

ATTACHMENT D
Right of Way Data Sheets

MEMORANDUM

*Serious Drought.
Help Save Water!*

To: TALITHA HODGSON
Design Engineer
Department of Transportation

Attention: CARLON SCHRIEVE
Project Engineer

From: KAREN E. HAWKINS
North Region Right of Way Assistant Manager,
Project Delivery
Eureka/Redding

Date: May 11, 2016

File: 01-DN-101-PM 12.0-15.5
EFIS No.: 01 1500 0099
EA: 0F280K
Alternate: A-1 (2 of 6)


Subject: CURRENT ESTIMATED RIGHT OF WAY COSTS

Project Description: In Del Norte Co. from Wilson Creek Bridge to 3.8 miles north of Wilson Creek Bridge

Alternate Description: A-1

We have completed an estimate of the right of way costs for the above referenced project based on information received from you on October 23, 2015 .

Right of Way Lead Time will require a minimum of 36 months after receipt of appraisal maps, utility conflict maps, environmental clearances (HMDD) and Certificate of Sufficiency (COS). A minimum of 36 months prior to certification will be required from receipt of the last map revision. Shorter lead times may require additional support resources and may adversely affect delivery of Right of Way Certification.


KAREN E. HAWKINS
Assistant Chief
North Region Right of Way
EUREKA/REDDING

Attachments:
Right of Way Data Sheet

cc. Sebastian Cohen

State of California - Department of Transportation
RIGHT OF WAY DATASHEET



EA: 0F280K
PROJECT NO.: 01 1500 0099
LOCATION: 01-DN-101-PM 12.0-15.5
Description: Repair slides, construct bypass
 In Del Norte Co. from Wilson
 Creek Bridge to 3.8 miles north
 of Wilson Creek Bridge

ALTERNATE: A-1 (2 of 6)
DATE: 5/11/2016
Datasheet Type: Revision

1. Right of Way Cost Estimate:

	Current Value Future Use	Escalation Rate	Escalated Value
A. Total Acquisition Cost	\$954,250	5%	\$1,903,037
B. Appraisal Fees Estimate	\$5,000	N/A	\$5,000
C. Mitigation Acquisition & Credits	\$15,750,000	5%	\$31,409,831
D. Project Development Permit Fees	\$453,000	5%	\$903,407
Subtotal	<u>\$17,162,250</u>		<u>\$34,221,275</u>
E. Utility Relocation (State's Share)	\$755,000	5%	\$1,505,678
(Owner's Share: _____ \$0 _____)			
F. Relocation Assistance (RAP)	\$0		\$0
G. Clearance/Demolition	\$0		\$0
H. Title & Escrow	\$1,000	5%	\$1,994
I. Total Estimated Right of Way Cost	<u>\$17,918,250</u>	Rounded	<u>\$35,729,000 *</u>
J. Construction Contract Work	<u>\$0</u>		

2. Current Date of Right of Way Certification July 1, 2030

3. Parcel Data:

Type	Dual/Appr	Utilities	Railroad
X <u>0</u>		U4 - 1 <u>0</u>	C&M Agreement <u>0</u>
A <u>0</u>		- 2 <u>1</u>	Service Contract <u>0</u>
B <u>0</u>		- 3 <u>0</u>	Easements <u>0</u>
C <u>3</u>	<u>1</u>	- 4 <u>0</u>	Rights of Entry <u>0</u>
D <u>0</u>	<u>0</u>	U5 - 7 <u>6</u>	Clauses <u>0</u>
RR <u>0</u>		- 8 <u>0</u>	
Total <u>3</u>		- 9 <u>1</u>	
Excess <u>0</u>			

Areas:	Mitigation	Misc. R/W Work
R/W <u>163.6 AC</u>	Impacts <u>2</u>	RAP Displacees <u>N/A</u>
TCE <u>N/A</u>	Parcels <u>0</u>	Clear/Demo <u>N/A</u>
Excess <u>N/A</u>	Credits <u>1</u>	Permit to Enters <u>N/A</u>
Mitigation <u>N/A</u>		Condemnation <u>0</u>
		USA Involvement <u>Yes</u>

4. Provide a general description of the right of way and excess lands required (zoning, use, major improvements, critical or sensitive parcels, etc.).

152.3 acres will be required from Green Diamond Resource Company, and 10.3 acres will be required from Redwood National Parks. Additional parcels were added for the utility relocations that will be at State expense.

5. Are any properties acquired for this project expected to be rented, leased, or sold?

Yes _____ No X

6. Are RAP displacements required?

Yes _____ No X

No. of single family N/A

No. of business/nonprofit N/A

No. of multi-family N/A

No. of farms N/A

Based on Draft/Final Relocation Impact Statement/Study dated _____ N/A

N/A Sufficient replacement housing will be available without last resort housing.

N/A Sufficient replacement housing will not be available without last resort housing.

7. Is there an effect on assessed valuation?

Yes _____ No X Not Significant _____

8. Are there any items of Construction Contract Work?

Yes _____ No X

There is no Construction Contract Work associated with the project.

9. Are utility facilities or rights of way affected?

Yes X No _____

Names of Utility Companies requiring verification only.

Blue Star Gas (Propane), Charter Communication (Communication), County of Del Norte (Water, Sewer), City of Crescent City (Water, Sewer), Frontier Communication (Water, Sewer), Pacific Power and Light (Electric Distribution)

Names of Utility Companies requiring involvements.

Pacific Power and Light (Electric Transmission)

Additional information concerning Utility Involvement on this project.

Alt "A-1" has potential conflict with 1 aerial Electric Transmission facility and PP&L. State expense. A replacement easement may be required for this relocation. As additional information becomes available, this estimate may need to be revised.

10. Are railroad facilities or rights of way affected?

Yes _____ No X Phase 4 Capital \$0

11. Are USA Lands or Rights Affected?

Yes X No _____ Phase 4 Capital \$0

Agencies Involved:

US Forest Service _____	BLM _____	Army Corps of Engineers _____
National Parks <u> X </u>	BIA _____	Vetrans Administration _____
US Fish & Wildlife _____	GSA _____	_____

Rights or Permissions to acquire:

Easement <u> X </u>	Special Use Permit _____	Courtesy Letter _____
Right of Way Grant _____	Cooperative Work Agreement _____	Cost Recovery <u> X </u>
Mineral Agreement _____	Letter of Concurrence <u> X </u>	Timber Sale _____

Acquisition of rights required will be heavily dependent on getting the federal agencies involved to accept Caltran's NEPA Document. Early consultation with Feds on their NEPA requirements for the Document is critical.

12. Is an RE Office required for the project?

Yes X No _____

Type of RE Office

Modular X Move In _____

13. Were any previously unidentified sites with hazardous waste and/or material found?

Yes _____ None Evident X

14. Are there material borrow and/or disposal sites required?

No _____ Optional _____ Manditory X

On-site disposal is within estimated R/W

15. Are there potential relinquishments and/or abandonments?

Yes X No _____

Unknown at present

16. Are there any existing and/or potential airspace sites?

Yes _____ No X

17. What type of mitigation is required for the project?

Mitigation estimates are very preliminary. Per Jason Meyer they are being calculated as a percentage of the Alternatives total cost. Of that total, another percentage is broken out for R/W for the acquisition on needed mitigation property.

18. Is it anticipated that Caltrans will perform all Right of Way work?

Yes _____ No _____

19. Indicate the anticipated Right of Way schedule and lead time requirements.

Right of Way Lead Time will require a minimum of 36 months after we receive first appraisal maps, utility conflict maps, necessary environmental clearances and freeway agreements have been approved and obtained. Additionally a minimum of 36 months will be required after receiving the last appraisal map to Right of Way for certification.

20. Assumptions and limiting Conditions: (Check boxes that apply.)

- Mapping did not provide sufficient detail to determine the limits of the right of way required.
- Transportation facilities have not been sufficiently designed to determine the damages to any of the remainder parcels affected by the project.
- Additional right of way requirements are anticipated, but are not defined due to the preliminary nature of the early design requirements.
- Design will secure necessary encroachment permits from local agencies.
- Project permits are not required for the project.
- _____
- _____
- _____
- _____
- _____
- _____

Evaluation Prepared By:

Right of Way *Natalie Morris*
NATALIE MORRIS

Date 5/19/2016

Reviewed By

RW Project Coordinator *Sam Gentle*
SAM GENTLE

Date 5-19-16

I have personally reviewed this Right of Way Data Sheet and all supporting information. I certify that the probable Highest and Best Use, estimated values, escalation rates and assumptions are reasonable and proper, subject to the limiting conditions set forth, and I find this Data Sheet to be complete and current.

Jeremiah Joyner
JEREMIAH JOYNER
Senior Right of Way Agent
Project Delivery Branch
Eureka

5/19/16
Date

Robert Chase for Karen E. Hawkins
KAREN E. HAWKINS
Assistant Chief
North Region Right of Way
Eureka/Redding

5/23/16
Date

MEMORANDUM

*Serious Drought.
Help Save Water!*

To: TALITHA HODGSON
Design Engineer
Department of Transportation

Attention: CARLON SCHRIEVE
Project Engineer

Date: May 11, 2016

File: 01-DN-101-PM 12.0-15.5
EFIS No.: 01 1500 0099
EA: 0F280K
Alternate: A-2 (3 of 6)

From: KAREN E. HAWKINS
North Region Right of Way Assistant Manager,
Project Delivery
Eureka/Redding


Subject: CURRENT ESTIMATED RIGHT OF WAY COSTS

Project Description: In Del Norte Co. from Wilson Creek Bridge to 3.8 miles north of Wilson Creek Bridge

Alternate Description: A-2

We have completed an estimate of the right of way costs for the above referenced project based on information received from you on October 23, 2015 .

Right of Way Lead Time will require a minimum of 36 months after receipt of appraisal maps, utility conflict maps, environmental clearances (HMDD) and Certificate of Sufficiency (COS). A minimum of 36 months prior to certification will be required from receipt of the last map revision. Shorter lead times may require additional support resources and may adversely affect delivery of Right of Way Certification.


KAREN E. HAWKINS
Assistant Chief
North Region Right of Way
EUREKA/REDDING

Attachments:
Right of Way Data Sheet

cc. Sebastian Cohen

State of California - Department of Transportation
RIGHT OF WAY DATASHEET



EA: OF280K
PROJECT NO.: 01 1500 0099
LOCATION: 01-DN-101-PM 12.0-15.5
Description: Repair slides, construct bypass
 In Del Norte Co. from Wilson
 Creek Bridge to 3.8 miles north
 of Wilson Creek Bridge

ALTERNATE: A-2 (3 of 6)
DATE: 5/11/2016
Datasheet Type: Revision

1. Right of Way Cost Estimate:

	Current Value Future Use	Escalation Rate	Escalated Value
A. Total Acquisition Cost	\$1,046,750	5%	\$2,087,507
B. Appraisal Fees Estimate	\$10,000	N/A	\$10,000
C. Mitigation Acquisition & Credits	\$39,375,000	5%	\$78,524,578
D. Project Development Permit Fees	\$453,000	5%	\$903,407
Subtotal	\$40,884,750		\$81,525,492
E. Utility Relocation (State's Share)	\$1,505,000	5%	\$3,001,384
(Owner's Share: _____ \$0 _____)			
F. Relocation Assistance (RAP)	\$0		\$0
G. Clearance/Demolition	\$0		\$0
H. Title & Escrow	\$2,000	5%	\$3,989
I. Total Estimated Right of Way Cost	\$42,391,750	Rounded	\$84,531,000 *
J. Construction Contract Work	\$0		

2. Current Date of Right of Way Certification July 1, 2030

3. Parcel Data:

Type	Dual/Appr	Utilities	Railroad
X	0	U4 - 1	C&M Agreement
A	0	- 2	Service Contract
B	2	- 3	Easements
C	2	- 4	Rights of Entry
D	0	U5 - 7	Clauses
RR	0	- 8	
Total	4	- 9	
Excess	0		

Areas:	Mitigation	Misc. R/W Work
R/W	Impacts	RAP Displacees
175.3 AC	2	N/A
TCE	Parcels	Clear/Demo
N/A	0	N/A
Excess	Credits	Permit to Enters
N/A	1	N/A
Mitigation		Condemnation
N/A		0
		USA Involvement
		Yes

4. Provide a general description of the right of way and excess lands required (zoning, use, major improvements, critical or sensitive parcels, etc.).

164 acres will be required from Green Diamond Resource Company, and 9.3 acres will be required from Redwood National Parks. Additional parcels were added for the utility relocations that will be at State expense.

5. Are any properties acquired for this project expected to be rented, leased, or sold?

Yes _____ No X

6. Are RAP displacements required?

Yes _____ No X

No. of single family N/A

No. of business/nonprofit N/A

No. of multi-family N/A

No. of farms N/A

Based on Draft/Final Relocation Impact Statement/Study dated _____ N/A

N/A Sufficient replacement housing will be available without last resort housing.

N/A Sufficient replacement housing will not be available without last resort housing.

7. Is there an effect on assessed valuation?

Yes _____ No X Not Significant _____

8. Are there any items of Construction Contract Work?

Yes _____ No X

There is no Construction Contract Work associated with the project.

9. Are utility facilities or rights of way affected?

Yes X No _____

Names of Utility Companies requiring verification only.

Blue Star Gas (Propane), Charter Communication (Communication), County of Del Norte (Water, Sewer), Frontier Communication (Communication), City of Crescent City (Water, Sewer), Pacific Power and Light (Electric Distribution)

Names of Utility Companies requiring involvements.

Pacific Power and Light (Electric Transmission)

Additional information concerning Utility Involvement on this project.

Alt "A-2" has potential utility conflicts with 2 aerial Electric Transmission facilities. State Expense. 2 replacement easements may be required for this relocation. As additional information becomes available, this estimate may need to be revised.

10. Are railroad facilities or rights of way affected?

Yes _____ No X Phase 4 Capital \$0

11. Are USA Lands or Rights Affected?

Yes X No _____ Phase 4 Capital \$0

Agencies Involved:

US Forest Service X BLM _____ Army Corps of Engineers _____
National Parks _____ BIA _____ Veterans Administration _____
US Fish & Wildlife _____ GSA _____

Rights or Permissions to acquire:

Easement X Special Use Permit _____ Courtesy Letter _____
Right of Way Grant _____ Cooperative Work Agreement _____ Cost Recovery X
Mineral Agreement _____ Letter of Concurrence _____ Timber Sale _____

Acquisition of rights required will be heavily dependent on getting the federal agencies involved to accept Caltran's NEPA Document. Early consultation with Feds on their NEPA requirements for the Document is critical.

12. Is an RE Office required for the project?

Yes X No _____

Type of RE Office

Modular X Move In _____

13. Were any previously unidentified sites with hazardous waste and/or material found?

Yes _____ None Evident X

14. Are there material borrow and/or disposal sites required?

No _____ Optional _____ Manditory X

On-site disposal is within estimated R/W

15. Are there potential relinquishments and/or abandonments?

Yes X No _____

Unknown at present

16. Are there any existing and/or potential airspace sites?

Yes _____ No X

17. What type of mitigation is required for the project?

Mitigation estimates are very preliminary. Per Jason Meyer they are being calculated as a percentage of the Alternatives total cost. Of that total another percentage is broken out for R/W for the acquisition on needed mitigation property.

18. Is it anticipated that Caltrans will perform all Right of Way work?

Yes _____ No _____

19. Indicate the anticipated Right of Way schedule and lead time requirements.

Right of Way Lead Time will require a minimum of 36 months after we receive first appraisal maps, utility conflict maps, necessary environmental clearances and freeway agreements have been approved and obtained. Additionally a minimum of 36 months will be required after receiving the last appraisal map to Right of Way for certification.

20. Assumptions and limiting Conditions: (Check boxes that apply.)

- Mapping did not provide sufficient detail to determine the limits of the right of way required.
- Transportation facilities have not been sufficiently designed to determine the damages to any of the remainder parcels affected by the project.
- Additional right of way requirements are anticipated, but are not defined due to the preliminary nature of the early design requirements.
- Design will secure necessary encroachment permits from local agencies.
- Project permits are not required for the project.
- _____
- _____
- _____
- _____
- _____
- _____

Evaluation Prepared By:

Right of Way Natalie Morris
NATALIE MORRIS

Date 5/19/16

Reviewed By

RW Project Coordinator [Signature]
SAM GENTLE

Date 9-5-16

I have personally reviewed this Right of Way Data Sheet and all supporting information. I certify that the probable Highest and Best Use, estimated values, escalation rates and assumptions are reasonable and proper, subject to the limiting conditions set forth, and I find this Data Sheet to be complete and current.

[Signature]
JEREMIAH JOYNER
Senior Right of Way Agent
Project Delivery Branch
Eureka

5/19/16
Date

[Signature]
KAREN E. HAWKINS
Assistant Chief
North Region Right of Way
Eureka/Redding

5/23/16
Date

MEMORANDUM

*Serious Drought.
Help Save Water!*

To: TALITHA HODGSON
Design Engineer
Department of Transportation

Attention: CARLON SCHRIEVE
Project Engineer

From: KAREN E. HAWKINS
North Region Right of Way Assistant Manager,
Project Delivery
Eureka/Redding

Date: May 11, 2016

File: 01-DN-101-PM 12.0-15.5
EFIS No.: 01 1500 0099
EA: 0F280K
Alternate: F (1-6)

Subject: CURRENT ESTIMATED RIGHT OF WAY COSTS

Project Description: In Del Norte Co. from Wilson Creek Bridge to 3.8 miles north of Wilson Creek Bridge

Alternate Description: F

We have completed an estimate of the right of way costs for the above referenced project based on information received from you on October 23, 2015 .

Right of Way Lead Time will require a minimum of 36 months after receipt of appraisal maps, utility conflict maps, environmental clearances (HMDD) and Certificate of Sufficiency (COS). A minimum of 36 months prior to certification will be required from receipt of the last map revision. Shorter lead times may require additional support resources and may adversely affect delivery of Right of Way Certification.



