I ST BRIDGE DECK CONVERSION FOR ACTIVE TRANSPORTATION - PROJECT REPORT

Project Report for Converting the I Street Bridge to Active Transportation Use

March 17, 2022

Prepared for:
City of West Sacramento
Department of Public Works
Engineering Division

Prepared by:
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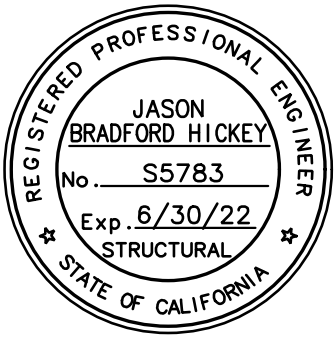
Sacramento, CA 95825

This Project Report has been prepared under the direction of the following registered engineer. The registered engineer attests to the technical information contained herein and the engineering data upon which recommendations, conclusions, and decisions are based.

REGISTERED PROFESSIONAL ENGINEER — *DATE*

3/17/22



APPROVAL RECOMMENDED: _____

Katy Jacobson, City of West Sacramento

ECONOMIC DEVELOPMENT AND HOUSING DIRECTOR

APPROVAL RECOMMENDED: _____

Ryan Moore, City of Sacramento

DIRECTOR OF PUBLIC WORKS

Vicinity Map

Contents

Background

The I Street Bridge Deck Conversion for Active Transportation Project proposes to make the current I Street Bridge safe and accessible for bicycle and pedestrian use by constructing new ADA compliant ramps that will connect to a portion of each City owned approach structure on each end of the existing I Street Bridge, to preserve raised platforms spanning over the active railroad tracks to which new pedestrian ramps can attach. The ramp and access alternatives were developed to stay outside of railroad right-of-way, except for the need to relocate a Union Pacific aerial easement on the West Sacramento side. This design strategy avoids any interference with existing rail facilities, minimizes and simplifies railroad and CPUC permitting, and allows proposed ramps in Sacramento to be constructed entirely outside rail right-of-way (no new or modified air space permissions). Approach options were previously developed in the March 2019 I Street Bridge Deck Conversion Feasibility Study. The Cities of West Sacramento and Sacramento selected their preferred alternatives from the Feasibility Study after an extensive public engagement process, and with stakeholder input. Both cities selected curving ramp alignment options that include loops on the north side of the existing bridge.

The I Street Deck Conversion Feasibility Study used a two-prong approach for community participation. A project steering committee was formed with members from both the City of Sacramento and the City of West Sacramento. Additionally, a public outreach event was held as a part of the Lantern Festival held on March 23, 2019. The ramp alignment alternatives were selected based upon feedback from the steering committee and public input at the Lantern Festival.

Purpose and Need

Project objectives are listed below.

- Maintain access to, and change the use of, the upper deck of the existing I Street Bridge for only active transportation modes of travel (i.e., bicycle and pedestrian use).
- Create new access points for active transportation modes in both West Sacramento and Sacramento that allow use of the upper deck of the existing I Street Bridge as a river crossing.
- Provide an opportunity to better serve bicycle traffic between West Sacramento's Washington District and Downtown Sacramento.
- Maintain vehicular access to upper deck for maintenance access for fuel delivery and equipment replacement associated with the existing movable bridge. Allow emergency vehicle access.

The project is needed to maintain the important pedestrian link the I Street Bridge provides between the historic districts of Sacramento and West Sacramento, and California State Teachers' Retirement System (CalSTRS) and The Ziggurat buildings in West Sacramento, and the Sacramento Valley Station, Old Sacramento, and Railroad Museum in Sacramento. The project also is needed to better serve bicycle traffic between the Washington District of West Sacramento and Downtown Sacramento.

Design Considerations

The structure design of the I Street approach ramps considered various aspects including vertical clearances, curve radii for bicycle and vehicular traffic as well as constructability, seismic performance, and construction cost. Additionally, coordination to date with Union Pacific Railroad (UPRR) was

considered in the design of one ramp that was adjusted to accommodate UPRR maintenance vehicles to the upper deck. California Department of Transportation (Caltrans) Highway Design Class I bike path width standard requires 8 feet clear path and prefers 10 feet on structures. The Caltrans Highway Design Manual minimum standard speed for a Class I Bike Path is 20 miles per hour (mph), 125 feet stopping sight distance and the suggested minimum radius is 90-feet. Although the facilities are Class I bikeways, the ramps not intended for cyclists to use them as a 20-mph Class I Bike Path. The ramps are intended to be a low-speed connection to the existing I Street Bridge for cyclists to Sacramento and West Sacramento; connecting Class I bike paths on both sides of the river. The project is located along the Sacramento River in an area with significant potential for planned urban infill development. Both cities intend to maximize developable land and minimize right-of-way impacts.

Northwest Ramp (City of West Sacramento)

The Northwest ramp connects the northwest corner of the existing I Street bridge with the planned West Sacramento Riverwalk that runs along the top of the Sacramento River levee north of the railroad tracks. The alignment for the ramp selected by the City of West Sacramento was initially laid out during the Feasibility Study to run in a counterclockwise loop when traveling up from the Riverwalk to the I Street Bridge deck. The alignment was slightly altered to include additional curvature and reversed the direction of the loop to achieve the required length of structure to meet minimum ADA ramp grades and provide a nearly constantly curving structure eliminating long tangent segments in the previous design.

Due to the ramp looping back over itself, and the desire to minimize the loop diameter, a shallow structure depth was desired to maintain adequate vertical clearance at the location of overlapping ramp. Additionally, a straddle bent system at the location of overlap is proposed to accommodate the shallow structure depth and avoid columns within the middle of the lower portion of the ramp. This resulted in the proposed slab system to optimize structure depth and the number of supports required within the loop.

Cast-in-place concrete was determined to be the most economical method of construction for the structure based upon the extensive curvature in the structure. Shallow hollow steel shell girders could also be shaped to match the curvature of the structure; however, steel sections are more expensive than cast-in-place concrete and have higher maintenance costs. Due to the tight curvature in the structure, reinforced concrete was selected over post-tensioned concrete as post-tensioning operations do not work well in tight radius situations. This is due to the post-tensioning's desire to follow the shortest path possible between the anchoring and jacking locations leading to inefficient post-tensioning and inward horizontal forces on tight horizontal curves.

Based upon the maximum span length possible for the proposed cast-in-place reinforced concrete slab system, span lengths were laid out to minimize the number of supports while maintaining a similar structure type and depth along the entire structure. A slab depth of approximately 3 ft is anticipated to be required based upon the maximum span length. This is anticipated to result in a minimum vertical

clearance at the ramp overlap location of approximately 10 ft 9 inches. The standard minimum vertical clearance for pedestrian pathways is 10 ft, which is being exceeded by the current design.

The face-of-curb to face-of-curb clear path exceeds the standard and is a total of 12 feet wide with 1 foot on each side to accommodate a curb and railing. The ramp meets a 11-mph design speed. The design speed is controlled by the 30-foot radius curve (curve 2 in the GP) and the stopping sight distance. To meet Caltrans standard radius and design speed additional right-of-way far outside the proposed ramp configuration would be needed. The curvature on the ramp is preferred to switchback ramps and warning signs are recommended to alert cyclists to reduce their speed in observance of the curve ahead.

Caltrans Seismic Design Criteria recommends balancing column stiffnesses between adjacent bents as well as within an entire frame. Therefore, to maintain similar stiffnesses between all bents, the column sizes are varied along the structure depending upon their height. Additionally, the straddle bent system utilizes two columns and therefore requires more slender columns to match stiffnesses of single column bents of similar height. Exact stiffnesses and column proportions will be finalized during final design as they will also depend on the flexibility of the supporting pile.

Thickened bent caps are proposed to ensure adequate superstructure strength to resist seismic induced forces from the columns. These thickened bent caps are proposed to be flared to avoid harsh lines along the bottom of the ramp and minimize their visual impact on the structure.

Based upon the relatively short columns and narrow structure width, Type I shafts are proposed as the foundations for the columns. The Type I shafts are smaller in diameter than Type II shafts and are therefore less expensive to construct. During final design, the possibility of using a pile cap or spread footing will be considered based upon coordination with a geotechnical engineer.

Southeast Ramp (City of Sacramento)

The Southeast ramp connects the Southeast corner of the existing I Street bridge with the Sacramento Valley Station. The alignment for the ramp selected by the City of Sacramento was initially laid out during the Feasibility Study to run in a counterclockwise loop when traveling up from the parking lot behind the railroad museum to the I Street Bridge deck.

Based upon coordination with UPRR, this ramp was modified to provide the required maintenance and emergency vehicle access to the top deck of the I Street Bridge. To provide vehicle access, the ramp width was widened, and the alignment was significantly straightened eliminating the loop. The alignment is now proposed to extend in an east-west direction, travelling underneath the existing I-5 Westend Viaduct and land in the western part of the Sacramento Valley Station parking lot.

Due to small vertical clearances over the existing parking lot and directly below the I-5 southbound off-ramp, a very shallow structure depth was desired to maximize both clearances. Cast-in-place concrete was determined to be the most economical method of construction for the structure based upon the

extensive curvature. Shallow hollow steel shell girders could also be shaped to match the curvature of the structure; however, steel sections are more expensive than cast-in-place concrete and have higher maintenance costs. Post-tensioning is possible due to the straighter path of this structure and is proposed to reduce structure depth while maximizing span length.

Based upon the maximum span length possible for the proposed shallow depth cast-in-place post-tensioned concrete slab system, span lengths were laid out to minimize the number of supports while maintaining a similar structure type and depth along the entire structure. A slab depth of approximately 2 ft is proposed to maximize vertical clearances while minimizing the number of spans and supports. This is anticipated to result in a minimum vertical clearance of 11 feet 5 inches over the parking lot with a localized minimum vertical clearance at a bent cap of 9 feet 11 inches, a minimum vertical clearance of 9 feet 1 inches over the pedestrian walkway with a localized minimum vertical clearance at a bent cap of 7 feet 7 inches and a minimum vertical clearance between the southbound I-5 off-ramp structure and the I Street pedestrian ramp of 18 feet.

