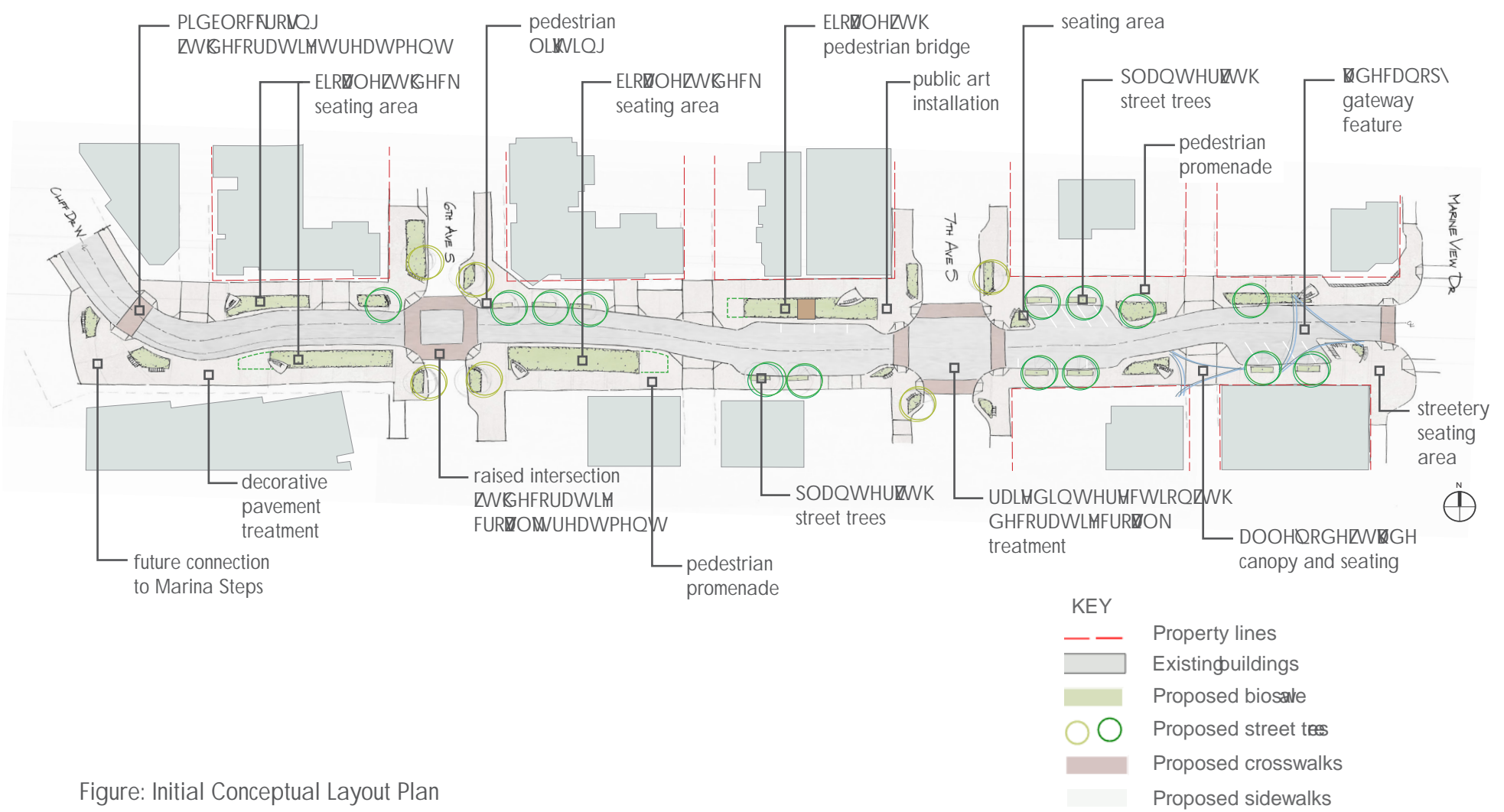


Figure: Initial Conceptual Layout Plan

KEY

- Property lines
- Existing buildings
- Proposed bioswale
- Proposed street trees
- Proposed crosswalks
- Proposed sidewalks