KAREN E. HAWKINS
Assistant Chief
North Region Right of Way
EUREKA/REDDING

Attachments:
Right of Way Data Sheet

cc. Sebastian Cohen

State of California - Department of Transportation
RIGHT OF WAY DATASHEET



EA: 0F280K
PROJECT NO.: 01 1500 0099
LOCATION: 01-DN-101-PM 12.0-15.5
Description: Repair slides, construct bypass
 In Del Norte Co. from Wilson
 Creek Bridge to 3.8 miles north
 of Wilson Creek Bridge

ALTERNATE: F (1-6)
DATE: 5/11/2016
Datasheet Type: Revision

1. Right of Way Cost Estimate:

	Current Value Future Use	Escalation Rate	Escalated Value
A. Total Acquisition Cost	\$1,125	5%	\$2,244
B. Appraisal Fees Estimate	\$0	N/A	\$0
C. Mitigation Acquisition & Credits	\$13,125,000	5%	\$26,174,859
D. Project Development Permit Fees	\$453,000	5%	\$903,407
Subtotal	<u>\$13,579,125</u>		<u>\$27,080,509</u>
E. Utility Relocation (State's Share)	\$5,000	5%	\$9,971
(Owner's Share: _____ \$0 _____)			
F. Relocation Assistance (RAP)	\$0		\$0
G. Clearance/Demolition	\$0		\$0
H. Title & Escrow	\$0		\$0
I. Total Estimated Right of Way Cost	<u>\$13,584,125</u>	Rounded	<u>\$27,090,000 *</u>
J. Construction Contract Work	\$0		

2. Current Date of Right of Way Certification July 1, 2030

3. Parcel Data:

Type	Dual/Appr	Utilities	Railroad
X <u>0</u>		U4 - 1 <u>0</u>	C&M Agreement <u>0</u>
A <u>0</u>		- 2 <u>0</u>	Service Contract <u>0</u>
B <u>0</u>		- 3 <u>0</u>	Easements <u>0</u>
C <u>1</u>	<u>0</u>	- 4 <u>0</u>	Rights of Entry <u>0</u>
D <u>0</u>	<u>0</u>	U5 - 7 <u>7</u>	Clauses <u>0</u>
RR <u>0</u>		- 8 <u>0</u>	
Total <u>1</u>		- 9 <u>0</u>	
Excess <u>0</u>			

Areas:	Mitigation	Misc. R/W Work
R/W <u>12.7 AC</u>	Impacts <u>2</u>	RAP Displacees <u>N/A</u>
TCE <u>N/A</u>	Parcels <u>0</u>	Clear/Demo <u>N/A</u>
Excess <u>N/A</u>	Credits <u>1</u>	Permit to Enters <u>N/A</u>
Mitigation <u>N/A</u>		Condemnation <u>0</u>
		USA Involvement <u>Yes</u>

4. Provide a general description of the right of way and excess lands required (zoning, use, major improvements, critical or sensitive parcels, etc.).

Approximately 12.7 acres will be required from Redwood National Park for a tunnel.

5. Are any properties acquired for this project expected to be rented, leased, or sold?

Yes _____ No X

6. Are RAP displacements required?

Yes _____ No X

No. of single family N/A

No. of business/nonprofit N/A

No. of multi-family N/A

No. of farms N/A

Based on Draft/Final Relocation Impact Statement/Study dated _____ N/A

 N/A Sufficient replacement housing will be available without last resort housing.

 N/A Sufficient replacement housing will not be available without last resort housing.

7. Is there an effect on assessed valuation?

Yes _____ No X Not Significant _____

8. Are there any items of Construction Contract Work?

Yes _____ No X

There is no Construction Contract Work associated with the project.

9. Are utility facilities or rights of way affected?

Yes X No _____

Names of Utility Companies requiring verification only.

Blue Star Gas (Propane), Charter Communication (Communication), County of Del Norte (Water, Sewer), Frontier Communication (Communication), Pacific Power and Light (Electric Transmission), Pacific Power and Light (Electric Distribution), City of Crescent City (Water, Sewer)

Names of Utility Companies requiring involvements.

None Anticipated

Additional information concerning Utility Involvement on this project.

Alt. "F" has no utility conflicts anticipated. As additional information becomes available, this estimate may need to be revised.

10. Are railroad facilities or rights of way affected?

Yes _____ No X Phase 4 Capital \$0

11. Are USA Lands or Rights Affected?

Yes X No _____ Phase 4 Capital \$0

Agencies Involved:

US Forest Service _____	BLM _____	Army Corps of Engineers _____
National Parks <u> X </u>	BIA _____	Vetrans Administration _____
US Fish & Wildlife _____	GSA _____	FHWA <u> X </u>

Rights or Permissions to acquire:

Easement <u> X </u>	Special Use Permit _____	Courtesy Letter _____
Right of Way Grant _____	Cooperative Work Agreement _____	Cost Recovery <u> X </u>
Mineral Agreement _____	Letter of Concurrence <u> X </u>	Timber Sale _____

Acquisition of rights required will be heavily dependent on getting the federal agencies involved to accept Caltran's NEPA Document. Early consultation with Feds on their NEPA requirements for the Document is critical.

12. Is an RE Office required for the project?

Yes X No _____

Type of RE Office

Modular X Move In _____

13. Were any previously unidentified sites with hazardous waste and/or material found?

Yes _____ None Evident X

14. Are there material borrow and/or disposal sites required?

No _____ Optional _____ Manditory X

On-site disposal is within estimated R/W

15. Are there potential relinquishments and/or abandonments?

Yes X No _____

Unknown at present

16. Are there any existing and/or potential airspace sites?

Yes _____ No X

17. What type of mitigation is required for the project?

Mitigation estimates are very preliminary. Per Jason Meyer they are being calculated as a percentage of the Alternatives total cost. Of that total, another percentage is broken out for R/W for the acquisition on needed mitigation property.

18. Is it anticipated that Caltrans will perform all Right of Way work?

Yes _____ No _____

19. Indicate the anticipated Right of Way schedule and lead time requirements.

Right of Way Lead Time will require a minimum of 36 months after we receive first appraisal maps, utility conflict maps, necessary environmental clearances and freeway agreements have been approved and obtained. Additionally a minimum of 36 months will be required after receiving the last appraisal map to Right of Way for certification.

20. Assumptions and limiting Conditions: (Check boxes that apply.)

- Mapping did not provide sufficient detail to determine the limits of the right of way required.
- Transportation facilities have not been sufficiently designed to determine the damages to any of the remainder parcels affected by the project.
- Additional right of way requirements are anticipated, but are not defined due to the preliminary nature of the early design requirements.
- Design will secure necessary encroachment permits from local agencies.
- Project permits are not required for the project.
- _____
- _____
- _____
- _____
- _____
- _____

Evaluation Prepared By:

Right of Way *Natalie Morris*
NATALIE MORRIS

Date 5/19/2016

Reviewed By

RW Project Coordinator *[Signature]*
SAM GENTLE

Date 5-19-16

I have personally reviewed this Right of Way Data Sheet and all supporting information. I certify that the probable Highest and Best Use, estimated values, escalation rates and assumptions are reasonable and proper, subject to the limiting conditions set forth, and I find this Data Sheet to be complete and current.

for Jeremia M Spellenberg
JEREMIAH JOYNER
Senior Right of Way Agent
Project Delivery Branch
Eureka

5/19/16
Date

Robert Close for
KAREN E. HAWKINS
Assistant Chief
North Region Right of Way
Eureka/Redding

5/23/16
Date

MEMORANDUM

*Serious Drought.
Help Save Water!*

To: TALITHA HODGSON
Design Engineer
Department of Transportation

Attention: CARLON SCHRIEVE
Project Engineer

Date: May 11, 2016

File: 01-DN-101-PM 12.0-15.5
EFIS No.: 01 1500 0099
EA: 0F280K
Alternate: C-3 (4 of 6)

From: KAREN E. HAWKINS
North Region Right of Way Assistant Manager,
Project Delivery
Eureka/Redding

Subject: CURRENT ESTIMATED RIGHT OF WAY COSTS

Project Description: In Del Norte Co. from Wilson Creek Bridge to 3.8 miles north of Wilson Creek Bridge

Alternate Description: C-3

We have completed an estimate of the right of way costs for the above referenced project based on information received from you on October 23, 2015 .

Right of Way Lead Time will require a minimum of 36 months after receipt of appraisal maps, utility conflict maps, environmental clearances (HMDD) and Certificate of Sufficiency (COS). A minimum of 36 months prior to certification will be required from receipt of the last map revision. Shorter lead times may require additional support resources and may adversely affect delivery of Right of Way Certification.



KAREN E. HAWKINS
Assistant Chief
North Region Right of Way
EUREKA/REDDING

Attachments:
Right of Way Data Sheet

cc. Sebastian Cohen

State of California - Department of Transportation
RIGHT OF WAY DATASHEET



EA: 0F280K
PROJECT NO.: 01 1500 0099
LOCATION: 01-DN-101-PM 12.0-15.5
Description: Repair slides, construct bypass
 In Del Norte Co. from Wilson
 Creek Bridge to 3.8 miles north
 of Wilson Creek Bridge

ALTERNATE: C-3 (4 of 6)
DATE: 5/11/2016
Datasheet Type: Revision

1. Right of Way Cost Estimate:

	Current Value Future Use	Escalation Rate	Escalated Value
A. Total Acquisition Cost	\$2,504,625	5%	\$4,994,911
B. Appraisal Fees Estimate	\$20,000	N/A	\$20,000
C. Mitigation Acquisition & Credits	\$28,350,000	5%	\$56,537,696
D. Project Development Permit Fees	\$453,000	5%	\$903,407
Subtotal	\$31,327,625		\$62,456,013
E. Utility Relocation (State's Share) (Owner's Share: _____ \$0)	\$6,755,000	5%	\$13,471,328
F. Relocation Assistance (RAP)	\$0		\$0
G. Clearance/Demolition	\$0		\$0
H. Title & Escrow	\$4,000	5%	\$7,977
I. Total Estimated Right of Way Cost	\$38,086,625		Rounded \$75,935,000 *
J. Construction Contract Work	\$0		

2. Current Date of Right of Way Certification July 1, 2030

3. Parcel Data:

Type	Dual/Appr	Utilities	Railroad
X	0	U4 - 1	C&M Agreement
A	0	- 2	Service Contract
B	4	- 3	Easements
C	2	- 4	Rights of Entry
D	0	U5 - 7	Clauses
RR	0	- 8	
Total	6	- 9	
Excess	0		

Areas:	Mitigation	Misc. R/W Work
R/W	Impacts	RAP Displaces
484.9 AC	2	N/A
TCE	Parcels	Clear/Demo
N/A	0	N/A
Excess	Credits	Permit to Enters
N/A	1	N/A
Mitigation		Condemnation
N/A		1
		USA Involvement
		Yes

4. Provide a general description of the right of way and excess lands required (zoning, use, major improvements, critical or sensitive parcels, etc.).

336.3 acres will be required from Green Diamond Resource Company, 101.6 acres will be required from Del Norte Coast Redwoods State Park, and 44 acres will be required from Redwood National Parks. This alternative may leave some parcels landlocked. Additional parcels were added for the utility relocations that will be at State expense.

5. Are any properties acquired for this project expected to be rented, leased, or sold?

Yes _____ No X

6. Are RAP displacements required?

Yes _____ No X

No. of single family N/A

No. of business/nonprofit N/A

No. of multi-family N/A

No. of farms N/A

Based on Draft/Final Relocation Impact Statement/Study dated _____ N/A

N/A Sufficient replacement housing will be available without last resort housing.

N/A Sufficient replacement housing will not be available without last resort housing.

7. Is there an effect on assessed valuation?

Yes _____ No X Not Significant _____

8. Are there any items of Construction Contract Work?

Yes _____ No X

There is no Construction Contract Work associated with the project.

9. Are utility facilities or rights of way affected?

Yes X No _____

Names of Utility Companies requiring verification only.

Blue Star Gas (Propane), Charter Communication (Communication), County of Del Norte (Water, Sewer), Frontier Communication (Communication), City of Crescent City (Water, Sewer), Pacific Power and Light (Electric Distribution)

Names of Utility Companies requiring involvements.

Pacific Power and Light (Electric Transmission)

Additional information concerning Utility Involvement on this project.

Alt "C-3" has potential utility conflicts with 9 Electric Transmission facilities. State Expense. 3 replacement utility easements may be required. As additional information becomes available, this estimate may need to be revised.

10. Are railroad facilities or rights of way affected?

Yes _____ No X Phase 4 Capital \$0

11. Are USA Lands or Rights Affected?

Yes X No _____ Phase 4 Capital \$0

Agencies Involved:

US Forest Service _____	BLM _____	Army Corps of Engineers _____
National Parks <u> X </u>	BIA _____	Vetrans Administration _____
US Fish & Wildlife _____	GSA _____	_____

Rights or Permissions to acquire:

Easement <u> X </u>	Special Use Permit _____	Courtesy Letter _____
Right of Way Grant _____	Cooperative Work Agreement _____	Cost Recovery <u> X </u>
Mineral Agreement _____	Letter of Concurrence <u> X </u>	Timber Sale _____

Acquisition of rights required will be heavily dependent on getting the federal agencies involved to accept Caltran's NEPA Document. Early consultation with Feds on their NEPA requirements for the Document is critical.

12. Is an RE Office required for the project?

Yes X No _____

Type of RE Office

Modular X Move In _____

13. Were any previously unidentified sites with hazardous waste and/or material found?

Yes _____ None Evident X

14. Are there material borrow and/or disposal sites required?

No _____ Optional _____ Manditory X

On-site disposal is within estimated R/W

15. Are there potential relinquishments and/or abandonments?

Yes X No _____

Unknown at present

16. Are there any existing and/or potential airspace sites?

Yes _____ No X

17. What type of mitigation is required for the project?

Mitigation estimates are very preliminary. Per Jason Meyer they are being calculated as a percentage of the Alternatives total cost. Of that total another percentage is broken out for R/W for the acquisition on needed mitigation property.

18. Is it anticipated that Caltrans will perform all Right of Way work?

Yes _____ No **X** _____

19. Indicate the anticipated Right of Way schedule and lead time requirements.

Right of Way Lead Time will require a minimum of **36** months after we receive first appraisal maps, utility conflict maps, necessary environmental clearances and freeway agreements have been approved and obtained. Additionally a minimum of **36** months will be required after receiving the last appraisal map to Right of Way for certification.

20. Assumptions and limiting Conditions: (Check boxes that apply.)

- Mapping did not provide sufficient detail to determine the limits of the right of way required.
- Transportation facilities have not been sufficiently designed to determine the damages to any of the remainder parcels affected by the project.
- Additional right of way requirements are anticipated, but are not defined due to the preliminary nature of the early design requirements.
- Design will secure necessary encroachment permits from local agencies.
- Project permits are not required for the project.
- _____
- _____
- _____
- _____
- _____
- _____

Evaluation Prepared By:

Right of Way *Natalie Morris*
NATALIE MORRIS

Date 5/19/2016

Reviewed By
RW Project Coordinator *Sam Gentle*
SAM GENTLE

Date 5-19-2016

I have personally reviewed this Right of Way Data Sheet and all supporting information. I certify that the probable Highest and Best Use, estimated values, escalation rates and assumptions are reasonable and proper, subject to the limiting conditions set forth, and I find this Data Sheet to be complete and current.

Jeremiah Joyner
JEREMIAH JOYNER
Senior Right of Way Agent
Project Delivery Branch
Eureka

5/19/16
Date

Robert Case for Karen E. Hawkins
KAREN E. HAWKINS
Assistant Chief
North Region Right of Way
Eureka/Redding

5/23/16
Date

MEMORANDUM

*Serious Drought,
Help Save Water!*

To: TALITHA HODGSON
Design Engineer
Department of Transportation

Attention: CARLON SCHRIEVE
Project Engineer

Date: May 11, 2016

File: 01-DN-101-PM 12.0-15.5
EFIS No.: 01 1500 0099
EA: 0F280K
Alternate: C-4 (5 of 6)

From: KAREN E. HAWKINS
North Region Right of Way Assistant Manager,
Project Delivery
Eureka/Redding


Subject: CURRENT ESTIMATED RIGHT OF WAY COSTS

Project Description: In Del Norte Co. from Wilson Creek Bridge to 3.8 miles north of Wilson Creek Bridge

Alternate Description: C-4

We have completed an estimate of the right of way costs for the above referenced project based on information received from you on October 23, 2015 .

Right of Way Lead Time will require a minimum of 36 months after receipt of appraisal maps, utility conflict maps, environmental clearances (HMDD) and Certificate of Sufficiency (COS). A minimum of 36 months prior to certification will be required from receipt of the last map revision. Shorter lead times may require additional support resources and may adversely affect delivery of Right of Way Certification.


KAREN E. HAWKINS
Assistant Chief
North Region Right of Way
EUREKA/REDDING

Attachments:
Right of Way Data Sheet

cc. Sebastian Cohen

State of California - Department of Transportation
RIGHT OF WAY DATASHEET



EA: 0F280K
PROJECT NO.: 01 1500 0099
LOCATION: 01-DN-101-PM 12.0-15.5
Description: Repair slides, construct bypass
 In Del Norte Co. from Wilson
 Creek Bridge to 3.8 miles north
 of Wilson Creek Bridge

ALTERNATE: C-4 (5 of 6)
DATE: 5/11/2016
Datasheet Type: Revision

1. Right of Way Cost Estimate:

	<u>Current Value Future Use</u>	<u>Escalation Rate</u>	<u>Escalated Value</u>
A. Total Acquisition Cost	\$2,504,625	5%	\$4,994,911
B. Appraisal Fees Estimate	\$20,000	N/A	\$20,000
C. Mitigation Acquisition & Credits	\$28,940,625	5%	\$57,715,565
D. Project Development Permit Fees	\$453,000	5%	\$903,407
Subtotal	<u>\$31,918,250</u>		<u>\$63,633,882</u>
E. Utility Relocation (State's Share)	\$6,755,000	5%	\$13,471,328
(Owner's Share: <u> \$50,000 </u>)			
F. Relocation Assistance (RAP)	\$0		\$0
G. Clearance/Demolition	\$0		\$0
H. Title & Escrow	\$4,000	5%	\$7,977
I. Total Estimated Right of Way Cost	<u>\$38,677,250</u>		<u>\$77,113,000 *</u>
J. Construction Contract Work	<u>\$0</u>		

2. Current Date of Right of Way Certification July 1, 2030

3. Parcel Data:

Type	Dual/Appr	Utilities	Railroad
X <u>0</u>		U4 - 1 <u>1</u>	C&M Agreement <u>0</u>
A <u>0</u>		- 2 <u>1</u>	Service Contract <u>0</u>
B <u>4</u>		- 3 <u>0</u>	Easements <u>0</u>
C <u>2</u>	<u>0</u>	- 4 <u>0</u>	Rights of Entry <u>0</u>
D <u>0</u>	<u>0</u>	U5 - 7 <u>5</u>	Clauses <u>0</u>
RR <u>0</u>		- 8 <u>0</u>	
Total <u>6</u>		- 9 <u>2</u>	
Excess <u>0</u>			

Areas:	Mitigation	Misc. R/W Work
R/W <u>500.3 AC</u>	Impacts <u>2</u>	RAP Displaces <u>N/A</u>
TCE <u>N/A</u>	Parcels <u>0</u>	Clear/Demo <u>N/A</u>
Excess <u>N/A</u>	Credits <u>1</u>	Permit to Enters <u>N/A</u>
Mitigation <u>N/A</u>		Condemnation <u>1</u>
		USA Involvement <u>Yes</u>

4. Provide a general description of the right of way and excess lands required (zoning, use, major improvements, critical or sensitive parcels, etc.).

336.3 acres will be required from Green Diamond Resource Company, 101.6 acres will be required from Del Norte Coast Redwoods State Park, and 59.4 acres will be required from Redwood National Parks. Additional parcels were added for the utility relocations that will be at State expense.