While the minimum standard vertical clearance over roadways for new construction is 16 feet 6 inches, vertical clearances are often far less in public parking garages. The minimum vertical clearance in the adjacent Old Sacramento parking garage is reported on the entrance to the garage to be 6 feet 9 inches, which is exceeded by the current design. The minimum vertical clearance over the pedestrian walkway may warrant consideration of raising the structure to achieve a minimum localized vertical clearance of 8 feet to meet guidelines for constrained pedestrian walkways. However, it may be possible to reduce the bent cap thickness at this location with a smaller column size made possible by a very short column length. This can be further investigated during final design as the actual column height and stiffness will depend on the flexibility of the supporting pile.

The face-of-curb to face-of-curb clear path exceeds the standard and is 14 feet wide with 1 foot on each side to accommodate a curb and railing. The ramp meets a 16-mph design speed. The design speed is controlled by the 150-foot radius curve (curve 2 and 3 in the GP) and the stopping sight distance. The Caltrans minimum standard speed for bikeways is 20 mph and 125 feet stopping sight distance. The ramp alignment was established to follow a proposed pedestrian path of the Sacramento Valley Station parking lot. The 150-foot radius curve is needed to curve around the existing I-5 columns. To meet the standard design speed and sight distance impacts to the pedestrian path would impact the planned Sacramento Valley Station. Warning signs are recommended to alert cyclists to reduce their speed on the ramp.

Truck turns were prepared to ensure that the UPRR maintenance vehicles, public safety and emergency response vehicles could follow the alignment of the ramp. An H5 or H10 maintenance vehicle is typically used for pedestrian structures to insure adequate minor maintenance vehicle carrying capacity, however, for this ramp standard HL-93 loading shall be applied to insure adequate capacity for larger maintenance and emergency response vehicles. Truck turns for a 100-ton rubber-tired crane and pumper fire truck tractor was used to insure adequate turning width for various maintenance and emergency response vehicles.

Caltrans Seismic Design Criteria recommends balancing column stiffnesses between adjacent bents as well as within an entire frame. Therefore, to maintain similar stiffnesses between all bents, the column sizes are varied along the structure depending upon their height. Exact stiffnesses and column proportions will be finalized during final design as they will also depend on the flexibility of the supporting piles.

Thickened bent caps are proposed to ensure adequate superstructure strength to resist seismic induced forces from the columns. These thickened bent caps are proposed to be flared to avoid harsh lines along the bottom of the ramp and minimize their visual impact on the structure.

Based upon the relatively short columns and narrow structure width, Type I shafts are proposed as the foundations for the columns. The Type I shafts are smaller in diameter than Type II shafts and are therefore less expensive to construct. During final design, the possibility of using a pile cap or spread footing will be considered based upon coordination with a geotechnical engineer.

The existing portion of I Street Viaduct proposed to remain is not expected to require any significant strengthening or retrofit measures based upon its current vehicle carrying capacity. Also, any remaining portion of the I Street Viaduct will be inspected for condition and any deck, superstructure, or substructure issues associated with that viaduct will be potentially included as work to be performed with a future phase(s) of the project. Railing upgrades and deck treatment are expected to be performed.

Southwest Ramp (City of West Sacramento)

The Southwest ramp connects the southwest corner of the existing I Street bridge with the West Sacramento Riverwalk that runs along the top of the Sacramento River levee south of the railroad tracks. The alignment for the ramp selected by the City of West Sacramento was initially laid out during the Feasibility Study to run in an extended U shape in the east west direction, curving over 2nd Street and then coming back down to grade at the Riverwalk. The alignment was slightly altered into more of a hairpin shaped curve to achieve the required length of structure to meet minimum ADA ramp grades and provide a nearly constantly curving structure instead of long tangent segments with a sharp U bend between them.

To avoid placement of any columns within 2nd Street or spanning over 2nd Street with supports such as C bents or straddle bents, columns were placed adjacent to 2nd Street. The span length of the structure over 2nd Street then set the required span length for this ramp and similar spans were proportioned up to the existing I Street Bridge deck and down to the Riverwalk.

Cast-in-place concrete was determined to be the most economical method of construction for the structure based upon the extensive curvature in the structure. Steel girders could also be shaped to match the curvature of the structure; however, steel girders are more expensive than cast-in-place concrete and have higher maintenance costs. Due to the tight curvature over 2nd Street, reinforced

concrete was selected over post-tensioned concrete as post-tensioning operations do not work well in tight radius situations. This is due to the post-tensioning's desire to follow the shortest path possible between the anchoring and jacking locations leading to inefficient post-tensioning and inward horizontal forces on tight horizontal curves.

Based upon the span length over 2nd Street and the use of reinforced cast-in-place concrete, a box girder system was selected to provide adequate structure depth. The box girder will have the added benefit of good torsional resistance that will help to resist torsional forces developed in the structure due to the large degree of curvature over 2nd Street between bents. A box girder depth of approximately 5 ft is anticipated to be required based upon the maximum span length. This is anticipated to result in a minimum vertical clearance over 2nd Street of approximately 17 ft 7 inches. While the Caltrans standard minimum vertical clearance for pedestrian structures is 18 ft, this is due to the weaker nature of pedestrian structures if hit compared to typical vehicular structures. Typical minimum vertical clearance for new construction is 16 ft 6 inches which is being exceeded by the current design.

The face-of-curb to face-of-curb clear path exceeds standards and is a total of 12 feet wide with 1 foot on each side to accommodate a curb and railing. The ramp meets an 11-mph design speed. The design speed is controlled by the 33-foot radius curve over 2nd Street (curve 2 in the GP) and stopping sight distance. To meet Caltrans standard radius and design speed four additional river front properties would be impacted and additional right-of-way would need to be acquired. The curvature on the ramp is preferred to switchback ramps and warning signs are recommended to alert cyclists to reduce their speed in observance of the curve ahead.

Caltrans Seismic Design Criteria recommends balancing column stiffnesses between adjacent bents as well as within an entire frame. Therefore, to maintain similar stiffnesses between all columns, the column sizes are being varied along the structure depending upon their height. Exact stiffnesses and column proportions will be finalized during final design as they will also depend on the flexibility of the supporting pile.

Based upon the relatively short columns and narrow structure width, Type I shafts are proposed as the foundations for the columns. The Type I shafts are smaller in diameter than Type II shafts and are therefore less expensive to construct. During final design, the possibility of using a pile cap or spread footing will be considered based upon coordination with a geotechnical engineer.

Northeast Ramp (City of Sacramento)

The Northeast ramp connects the northeast corner of the existing I Street bridge with the Sacramento River Bike Trail that runs along the top of the Sacramento River levee and underneath the existing I Street Bridge. The alignment for the ramp selected by the City of Sacramento was initially laid out during the Feasibility Study to run in a clockwise two-story loop when traveling up from the bike trail to the I Street Bridge deck. The alignment was not significantly altered from the previous design.

Due to the ramp looping back over itself, and the desire to minimize the loop diameter, a shallow structure depth was desired to maintain adequate vertical clearance at the location of overlapping trail. Additionally, a straddle bent system along the two-story loop is proposed to accommodate the shallow structure depth and avoid columns within the middle of the lower loop. This resulted in the proposed slab system to optimize structure depth and the number of supports required within the loop portion of the ramp.

Cast-in-place concrete was determined to be the most economical method of construction for the structure based upon the extensive curvature in the structure. Shallow hollow steel shell girders could also be shaped to match the curvature of the structure; however, steel sections are more expensive than cast-in-place concrete and have higher maintenance costs. Due to the tight curvature in the structure, reinforced concrete was selected over post-tensioned concrete as post-tensioning operations do not work well in tight radius situations. This is due to the post-tensioning's desire to follow the shortest path possible between the anchoring and jacking locations leading to inefficient post-tensioning and inward horizontal forces on tight horizontal curves.

Based upon the maximum span length possible for the proposed cast-in-place reinforced concrete slab system, span lengths were laid out to minimize the number of supports while maintaining a similar structure type and depth along the entire structure. A slab depth of approximately 2 ft 6 inches is anticipated to be required based upon the maximum span length. This is anticipated to result in a minimum vertical clearance along the overlapping ramp loop of approximately 10 ft 4 inches. The standard minimum vertical clearance for pedestrian pathways is 10 ft, which is being exceeded by the current design.

The face-of-curb to face-of-curb clear path is a total of 12 feet wide with 1 foot on each side to accommodate a curb and railing. The ramp meets a 12-mph design speed. The design speed is controlled by the 42.5-foot radius curve (curve 2 and 3 in the GP) and stopping sight distance. To meet Caltrans standard radius and design speed, the ramp alignment would have to be shifted to the east because would not fit in the proposed location (in between the existing I Street/Jibboom Street structure and the Sacramento River trail). Additional right-of-way far outside the proposed ramp configuration would also be needed. The curvature on the ramp is preferred to switchback ramps and warning signs are recommended to alert cyclists to reduce their speed in observance of the curve ahead.

Caltrans Seismic Design Criteria recommends balancing column stiffnesses between adjacent bents as well as within an entire frame. Therefore, to maintain similar stiffnesses between all bents, the column sizes are varied along the structure depending upon their height. Additionally, the straddle bents utilize two columns and therefore require more slender columns to match stiffnesses of single column bents of similar height. Exact stiffnesses and column proportions will be finalized during final design as they will also depend on the flexibility of the supporting piles.

Thickened bent caps are proposed to ensure adequate superstructure strength to resist seismic induced forces from the columns. These thickened bent caps are proposed to be flared to avoid harsh lines along the bottom of the ramp and minimize their visual impact on the structure.

Based upon the relatively short columns and narrow structure width, Type I shafts are proposed as the foundations for the columns. The Type I shafts are smaller in diameter than Type II shafts and are therefore less expensive to construct. During final design, the possibility of using a pile cap or spread footing will be considered based upon coordination with a geotechnical engineer.