&52666&7216

Sections A, B & C

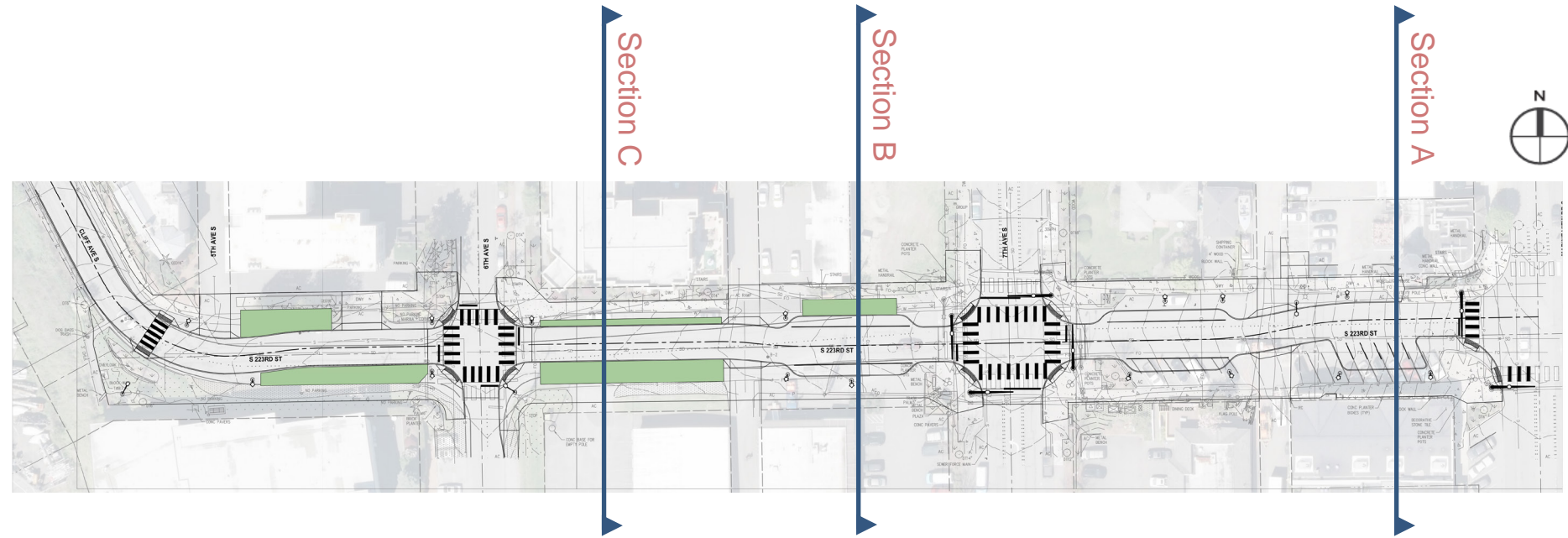
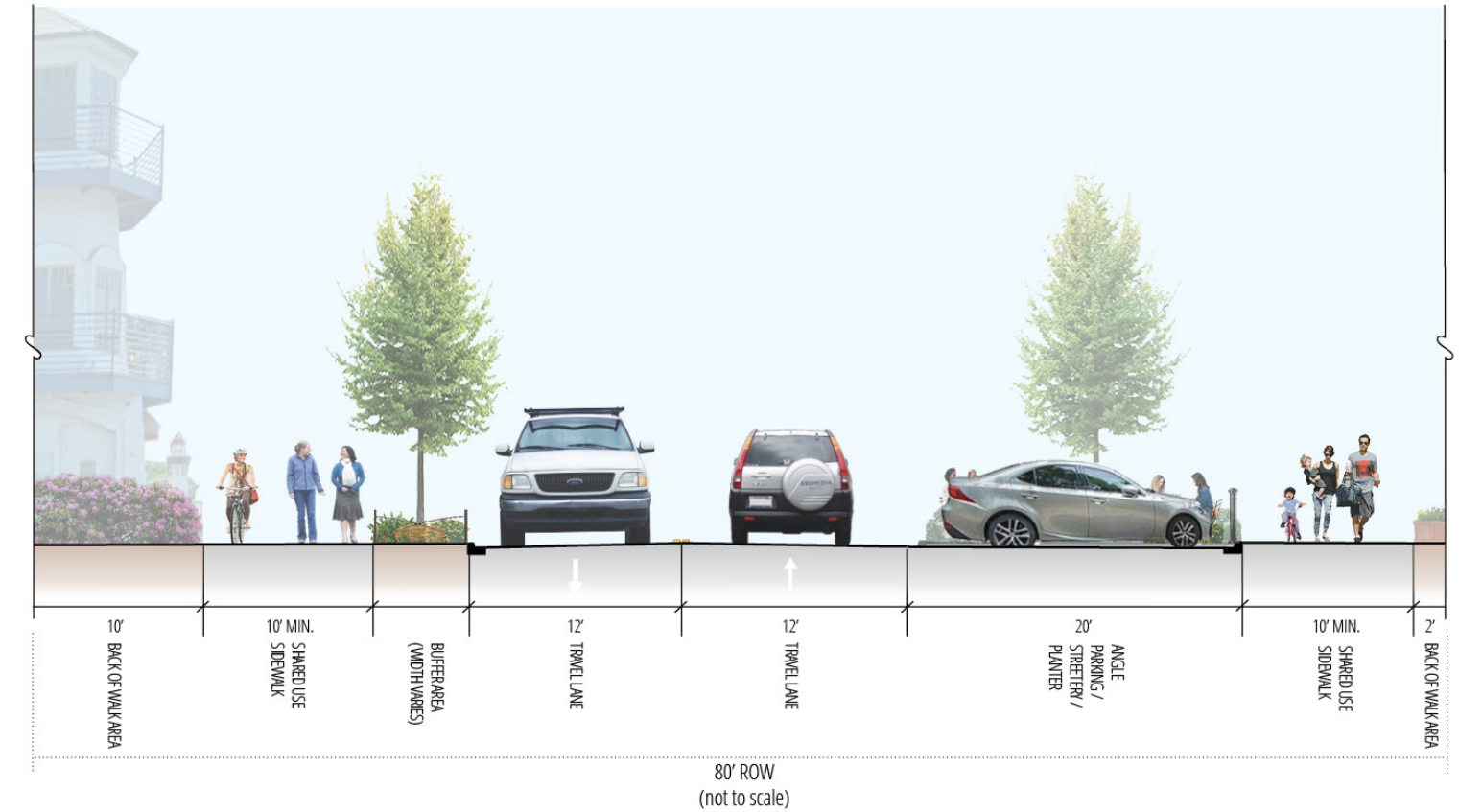