5. Are any properties acquired for this project expected to be rented, leased, or sold?

Yes _____ No X

6. Are RAP displacements required?

Yes _____ No X

No. of single family N/A

No. of business/nonprofit N/A

No. of multi-family N/A

No. of farms N/A

Based on Draft/Final Relocation Impact Statement/Study dated _____ N/A

N/A Sufficient replacement housing will be available without last resort housing.

N/A Sufficient replacement housing will not be available without last resort housing.

7. Is there an effect on assessed valuation?

Yes _____ No X Not Significant _____

8. Are there any items of Construction Contract Work?

Yes _____ No X

There is no Construction Contract Work associated with the project.

9. Are utility facilities or rights of way affected?

Yes X No _____

Names of Utility Companies requiring verification only.

Blue Star Gas (Propane), Charter Communication (Communication), County of Del Norte (Water, Sewer), Frontier Communication (Communication), City of Crescent City (Water, Sewer)

Names of Utility Companies requiring involvements.

Pacific Power and Light (Electric Distribution), Pacific Power and Light (Electric Transmission)

Additional information concerning Utility Involvement on this project.

Alt "C-4" has potential conflicts with 9 aerial Electric Transmission facilities and 1 underground Electric Distribution facility. The Transmission will be at State Expense, and the Distribution appears to be Owner Expense. 3 replacement easements may be required. As additional information becomes available, this estimate may need to be revised.

10. Are railroad facilities or rights of way affected?

Yes _____ No X Phase 4 Capital \$0

11. Are USA Lands or Rights Affected?

Yes X No _____ Phase 4 Capital \$0

Agencies Involved:

US Forest Service _____ BLM _____ Army Corps of Engineers _____
National Parks X BIA _____ Vetrans Administration _____
US Fish & Wildlife _____ GSA _____

Rights or Permissions to acquire:

Easement X Special Use Permit _____ Courtesy Letter _____
Right of Way Grant _____ Cooperative Work Agreement _____ Cost Recovery X
Mineral Agreement _____ Letter of Concurrence X Timber Sale _____

Acquisition of rights required will be heavily dependent on getting the federal agencies involved to accept Caltran's NEPA Document. Early consultation with Feds on their NEPA requirements for the Document is critical.

12. Is an RE Office required for the project?

Yes X No _____

Type of RE Office

Modular X Move In _____

13. Were any previously unidentified sites with hazardous waste and/or material found?

Yes _____ None Evident X

14. Are there material borrow and/or disposal sites required?

No _____ Optional _____ Manditory X

On-site disposal is within estimated R/W.

15. Are there potential relinquishments and/or abandonments?

Yes X No _____

Unknown at present

16. Are there any existing and/or potential airspace sites?

Yes _____ No X

17. What type of mitigation is required for the project?

Mitigation estimates are very preliminary. Per Jason Meyer they are being calculated as a percentage of the Alternatives total cost. Of that total, another percentage is broken out for R/W for the acquisition on needed mitigation property.

18. Is it anticipated that Caltrans will perform all Right of Way work?

Yes _____ No _____

19. Indicate the anticipated Right of Way schedule and lead time requirements.

Right of Way Lead Time will require a minimum of **36** months after we receive first appraisal maps, utility conflict maps, necessary environmental clearances and freeway agreements have been approved and obtained. Additionally a minimum of **36** months will be required after receiving the last appraisal map to Right of Way for certification.

20. Assumptions and limiting Conditions: (Check boxes that apply.)

- Mapping did not provide sufficient detail to determine the limits of the right of way required.
- Transportation facilities have not been sufficiently designed to determine the damages to any of the remainder parcels affected by the project.
- Additional right of way requirements are anticipated, but are not defined due to the preliminary nature of the early design requirements.
- Design will secure necessary encroachment permits from local agencies.
- Project permits are not required for the project.
- _____
- _____
- _____
- _____
- _____
- _____

Evaluation Prepared By:

Right of Way *Natalie Morris*
NATALIE MORRIS

Date _____

Reviewed By

RW Project Coordinator *[Signature]*
SAM GENTLE

Date 5-19-16

I have personally reviewed this Right of Way Data Sheet and all supporting information. I certify that the probable Highest and Best Use, estimated values, escalation rates and assumptions are reasonable and proper, subject to the limiting conditions set forth, and I find this Data Sheet to be complete and current.

Jeremiah Joyner
JEREMIAH JOYNER
Senior Right of Way Agent
Project Delivery Branch
Eureka

5/19/16
Date

Robert Close for Karen E. Hawkins
KAREN E. HAWKINS
Assistant Chief
North Region Right of Way
Eureka/Redding

5/23/16
Date

MEMORANDUM

*Serious Drought.
Help Save Water!*

To: TALITHA HODGSON
Design Engineer
Department of Transportation

Attention: CARLON SCHRIEVE
Project Engineer

From: KAREN E. HAWKINS
North Region Right of Way Assistant Manager,
Project Delivery
Eureka/Redding

Date: May 11, 2016

File: 01-DN-101-PM 12.0-15.5
EFIS No.: 01 1500 0099
EA: 0F280K
Alternate: C-5 (6 of 6)


Subject: CURRENT ESTIMATED RIGHT OF WAY COSTS

Project Description: In Del Norte Co. from Wilson Creek Bridge to 3.8 miles north of Wilson Creek Bridge

Alternate Description: C-5

We have completed an estimate of the right of way costs for the above referenced project based on information received from you on October 23, 2015 .

Right of Way Lead Time will require a minimum of 36 months after receipt of appraisal maps, utility conflict maps, environmental clearances (HMDD) and Certificate of Sufficiency (COS). A minimum of 36 months prior to certification will be required from receipt of the last map revision. Shorter lead times may require additional support resources and may adversely affect delivery of Right of Way Certification.


KAREN E. HAWKINS
Assistant Chief
North Region Right of Way
EUREKA/REDDING

Attachments:
Right of Way Data Sheet

cc. Sebastian Cohen

State of California - Department of Transportation
RIGHT OF WAY DATASHEET



EA: OF280K
PROJECT NO.: 01 1500 0099
LOCATION: 01-DN-101-PM 12.0-15.5
Description: Repair slides, construct bypass
 In Del Norte Co. from Wilson
 Creek Bridge to 3.8 miles north
 of Wilson Creek Bridge

ALTERNATE: C-5 (6 of 6)
DATE: 5/11/2016
Datasheet Type: Revision

1. Right of Way Cost Estimate:

	Current Value Future Use	Escalation Rate	Escalated Value
A. Total Acquisition Cost	\$2,852,125	5%	\$5,687,922
B. Appraisal Fees Estimate	\$20,000	N/A	\$20,000
C. Mitigation Acquisition & Credits	\$33,862,500	5%	\$67,531,137
D. Project Development Permit Fees	\$453,000	5%	\$903,407
Subtotal	\$37,187,625		\$74,142,465
E. Utility Relocation (State's Share)	\$7,705,000	5%	\$15,365,889
(Owner's Share: _____ \$0 _____)			
F. Relocation Assistance (RAP)	\$0		\$0
G. Clearance/Demolition	\$0		\$0
H. Title & Escrow	\$4,000	5%	\$7,977
I. Total Estimated Right of Way Cost	\$44,896,625		Rounded \$89,516,000 *
J. Construction Contract Work	\$0		

2. Current Date of Right of Way Certification July 1, 2030

3. Parcel Data:

Type	Dual/Appr	Utilities	Railroad
X	0	U4 - 1	C&M Agreement
A	0	- 2	Service Contract
B	4	- 3	Easements
C	2	- 4	Rights of Entry
D	0	U5 - 7	Clauses
RR	0	- 8	
Total	6	- 9	
Excess	0		

Areas:	Mitigation	Misc. R/W Work
R/W	Impacts	RAP Displaces
581.4 AC	2	N/A
TCE	Parcels	Clear/Demo
N/A	0	N/A
Excess	Credits	Permit to Enters
N/A	1	N/A
Mitigation		Condemnation
N/A		1
		USA Involvement
		Yes

4. Provide a general description of the right of way and excess lands required (zoning, use, major improvements, critical or sensitive parcels, etc.).

336.3 acres will be required from Green Diamond Resource Company, 101.6 acres will be required from Del Norte Coast Redwoods State Park, and 44 acres will be required from Redwood National Parks. This alternative may leave some parcels landlocked. Additional parcels were added for the utility relocations that will be at State expense.

5. Are any properties acquired for this project expected to be rented, leased, or sold?

Yes _____ No X

6. Are RAP displacements required?

Yes _____ No X

No. of single family N/A

No. of business/nonprofit N/A

No. of multi-family N/A

No. of farms N/A

Based on Draft/Final Relocation Impact Statement/Study dated _____ N/A

 N/A Sufficient replacement housing will be available without last resort housing.

 N/A Sufficient replacement housing will not be available without last resort housing.

7. Is there an effect on assessed valuation?

Yes _____ No X Not Significant _____

8. Are there any items of Construction Contract Work?

Yes _____ No X

There is no Construction Contract Work associated with the project.

9. Are utility facilities or rights of way affected?

Yes X No _____

Names of Utility Companies requiring verification only.

Blue Star Gas (Propane), Charter Communication (Communication), County of Del Norte (Water, Sewer), Frontier Communication (Communication), City of Crescent City (Water, Sewer)

Names of Utility Companies requiring involvements.

Pacific Power and Light (Electric Transmission), Pacific Power and Light (Electric Distribution)

Additional information concerning Utility Involvement on this project.

Alt "C-5" has potential utility conflicts with 9 aerial Electric Transmission facilities and 19 aerial Electric Distribution facilities. State expense. 4 replacement utility easements may be required. As additional information becomes available, this estimate may need to be revised.

10. Are railroad facilities or rights of way affected?

Yes _____ No X Phase 4 Capital \$0

11. Are USA Lands or Rights Affected?

Yes X No _____ Phase 4 Capital \$0

Agencies Involved:

US Forest Service <u> X </u>	BLM _____	Army Corps of Engineers _____
National Parks _____	BIA _____	Vetrans Administration _____
US Fish & Wildlife _____	GSA _____	_____

Rights or Permissions to acquire:

Easement <u> X </u>	Special Use Permit _____	Courtesy Letter _____
Right of Way Grant _____	Cooperative Work Agreement _____	Cost Recovery <u> X </u>
Mineral Agreement _____	Letter of Concurrence <u> X </u>	Timber Sale _____

Acquisition of rights required will be heavily dependent on getting the federal agencies involved to accept Caltran's NEPA Document. Early consultation with Feds on their NEPA requirements for the Document is critical.

12. Is an RE Office required for the project?

Yes X No _____

Type of RE Office

Modular X Move In _____

13. Were any previously unidentified sites with hazardous waste and/or material found?

Yes _____ None Evident X

14. Are there material borrow and/or disposal sites required?

No _____ Optional _____ Manditory X

On-site disposal is within estimated R/W.

15. Are there potential relinquishments and/or abandonments?

Yes X No _____

Unknown at present

16. Are there any existing and/or potential airspace sites?

Yes _____ No X

17. What type of mitigation is required for the project?

Mitigation estimates are very preliminary. Per Jason Meyer they are being calculated as a percentage of the Alternatives total cost. Of that total, another percentage is broken out for R/W for the acquisition on needed mitigation property.

18. Is it anticipated that Caltrans will perform all Right of Way work?

Yes _____ No _____

19. Indicate the anticipated Right of Way schedule and lead time requirements.

Right of Way Lead Time will require a minimum of 36 months after we receive first appraisal maps, utility conflict maps, necessary environmental clearances and freeway agreements have been approved and obtained. Additionally a minimum of 36 months will be required after receiving the last appraisal map to Right of Way for certification.

20. Assumptions and limiting Conditions: (Check boxes that apply.)

- Mapping did not provide sufficient detail to determine the limits of the right of way required.
- Transportation facilities have not been sufficiently designed to determine the damages to any of the remainder parcels affected by the project.
- Additional right of way requirements are anticipated, but are not defined due to the preliminary nature of the early design requirements.
- Design will secure necessary encroachment permits from local agencies.
- Project permits are not required for the project.
- _____
- _____
- _____
- _____
- _____
- _____

Evaluation Prepared By:

Right of Way Natalie Morris
NATALIE MORRIS

Date 5/19/2016

Reviewed By

RW Project Coordinator [Signature]
SAM GENTLE

Date 5-19-16

I have personally reviewed this Right of Way Data Sheet and all supporting information. I certify that the probable Highest and Best Use, estimated values, escalation rates and assumptions are reasonable and proper, subject to the limiting conditions set forth, and I find this Data Sheet to be complete and current.

[Signature]
JEREMIAH JOYNER
Senior Right of Way Agent
Project Delivery Branch
Eureka

[Signature]
KAREN E. HAWKINS
Assistant Chief
North Region Right of Way
Eureka/Redding

Date

5/23/16
Date

ATTACHMENT E
Advance Planning Study

Memorandum

*Flex your power!
Be energy efficient!*

To: TALITHA HODGSON, Chief
Advance Planning Branch
DISTRICT 01

Date: March 1, 2016

Attn: Sebastian Cohen
Jeff Pimentel

File: 01-DN-101-PM12.57/22.7
01-98710K
01 1400 0066
Last Chance Grade Bypass
Various Bridges and
Tunnels

From: GARY JOE
Bridge Design Branch 17
Office of Bridge Design North/Central
Structure Design
Division of Engineering Services



Subject: Advance Planning Study / Preliminary Cost Estimate Transmittal

Attached is the Advance Planning Study / Preliminary Cost Estimate for the above referenced project as submitted to the Division of Engineering Services by your request memo dated June 10, 2015.

The Preliminary Cost Estimate is tabulated below. The Results are organized according to the various alternative alignment segments.

The forecasted structure and tunnel costs shown below include time related overhead (10%), mobilization (10%) and contingencies (25%). Working Days were not developed for this preliminary cost estimate. Except for Bridges 2b and 3a, the bridges have been categorized into one of three categories based primarily on span length. The Categories are described on the APS plan sheets. All the bridges in a category are assigned the same square foot unit price based on a detailed cost estimate performed on one bridge representative of the category. Bridges 2a and 3b were estimated separately (not categorized) due to their long length and unique framing requirements. Tunnel costs were developed primarily by analyzing the recently completed Caldecott Tunnel project in District 4 and selecting applicable items of work and unit costs.

ALIGNMENT SEGMENT 1

Structure	Description	Structure Length (ft)	Estimated Cost
Bridge 1a	2-span CIP/PS Box Girder (Category 1)	347	\$ 6,028,000
Tunnel 1	Mined Tunnel	2425	\$ 458,444,000
TOTAL STRUCTURE COST SEGMENT 1			\$ 464,472,000

ALIGNMENT SEGMENT 2

Structure	Description	Structure Length (ft)	Estimated Cost
Bridge 2a	2-span CIP/PS Box Girder (Category 1)	344	\$ 5,978,000
Bridge 2b	7-span CIP/PS Box Girder	1106	\$ 20,699,000
TOTAL STRUCTURE COST SEGMENT 2			\$ 26,677,000

ALIGNMENT SEGMENT C

Structure	Description	Structure Length (ft)	Estimated Cost
Bridge C-1	3-span CIP/PS Box Girder (Category 2)	544	\$ 10,708,000
Bridge C-2	3-span CIP/PS Box Girder (Category 2)	596	\$ 11,199,000
Tunnel 3	Mined Tunnel	1666	\$ 335,962,000
Bridge C-3	2-span CIP/PS Box Girder (Category 2)	466	\$ 10,262,000
TOTAL STRUCTURE COST SEGMENT C			\$ 368,129,000



ALIGNMENT SEGMENT 3

Structure	Description	Structure Length (ft)	Estimated Cost
Bridge 3a	5-span CIP/PS Box Girder	1098	\$ 22,300,000

ALIGNMENT SEGMENT 4

Structure	Description	Structure Length (ft)	Estimated Cost
Bridge 4a	4-span CIP/PS Box Girder (Category 1)	560	\$ 9,985,000
Bridge 4b	3-span CIP/PS Box Girder (Category 1)	371	\$ 6,445,000
TOTAL STRUCTURE COST SEGMENT 4			\$16,430,000

ALIGNMENT SEGMENT 5

Structure	Description	Structure Length (ft)	Estimated Cost
Bridge 5b	3-span CIP/PS Box Girder (Category 2)	539	\$ 10,128,000
Bridge 5c	3-span CIP/PS Box Girder (Category 2)	510	\$ 9,933,000
Bridge 5d	4-span RC Box Girder (Category 3)	286	\$ 3,288,000

Bridge 5e	2-span RC Box Girder (Category 3)	150	\$ 1,722,000
Bridge 5f	2-span RC Box Girder (Category 3)	150	\$ 1,722,000
Bridge 5g	2-span RC Box Girder (Category 3)	150	\$ 1,722,000
TOTAL STRUCTURE COST SEGMENT 5			\$ 28,511,000



ALIGNMENT SEGMENT F

Structure	Description	Structure Length (ft)	Estimated Cost
Tunnel 2	Mined Tunnel	5600	\$ 978,070,000

The following tables summarize the projected total structure cost based on a variable escalation rate. The escalated structure cost is provided for informational purposes only and does not replace annual cost updates as required by Department policy.