Project Phasing

Depending on funding availability, construction of the project may be phased. Construction phasing will ensure pedestrian, maintenance and emergency response vehicle access is maintained to the upper deck of the existing I Street Bridge during each phase. There are four possible construction phases.

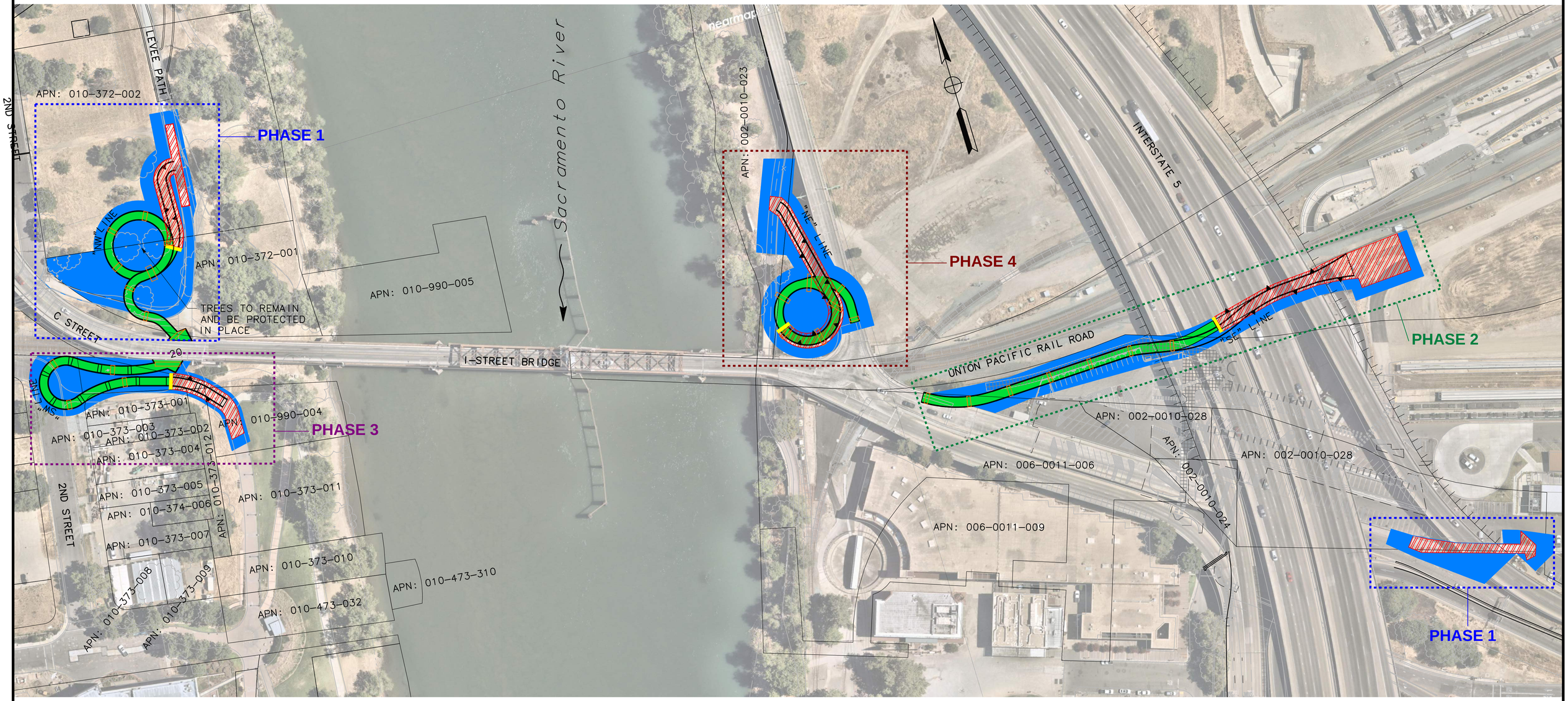
Construction of at least the first phase of the project would be concurrent with construction of the I Street Bridge Replacement Project. The second phase could be constructed prior to completion of phase one. Phases three and four add additional connectivity throught the construction of a southwest and If funding is not available to construct all proposed ramps at once, construction of the second phase would occur when funding becomes available.

Phase One

The first phase would provide bicycle and pedestrian access to the upper deck of the existing I Street Bridge. Phase one includes the construction of a new ramp structure on in West Sacramento at the northwest corner of the existing I Street Bridge. On the Sacramento side construction would include modifying an existing pedestrian connection between the Sacramento Valley Station parking lot and the westbound I Street Bridge roadway approach ramp structure in Sacramento that is planned for removal as part of the separate I Street Bridge Replacement Project. As part of the bridge replacement project, prior to its removal the structure will be barricaded to prevent vehicular access once traffic is shifted to the new bridge upstream. This phase would use the existing approach ramp to create a pedestrian connection to the existing I Street Bridge. The connection from the Sacramento Valley Station would be widened and reconstructed under the I-5 northbound on-ramp to provide access to the upper bridge deck of the I Street Bridge for maintenance vehicles, bicycles, and pedestrians.

Phase Two

This phase includes the construction of a new southeast ramp structure that would provide ADA compliant access as well as maintenance vehicle access to the upper deck. This ramps construction would allow the demolition of the modified ramp at the Sacramento Valley Station parking lot constructed in Phase one. If funding permits, phase two construction could be combined with phase one.



LEGEND

- STRUCTURE
- COLUMN LOCATION – ~60 FOOT PILE DEPTH
- MAXIMUM 2–3 FOOT EXCAVATION
- BRIDGE ABUTMENT – MAXIMUM 6 FOOT EXCAVATION, ~60 FOOT PILE DEPTH
- TEMPORARY IMPACT AREA, MAXIMUM 1 FOOT EXCAVATION

SCALE: 1" = 70'

MAY 2021

I STREET DECK CONVERSION
PERMANENT/TEMPORARY IMPACT AREA

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Phase Three

Phase three is the construction of a new southwest ramp connection. The project is functional without the construction of this phase, but this ramp improves connectivity to West Sacramento.

Phase Four

Phase four is the construction of a new northeast ramp connection. The project is functional without the construction of this phase, but this ramp improves connectivity to Sacramento.

Construction phases listed above could all be completed at the same time if funding permits and would increase the connectivity provided by the project.

References

City of West Sacramento (City) Department of Public Works. 2019. *I Street Bridge Final Feasibility Study for Bridge Deck Conversion to Active Transportation Use.* March. West Sacramento, California. Prepared by WSP. Available: http://www.cityofsacramento.org/-/media/Corporate/Files/Public-Works/Projects/I-Street-Bridge/I-Street-Bridge_Feasibility-Study_Final-2019_03_29.pdf?la=en. Accessed: April 19, 2021.

Attachments

A. Permanent and Temporary Impact Area Exhibit
B. Access Ramp General Plans
C. Interim Ramp - Sacramento Valley Station Vehicle Access Exhibits
D. Engineers Estimate by Phase

Permanent and Temporary Impact Area Exhibit

LEGEND

- STRUCTURE
- COLUMN LOCATION – ~60 FOOT PILE DEPTH
- MAXIMUM 2–3 FOOT EXCAVATION
- BRIDGE ABUTMENT – MAXIMUM 6 FOOT EXCAVATION, ~60 FOOT PILE DEPTH
- TEMPORARY IMPACT AREA, MAXIMUM 1 FOOT EXCAVATION

SCALE: 1" = 70'

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I STREET DECK CONVERSION
PERMANENT/TEMPORARY IMPACT AREA

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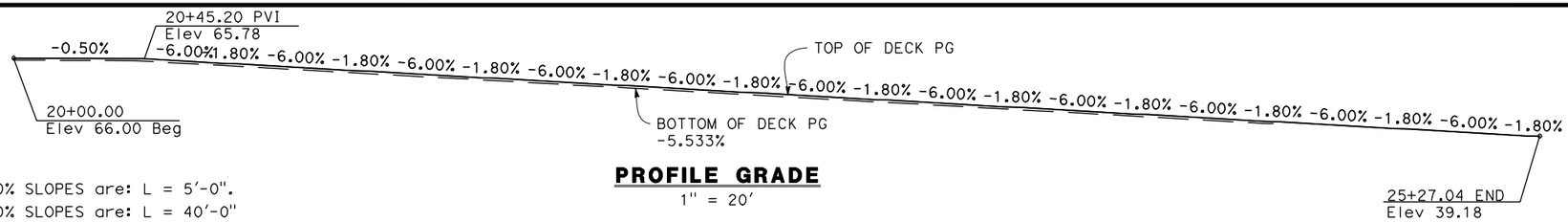
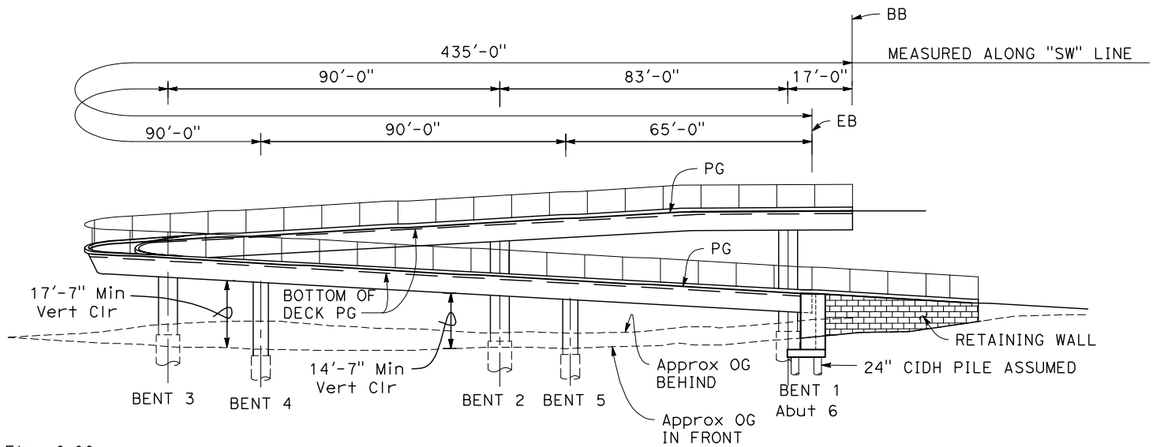
Access Ramp General Plans