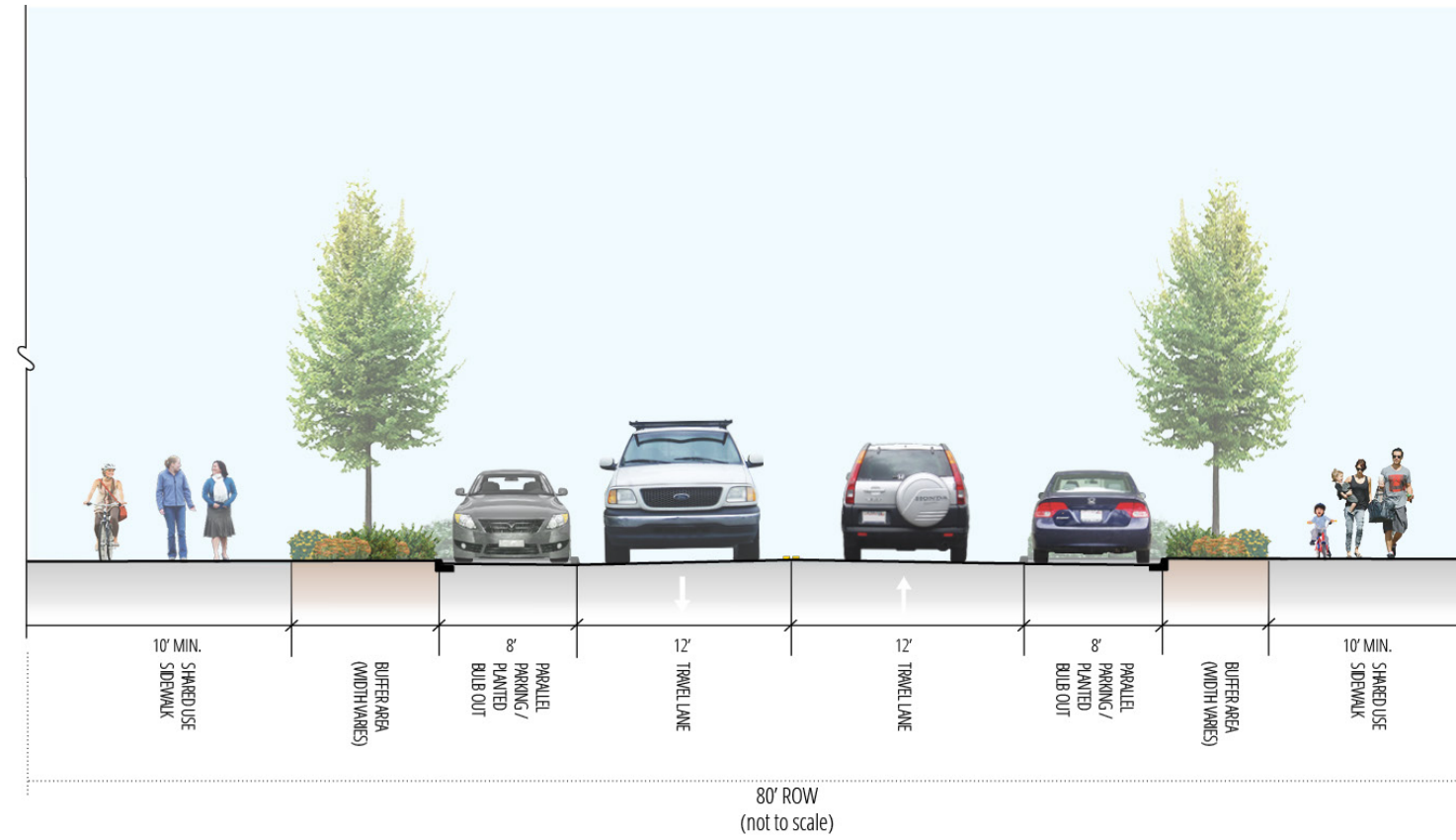
Figure: 10% Roadway Layout Plan

&52666&7216

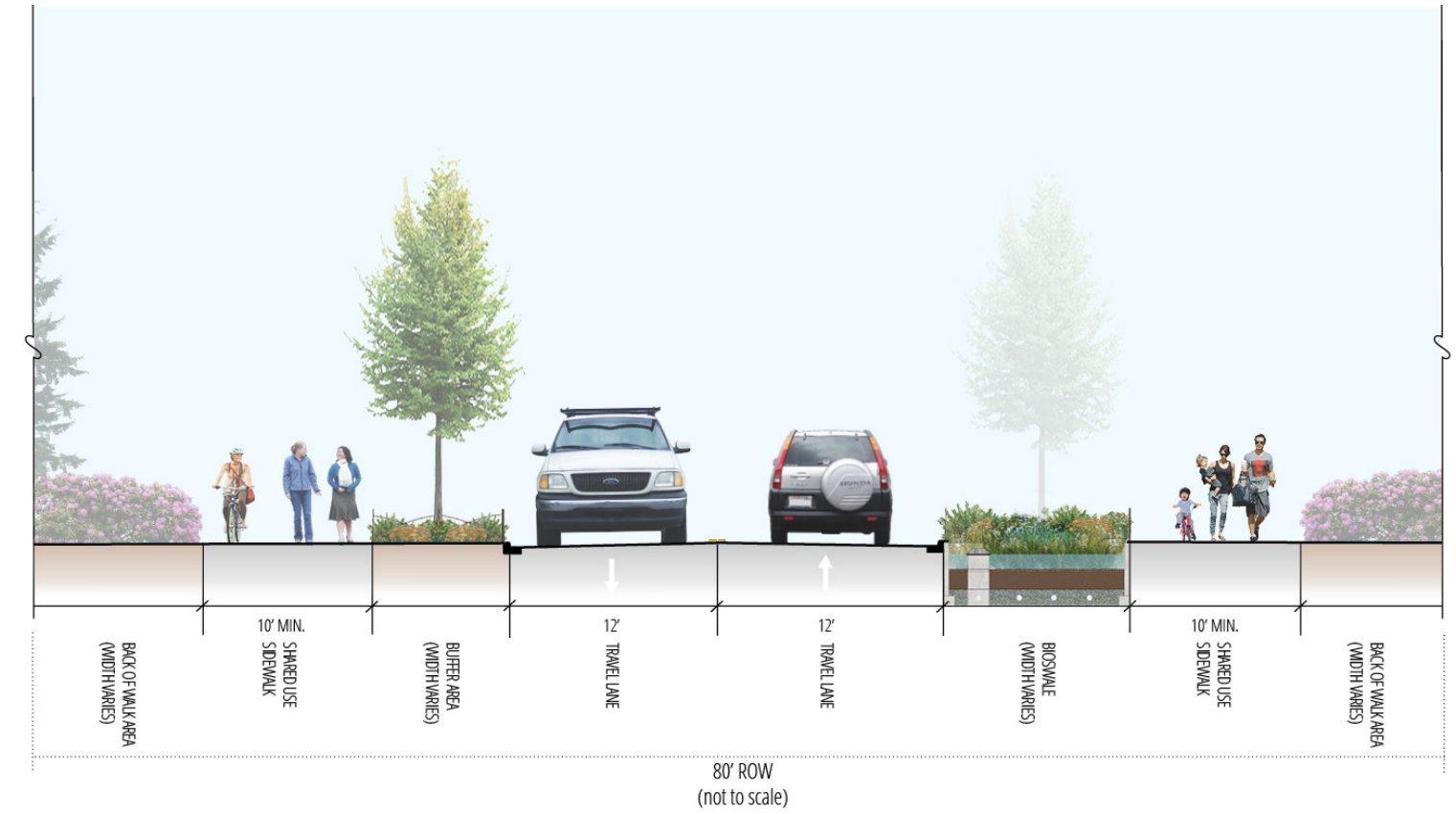
Section A with Angle Parking (looking east)



Section B with Parallel Parking (looking east)



Section C with Bioretention Swale (looking east)



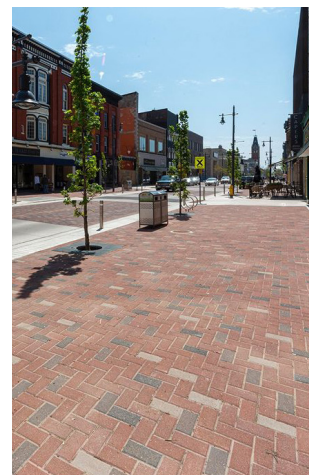
35232685%\$6,1706

Urban Design Theme Development

SDUWRI WKFRUULGRUHLVLO WKHGHVLOWHDPGHMORSHGWKUHHSURSRVHOMEDQ GHVLOWKHPHRU WKHFWK UG UHHQ WUHHW FRUULGRDFK WKHPHVGHFULEHGWKHPROORZOSDHV DOROZWK LOVSLUDWLRQHV FROFHSWGHVLOODRWV DOGSRWHQWLOVLO elements.

SDUWRI WK&LWVSKOLF LOROMPHQWIRUWVWKW WKPHVUHU EURV WRVKFRPPQLWWRWVWUHUHQH WKFRQFHSVDOGWVMOG FRPPQLWVSRUWIRUWK6RXJKG UHHQ 6WUHSURMHFWK QDO GHMD FROFHSWV\ DWLPDWFRDELQHHOHPHQWV HDFKWKPH DV ZOODMOHPHQWVWVWLHLQZVWVKIMVHODULQD6WHSV