Escalated Costs

Category 1 Bridges

Structure	Years Beyond Midpoint				
	1	2	3	4	5
1a	\$6,181,000	\$6,379,000	\$6,596,000	\$6,794,000	\$6,957,000
2a	\$6,233,000	\$6,432,000	\$6,651,000	\$6,851,000	\$7,015,000
4a	\$10,324,000	\$10,654,000	\$11,016,000	\$11,346,000	\$11,618,000
4b	\$6,664,000	\$6,877,000	\$7,111,000	\$7,324,000	\$7,500,000

Category 2 Bridges

Structure	Years Beyond Midpoint				
	1	2	3	4	5
C-1	\$11,072,000	\$11,426,000	\$11,814,000	\$12,168,000	\$12,460,000
C-2	\$11,580,000	\$11,951,000	\$12,357,000	\$12,728,000	\$13,033,000
C-3	\$10,611,000	\$10,951,000	\$11,323,000	\$11,663,000	\$11,943,000
5b	\$10,472,000	\$10,807,000	\$11,174,000	\$11,509,000	\$11,785,000
5c	\$10,271,000	\$10,600,000	\$10,960,000	\$11,289,000	\$11,560,000

Category 3 Bridges

Structure	Years Beyond Midpoint				
	1	2	3	4	5
5d	\$3,400,000	\$3,509,000	\$3,628,000	\$3,737,000	\$3,827,000
5e, 5f, 5g	\$1,781,000	\$1,838,000	\$1,900,000	\$1,957,000	\$2,004,000

Bridges 2b and 3a

Structure	Years Beyond Midpoint				
	1	2	3	4	5
2b	\$ 21,403,000	\$ 22,088,000	\$ 22,839,000	\$ 23,524,000	\$ 24,089,000
3a	\$ 23,058,000	\$ 23,796,000	\$ 24,605,000	\$ 25,343,000	\$ 25,951,000

Tunnels

Structure	Years Beyond Midpoint				
	1	2	3	4	5
Tunnel 1	\$ 474,031,000	\$ 489,200,000	\$ 505,833,000	\$ 521,008,000	\$ 533,512,000
Tunnel 2	\$ 1,011,324,000	\$ 1,043,686,000	\$ 1,079,171,000	\$1,111,546,000	\$ 1,138,223,000
Tunnel 3	\$ 347,385,000	\$ 358,501,000	\$ 370,690,000	\$ 381,811,000	\$ 390,974,000

This Advance Planning Study and the associated cost estimate are based on the following assumptions:

1. Tunnel Cost Estimates are subject to uncertainty due to a lack of detailed subsurface geotechnical information. The appropriateness of a mined tunnel is based on the recent successful completion of the tunnels at Devil's Slide and Caldecott in District 4.
2. Tunnel Cost Estimates do not include paving costs inside the tunnels. Also excluded are any highway utilities or drainage systems not directly related to the tunnel.
3. The scope of operation buildings and tunnel systems (e.g. ventilation) has not been thoroughly determined. It is assumed they will be needed and the cost for these facilities has been included in the estimate based on similar facilities used at the recently completed Caldecott Tunnel in District 4.
4. Tunnel construction will face several difficulties, including muck disposal and limited work areas at the portal locations. For example, the construction of Tunnel 2 will produce over 250,000 CY of excavated material.
5. The tunnels, by necessity, have several undesirable features. They handle two-way traffic, are on curved alignments, and have profile grades at the upper limit of acceptability according to FHWA guidelines. They are also quite long, which introduces safety evacuation concerns.
6. With the exception of the four bridges that cross Mill Creek at the North end of Alignment 5, CIDH foundations have been assumed for all foundation locations at all bridges. The four bridges crossing Mill Creek assume 36" diameter CISS Piles at the Bents and driven piles at the abutments. Further Geotechnical investigation will be required to finalize foundation types.
7. Bridge locations and span lengths are sensitive to the steep and variable topography. The bridge span layouts and abutment locations will require refinement when final alignments, and topographical and geotechnical information become available.
8. This estimate includes only retaining walls that appear necessary at bridge abutment locations. All walls were assumed to be Type 1 with no further information available

at this time. Feasibility of other wall types, and the potential need for retaining walls at other non-bridge (roadway) locations may be considered at the appropriate stage of project development.

9. The estimate reflects the expected construction constraints due to remote location, steep terrain and difficult access.

If you have any questions or if you need additional information regarding this study, please contact **Rod Simmons** at (916) 227-8168 or **Gary Joe** at (916) 227-8516.

Attachments

- c: ESKINDER TADDESE, Project Liaison Engineer
- GUDMUND SETBERG, Bridge Design Office Chief
- JOHN FUJIMOTO, Technical Liaison Engineer
- EROL KASLAN, Office Chief, Structure Maintenance & Investigations
- JOHN BABCOCK, Structure Construction Assistant Deputy Division Chief
- TOM POKRYWKA, Geotechnical Services

Schrieve, Carlon T@DOT

From: Fujimoto, John H@DOT
Sent: Thursday, June 02, 2016 4:26 PM
To: Pimentel, Jeffrey L@DOT; Schrieve, Carlon T@DOT
Cc: Simmons, Rodney R@DOT; Joe, Gary S@DOT; Taddese, Eskinder@DOT; Li, Louise@DOT
Subject: RE: 0F280K resource estimate

I indicated in red, the changes to the cost totals, below.

John Fujimoto

Technical Liaison Engineer, North Region
Division of Engineering Services, Structure Design
(916) 227-8757



[DES Contacts](#) | [Products & Services](#) | [DES Website](#)

Caltrans Mission: Provide a safe, sustainable, integrated, and efficient transportation system to enhance California's economy and livability.

Caltrans Vision: A performance-driven, transparent, and accountable organization that values its people, resources and partners, and meets new challenges through leadership, innovation, and teamwork.

From: Fujimoto, John H@DOT
Sent: Thursday, June 02, 2016 4:24 PM
To: Pimentel, Jeffrey L@DOT; Schrieve, Carlon T@DOT
Cc: Simmons, Rodney R@DOT; Joe, Gary S@DOT; Taddese, Eskinder@DOT; Li, Louise@DOT
Subject: RE: 0F280K resource estimate

Jeff, Carlon,

Based on the estimated cost of Bridge C4 at \$11,030,000 (see my previous email), and correcting the subtotal for Alignment Segment C and Segment 5 (apparent math errors on the APS transmittal), I come up with a total structure cost of **\$424,106,000** for Alternative C-5.

If you concur, then this should be the total structure cost used in the PSR and for estimating resource needs associated with Alternative C-5.

Thanks.

John Fujimoto

Technical Liaison Engineer, North Region
Division of Engineering Services, Structure Design
(916) 227-8757



[DES Contacts](#) | [Products & Services](#) | [DES Website](#)

Caltrans Mission: Provide a safe, sustainable, integrated, and efficient transportation system to enhance California's economy and livability.

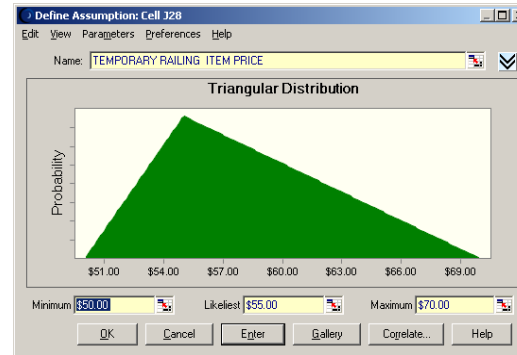
PROBABILISTIC STRUCTURE COST ESTIMATE

GENERAL PLAN ESTIMATE ADVANCE PLANNING ESTIMATE

Revised - September 4, 2015

BRIDGE NAME: BRIDGE 2A (CATEGORY 1)
BRIDGE NUMBER:
TYPE: CIP/PS Box Girder
CU:
EA: 01-0F280K
PROJECT ID: 0115000099
DESIGN SECTION: Branch 17
OF STRUCTURES IN PROJECT : 15
PRICES BY : C. Siegenthaler
PRICES CHECKED BY :
QUANTITIES BY: R. Simmons

IN EST: 1/13/2016
OUT EST: 2/19/2016
DISTRICT: 01
CO: DN
RTE: 101
PM:
DEPTH: 7.5
LENGTH: 344
WIDTH: 43
AREA: 14,792
EST. NO.: 1
COST INDEX: 452
DATE: 2/11/2016
DATE: 1/16/2016



The Assumption Curves, unless noted otherwise, are modeled with a triangular distribution with the "Minimum, Likeliest and Maximum values."

	CONTRACT ITEMS	TYPE	UNIT	QUANTITY
1	STRUCTURE EXCAVATION (BRIDGE)		CY	875
2	STRUCTURE BACKFILL (BRIDGE)		CY	460
3	CIDH CONCRETE PILING	16" DIA	LF	1,600
4	CIDH CONCRETE PILING	48" DIA	LF	320
5	STRUCTURAL CONCRETE, BRIDGE		CY	1,700
6	STRUCTURAL CONCRETE, BRIDGE FOOTING		CY	192
7	PRESTRESSING STEEL		LB	66,000
8	BAR REINFORCING STEEL (BRIDGE)		LB	420,000
9	JOINT SEAL (MR 2")		LF	86
10	CONCRETE BARRIER	TYPE 736	LF	768
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30				

ITEM PRICE RANGE			
MINIMUM	LIKELIEST	MAXIMUM	AMOUNT
\$70.00	\$110.00	\$150.00	\$96,250
\$65.00	\$95.00	\$125.00	\$43,700
\$50.00	\$125.00	\$200.00	\$200,000
\$600.00	\$900.00	\$1,200.00	\$288,000
\$850.00	\$1,300.00	\$1,750.00	\$2,210,000
\$450.00	\$600.00	\$750.00	\$115,200
\$1.40	\$1.80	\$2.20	\$118,800
\$0.95	\$1.10	\$1.25	\$462,000
\$60.00	\$75.00	\$90.00	\$6,450
\$90.00	\$110.00	\$130.00	\$84,480

Comments	TIME RELATED OVERHEAD
	10%
	MOBILIZATION
	10%
	SUBTOTAL BRIDGE ITEMS
	\$4,430,409
	CONTINGENCIES
	25%
	\$1,107,602
	SUBTOTAL
	\$5,538,011

	MINIMUM	LIKELIEST	MAXIMUM
SUBTOTAL			\$3,624,880
			\$362,488
			\$443,041
			\$4,430,409
			\$1,107,602
SUBTOTAL			\$5,538,011

	TYPE	UNIT	QUANTITY
BRIDGE REMOVAL			

BRIDGE REMOVAL LUMP SUM PRICE INCLUDES TRO, MOBILIZATION AND CONTINGENCY

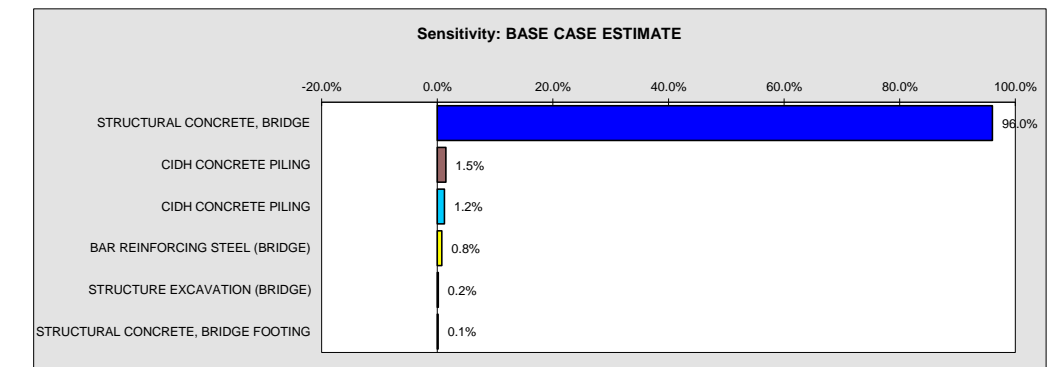
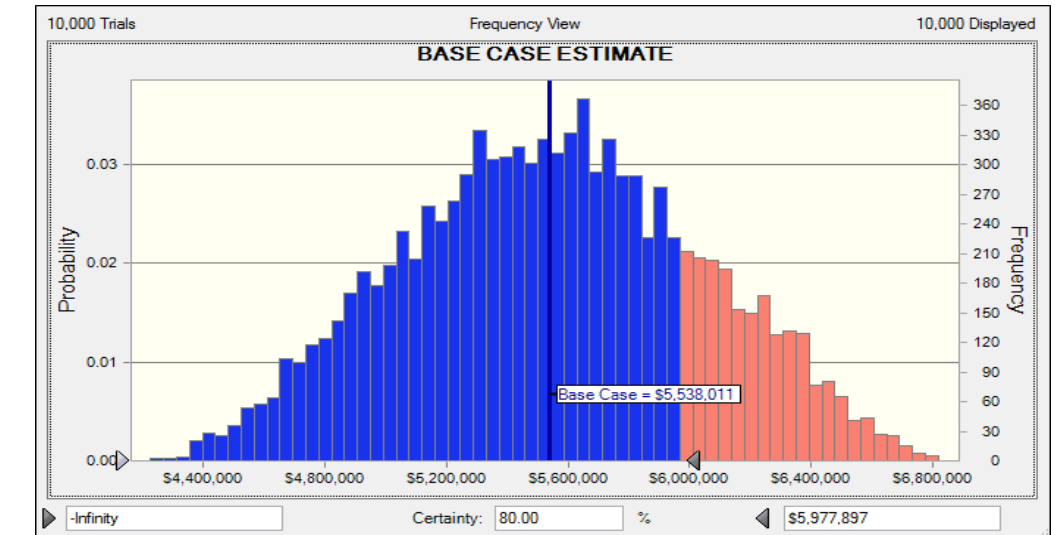
BASELINE ESTIMATE TO ASSUMED MIDPOINT OF CONSTRUCTION	
BASE CASE ESTIMATE	\$5,538,011

Notes
 Highlighted cells represent the quantities and prices that are included in the model.
 Base Case Estimate is the sum of the Quantity multiplied by "Likeliest" Item Price

INPUT

OUTPUT

The estimate ranges generated below were prepared using Crystal Ball software. Crystal Ball software automatically calculates and records the results of thousands of different "what if" cases. Analysis of these scenarios reveals to you the range of possible outcomes, their probability of occurring, the inputs that most impact your model, and where you should focus your efforts.



Percentiles:	Forecast values
0%	\$4,226,912
10%	\$4,892,970
20%	\$5,107,322
30%	\$5,273,936
40%	\$5,406,269
50%	\$5,542,647
60%	\$5,668,854
70%	\$5,808,492
80%	\$5,977,897
90%	\$6,206,124
100%	\$6,816,739

Recommended Range

80% FORECAST VALUE = \$5,978,000.00

*80% Forecast Value Escalated Budget Estimate to Assumed Midpoint of Construction

Years Beyond	Escalation Rate	Escalated Budget Est.
Midpoint		
1	3.40%	\$6,181,000
2	3.20%	\$6,379,000
3	3.40%	\$6,596,000
4	3.00%	\$6,794,000
5	2.40%	\$6,957,000

* Escalated structure cost is provided for information only, actual construction costs may vary. Escalated structure costs provided do not replace Departmental policy to update cost estimates annually. Escalation rates used are based on Global Insight data posted at <http://www.dot.ca.gov/hq/oppd/costest/data.htm>. Web page updated May 2014.

80 % Forecast		
BRIDGE COST PER SQUARE FOOT	=	\$404
BRIDGE REMOVAL	=	

Bridge Cost per Square Foot and/or Bridge Removal costs modeled independently. Their 80% Forecast Values Provided for informational purposes only.

BASED ON THE ASSUMPTIONS USED TO CREATE THE MODEL, THE DES-STRUCTURE OFFICE ENGINEER RECOMMENDS THAT THE PROGRAMMING LEVEL BUDGET FOR THIS PROJECT BE DESIGNATED AT THE 80% FORECAST VALUE.

PROBABILISTIC STRUCTURE COST ESTIMATE

GENERAL PLAN ESTIMATE ADVANCE PLANNING ESTIMATE

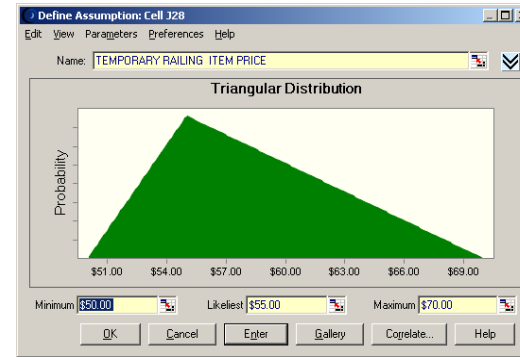
Revised - September 4, 2015

BRIDGE NAME: BRIDGE C-1 (CATEGORY 2)
BRIDGE NUMBER:
TYPE: CIP/PS Box Girder
CU:
EA: 01-0F280K
PROJECT ID:

DESIGN SECTION: Branch 17
OF STRUCTURES IN PROJECT : 15

PRICES BY : C. Siegenthaler
PRICES CHECKED BY :
QUANTITIES BY : R. Simmons

IN EST: 1/13/2016
OUT EST: 2/19/2016
DISTRICT: 01
CO: DN
RTE: 101
PM:
DEPTH: varies
LENGTH: 544
WIDTH: 43
AREA: 23,392
EST. NO.: 1
COST INDEX: 452
DATE: 2/11/2016
DATE: 1/6/2016



The Assumption Curves, unless noted otherwise, are modeled with a triangular distribution with the "Minimum, Likeliest and Maximum values."

	CONTRACT ITEMS	TYPE	UNIT	QUANTITY
1	STRUCTURE EXCAVATION (BRIDGE)		CY	1,650
2	STRUCTURE BACKFILL (BRIDGE)		CY	1,000
3	CIDH CONCRETE PILING	16" DIA	LF	1,920
4	CIDH CONCRETE PILING	60" DIA	LF	800
5	STRUCTURAL CONCRETE, BRIDGE		CY	2,670
6	STRUCTURAL CONCRETE, BRIDGE FOOTING		CY	393
7	PRESTRESSING STEEL		LB	90,000
8	BAR REINFORCING STEEL (BRIDGE)		LB	835,000
9	JOINT SEAL (MR 2")		LF	86
10	CONCRETE BARRIER	TYPE 736	LF	1,318
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MINIMUM	LIKELIEST	MAXIMUM	AMOUNT
\$70.00	\$110.00	\$150.00	\$181,500
\$65.00	\$95.00	\$125.00	\$95,000
\$50.00	\$125.00	\$200.00	\$240,000
\$700.00	\$980.00	\$1,260.00	\$784,000
\$850.00	\$1,300.00	\$1,750.00	\$3,471,000
\$450.00	\$600.00	\$750.00	\$235,800
\$1.40	\$1.80	\$2.20	\$162,000
\$0.95	\$1.10	\$1.25	\$918,500
\$60.00	\$75.00	\$90.00	\$6,450
\$90.00	\$110.00	\$130.00	\$144,980

TIME RELATED OVERHEAD	
10%	\$623,923
MOBILIZATION	\$762,573
SUBTOTAL BRIDGE ITEMS	\$7,625,726
CONTINGENCIES	\$1,906,431
SUBTOTAL	\$9,532,157

	TYPE	UNIT	QUANTITY	MINIMUM	LIKELIEST	MAXIMUM
BRIDGE REMOVAL						

BRIDGE REMOVAL LUMP SUM PRICE INCLUDES TRO, MOBILIZATION AND CONTINGENCY

BASELINE ESTIMATE TO ASSUMED MIDPOINT OF CONSTRUCTION	
BASE CASE ESTIMATE	\$9,532,157

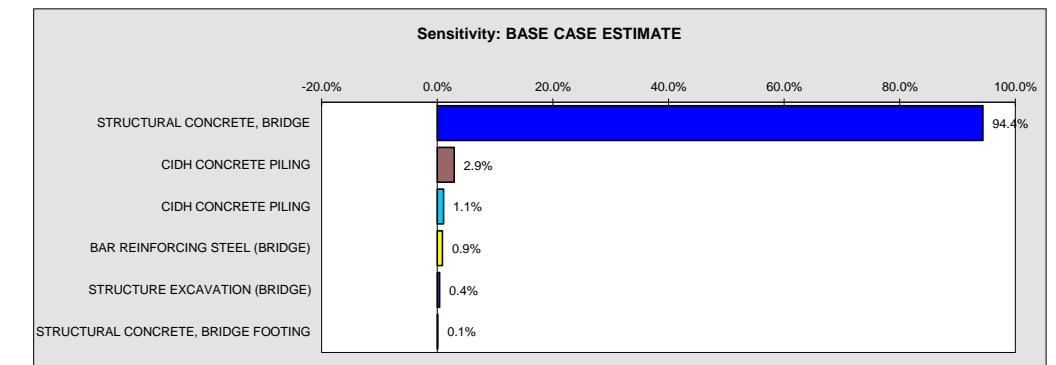
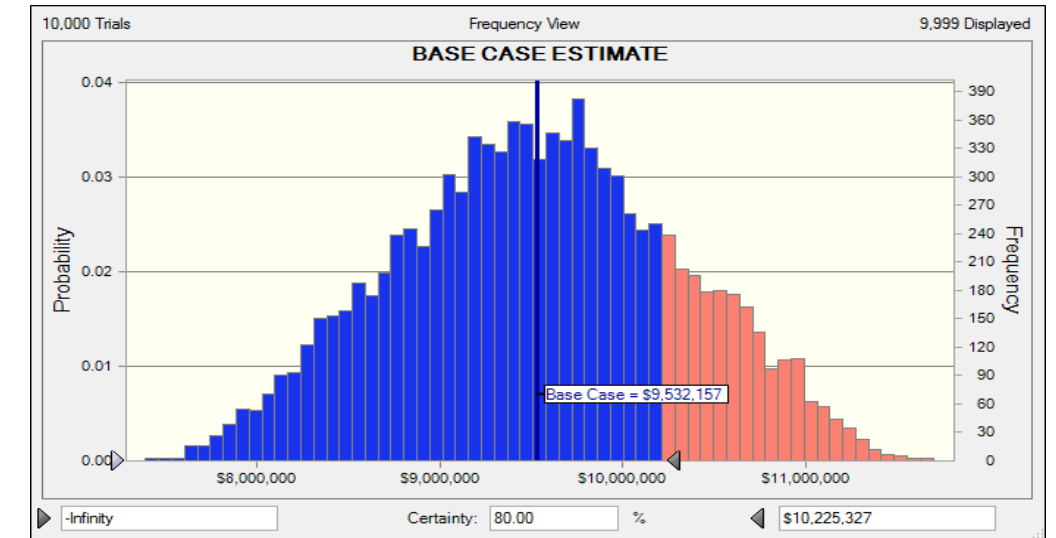
Notes

Highlighted cells represent the quantities and prices that are included in the model. Base Case Estimate is the sum of the Quantity multiplied by "Likeliest" Item Price

← INPUT

OUTPUT →

The estimate ranges generated below were prepared using Crystal Ball software. Crystal Ball software automatically calculates and records the results of thousands of different "what if" cases. Analysis of these scenarios reveals to you the range of possible outcomes, their probability of occurring, the inputs that most impact your model, and where you should focus your efforts.