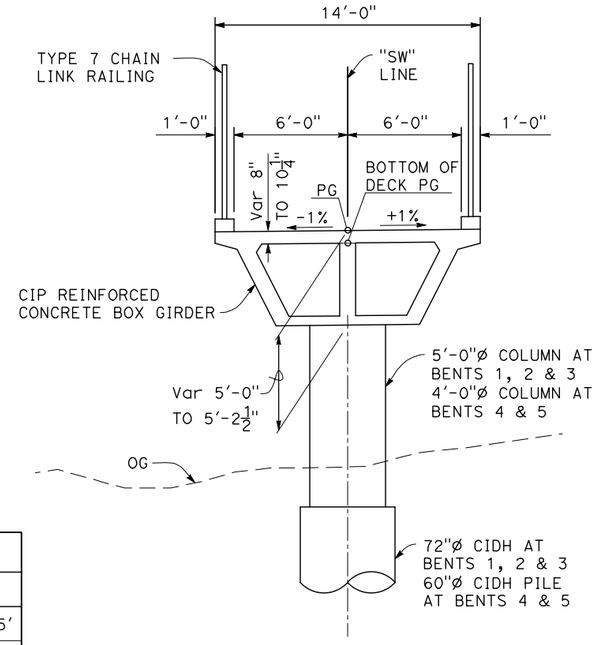
NOTES:
1. -1.80% SLOPES are: L = 5'-0".
2. -6.00% SLOPES are: L = 40'-0"

PROFILE GRADE
1" = 20'

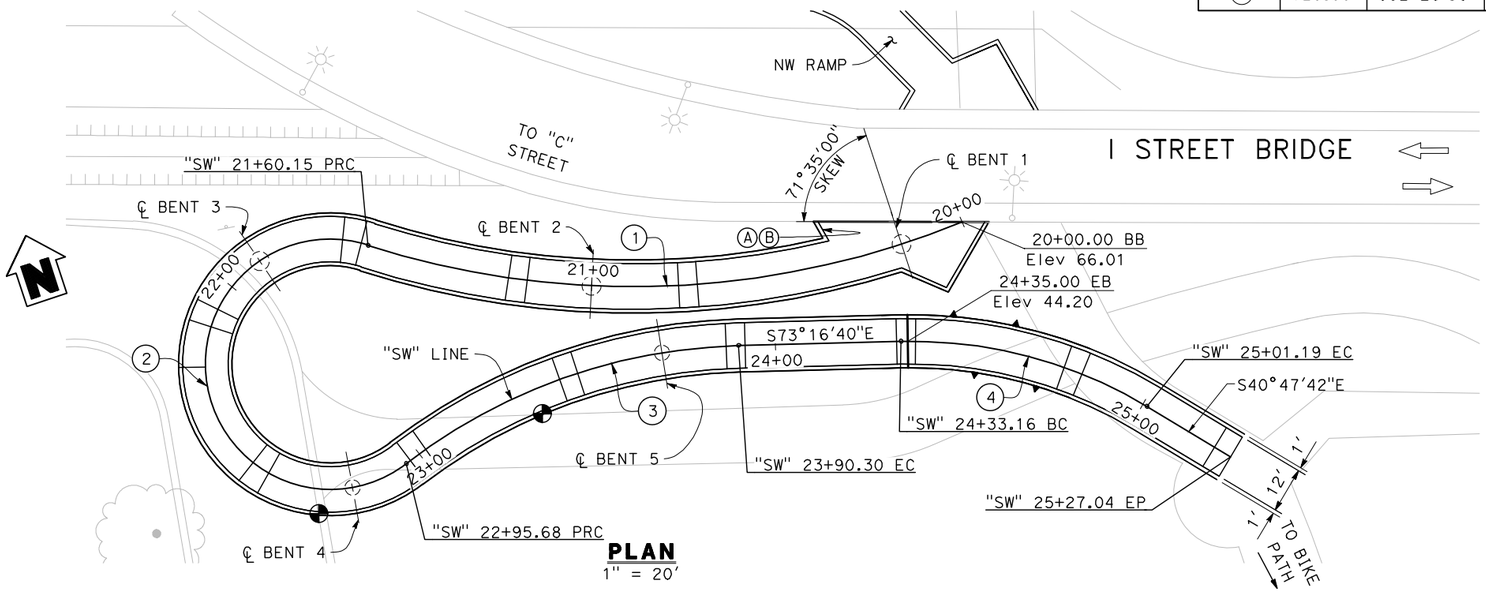


ELEVATION
1" = 20'

CURVE DATA				
No. Ⓧ	R	Δ	T	L
①	230.00'	039°53'44"	83.48'	160.15'
②	33.00'	235°18'10"	62.99'	135.52'
③	150.00'	036°08'43"	48.95'	94.63'
④	120.00'	032°28'58"	34.96'	68.03'



TYPICAL SECTION
1/4" = 1'-0"



PLAN
1" = 20'

NOTES:
- Ⓐ Paint "SW RAMP"
- Ⓑ Paint "BR NO. 03-NEW" & "YEAR CONSTRUCTED"

1. The contractor shall verify all controlling field dimensions before ordering or fabricating any material.
2. For "INDEX TO PLANS" and "GENERAL NOTES", see "DECK CONTOURS" sheet.
3. For "HYDROLOGIC SUMMARY" and "PILE DATA TABLE", see "FOUNDATION PLAN" sheet.

SCALE: PER PLAN

SHEET XX

I STREET DECK CONVERSION
SW RAMP GENERAL PLAN

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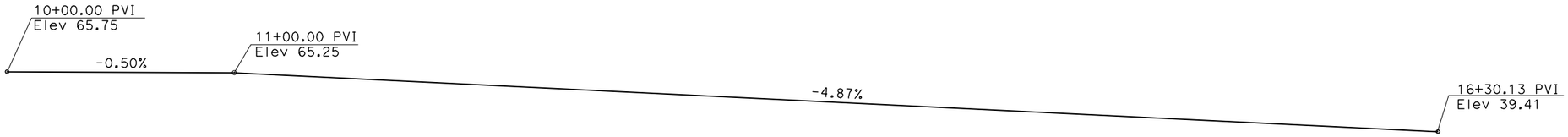
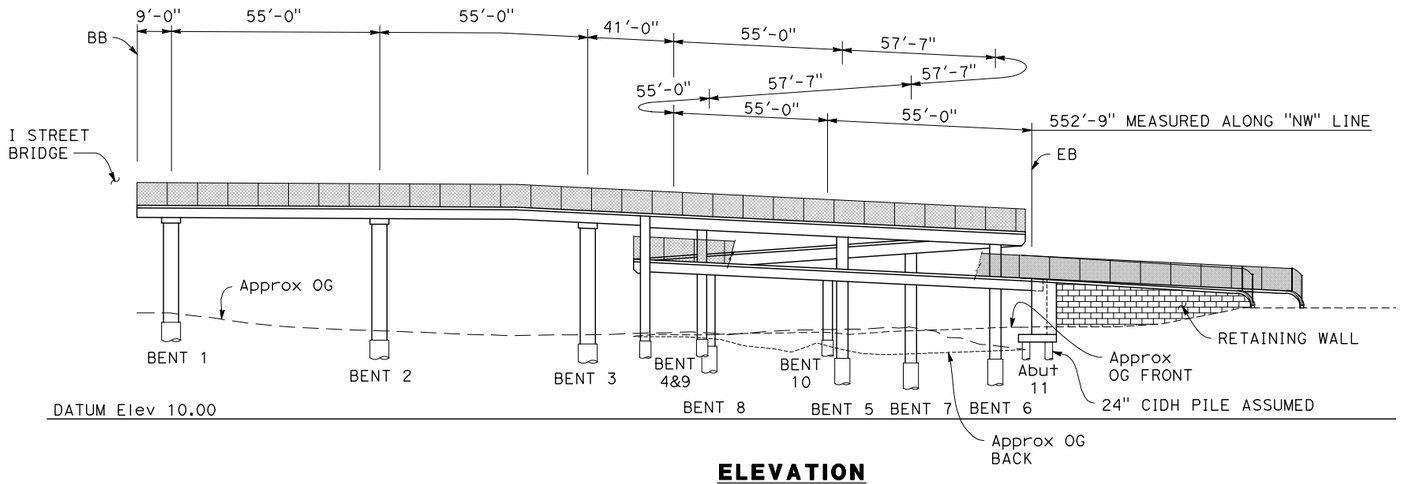
JANUARY 2021