arts inspired
vibrant color palette
playful
engaging



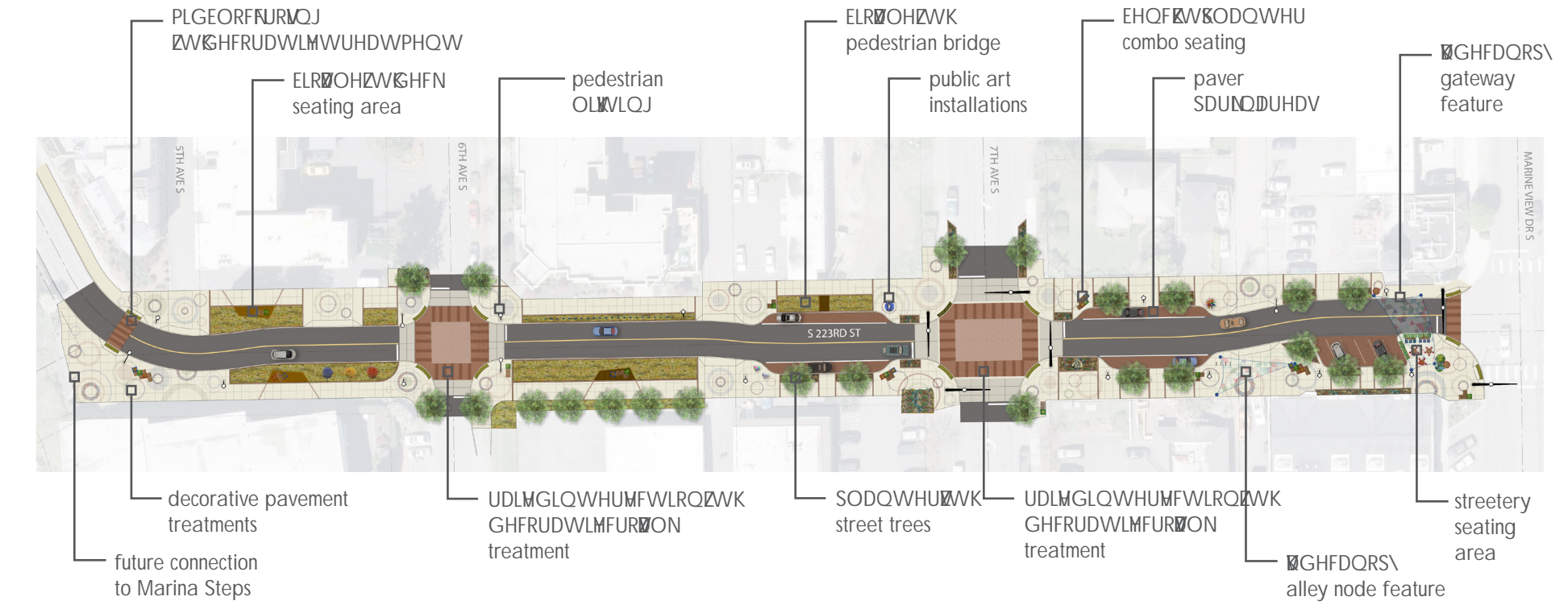
Theme 1: Downtown Arts & Culture
With the current renovation of the Downtown Des Moines theater as a music and performing arts venue and the variety multicultural dining options in the Downtown area represent the diversity of the Des Moines community, this concept explores the arts and culture theme with a vibrant palette that is welcoming and engaging.

Inspirational images



35232685%\$6,1706

Urban Design Theme Downtown Arts & Culture



NORTH

Urban Design Theme 1:
Downtown Arts & Culture



Downtown Arts & Culture FEATURES + AMENITIES



Bench with planter combo



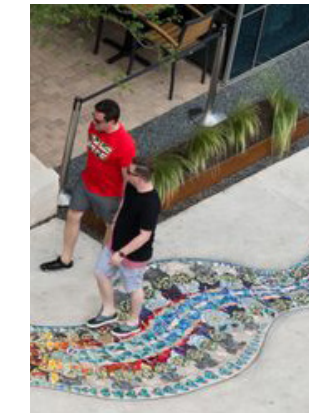
Decorative paver accent bands



Decorative crosswalk treatment



Shade canopy feature



Mosaic pavement accents



Deck seating area over bioswale



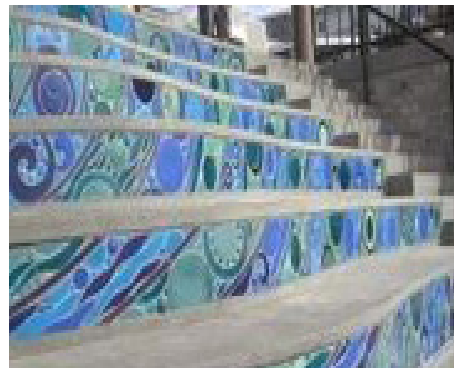
Placemaking elements

35232685%\$6,1706

Theme 2: Waterland City
 ,QVSLUHG WKHV ORLQHYDWHUODQW PRWDOGH[VWLOMDO
 GHVLOHOHPHODVORWKWK WK WUHHFRUULGROGKHHFHQWO\
 FRQVWUWVODGLOEDNHDG WKEFRQFHSMHVD FRRORORSDOHWDOG
 PDULOHRWLRWRHPSKDVLHWKHWK UG WUHHFRQOHFWLRWKH
 Marina and Puget Sound.



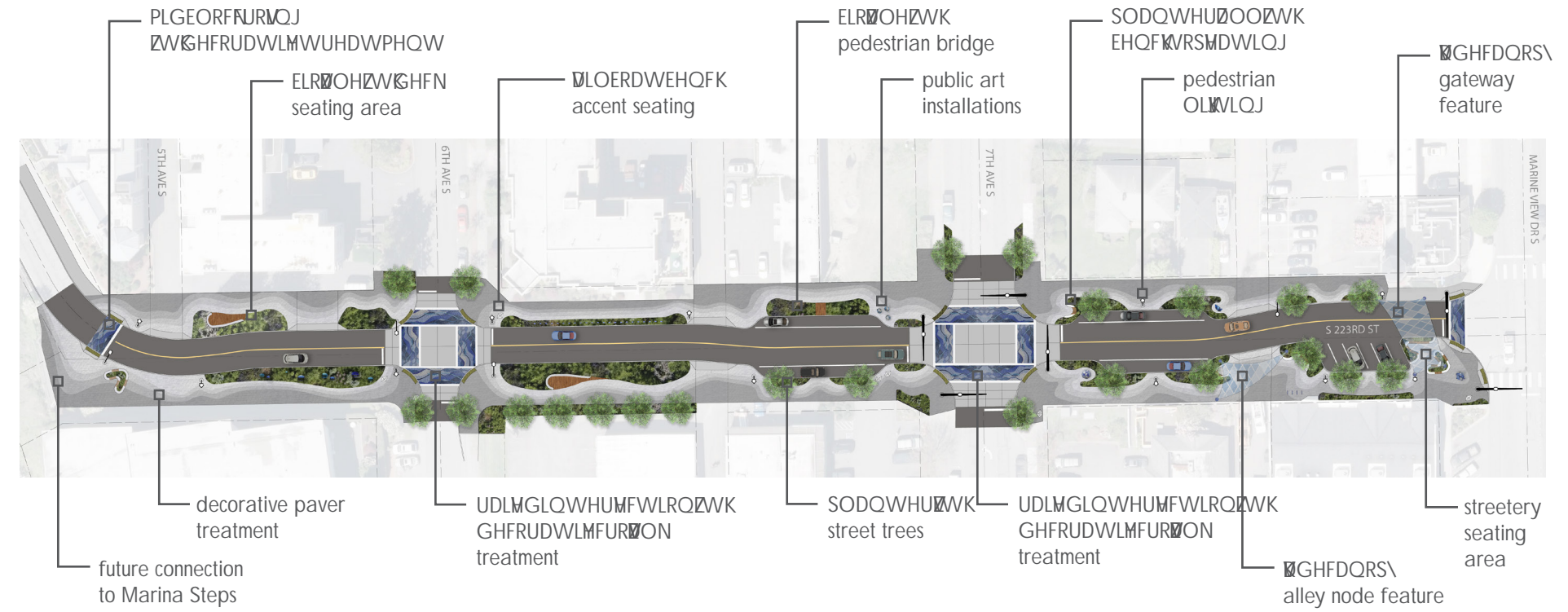
marine inspired
 cool color palette
 inviting
 relaxing



Inspirational images

35232685%\$6,1706

Urban Design Theme 2 Waterland City



NORTH

35232685%\$6,1706

Urban Design Theme 2:
Waterland City



35232685%\$6,1706

Waterland City | FEATURES + AMENITIES



Decorative cement paver treatment



Planter wall with bench top seating



Decorative mosaic crosswalk treatment



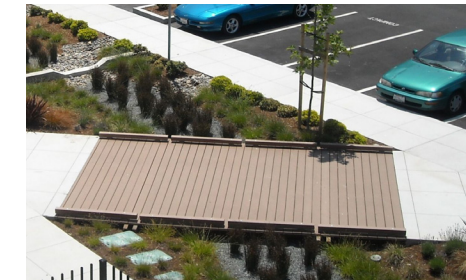
Cast concrete accent seating



Bike rack



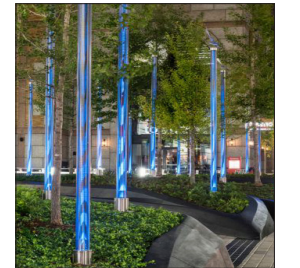
Shade canopy feature



Pedestrian bridge over bioswale



Tie in with existing
'HV 0RLQHV ZD\
banners



Accent lighting

Theme 3: Contemporary Pacific Northwest

Interpreting the Pacific Northwest coastal theme with a contemporary downtown air, this concept utilizes natural materials and nature-inspired art elements to reflect the local geography and character of the Puget Sound location.