Percentiles:	Forecast values
0%	\$7,392,653
10%	\$8,500,585
20%	\$8,851,626
30%	\$9,114,995
40%	\$9,331,353
50%	\$9,531,298
60%	\$9,741,847
70%	\$9,954,263
80%	\$10,225,327
90%	\$10,585,716
100%	\$11,769,693

Recommended Range

80% FORECAST VALUE = \$10,225,000.00

***80% Forecast Value Escalated Budget Estimate to Assumed Midpoint of Construction**

Years Beyond	Escalation Rate	Escalated Budget Est.
Midpoint		
1	3.40%	\$10,573,000
2	3.20%	\$10,911,000
3	3.40%	\$11,282,000
4	3.00%	\$11,620,000
5	2.40%	\$11,899,000

* Escalated structure cost is provided for information only, actual construction costs may vary. Escalated structure costs provided do not replace Departmental policy to update cost estimates annually. Escalation rates used are based on Global Insight data posted at <http://www.dot.ca.gov/hq/opcd/costest/data.htm>. Web page updated May 2014.

80 % Forecast		
BRIDGE COST PER SQUARE FOOT	=	\$437
BRIDGE REMOVAL	=	

Bridge Cost per Square Foot and/or Bridge Removal costs modeled independently. Their 80% Forecast Values Provided for informational purposes only.

BASED ON THE ASSUMPTIONS USED TO CREATE THE MODEL, THE DES-STRUCTURE OFFICE ENGINEER RECOMMENDS THAT THE PROGRAMMING LEVEL BUDGET FOR THIS PROJECT BE DESIGNATED AT THE 80% FORECAST VALUE.

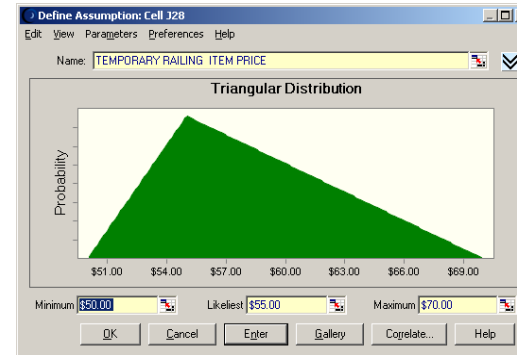
PROBABILISTIC STRUCTURE COST ESTIMATE

GENERAL PLAN ESTIMATE ADVANCE PLANNING ESTIMATE

Revised - September 4, 2015

BRIDGE NAME: BRIDGE 5d (CATEGORY 3)
BRIDGE NUMBER:
TYPE: RC Box
CU:
EA: 01-0F280K
PROJECT ID:
DESIGN SECTION: Branch 17
OF STRUCTURES IN PROJECT : 15
PRICES BY : C. Siegenthaler
PRICES CHECKED BY :
QUANTITIES BY: P. Vu

IN EST: 1/13/2016
OUT EST: 2/19/2016
DISTRICT: 01
CO: DN
RTE: 101
PM:
DEPTH: 4.5
LENGTH: 286
WIDTH: 43
AREA: 12,298
EST. NO.: 1
COST INDEX: 452
DATE: 2/11/2016
DATE: 1/16/2016



The Assumption Curves, unless noted otherwise, are modeled with a triangular distribution with the "Minimum, Likeliest and Maximum values."

	CONTRACT ITEMS	TYPE	UNIT	QUANTITY
1	STRUCTURE EXCAVATION (BRIDGE)		CY	200
2	STRUCTURE BACKFILL (BRIDGE)		CY	134
3	FURNISH CONCRETE PILING	CLASS 90	LF	1,440
4	DRIVE CONCRETE PILES	CLASS 90	EA	36
5	FURNISH CISS PILING	36" DIA	LF	420
6	DRIVE CISS PILES	36" DIA	EA	6
7	STRUCTURAL CONCRETE, BRIDGE		CY	900
8	STRUCTURAL CONCRETE, BRIDGE FOOTING		CY	65
9	BAR REINFORCING STEEL (BRIDGE)		LB	300,000
10	JOINT SEAL (MR 1.5")		LF	86
11	CONCRETE BARRIER	TYPE 736	LF	628
12				
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ITEM PRICE RANGE			
MINIMUM	LIKELIEST	MAXIMUM	AMOUNT
\$70.00	\$110.00	\$150.00	\$22,000
\$65.00	\$95.00	\$125.00	\$12,730
\$30.00	\$40.00	\$50.00	\$57,600
\$1,600.00	\$2,400.00	\$3,200.00	\$86,400
\$210.00	\$245.00	\$280.00	\$102,900
\$12,000.00	\$18,000.00	\$24,000.00	\$108,000
\$850.00	\$1,300.00	\$1,750.00	\$1,170,000
\$450.00	\$600.00	\$750.00	\$39,000
\$0.95	\$1.10	\$1.25	\$330,000
\$65.00	\$75.00	\$85.00	\$6,450
\$90.00	\$110.00	\$130.00	\$69,080

Comments	TIME RELATED OVERHEAD	10%	200,416
	MOBILIZATION	10%	\$244,953
	SUBTOTAL BRIDGE ITEMS		\$2,449,529
	CONTINGENCIES	25%	\$612,382
	SUBTOTAL		\$3,061,911

	TYPE	UNIT	QUANTITY
BRIDGE REMOVAL			

BRIDGE REMOVAL LUMP SUM PRICE INCLUDES TRO, MOBILIZATION AND CONTINGENCY

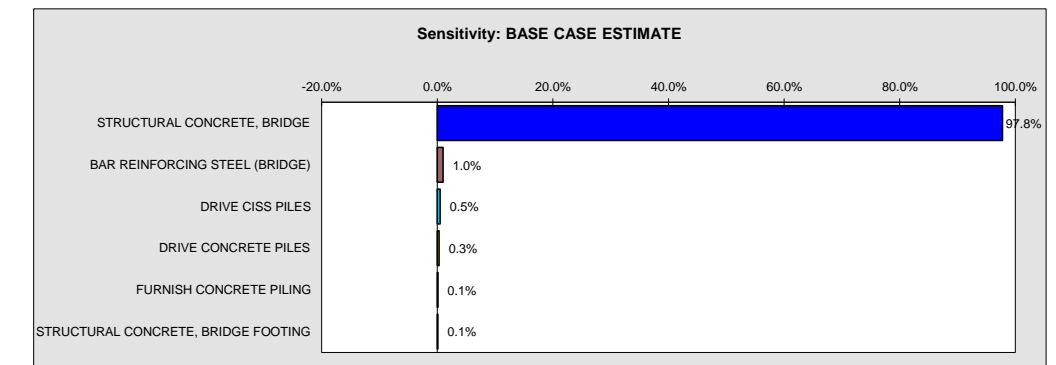
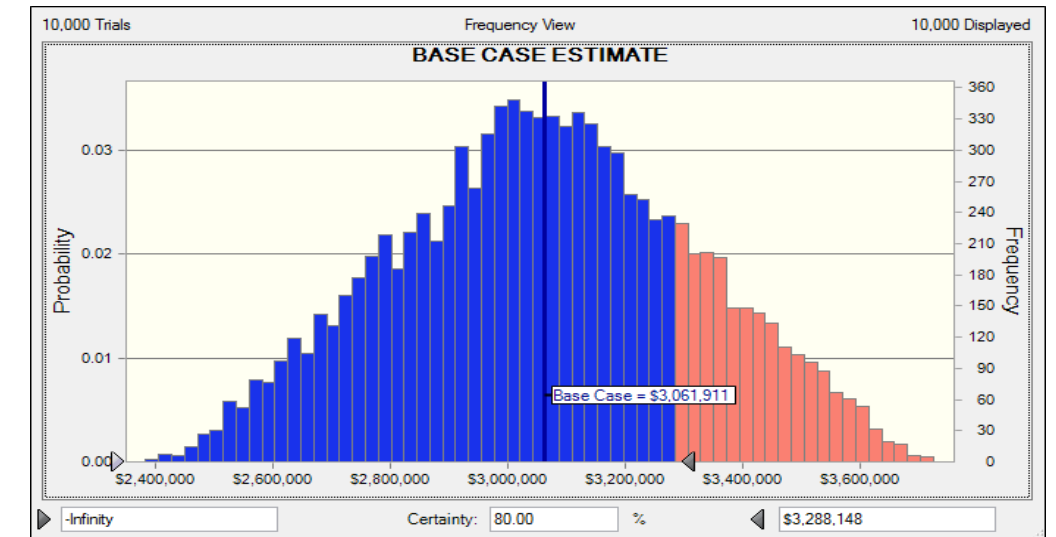
Notes
 Highlighted cells represent the quantities and prices that are included in the model.
 Base Case Estimate is the sum of the Quantity multiplied by "Likeliest" Item Price

BASELINE ESTIMATE TO ASSUMED MIDPOINT OF CONSTRUCTION	
BASE CASE ESTIMATE	\$3,061,911

INPUT

OUTPUT

The estimate ranges generated below were prepared using Crystal Ball software. Crystal Ball software automatically calculates and records the results of thousands of different "what if" cases. Analysis of these scenarios reveals to you the range of possible outcomes, their probability of occurring, the inputs that most impact your model, and where you should focus your efforts.



Percentiles:	Forecast values
0%	\$2,382,492
10%	\$2,721,151
20%	\$2,833,777
30%	\$2,923,870
40%	\$2,995,946
50%	\$3,060,543
60%	\$3,127,023
70%	\$3,199,151
80%	\$3,288,148
90%	\$3,405,531
100%	\$3,722,906

Recommended Range

80% FORECAST VALUE = \$3,288,000.00

*80% Forecast Value Escalated Budget Estimate to Assumed Midpoint of Construction Years Beyond	Escalation Rate	Escalated Budget Est.
1	3.40%	\$3,400,000
2	3.20%	\$3,509,000
3	3.40%	\$3,628,000
4	3.00%	\$3,737,000
5	2.40%	\$3,827,000

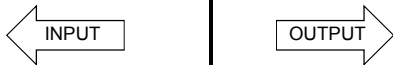
* Escalated structure cost is provided for information only, actual construction costs may vary. Escalated structure costs provided do not replace Departmental policy to update cost estimates annually. Escalation rates used are based on Global Insight data posted at <http://www.dot.ca.gov/hq/oppd/costest/data.htm>. Web page updated May 2014.

80 % Forecast		
BRIDGE COST PER SQUARE FOOT	=	\$267
BRIDGE REMOVAL	=	

Bridge Cost per Square Foot and/or Bridge Removal costs modeled independently. Their 80% Forecast Values Provided for informational purposes only.

BASED ON THE ASSUMPTIONS USED TO CREATE THE MODEL, THE DES-STRUCTURE OFFICE ENGINEER RECOMMENDS THAT THE PROGRAMMING LEVEL BUDGET FOR THIS PROJECT BE DESIGNATED AT THE 80% FORECAST VALUE.

PROBABILISTIC STRUCTURE COST ESTIMATE

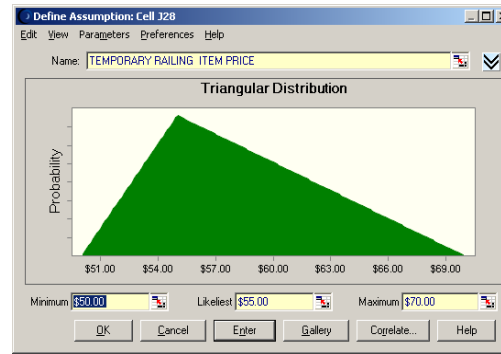


GENERAL PLAN ESTIMATE ADVANCE PLANNING ESTIMATE

Revised - September 4, 2015

BRIDGE NAME: TUNNEL 2
 BRIDGE NUMBER:
 TYPE: MINED TUNNEL
 CU:
 EA: 01-0F280K
 PROJECT ID: 0115000099
 DESIGN SECTION: Branch 17
 # OF STRUCTURES IN PROJECT: 15
 PRICES BY: D. Seifert
 PRICES CHECKED BY:
 QUANTITIES BY: R. Simmons

IN EST: 1/13/2016
 OUT EST: 2/19/2016
 DISTRICT: 01
 CO: DN
 RTE: 101
 PM:
 DEPTH
 LENGTH 5,600
 WIDTH 44
 AREA 246,400
 EST. NO. 1
 COST INDEX: 452
 DATE: 2/11/2016
 DATE: 1/16/2016



The Assumption Curves, unless noted otherwise, are modeled with a triangular distribution with the "Minimum, Likeliest and Maximum values."

ITEM NO.	CONTRACT ITEMS	TYPE	UNIT	QUANTITY	ITEM PRICE RANGE			AMOUNT
					MINIMUM	LIKELIEST	MAXIMUM	
1	MINED TUNNEL		LF	5,600	\$61,714.33	\$78,914.53	\$136,703.99	\$441,921,361
2	PORTAL STRUCTURE (INCLUDING RETAINING WALLS)		EA	2	\$7,886,135.25	\$8,814,496.25	\$9,191,588.00	\$17,628,993
3	OMC BUILDING		EA	1	\$3,325,000.00	\$6,591,666.67	\$6,650,000.00	\$6,591,667
4	TUNNEL SYSTEMS		LF	2,425	\$5,841.96	\$6,710.93	\$9,169.66	\$16,274,003
5								
6								
7								
8								
9	Note: While the pricing includes the mechanical and electrical systems specific to the tunnel, the pricing excludes Roadway pavement, drainage, and utilities through the tunnel section							
10								
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Comments

TIME RELATED OVERHEAD	10%	
MOBILIZATION	10%	
SUBTOTAL BRIDGE ITEMS		\$589,619,584
CONTINGENCIES	25%	\$147,404,896
SUBTOTAL		\$737,024,480

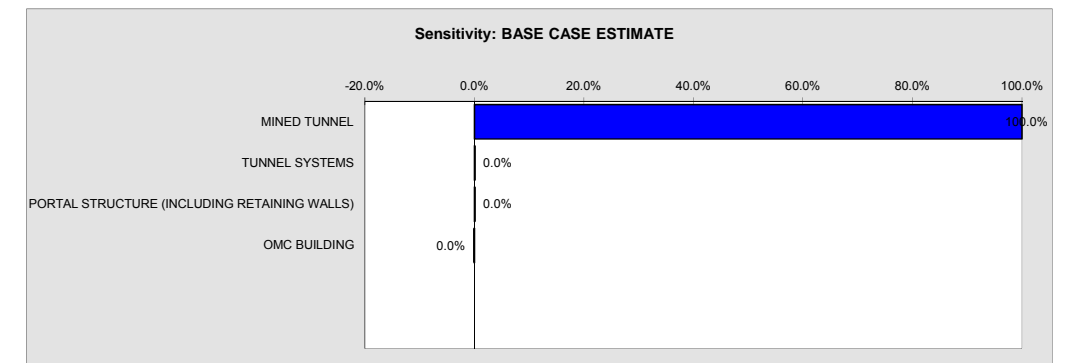
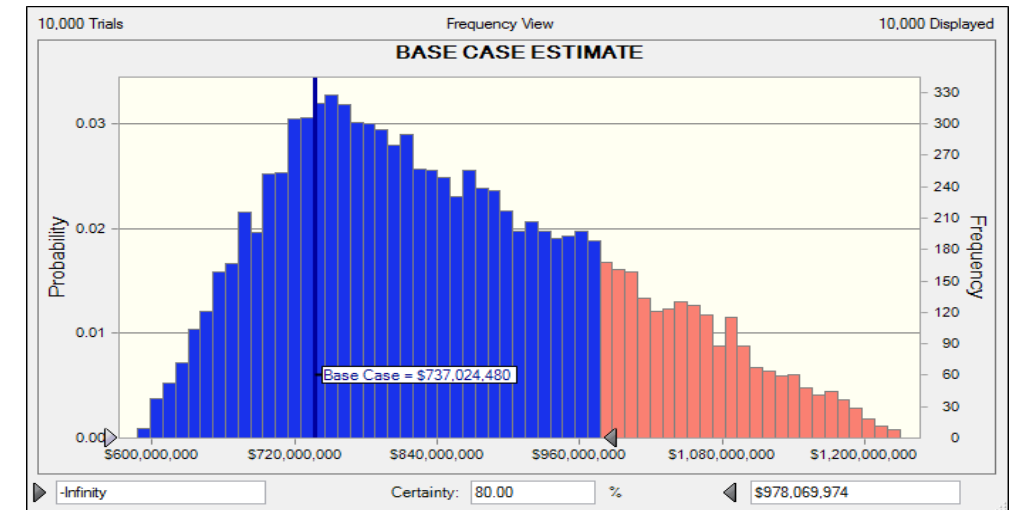
	TYPE	UNIT	QUANTITY	MINIMUM	LIKELIEST	MAXIMUM
BRIDGE REMOVAL						

BRIDGE REMOVAL LUMP SUM PRICE INCLUDES TRO, MOBILIZATION AND CONTINGENCY

Notes: Highlighted cells represent the quantities and prices that are included in the model. Base Case Estimate is the sum of the Quantity multiplied by "Likeliest" Item Price

BASELINE ESTIMATE TO ASSUMED MIDPOINT OF CONSTRUCTION	
BASE CASE ESTIMATE	\$737,024,480

The estimate ranges generated below were prepared using Crystal Ball software. Crystal Ball software automatically calculates and records the results of thousands of different "what if" cases. Analysis of these scenarios reveals to you the range of possible outcomes, their probability of occurring, the inputs that most impact your model, and where you should focus your efforts.