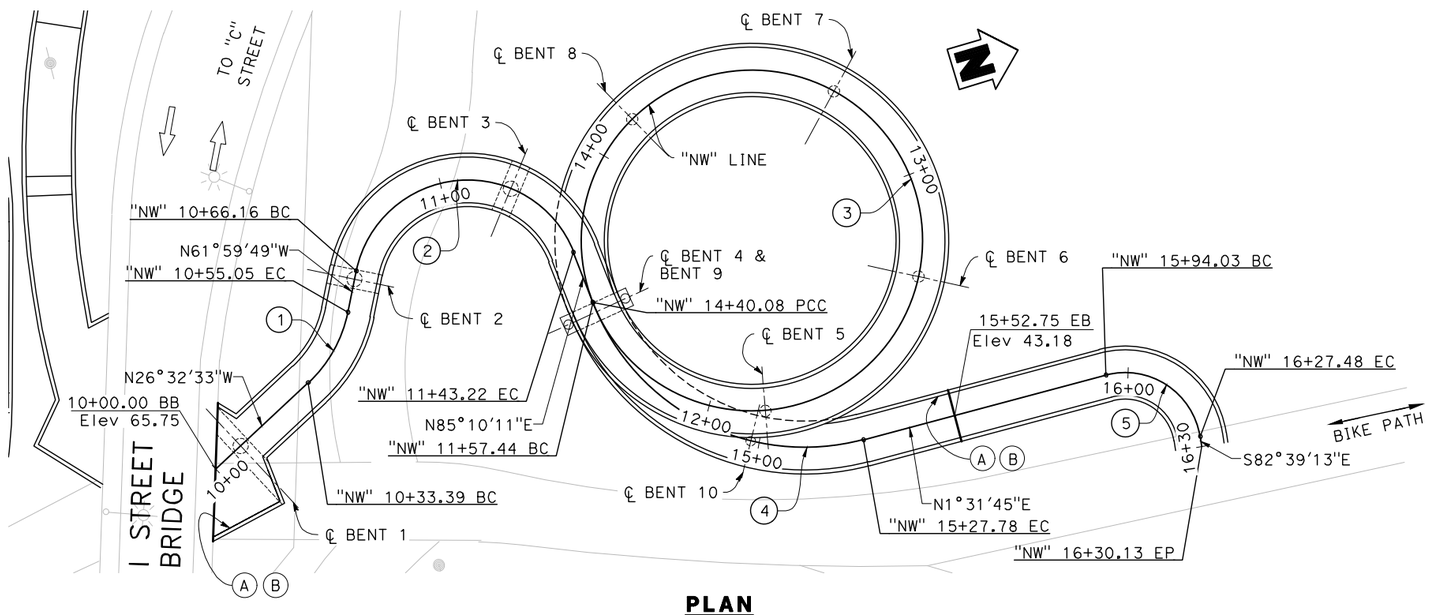
PROFILE GRADE

NO SCALE



ELEVATION

Horz: 1" = 20'



PLAN

1" = 20'

CURVE DATA				
No. (X)	R	Δ	T	L
(1)	35.00'	035°27'16"	11.19'	21.66'
(2)	30.00'	147°10'00"	101.82'	77.06'
(3)	45.00'	359°51'22"	0.06'	282.63'
(4)	60.00'	083°44'55"	53.79'	87.70'
(5)	20.00'	095°49'01"	22.14'	33.45'

NOTES:

(A) Paint "NW POC"

(B) Paint "BR NO. 03-NEW" & "YEAR CONSTRUCTED"

1. The contractor shall verify all controlling field dimensions before ordering or fabricating any material.
2. For "INDEX TO PLANS" and "GENERAL NOTES", see "DECK CONTOURS" sheet.
3. For "HYDROLOGIC SUMMARY" and "PILE DATA TABLE", see "FOUNDATION PLAN" sheet.

SCALE: PER PLAN

SHEET XX

JANUARY 2021

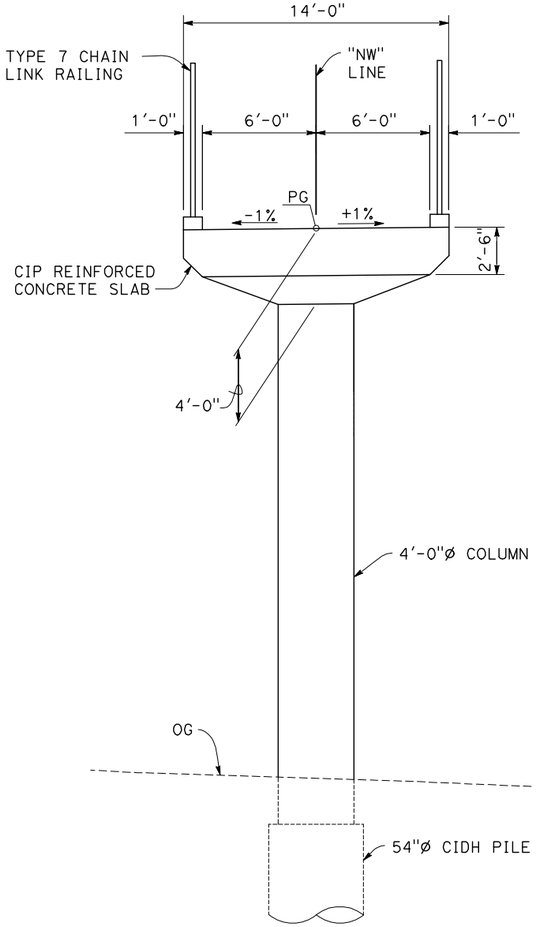
I STREET DECK CONVERSION

NW RAMP GENERAL PLAN No. 1

CITY OF WEST SACRAMENTO

City of SACRAMENTO

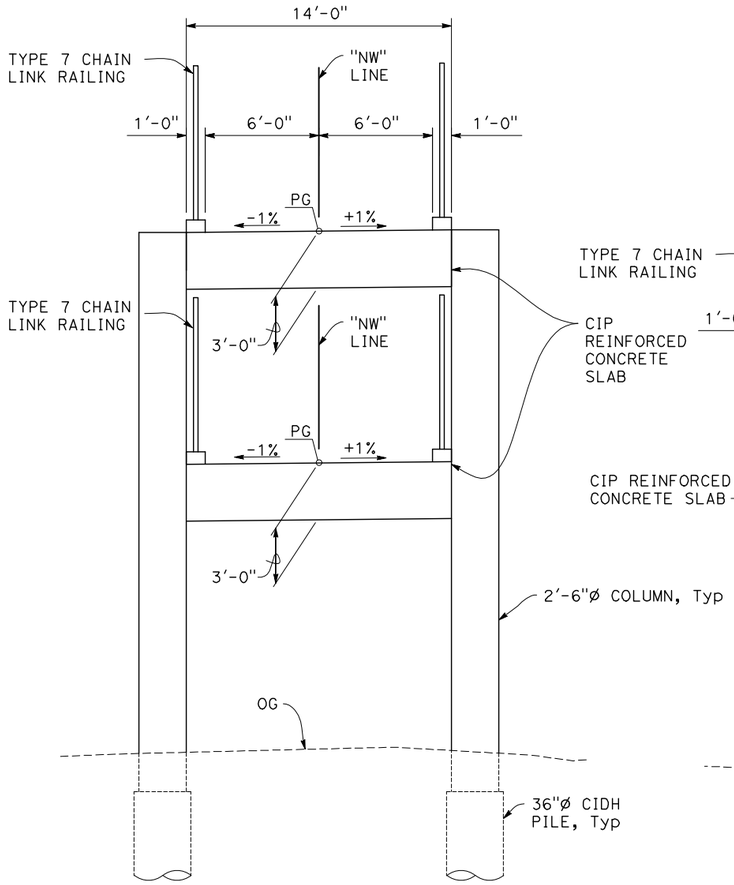
MARK THOMAS



BENTS 1, 2 & 3

TYPICAL SECTION

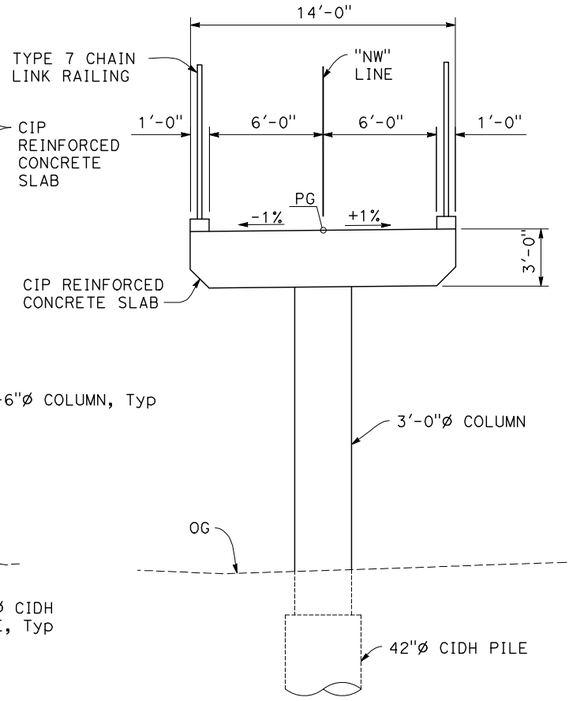
1/4" = 1'-0"



BENTS 4 & 9

TYPICAL SECTION

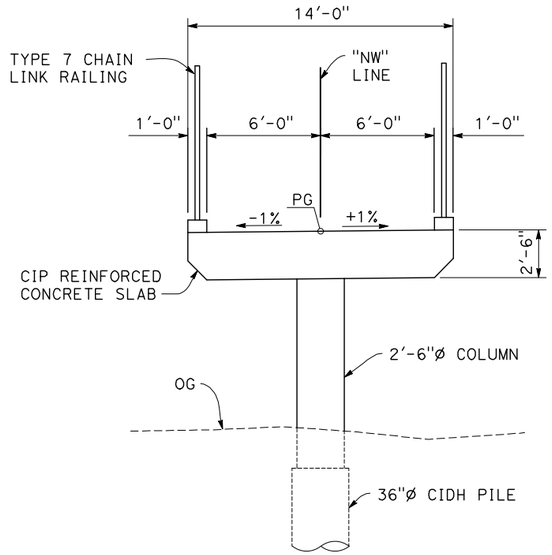
1/4" = 1'-0"



BENTS 5, 6, 7 & 8

TYPICAL SECTION

1/4" = 1'-0"



BENT 10

TYPICAL SECTION

1/4" = 1'-0"