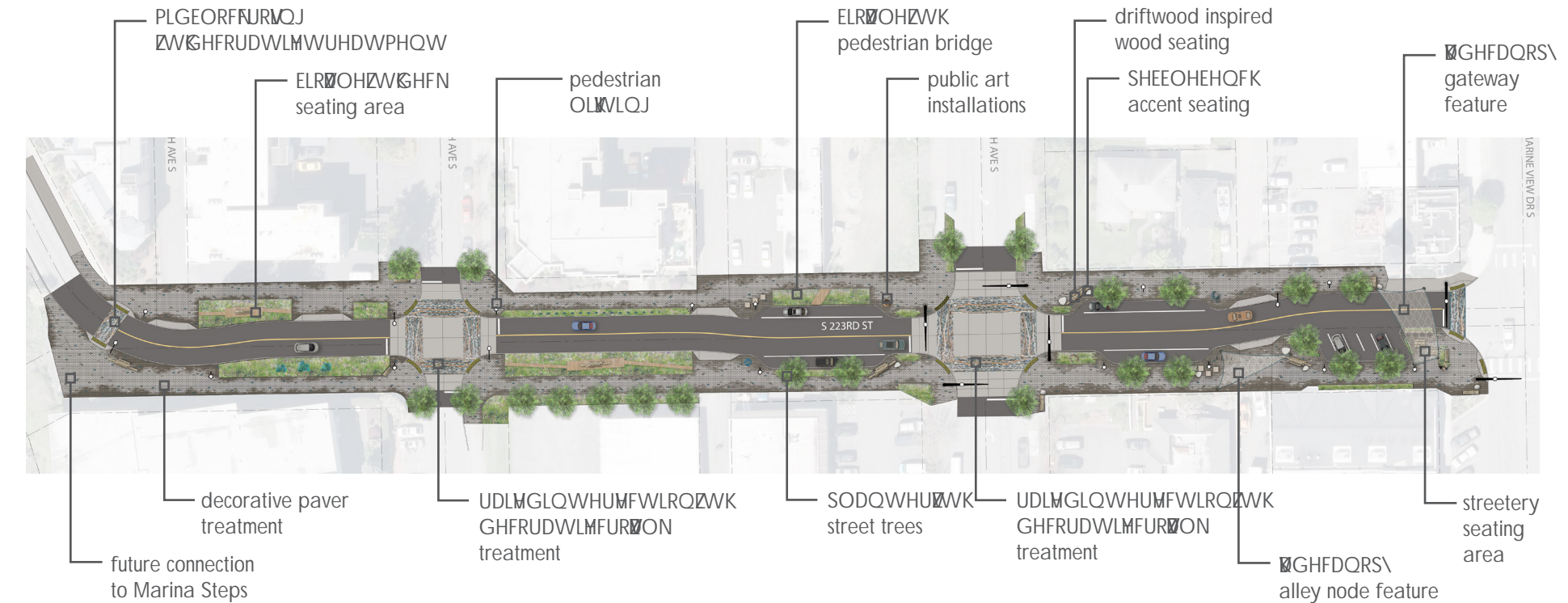
31: LQSLUHG
neutral color palette
welcoming
natural



Inspirational images



Urban Design Theme 3 & R Q W H P S R U D U \ 3 D F L A



35232685%\$6,1706

Urban Design Theme 3:
& RQWHP SRUDU \ 3DFLÀF 1RUWKZHV\



35232685%\$6,1706

& RQWHP SRUDU \ 3DFEATÙRESR ÆMÆNIZIBS



Decorative permeable cement concrete paving



Drifter structure seating (sizes vary)



Pebble precast seating



Shade canopy feature



Plank pathway over bioswale



Accent lighting

:D\ÀQGLQJ NLRVN

51675761

Creating a Green Street

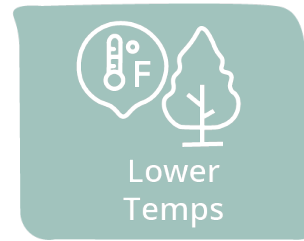
The 223rd Street corridor will be transformed into a “green street” and include:

- Improved air quality
- Lower street temperatures
- Native and pollinator-friendly plantings
- A more inviting pedestrian experience for residents and visitors
- Incentives for economic development and investment



Example of a green street promenade from the Grey to Green initiative

Benefits of a Green Street



51675761

South 223rd Street as a Linear Stormwater Park

South 223rd Street as a Linear Stormwater Park (FROR) VWRUPDWHU UORII LWK WHDWHWRMFRI WRFSROOXDQXW BQG https://ecology.wa.gov/water-shorelines/puget-sound/issues-problems/toxic-chemicals). SDLODMU DMV SROOXORP RDC BRV MZOM SDNDJ ORWDOGRMU LPSHDEOHMFV LORWB QLOV DQGLV MOCBHDZAMPLOREBQ

EHQ RZMU LODW R DVELRZOHV MV RLOVQGSODQW PDWDO RV BOQHORZMU QRI DOGDMU SROOXORP W RZMU EHRH LWVHOV QHG LORW 6RQG EHQ RZMU LODW BO EH RPELHG W HEDVQDO DPHQLMV RV RB RZMU SDM WV DH EHQHODRV ERK W HOMROPHQW DOGORBOPPLMV BU W W 6RQG SHURODQ&RQEO RPH RI MEHQHV RZMSDNDQ