Percentiles:	Forecast values
0%	\$588,020,126
10%	\$686,536,567
20%	\$726,784,183
30%	\$759,365,784
40%	\$793,888,985
50%	\$832,457,674
60%	\$875,025,599
70%	\$923,629,713
80%	\$978,069,974
90%	\$1,052,409,219
100%	\$1,229,559,946

Recommended Range

80% FORECAST VALUE = \$978,070,000.00

***80% Forecast Value Escalated Budget Estimate to Assumed Midpoint of Construction**

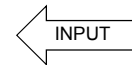
Years Beyond	Escalation Rate	Escalated Budget Est.
1	3.40%	\$1,011,324,000
2	3.20%	\$1,043,686,000
3	3.40%	\$1,079,171,000
4	3.00%	\$1,111,546,000
5	2.40%	\$1,138,223,000

* Escalated structure cost is provided for information only, actual construction costs may vary. Escalated structure costs provided do not replace Departmental policy to update cost estimates annually. Escalation rates used are based on Global Insight data posted at <http://www.dot.ca.gov/hq/opd/costest/data.htm>. Web page updated May 2014.

80 % Forecast	
BRIDGE COST PER SQUARE FOOT	= \$3,969
BRIDGE REMOVAL	=

Bridge Cost per Square Foot and/or Bridge Removal costs modeled independently. Their 80% Forecast Values Provided for informational purposes only.

PROBABILISTIC STRUCTURE COST ESTIMATE

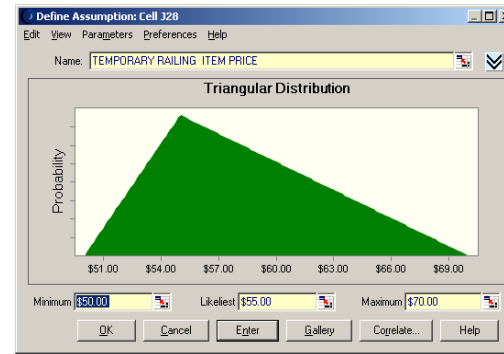


GENERAL PLAN ESTIMATE ADVANCE PLANNING ESTIMATE

Revised - September 4, 2015

BRIDGE NAME: TUNNEL 3
BRIDGE NUMBER:
TYPE: MINED TUNNEL
CU:
EA: 01-0F280K
PROJECT ID: 0115000099
DESIGN SECTION: Branch 17
OF STRUCTURES IN PROJECT : 15
PRICES BY : D. Seifert
PRICES CHECKED BY :
QUANTITIES BY: R. Simmons

IN EST: 1/13/2016
OUT EST: 2/19/2016
DISTRICT: 01
CO: DN
RTE: 101
PM:
DEPTH
LENGTH 1,666
WIDTH 44
AREA 73,304
EST. NO. 1
COST INDEX: 452
DATE: 2/11/2016
DATE: 1/16/2016



The Assumption Curves, unless noted otherwise, are modeled with a triangular distribution with the "Minimum, Likeliest and Maximum values."

	CONTRACT ITEMS	TYPE	UNIT	QUANTITY	ITEM PRICE RANGE			AMOUNT
					MINIMUM	LIKELIEST	MAXIMUM	
1	MINED TUNNEL		LF	1,666	\$61,714.33	\$78,914.53	\$136,703.99	\$131,471,605
2	PORTAL STRUCTURE (INCLUDING RETAINING WALLS)		EA	2	\$7,886,135.25	\$8,814,496.25	\$9,191,588.00	\$17,628,993
3	OMC BUILDING		EA	1	\$3,325,000.00	\$6,591,666.67	\$6,650,000.00	\$6,591,667
4	TUNNEL SYSTEMS		LF	2,425	\$5,841.96	\$6,710.93	\$9,169.66	\$16,274,003
5-30								
8	Note: While the pricing includes the mechanical and electrical systems specific to the tunnel, the pricing excludes Roadway pavement, drainage, and utilities through the tunnel section							

Comments	TIME RELATED OVERHEAD	10%	SUBTOTAL	\$171,966,267
	MOBILIZATION	10%		\$17,196,627
	SUBTOTAL BRIDGE ITEMS			\$21,018,099
	CONTINGENCIES	25%		\$210,180,993
			SUBTOTAL	\$52,545,248
			SUBTOTAL	\$262,726,242

	TYPE	UNIT	QUANTITY	MINIMUM	LIKELIEST	MAXIMUM
BRIDGE REMOVAL						

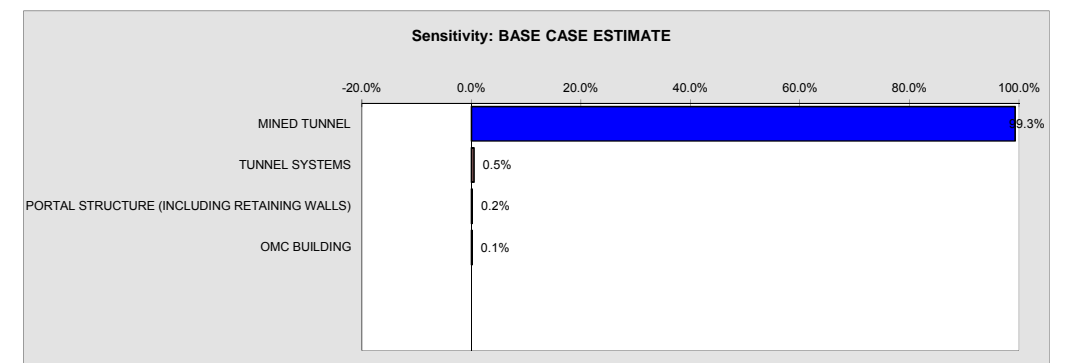
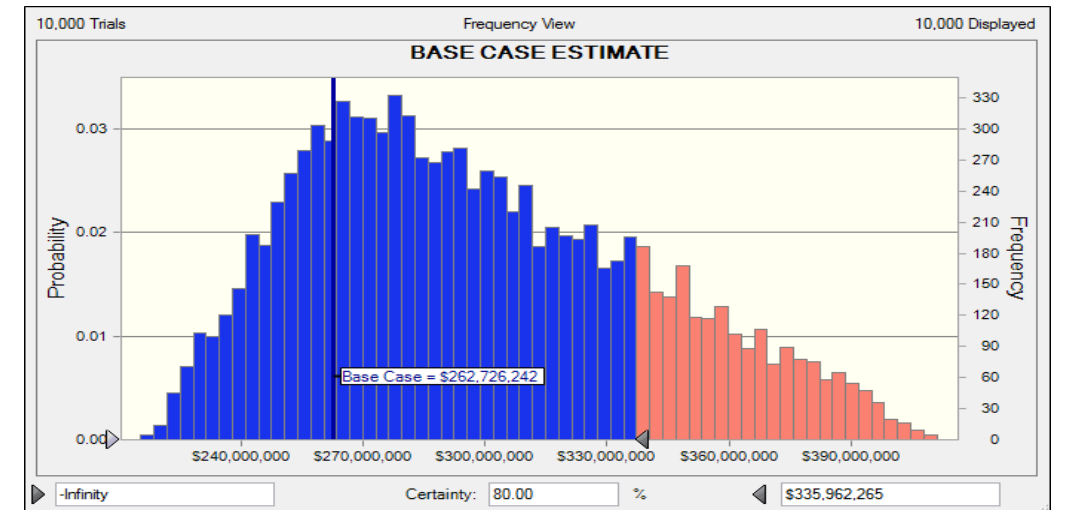
BRIDGE REMOVAL LUMP SUM PRICE INCLUDES TRO, MOBILIZATION AND CONTINGENCY

BASELINE ESTIMATE TO ASSUMED MIDPOINT OF CONSTRUCTION	
BASE CASE ESTIMATE	\$262,726,242

Notes

Highlighted cells represent the quantities and prices that are included in the model. Base Case Estimate is the sum of the Quantity multiplied by "Likeliest" Item Price

The estimate ranges generated below were prepared using Crystal Ball software. Crystal Ball software automatically calculates and records the results of thousands of different "what if" cases. Analysis of these scenarios reveals to you the range of possible outcomes, their probability of occurring, the inputs that most impact your model, and where you should focus your efforts.



Percentiles:	Forecast values
0%	\$215,425,388
10%	\$247,677,110
20%	\$259,712,127
30%	\$270,183,029
40%	\$280,408,874
50%	\$291,796,721
60%	\$304,310,170
70%	\$318,910,858
80%	\$335,962,265
90%	\$357,903,272
100%	\$411,062,606

Recommended Range

80% FORECAST VALUE = \$335,962,000.00

*80% Forecast Value Escalated Budget Estimate to Assumed Midpoint of Construction

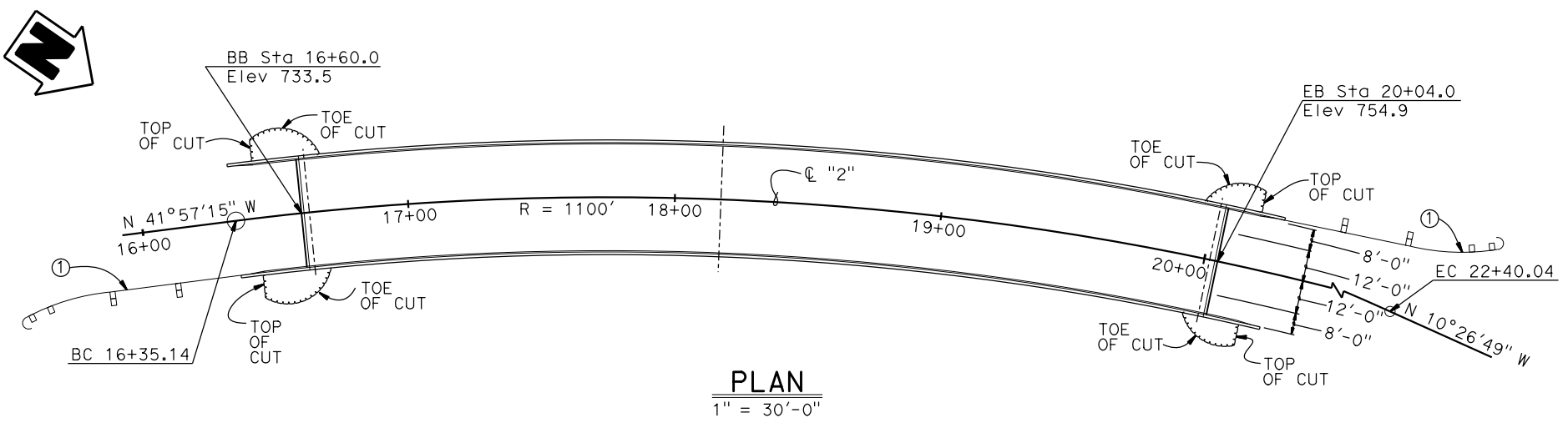
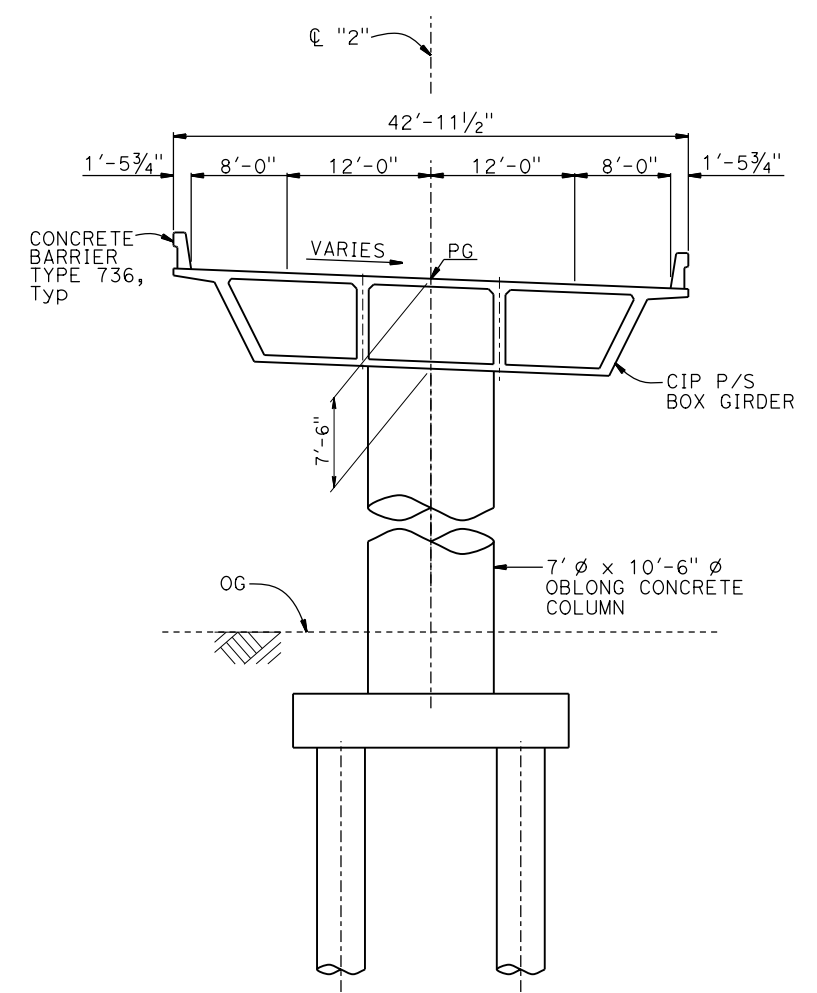
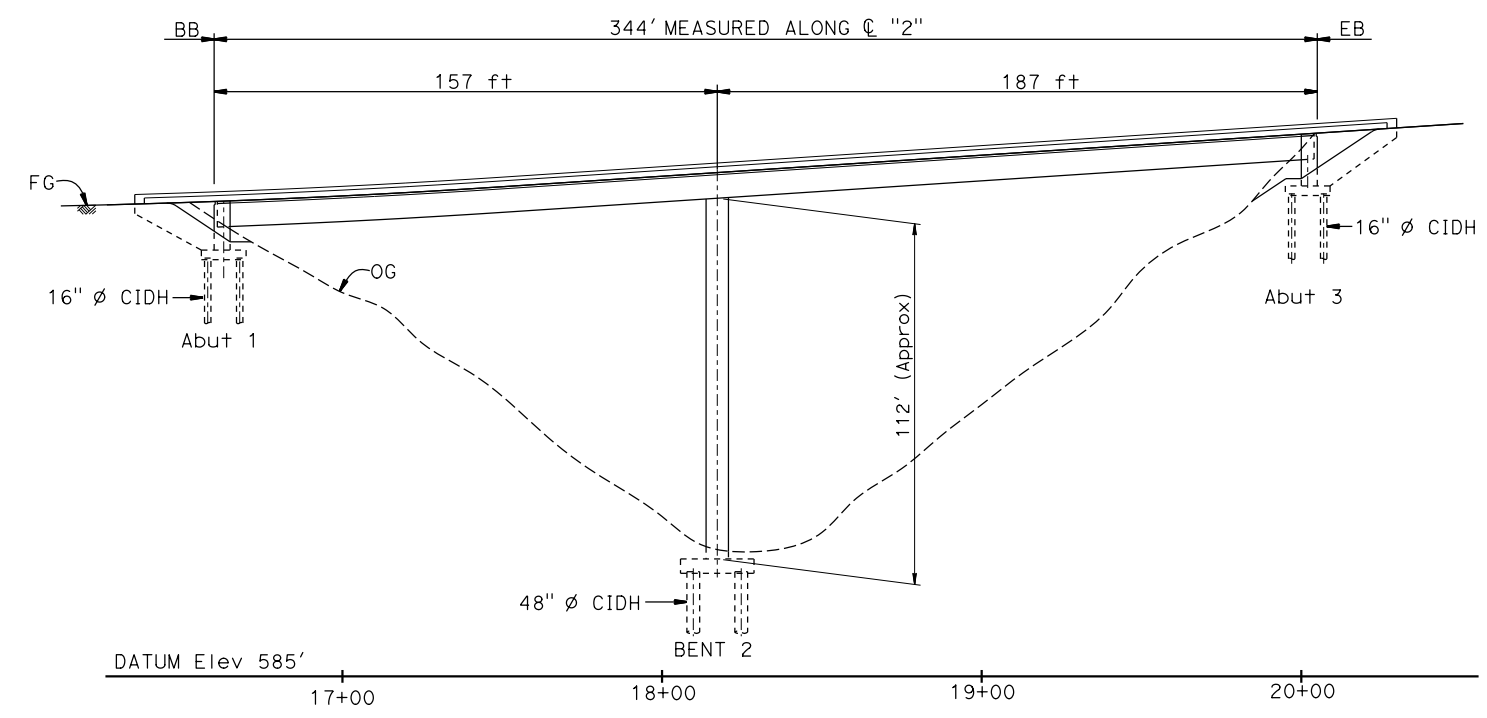
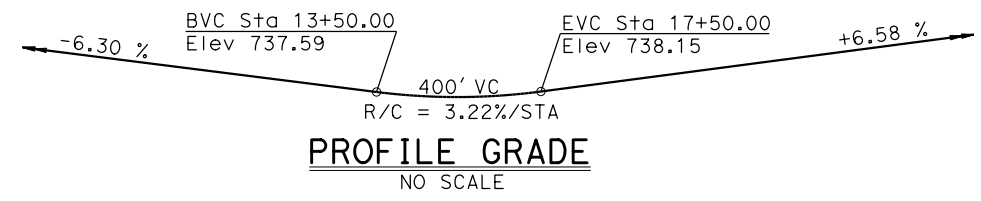
Years Beyond	Escalation Rate	Escalated Budget Est.
1	3.40%	\$347,385,000
2	3.20%	\$358,501,000
3	3.40%	\$370,690,000
4	3.00%	\$381,811,000
5	2.40%	\$390,974,000

* Escalated structure cost is provided for information only, actual construction costs may vary. Escalated structure costs provided do not replace Departmental policy to update cost estimates annually. Escalation rates used are based on Global Insight data posted at <http://www.dot.ca.gov/hq/oppd/costest/data.htm>. Web page updated May 2014.