SCALE: PER PLAN

SHEET XX

JANUARY 2021

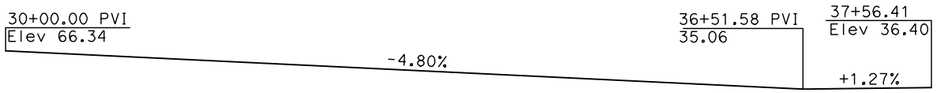
I STREET DECK CONVERSION

NW RAMP GENERAL PLAN No. 2

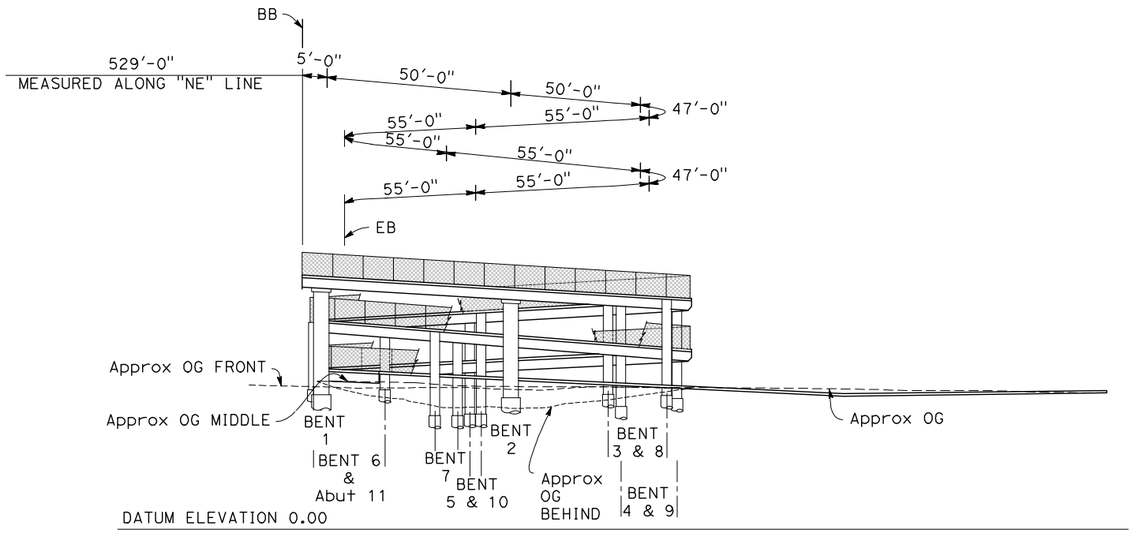
CITY OF WEST SACRAMENTO

City of SACRAMENTO

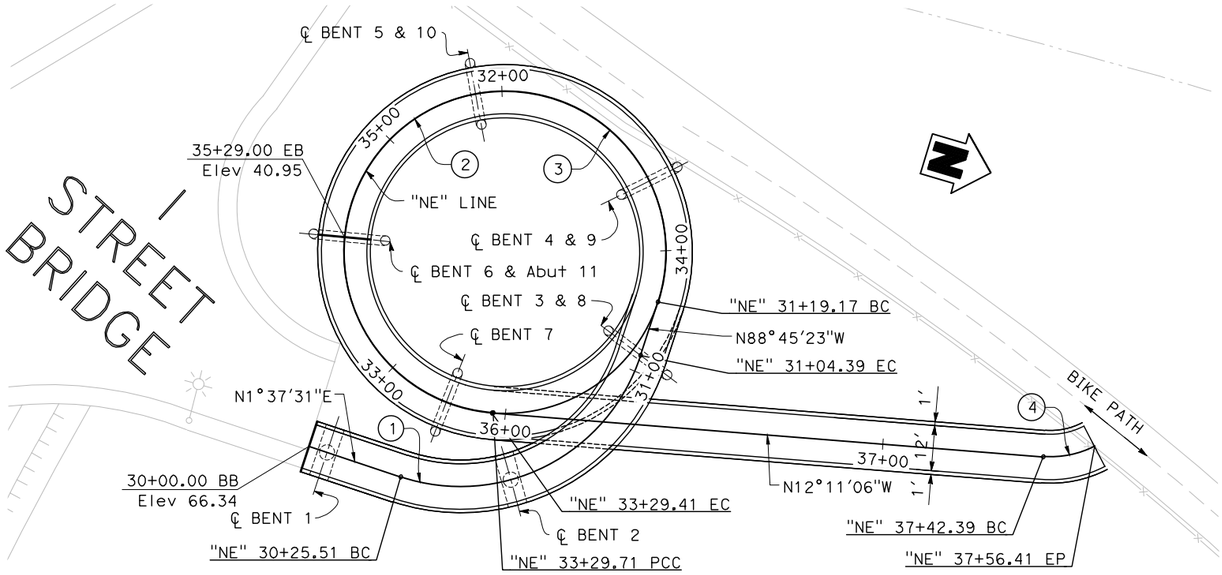
MARK THOMAS



PROFILE GRADE
NO SCALE



ELEVATION
1" = 20'



PLAN
1" = 20'

CURVE DATA				
No. Ⓧ	R	Δ	T	L
①	50.00'	090°22'54"	50.33'	78.87'
②	42.50'	283°50'06"	33.30'	210.54'
③	42.50'	359°35'29"	0.15'	266.73'
④	25.00'	032°08'52"	7.20'	14.03'

NOTES:

1. The contractor shall verify all controlling field dimensions before ordering or fabricating any material.
2. For "INDEX TO PLANS" and "GENERAL NOTES", see "DECK CONTOURS" sheet.
3. For "HYDROLOGIC SUMMARY" and "PILE DATA TABLE", see "FOUNDATION PLAN" sheet.

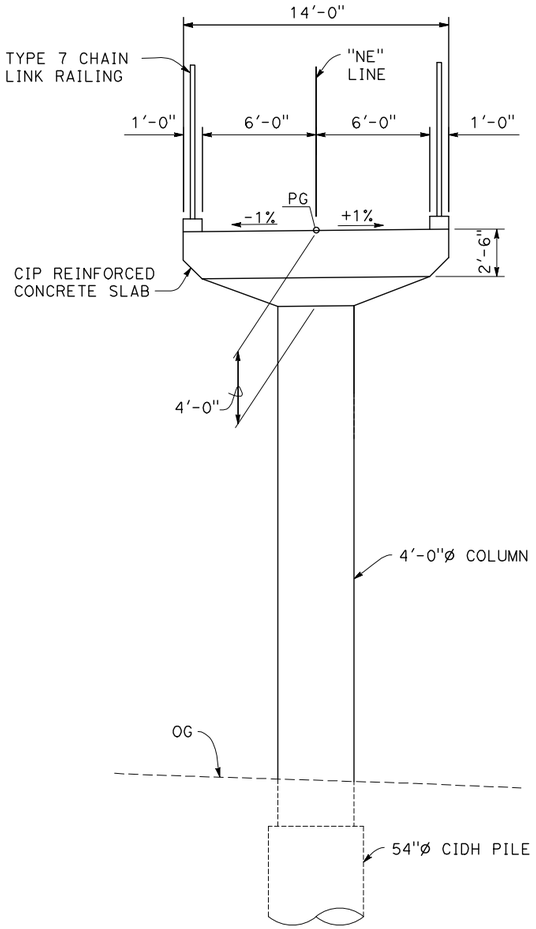
SCALE: PER PLAN

SHEET 01

I STREET DECK CONVERSION
NE RAMP GENERAL PLAN No. 1

JANUARY 2021

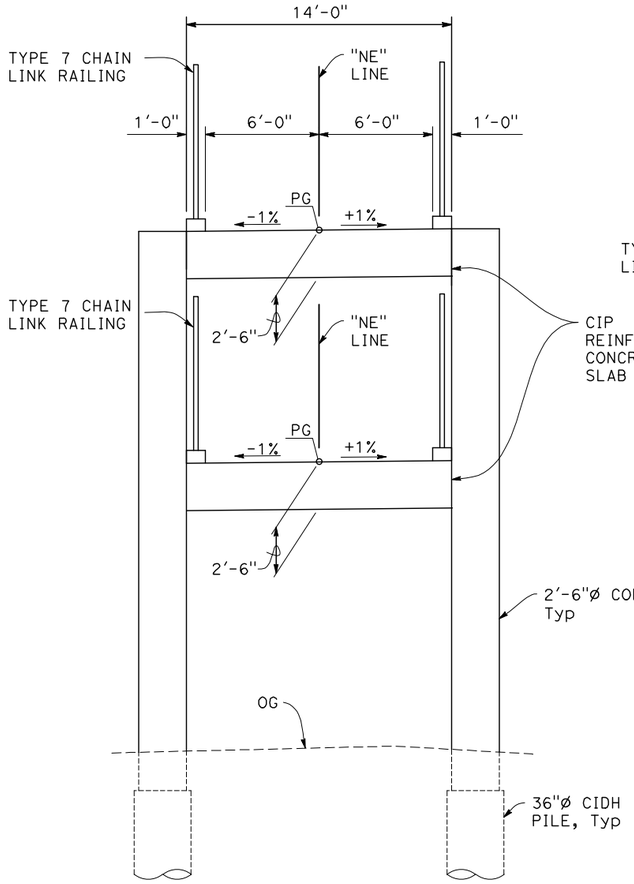
CITY OF WEST SACRAMENTO | City of SACRAMENTO | MARK THOMAS



BENTS 1 & 2

TYPICAL SECTION

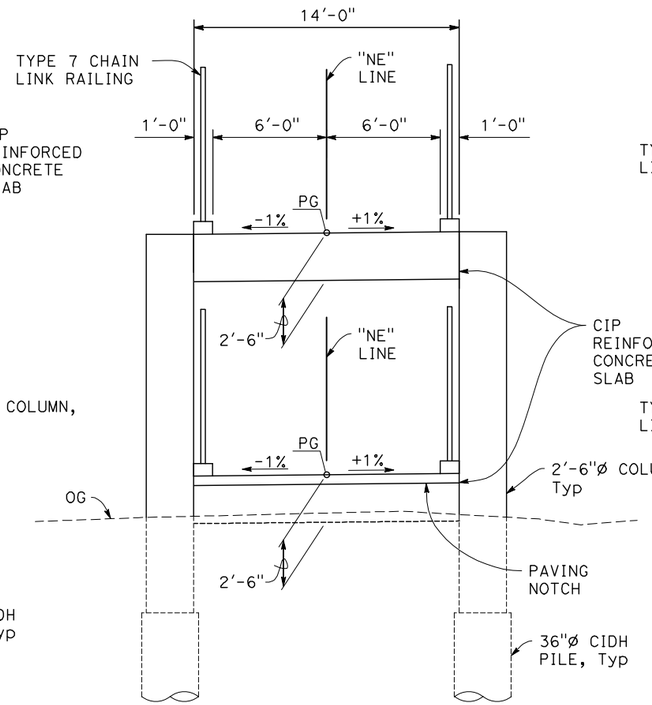
1/4" = 1'-0"