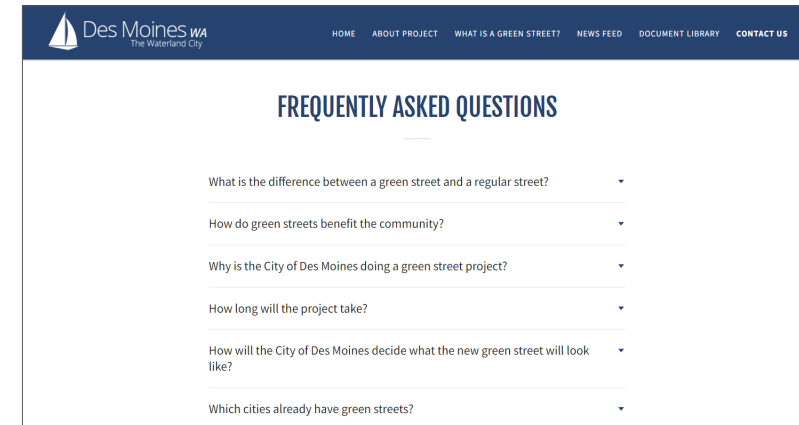
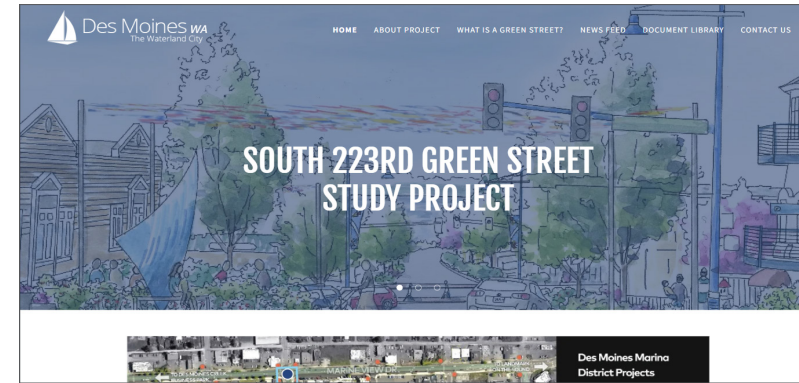
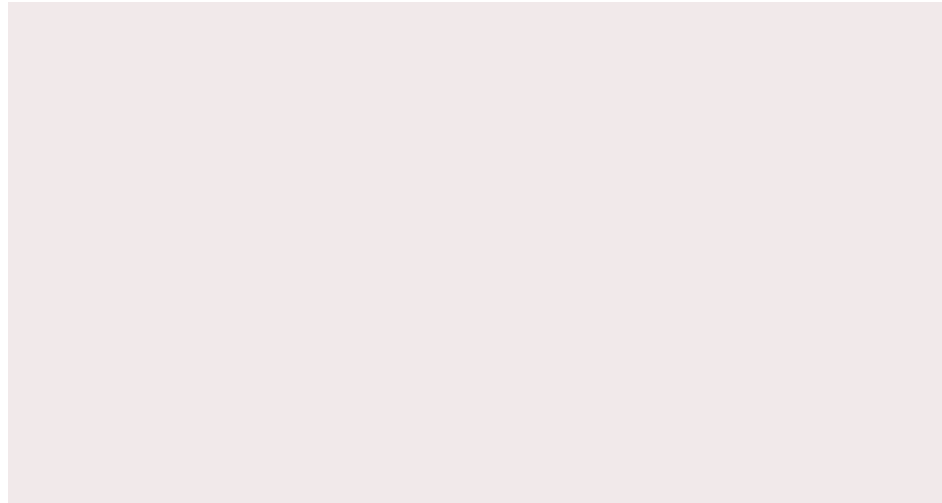
- Stormwater management
- Improved water ecosystems
- Educational opportunities
- Recreational amenities

7K SURSRMG ODRVGHM IRU 6RX/KJG 6WUHHMFWLMOFUHDWHV D OLOHWRUPDWHSDUNDORQVKFRUULGRVW KD MULHVRI FRQQHFWHG ELRZOHV FRPELOHGZWKDGGHSGOLF DPHQLWIKV DVMWLOUHDV DUWLQWDOODWLROSHGHWULDQOLWLODQGLQWHUSUHWLMDDB



Mission Creek Stormwater Park in San Francisco, CA is an example of a linear stormwater park

PUBLIC OUTREACH



Web site excerpts

Project Web Site CHVPRLOHVJHHQVWUHHWFRP \$ GHGLFDWIG VLWVDVEHHQODFKHBUWKUWK UG UHHQ WUHHWV\ 3URMHFRUGHWFSURYGHWKFRPPDLWVWKSXWRGDWH SURMHEDMRUPDWLROFOLWKISURMHEDFMRQG RDOVVFKHGH SURWVHVGDWHV SUHOLPLODFRQFHSWGHVLOV\$ DOGFROWDFW LQIRUPDWLRKH ZE VLWFOEH XGDWHGUHDDUODVWKSURMHFW SURWVHVDOQZOOHUMDWKISULPDUUHVRMFRUWKFRPPDLWWR QGLOIRUPDWLRQRQWKHSURMHFWVSURWVHVDOQGUHODWHGGRFRHQW

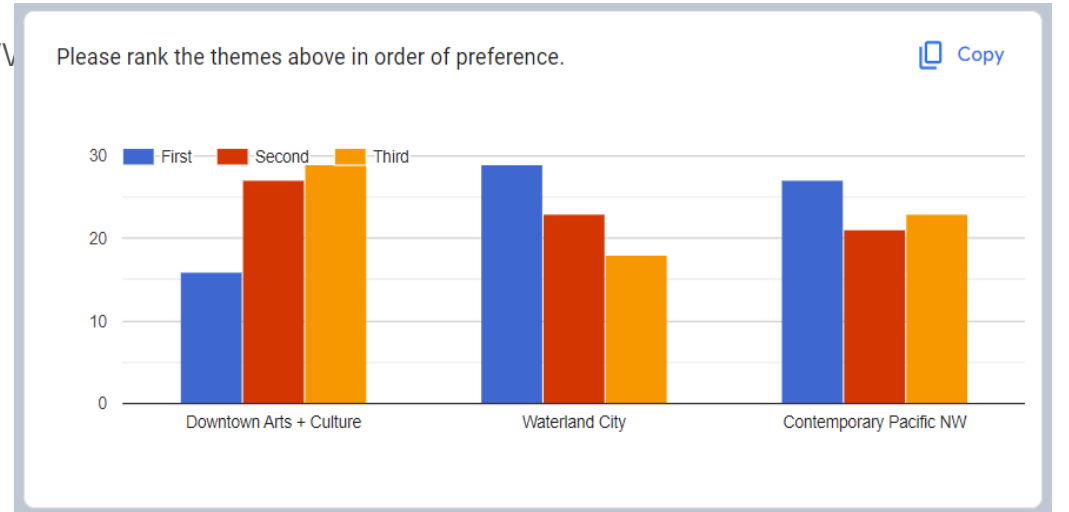
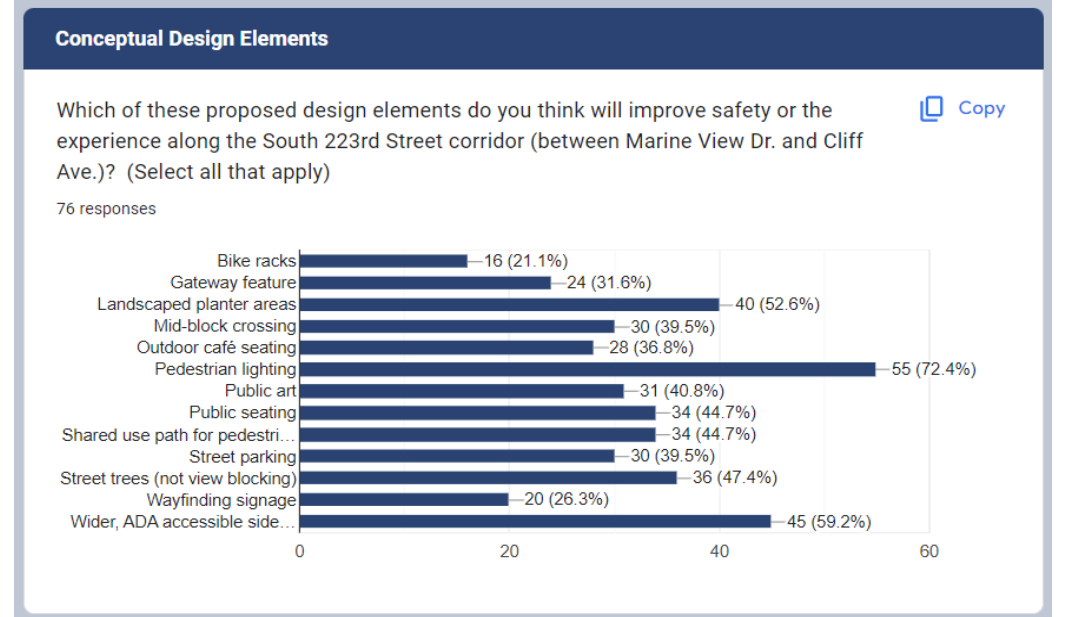
PUBLIC OUTREACH