80 % Forecast		
BRIDGE COST PER SQUARE FOOT	=	\$4,583
BRIDGE REMOVAL	=	

Bridge Cost per Square Foot and/or Bridge Removal costs modeled independently. Their 80% Forecast Values Provided for informational purposes only.

DIST	COUNTY	ROUTE	POST MILE
01	DN	101	X



TYPICAL SECTION
1/8" = 1'-0"

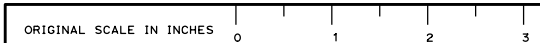
- NOTES:
- ① MBGR, see "ROADWAY PLANS"
 - 1. Access is limited due to steep, remote terrain. See sheet 2 for cost data.
 - 2. See sheet 2 of 2 for BRIDGE CATEGORY 1 COST DATA.
 - 3. Alignment and profile shown are preliminary and approximate.

BRIDGE CATEGORY 1
SHEET 1 OF 2

DESIGNED BY	R. Simmons	DATE	11-15
DRAWN BY	L. Wang	DATE	11-15
CHECKED BY	A. Tern	DATE	11-15
APPROVED	X	DATE	X

STRUCTURE DESIGN BRANCH
17

PLANNING STUDY	
LAST CHANCE GRADE	
UNIT: 3586	BRIDGE No. 2a
SCALE: As Noted	PROJECT No. & PHASE: 0115000099



DIST	COUNTY	ROUTE	POST MILE
01	DN	101	X

BRIDGE CATEGORY 1

Description:
 Multi-Span CIP/PS prismatic box girder (moderate spans up to approx 190').
 Tall Single Column bents with CIDH pile foundations at all supports.

NOTE: Bridge 2a as shown on sheet 1 is representative of "Category 1" bridges.
 Other bridges of this category are shown in the following table and are assigned the same square foot cost for this preliminary study.

BRIDGE NUMBER	NO. SPANS	SPAN LENGTHS	MAXIMUM COLUMN HEIGHT	RETAINING WALL AREA	DATE OF ESTIMATE	STRUCTURE DEPTH	LENGTH	WIDTH	AREA	① COST PER SQ FT	② WALL COST	TOTAL COST \$ x 1000
1a	2	181-166	129	N/A	2/9/16	7'-6"	347	43	14921	\$ 404	N/A	\$ 6,028
2a	2	157-187	113	N/A	2/9/16	7'-6"	344	43	14792	\$ 404	N/A	\$ 5,978
4a	4	115-155-165-125	94	1025 s.f.	2/9/16	6'-6"	560	43	24080	\$ 404	\$ 256,250	\$ 9,985
4b	3	110-151-110	82	N/A	2/9/16	6'-0"	371	43	15953	\$ 404	N/A	\$ 6,445

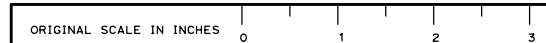
- ① Cost includes 10% mobilization and 25% contingency.
- ② Wall cost assumed to be \$ 250/sf, including 10% mobilization and 25% contingency.

BRIDGE CATEGORY 1
SHEET 2 OF 2

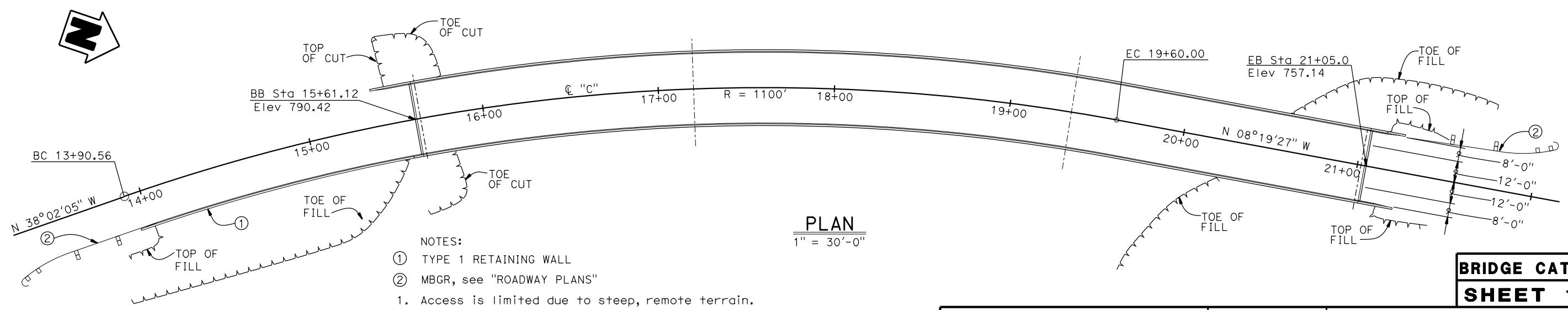
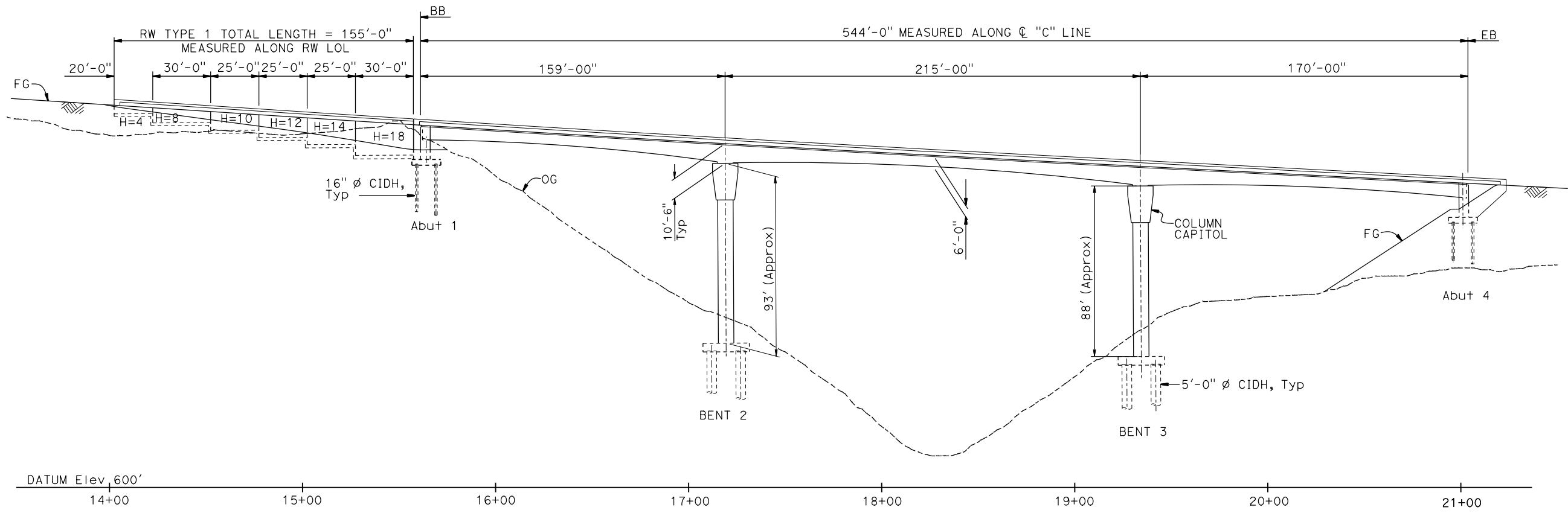
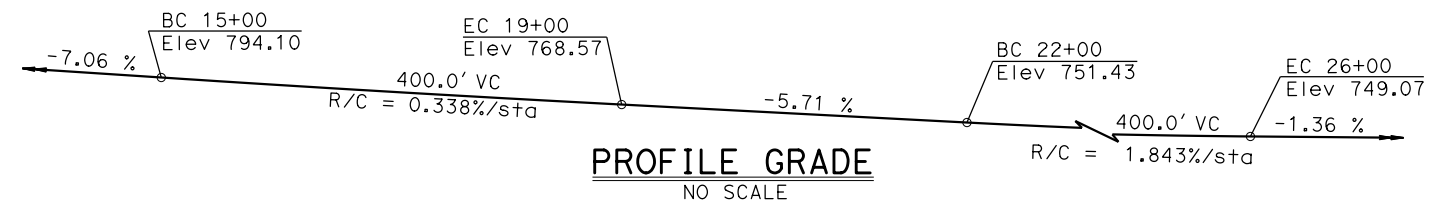
DESIGNED BY	R. Simmons	DATE	12-15
DRAWN BY	L. Wang	DATE	12-15
CHECKED BY	I. Chernioglo	DATE	12-15
APPROVED	X	DATE	X

STRUCTURE DESIGN BRANCH
17

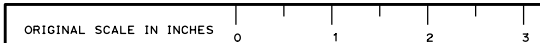
PLANNING STUDY	
LAST CHANCE GRADE	
UNIT: 3586	BRIDGE No. VARIOUS
SCALE: As Noted	PROJECT No. & PHASE: 0115000099



DIST	COUNTY	ROUTE	POST MILE
01	DN	101	X



- NOTES:
- ① TYPE 1 RETAINING WALL
 - ② MBGR, see "ROADWAY PLANS"
1. Access is limited due to steep, remote terrain.
 2. See sheet 2 of 2 for Typical Section.
 3. See sheet 2 of 2 for BRIDGE CATEGORY 2 COST DATA.
 4. Alignment and profile shown are preliminary and approximate.

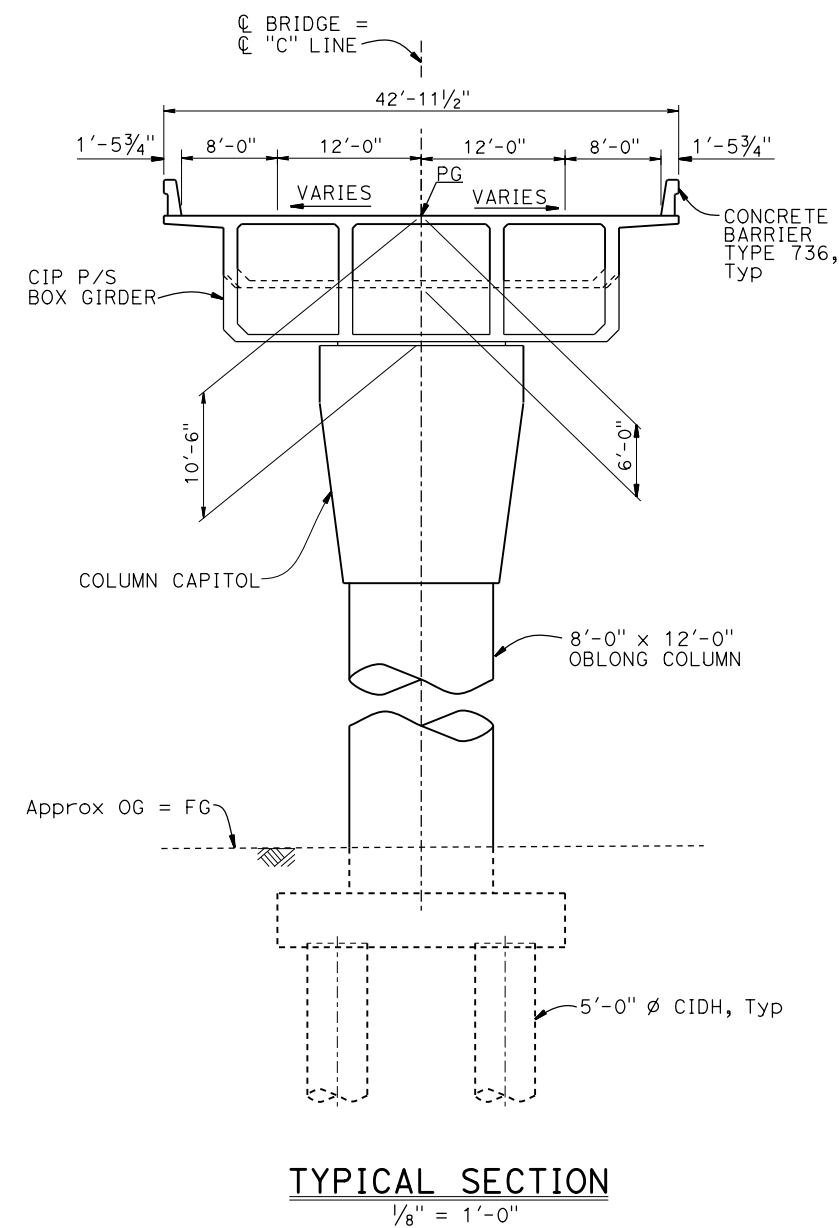


DESIGNED BY	R. Simmons	DATE	12-15
DRAWN BY	L. Wang	DATE	12-15
CHECKED BY	I. Chernioglo	DATE	12-15
APPROVED	X	DATE	X

STRUCTURE DESIGN BRANCH
17

BRIDGE CATEGORY 2	
SHEET 1 OF 2	
PLANNING STUDY	
LAST CHANCE GRADE	
UNIT: 3586	BRIDGE No. C-1
SCALE: As Noted	PROJECT No. & PHASE: 0115000099

DIST	COUNTY	ROUTE	POST MILE
01	DN	101	X



BRIDGE CATEGORY 2

Description:
Multi-Span, long span (>200 ft) CIP/PS variable depth (parabolic soffit) box girder.
Single Column (8x12 oblong) Bents CIDH Foundations.

NOTE: Bridge C-1 as shown is representative of "Category 2" bridges.
The other bridges of this category are shown in the table and are assigned the same square foot cost for this preliminary study.

BRIDGE NUMBER	NO. SPANS	SPAN LENGTHS	MAXIMUM COLUMN HEIGHT	RETAINING WALL AREA	DATE OF ESTIMATE	STRUCTURE DEPTH	LENGTH	WIDTH	AREA	① COST PER SQ FT	② WALL COST	TOTAL COST \$ x 1000
C-1	3	159-215-170	93	1933	2/11/16	10'-6" max/6'-6" min	544	43	23392	\$ 437	\$ 483,250	\$ 10,708
C-2	3	172-234-190	102	N/A	2/11/16	11'-6" max/7'-0" min	596	43	25628	\$ 437	N/A	\$ 11,199
C-3	2	233-233	112	6020	2/11/16	11'-6" max/7'-0" min	466	43	20038	\$ 437	\$ 1,505,000	\$ 10,262
5b	3	163-213-163	94	N/A	2/11/16	10'-0" max/6'-0" min	539	43	23177	\$ 437	N/A	\$ 10,128
5c	3	152-206-152	66	1400	2/11/16	10'-0" min/6'-0" max	510	43	21930	\$ 437	\$ 350,000	\$ 9,933

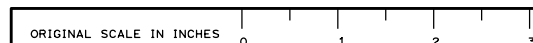
- ① Cost includes 10% mobilization and 25% contingency.
- ② Wall cost assumed to be \$ 250/sf, including 10% mobilization and 25% contingency.

BRIDGE CATEGORY 2
SHEET 2 OF 2

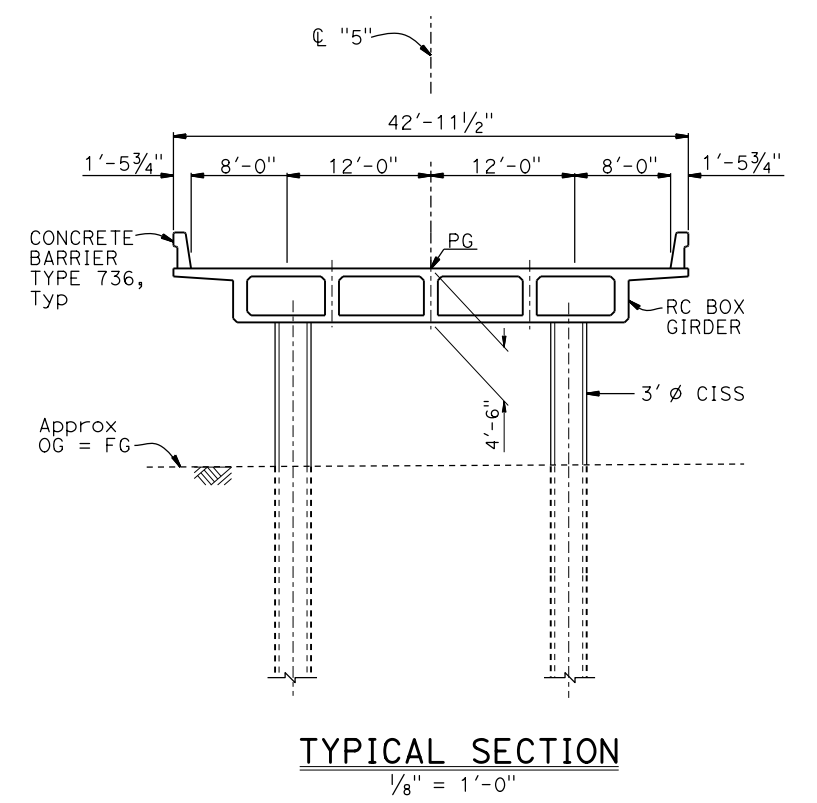
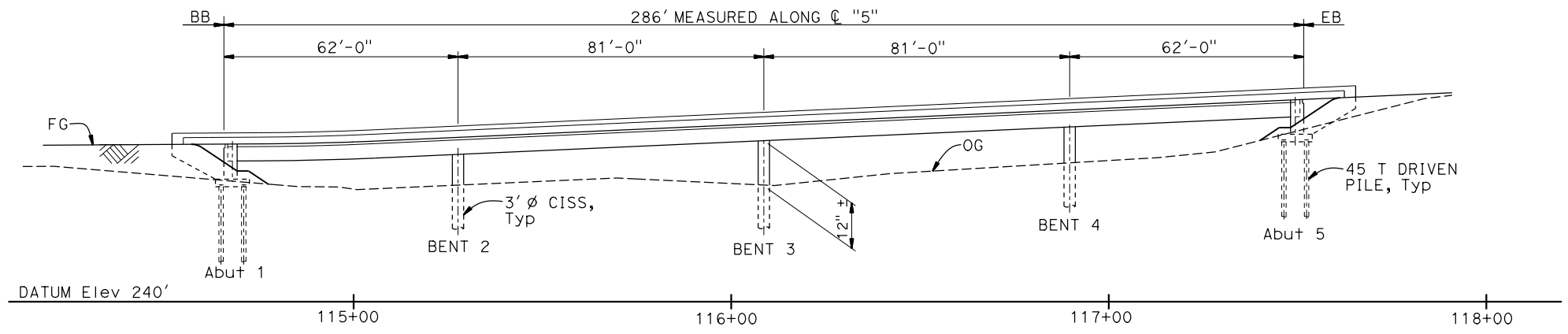
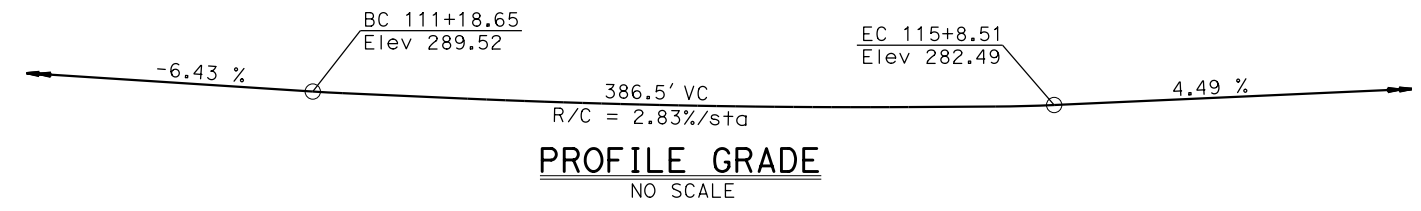
DESIGNED BY	R. Simmons	DATE	12-15
DRAWN BY	L. Wang	DATE	12-15
CHECKED BY	I. Chernioglo	DATE	12-15
APPROVED	X	DATE	X