BENTS 3 & 8, 4 & 9 AND 5 & 10

TYPICAL SECTION

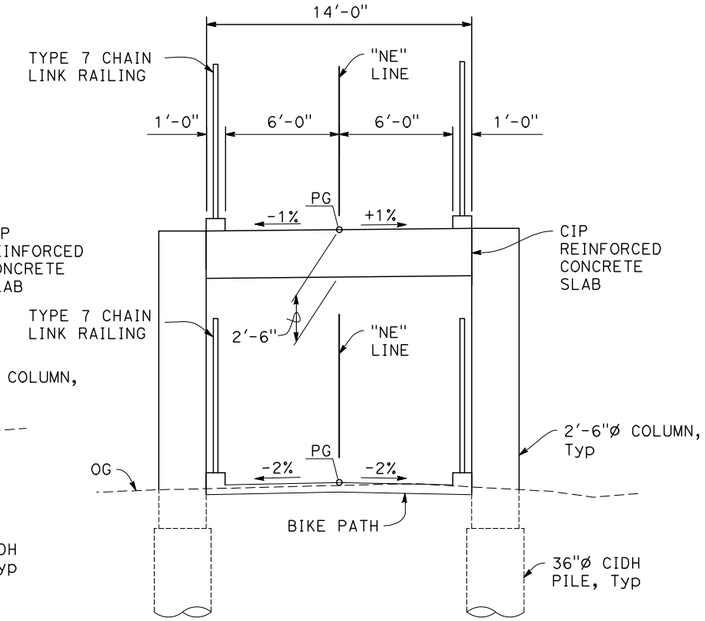
1/4" = 1'-0"



BENT 6 & ABUTMENT 11

TYPICAL SECTION

1/4" = 1'-0"



BENT 7

TYPICAL SECTION

1/4" = 1'-0"

SCALE: PER PLAN

SHEET 02

I STREET DECK CONVERSION

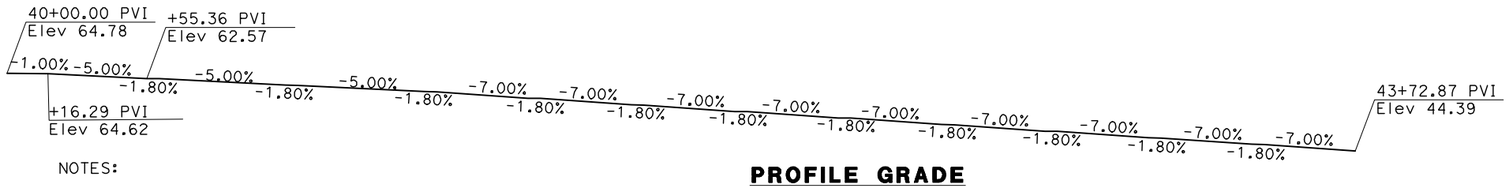
NE RAMP GENERAL PLAN No. 2

JANUARY 2021

CITY OF WEST SACRAMENTO

City of SACRAMENTO

MARK THOMAS

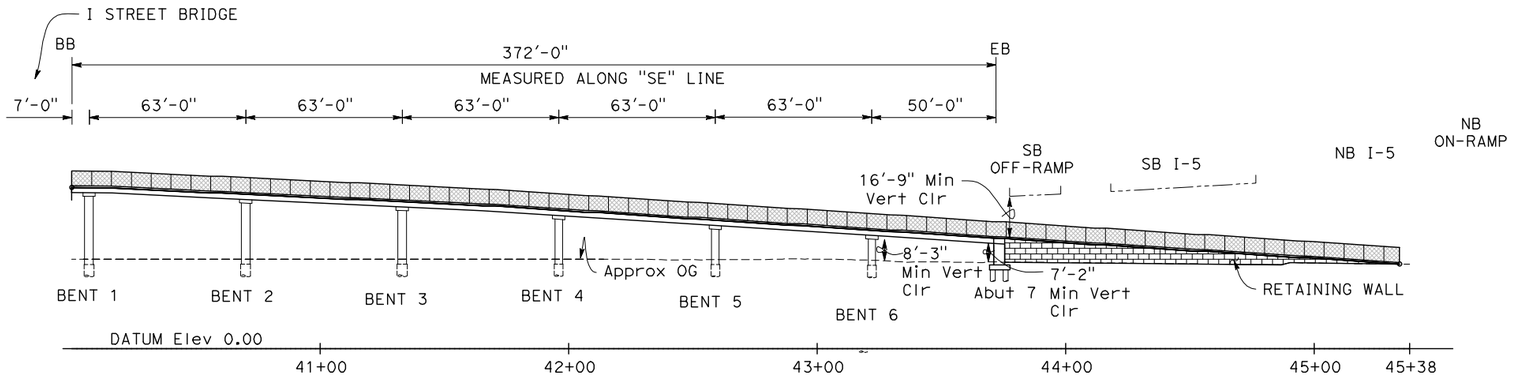


NOTES:

1. -1.80% SLOPES are: L = 5'-1"
2. -5.00% SLOPES are: L = 50'-1" unless noted otherwise
3. -7.00% SLOPES are L = 36'-0"

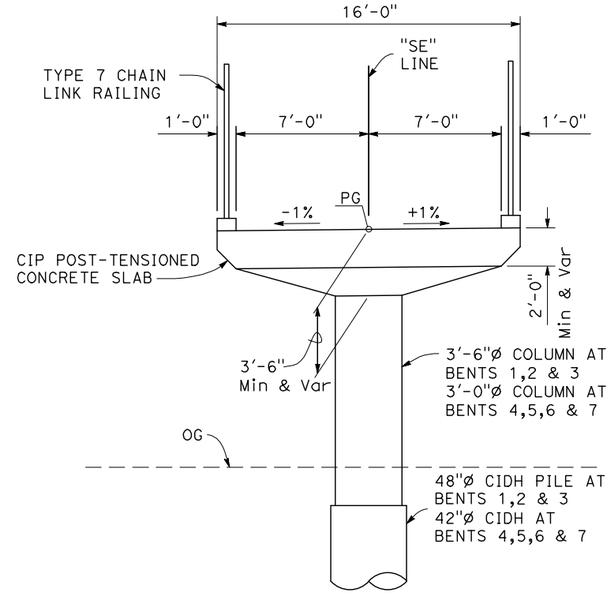
PROFILE GRADE

NO SCALE



DEVELOPED ELEVATION

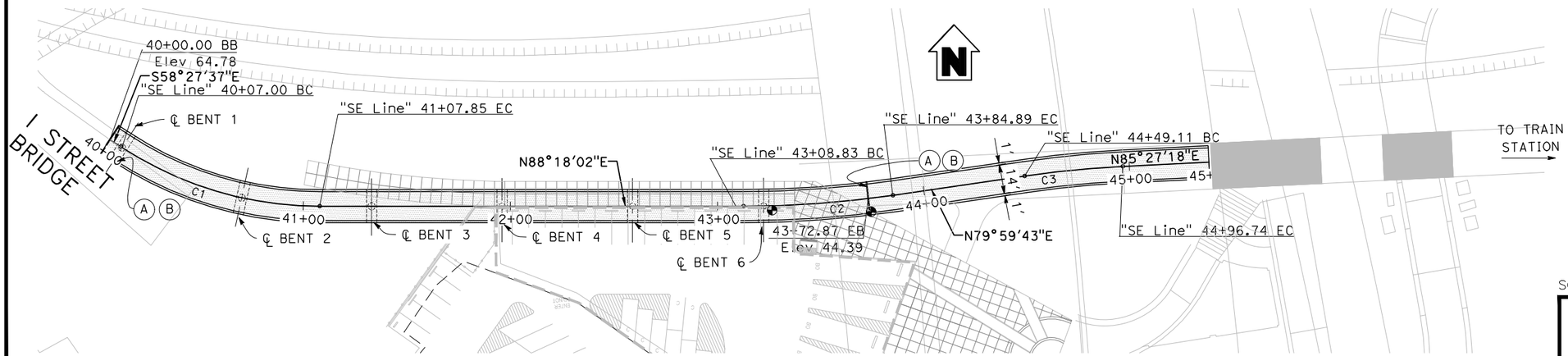
1" = 30'



TYPICAL SECTION

1/4" = 1'-0"

CURVE DATA				
No. (X)	R	Δ	T	L
(C1)	175.00'	033°14'22"	52.24'	101.52'
(C2)	500.00'	008°18'19"	36.30'	72.48'
(C3)	500.00'	005°27'36"	23.84'	47.65'



PLAN

1" = 30'

NOTES:

(A) Paint "BRIDGE NAME"

(B) Paint "BR NO. 03-NEW" & "YEAR COMPLETED"

1. The contractor shall verify all controlling field dimensions before ordering or fabricating any material.
2. For "INDEX TO PLANS" and "GENERAL NOTES", see "DECK CONTOURS" sheet.
3. For "PILE DATA TABLE", see "FOUNDATION PLAN" sheet.