Online Survey

GHVFULHSGHYXOLQWKUHSRUWKHQLWSDOVHRI WKUWK UG WUHHWV\LOFOGHWKIGHMORSPHORW WKUISHOLPLODFRQFHSWGHVLORSWLROUWKORRNOG IHHOR WKFRUULGRKH W\ GHVLUH\$OLF LOROMPHOW LOSULRULWLWKISURSRVHG WUHHWVH\$KDOFHPHQDG VHOHFWMKISHUHIUUHGHVLOWKHPHWKDWOOVHUMDV WKHEDVLRUJW\H QDOGHVLORI WKFRUULGRUH \$OLF HQDHPHQWFDPSDLQ EHQDQ RQ1RMPEHU ZWK WKEDDFRI WKIROOLMM\ KH SURMHEDQGM\ ZUH SURPRWHQKURXWKUW\ ZE VLW\$URMHZV VLWBOG social media updates in order to encourage engagement IURPDZGHVWRI WKFRPPDLW\

7K RQOLOMM\ DV RSHQIRU \$OLF IHGDFNWKIK HFHPEHU DOGUHFHLMGD WRWDO UHSROMV BROW WKIHGDFNUHFHLMGSDUWFLSDQDQVDFWVWQ LPSURMGSHGHWULDOVLOZGHU\$ DFFHMOHGHZOM DOGHQDFHGDQGFDSODQVDDUHGHM HOHPHQWV WQWOG PRWLPSURM DIHWDOGVKH\$SHULHQFHORQWK 6RWVIG6WUHHWFRUULGRU

3DUWFLSDQDQVDFWVWQVHUODOGLWVWKSUHIUUHG GHM WKPH ZWK&RQWHP\$RUDU\$FLA 1RUWVWUDVD FORMFRQG &RPPHQWGLFDWVWQVWKSUHIUUHGVKPHV FHOHEUDWV\$OLM LGHQWRM\V ORLOHDOGLW\$W 6RQZWHUIURQVDFWVWQVLP\$URMGWK\$SHULHQFH DOGHQURQPHQVDFWRI WKUHHWVWK WKHQDFHG SODQVDDUHDOQWRUPVWHQOLW\$PSURM\$PHQWVK FRPSOHMM\ UH\$WMM EHQFRPSLOHGQWR 3OLF QDHPHQW6RDU\$SHOGL[



115,123,1212,52%\$&216758&721&267

115,123,1212,52%\$&216758&721&267

administrative costs.



CITY OF DES MOINES
S 223RD ST ENHANCEMENT STUDY
 CLIFF DR - MARINE VIEW DRIVE



PRELIMINARY FUNDING ESTIMATE

Title: South 223rd Street Enhancement Study	Project Length (LF)	950
Location: Des Moines, WA	Project Area (SF)	76,500

CONSTRUCTION COST ESTIMATE

Description	Quantity	Unit	Unit Cost	Total
1 Mobilization (8% of Const Subtotal)	1	LS	\$ 534,492.00	\$ 534,492.00
2 Construction Surveying (1.5% of Const Subtotal)	1	LS	\$ 100,217.00	\$ 100,217.00
3 Project Temporary Traffic Control (High - 8% Const Subtotal)	1	LS	\$ 534,492.00	\$ 534,492.00
4 Earthwork - Medium (1' to 4' depth)	76,500	SF*	\$ 3.00	\$ 229,500.00
5 Removals	76,500	SF*	\$ 4.00	\$ 306,000.00
6 Roadway Improvements incl. Excavation - Arterial, (width = 80')	76,500	SF	\$ 15.00	\$ 1,147,500.00
7 Concrete Sidewalk	5,278	SY	\$ 95.00	\$ 501,388.89
8 Concrete Curb & Gutter	2,375	LF	\$ 45.00	\$ 106,875.00
9 Planter Strip	1,689	SY	\$ 55.00	\$ 92,888.89
10 Decorative Lighting (Des Moines Standard)	950	LF	\$ 450.00	\$ 427,500.00
11 Landscaping & Restoration - Complex	1,900	LF	\$ 90.00	\$ 171,000.00
12 Traffic Signal - Partial, (new/replacement)	1	EA	\$ 250,000.00	\$ 250,000.00
13 Miscellaneous Utilities	76,500	SF*	\$ 1.25	\$ 95,625.00
14 Temporary Erosion/Water Pollution Control	76,500	SF*	\$ 2.00	\$ 153,000.00
15 Storm Drainage - New	950	LF	\$ 150.00	\$ 142,500.00
16 Storm Water Treatment System (Alt 3)	76,500	SF*	\$ 7.00	\$ 535,500.00
17 Storm Water Flow Control (Alt 3)	76,500	SF*	\$ 2.50	\$ 191,250.00
18 Stormwater LID (Alt 3)	76,500	SF	\$ 5.00	\$ 382,500.00
19 Water Main Improvements (width=5') - Adjust	475	LF	\$ 150.00	\$ 71,250.00
20 Utility Undergrounding (7th to Cliff Dr)	550	LF	\$ 1,100.00	\$ 605,000.00
21 Sewer Main Improvements (width=5') - Adjust	475	LF	\$ 125.00	\$ 59,375.00
22 Urban Design Features	950	LF	\$ 750.00	\$ 712,500.00
23 Gateway Features	1	LS	\$ 500,000.00	\$ 500,000.00

Subtotal Cost \$ 7,850,353.78
 30% Contingency \$ 2,355,106.13

TOTAL CONSTRUCTION COST (2024) \$ 10,205,459.91

* NOTE: (SF) based on proposed widened area

RIGHT OF WAY COST ESTIMATE

Description	Quantity	Unit	Unit Cost*	Total
ROW - Residential	0	SF	\$ 20.00	\$ -
ROW - Commercial	1000	SF	\$ 125.00	\$ 125,000.00
Construction Easement	6	EA	\$ 2,500.00	\$ 15,000.00
R.O.W. Administration (20% of subtotal)	1	LS	\$ 28,000.00	\$ 28,000.00
TOTAL RIGHT OF WAY COST				\$ 168,000.00

ENGINEERING / MANAGEMENT FEE

(Preliminary, Design, Survey, and Inspection)

	Total
Preliminary, Design, Survey (15%)	\$ 1,530,818.99
Constr. Eng., Admin. and Inspection (15%)	\$ 1,530,818.99
City Admin (from City's project description sheet)	\$ -

TOTAL ENGINEERING / MANAGEMENT COST \$ 3,061,637.97

PROJECT COST SUMMARY

CONSTRUCTION COST	\$ 10,205,459.91
RIGHT OF WAY COST	\$ 168,000.00
ENGINEERING / MANAGEMENT COST	\$ 3,061,637.97

SUBTOTAL OF PROJECT COSTS (2024) \$ 13,435,097.88

6 Year Inflation Projection (3.5% per year) \$ 3,080,067.75

TOTAL PROJECT COST (2030) \$ 16,515,165.63

TOTAL PROJECT COST (with Federal Funding; 120%) \$ 19,818,198.76

Assumptions

- Landscape / Restoration - Basic = 3" bark mulch or hydroseed
- Landscape / Restoration - Complex = Basic + Shrubs & Trees + Fences
- 'Concrete Sidewalk' includes driveway entrances and curb ramps
- For Federally Funded projects, add 20% for Administration fees

8112332578176

Stormwater Funding General Information:

Stormwater funding is provided through various sources, including grants and local government budgets. Funding is typically provided in the form of grants to support stormwater management projects. Assistance is typically provided in the form of grants to support stormwater management projects. Assistance is typically provided in the form of grants to support stormwater management projects.

Project Stormwater Features:

- Create a linear stormwater park with water quality treatment for existing and redeveloped public and private areas.
- Increase stormwater infiltration through permeable pavement and green infrastructure.

- Demonstrate and implement best management practices (BMPs) to reduce pollutant loadings to Puget Sound.
- Reduce pollutant loadings to Puget Sound to:
 - o Copper
 - o Lead
 - o Solids and particulates
- Reduce temperature of stormwater runoff
- Implement a stormwater management system

¹ 6WRUPDWHSDUM HQBQFHRPPQLWLHV\ WUHDWVRUPDWHIDQGSURYGLOJ recreational opportunities. Puget Sound Regional Council was awarded a Puget Sound 1DWLRQDU\ 3URJDP IDQWWRKOSFDWDOVWGHMORSPHQRVQHZWRUPDWHU SDUM 6WRUPDWHSDUM DUHFRPPQLWYDFLQVWVWRWRDQDHI WRUPDWHIWRP D ODUHIDUHDIHURQDWRUPDWHIDFLOLVDOGSURYGHUHFUHDWLRSDUJWLWLHV SDUM WUDLRSWQSDFH FRPPQLWYDUGHQVHWF Reference: Stormwater Parks | Puget Sound Regional Council (psrc.org)

³ 1LPHWDEVO1SKQOSSKQDQHQHGLDPLQHTXQRQH 33TXQRQH LVD UHEHU WLREGDWLRSDRGVRG LQRDQWRUPDWHURII 5HMDUFKZ LWVRH KO\ DQGFVHOVRIFWHOHFWDGPRQLGQFOGLERK DOPRQEURRWURDQG rainbow trout. Reference: Environmental Occurrence and Toxicity of 6PPD Quinone, an Emerging Tire Rubber-Derived Chemical: A Review | Environmental Science & Technology Letters (acs.org)

² 6HHWKSROOXVDDGLDFOFDWLRQVWRUPDWHIFWLRQ WKGHMD UHSRUW for more detailed data pertaining to anticipated pollutant load reductions predicted IRUWKSURSRMGWHHQWUHHW

8112332578176

Funding Source Review:

The funding source review identifies various funding opportunities available for stormwater management projects. Funding is typically provided in the form of grants to support stormwater management projects. Assistance is typically provided in the form of grants to support stormwater management projects.

- Puget Sound National Estuary Program Stormwater Strategic Initiative Leads. This program provides funding for stormwater management projects in the Puget Sound region.
- Ecology Water Quality Combined Funding (WQCF). This program provides funding for water quality improvement projects.

- Ecology Stormwater Capacity Grants. These grants provide funding for stormwater management projects that improve the capacity of the stormwater system.
- Ecology Grants of Regional or Statewide Significance (GROSS). These grants are designed to address issues of common concern and to promote economies of scale.
- King County WaterWorks Grant Program. This program provides funding for water infrastructure projects.

Schedule Considerations:

- Puget Sound National Estuary Program Stormwater Strategic Initiative Leads. Applications for funding are typically due in the fall.
- Ecology Water Quality Combined Funding (WQCF). Applications for funding are typically due in the fall.

⁴ WWSWVRGHWBWRUPDWHULOUIS
⁵ WWSMFRBRERVDRHQVFRQWUDFVWDDQWDDQWDRDQGD WDDQWRUORDQVWHUTXOLWRPELQHG

112332578176

Permitting Requirements Related to Funding:

1. IWKH... KUGUHHQW UHHWSURMHFWUHFHLMVIHGHUDOIGLOWKHIROORZQSHUPLWV... GEHUHTUJHG

- 13&RUP
- QGDQHUHG6SHFLH&RQDWDWLRQ1RHFHWWWHURU%LRORJFDOWWHQW
- 6HFWLRQFRPSOLDQHF&WADOUHMFHV

7. KIROORZQDRFDOSHUPLWDOGDSSURDOR&GDOR&EHQHFDU\

- 6&KFDLW

7. K. DERM OLW SHUPLW... UPHQ... HV W&W&HQRWISURMHVORFDWR&GRI WKIRRW KUHOLO... QH W&ORFULWLFDO DUH... WODQG WUHDPE... HURU... RORJ... DUG... UHSUHM... QWDOG W&WQR... HDW... HZOOEHDIHFWHG... V&SURMHFW



Des Moines Creek at Des Moines Beach. Photo source: City of Des Moines

176736

7. K. QH... WWSRUW... KRWKJG UHHQ 6WUHS... SURMHV... WRRQ... P WK URDGA\ ODRMSOD... W&LWWDIILCRUGHW... RQLWL... DQGH... RI W&SURMHF... LWKIHHGEDFNURP W&FRPP... LW... DQG... LW... HDGHU... W&SURMHF... W&DPDCEHIQ W&H... HDQ... &GDW... W&K SUHOLP... DQGH... D... QDQGH... D... ZOEHIQ E\ GHMORSLO... GHWD... D... PDS IRUW&FRUULGR... W&W&OG LOFO... D... Y... L... LW... W&R... P... W&HU DOGWRSR... W&S... W&K... L... W&RI DNDMPHQW... DQGSURSHUW... OLOHV

:LWKD SUHOLP... DQGH... L... Q... Q... W&L... W&OG EH HOLIEOW... DSSOYRUW... DW... DQGH... GH... UD... DQGH... VIRU... FROWU... W&L... W&K... Y... GLO... DQGH... DOOR... W&L... W&R... DMUDH... LW... ORFD... DQGH... W&R... OG... W&K... SURMHF... W&R... MHF... W&W&P... SURM WRUP... D... W&HU... W&UHD... W&P... D... W&HU... X... OLW... S... RUW... P... OWL PRGDOWUDIA... DQGSURPRWH... EDQGHMORS... PHQW... DQGH... W&R... Z... V... MEHH... QUHFHQW... HPS... M... U... HD... RU... W&DQW... I... OG V



this page intentionally left blank

\$31,