SCALE: PER PLAN

SHEET XX

I STREET DECK CONVERSION

SE RAMP GENERAL PLAN

JANUARY 2021

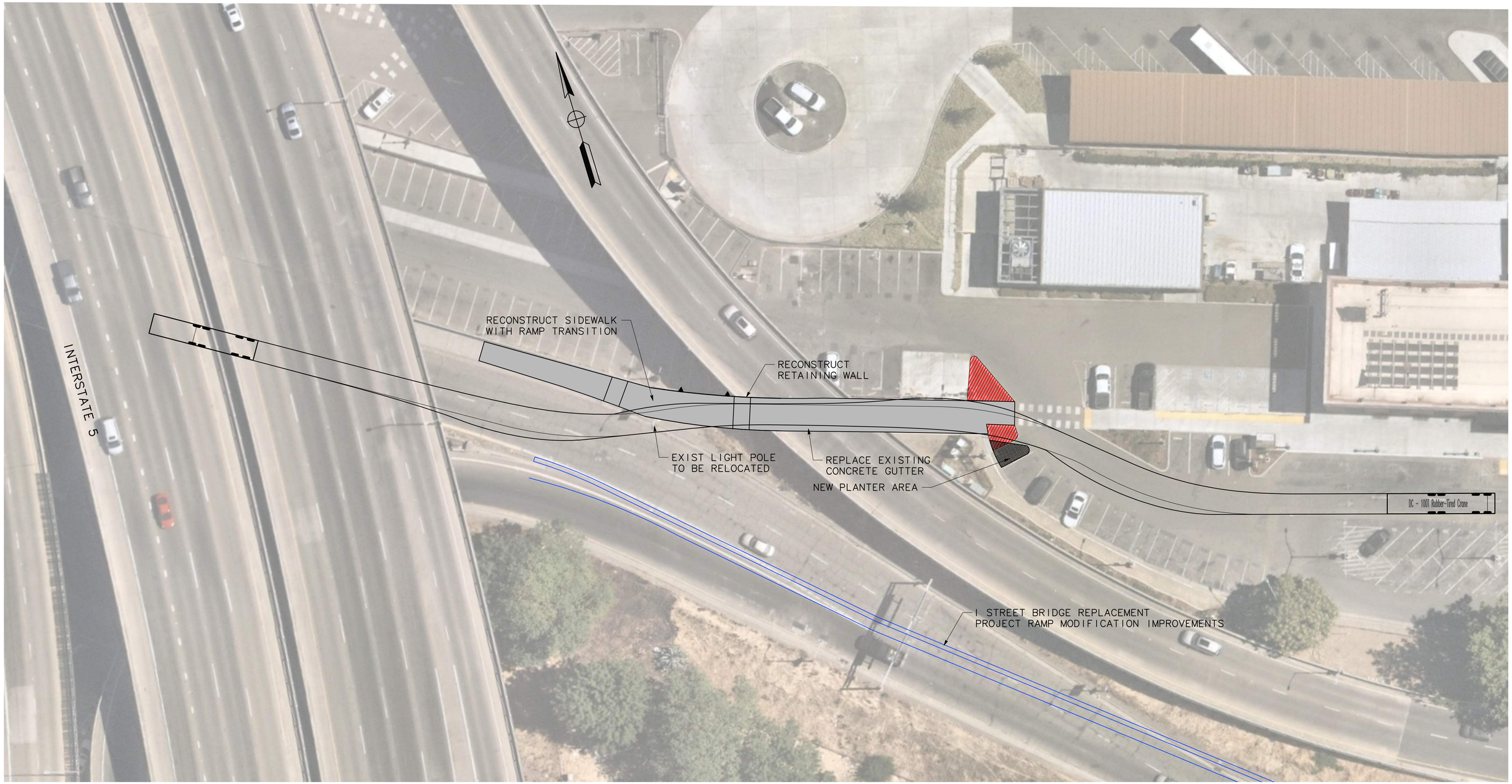
CITY OF WEST SACRAMENTO

City of SACRAMENTO

MARK THOMAS

Interim Ramp

Sacramento Valley Station Vehicle Access Exhibits



LEGEND

SIDEWALK

REMOVE PLANTER

SACRAMENTO
WEST BOUND

SCALE: 1" = 20'

JUNE 2021

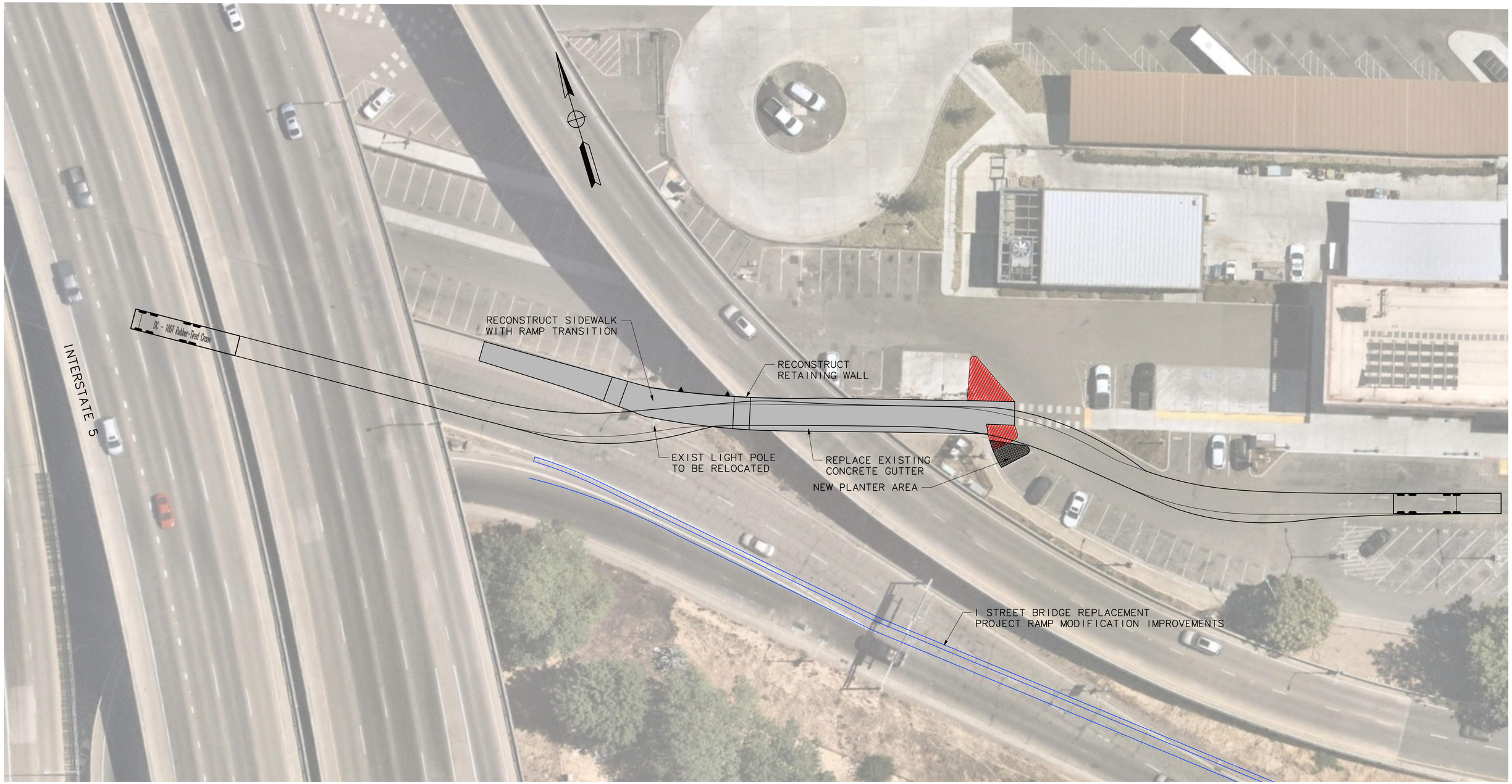
I STREET DECK CONVERSION

SACRAMENTO VALLEY STATION VEHICLE ACCESS

CITY OF WEST SACRAMENTO

City of SACRAMENTO

MARK THOMAS



LEGEND

SIDEWALK

REMOVE PLANTER

SACRAMENTO
EAST BOUND

SCALE: 1" = 20'

JUNE 2021

I STREET DECK CONVERSION

SACRAMENTO VALLEY STATION VEHICLE ACCESS

CITY OF WEST SACRAMENTO

City of SACRAMENTO

MARK THOMAS

Engineers Estimate

By Phases

PROJECT NAME: **I Street Bridge Deck Conversion for Active Transportation Project**

SPONSOR: **City of West Sacramento**, in Partnership with the City of Sacramento

Item No.	Item Description	Unit	Qty	Unit price	Amount ($) *YOE 2025*
	CONSTRUCTION: PHASE 1				
1	Class 2 Aggregate Base	CY	25	$190.00	$5,190
2	Hot Mix Asphalt (Type A)	TON	35	$250.00	$9,561
3	Retaining Wall (Masonry Wall)	SF	1,540	$300.00	$504,840
4	West Sacramento North Ramp	SF	7,739	$438.00	$3,703,997
5	Sacramento Interim Ramp Structure Improvements	LS	1	$300,000.00	$327,818
6	Landscaping	LS	1	$250,000.00	$273,182
7	Wayfinding and Interpretive Signs	LS	1	$25,000.00	$27,318
8	Pedestrian Scale Lighting	LS	1	$100,000.00	$109,273
9	Lane Striping / Green Lane Cycletrack	LS	1	$35,000.00	$38,245
10	Minor Items (Benches, Bike Racks, Miscellaneous)	LS	1	$349,400.00	$381,799
11	Sacramento I Street Viaduct Deck Conversion	LS	1	$271,000.00	$296,129
				TOTAL =	**$5,677,353**
	CONSTRUCTION: PHASE 2				
1	Class 2 Aggregate Base	CY	50	$190.00	$10,381
2	Hot Mix Asphalt (Type A)	TON	70	$250.00	$19,123
3	Retaining Wall (Masonry Wall)	SF	1,585	$300.00	$519,592
4	Sacramento South Ramp	SF	6,960	$341.00	$2,593,435
				TOTAL =	**$3,142,530**
	CONSTRUCTION: PHASE 3				
1	Class 2 Aggregate Base	CY	15	$190.00	$3,114
2	Hot Mix Asphalt (Type A)	TON	20	$250.00	$5,464
3	Retaining Wall (Masonry Wall)	SF	450	$300.00	$147,518
4	West Sacramento South Ramp	SF	6,090	$505.00	$3,360,627
				TOTAL =	**$3,516,723**
	CONSTRUCTION: PHASE 4				
1	Class 2 Aggregate Base	CY	60	$190.00	$12,457
2	Hot Mix Asphalt (Type A)	TON	80	$250.00	$21,855
3	Retaining Wall (Masonry Wall)	SF	1,345	$300.00	$440,915
4	Sacramento North Ramp	SF	7,406	$365.00	$2,953,849
				TOTAL =	**$3,429,076**
				TOTAL =	**$15,765,682**