STRUCTURE DESIGN BRANCH
17

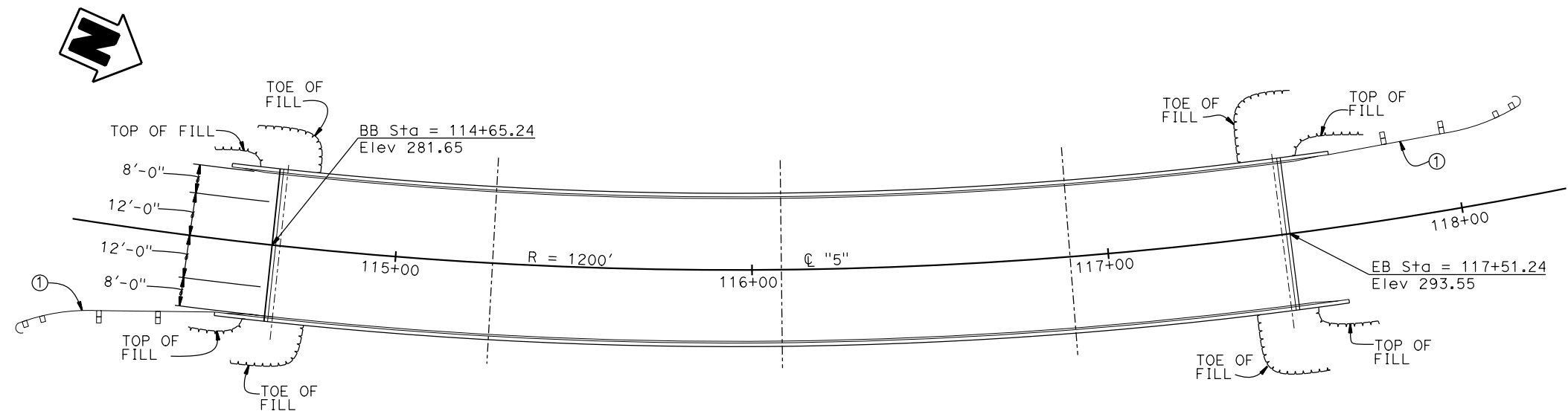
PLANNING STUDY	
LAST CHANCE GRADE	
UNIT: 3586	BRIDGE No. VARIOUS
SCALE: As Noted	PROJECT No. & PHASE: 0115000099



DIST	COUNTY	ROUTE	POST MILE
01	DN	101	X



- NOTES:
- ① MBGR, see "ROADWAY PLANS"
 - 1. Access is limited due to steep, remote terrain.
 - 2. See sheet 2 of 2 for BRIDGE CATEGORY 3 COST DATA.
 - 3. Alignment and profile shown are preliminary and approximate.

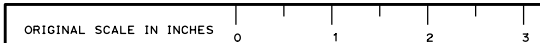


BRIDGE CATEGORY 3
SHEET 1 OF 2

DESIGNED BY	R. Simmons	DATE	11-15
DRAWN BY	L. Wang	DATE	11-15
CHECKED BY	I. Chernioglo	DATE	11-15
APPROVED	X	DATE	X

STRUCTURE DESIGN BRANCH
17

PLANNING STUDY	
LAST CHANCE GRADE	
UNIT: 3586	BRIDGE No. 5d
SCALE: As Noted	PROJECT No. & PHASE: 011500099



DIST	COUNTY	ROUTE	POST MILE
01	DN	101	X

BRIDGE CATEGORY 3

Description:

Multi-Span RC prismatic box girder (short to medium spans).
Short two-column bents. 45T pile foundations at abutments, CISS piles @ bents.

NOTE: Bridge 5d as shown is representative of "Category 3" bridges.
The other bridges of this category are shown in the table and are assigned the same square foot cost for this preliminary study.

BRIDGE NUMBER	NO. SPANS	SPAN LENGTHS	MAXIMUM COLUMN HEIGHT	DATE OF ESTIMATE	STRUCTURE DEPTH	LENGTH	WIDTH	AREA	① COST PER SQ FT	TOTAL COST \$ x 1000
5d	4	62-81-81-62	12	2/11/16	4'-6"	286	43	12298	\$ 267	\$ 3,288
5e*	2	75-75	20	2/11/16	4'-3"	150	43	6450	\$ 267	\$ 1,722
5f*	2	75-75	20	2/11/16	4'-3"	150	43	6450	\$ 267	\$ 1,722
5g*	2	75-75	20	2/11/16	4'-3"	150	43	6450	\$ 267	\$ 1,722

① Cost includes 10% mobilization and 25% contingency.

* 5e, 5f and 5g are assumed to be 150 ft total length.
No supporting information is available for this preliminary study.
These bridges all cross Mill Creek.

BRIDGE CATEGORY 3

SHEET 2 OF 2

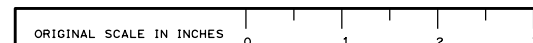
DESIGNED BY	R. Simmons	DATE	12-15
DRAWN BY	L. Wang	DATE	12-15
CHECKED BY	I. Chernioglo	DATE	12-15
APPROVED	X	DATE	X

STRUCTURE DESIGN BRANCH
17

PLANNING STUDY

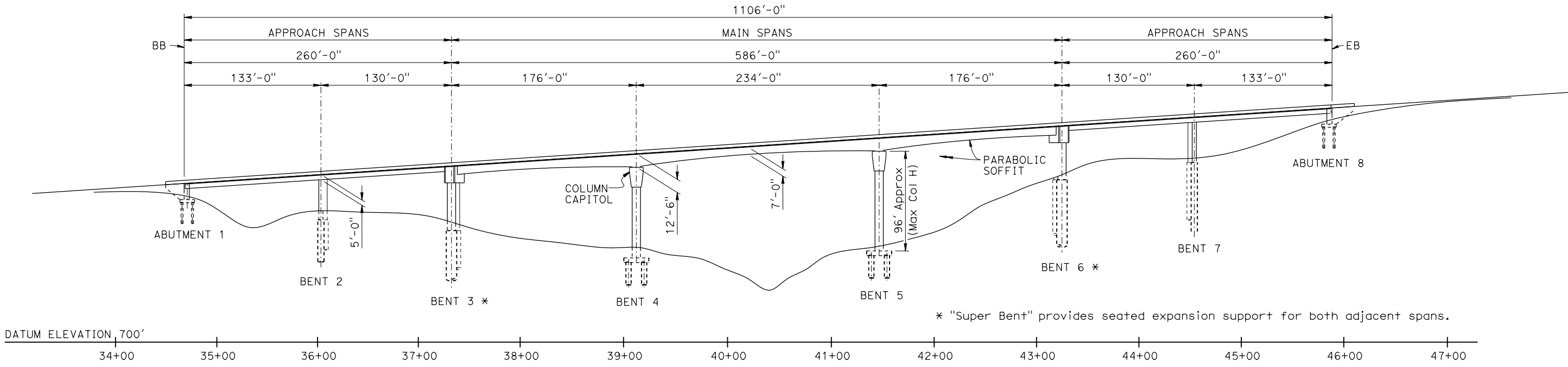
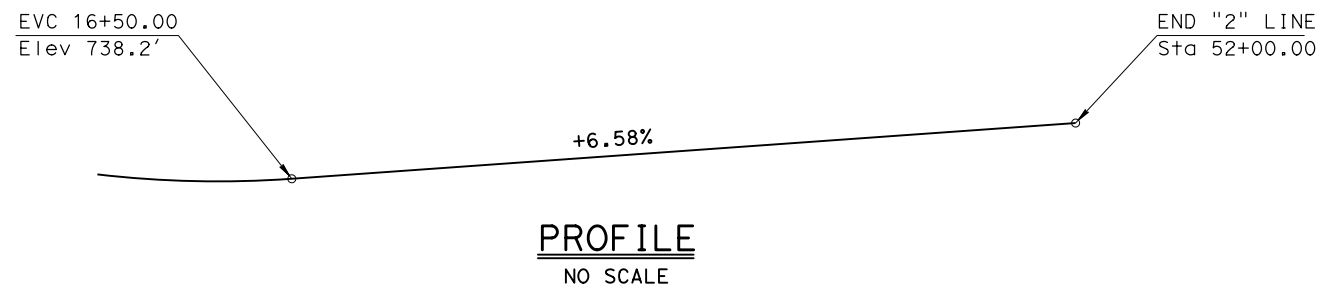
LAST CHANCE GRADE

UNIT: 3586	BRIDGE No. VARIOUS
SCALE: As Noted	PROJECT No. & PHASE: 0115000099

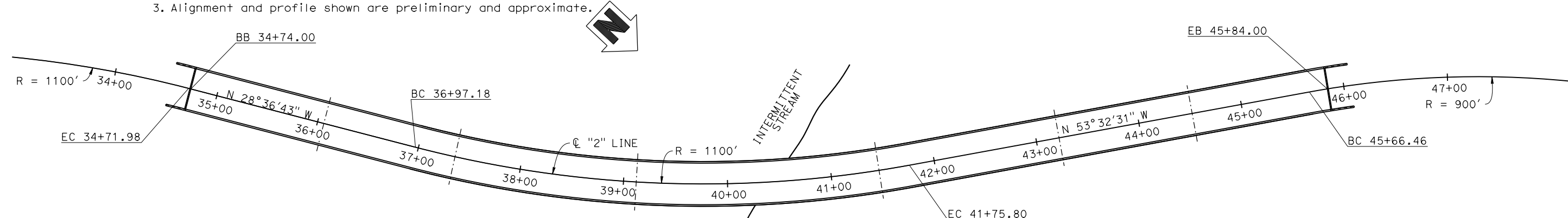


DIST	COUNTY	ROUTE	POST MILE
01	DN	101	XXXX

DATE OF ESTIMATE	2-19-16
STRUCTURE DEPTH	= Varies 12'-6" Max
LENGTH	= 1106
WIDTH	= 43
AREA	= 47558
COST/□ft INCLUDING 10% MOBILIZATION & 25% CONTINGENCY	= 435
TOTAL COST	= \$ 20,699,000



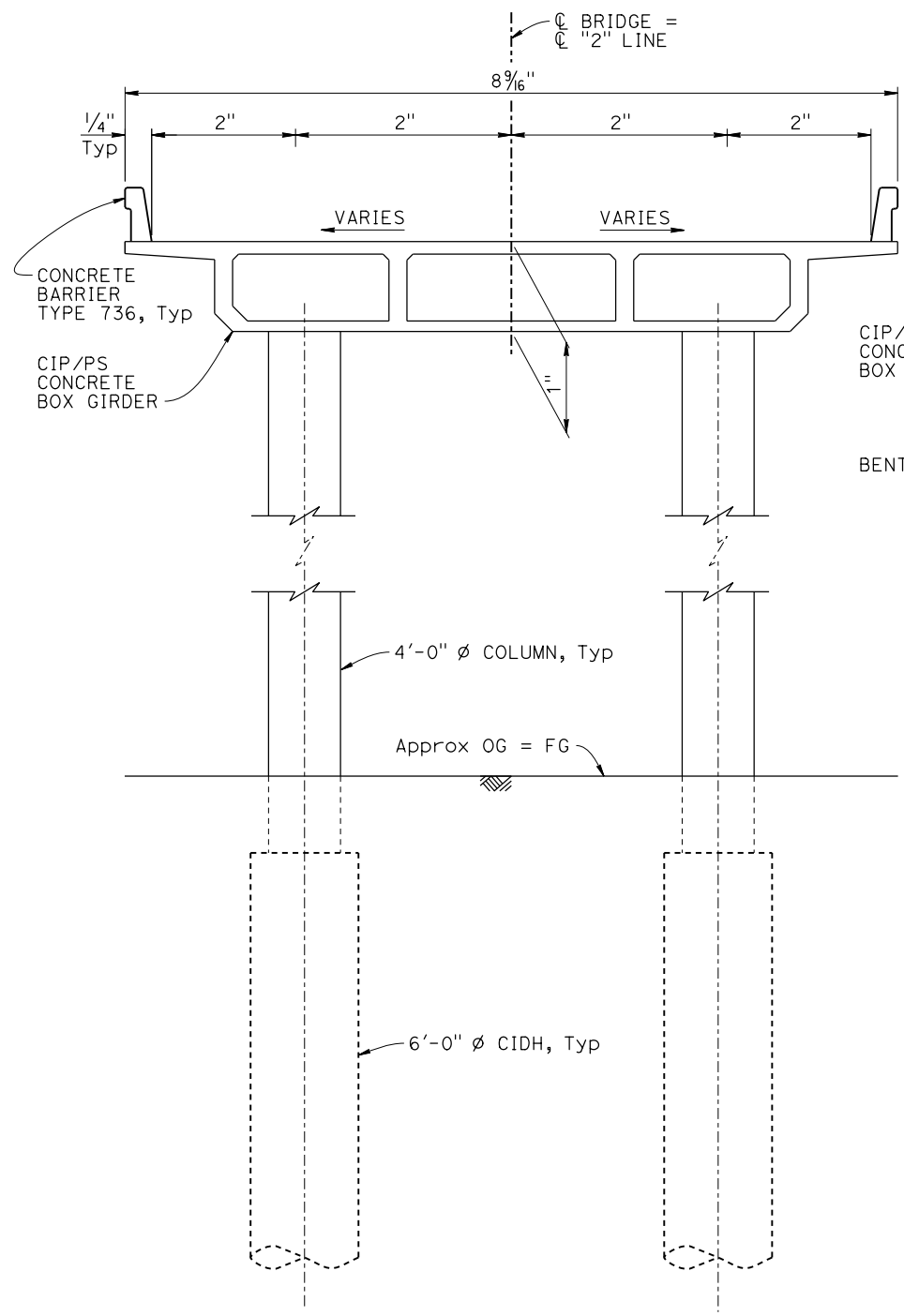
- Notes:
1. New alignment, no traffic control required.
 2. Access is limited by steep, remote terrain.
 3. Alignment and profile shown are preliminary and approximate.



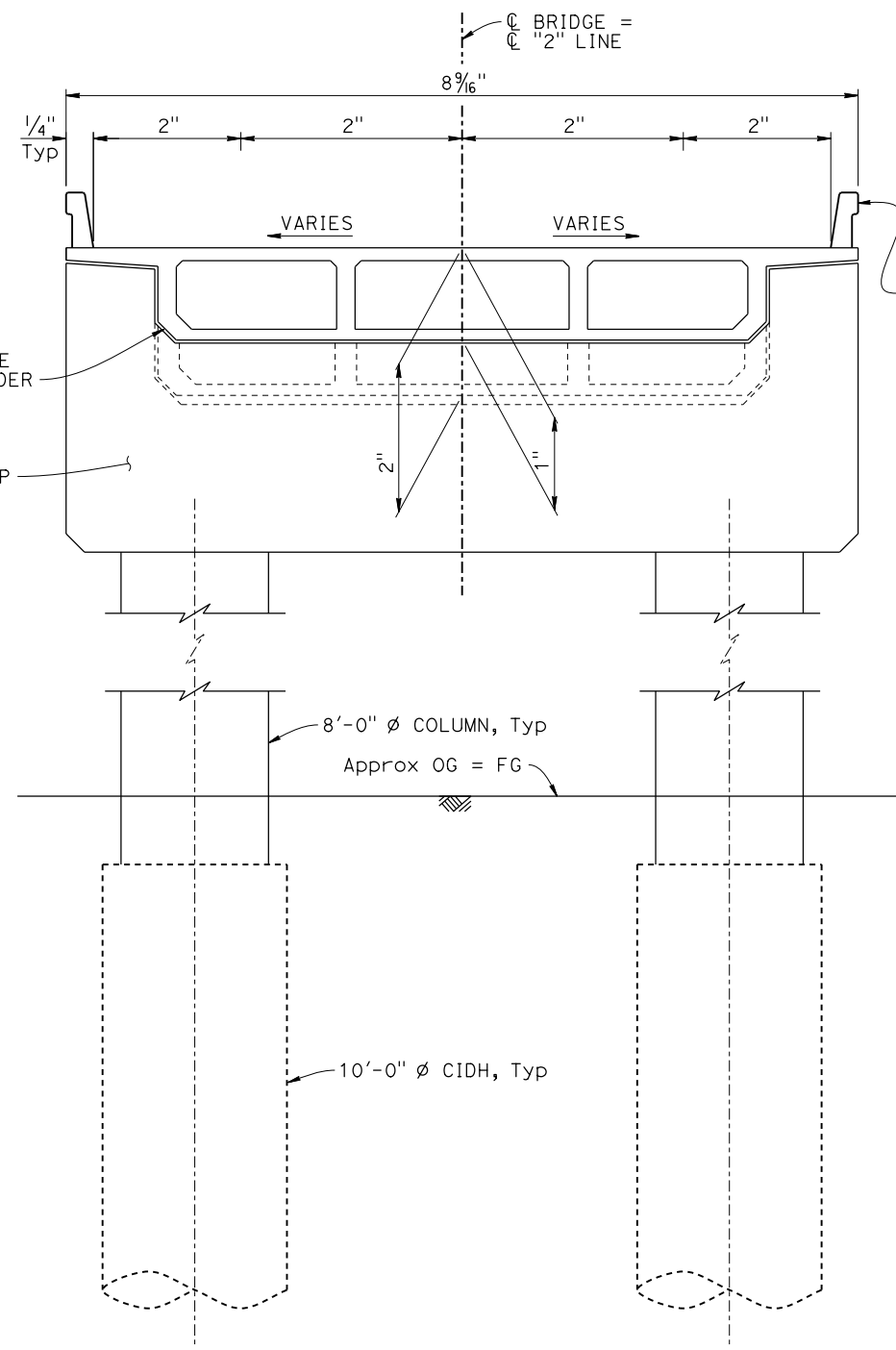
DESIGNED BY R. Simmons DATE 12/15		STRUCTURE DESIGN BRANCH 17	SHEET 1 OF 2	
DRAWN BY G. Souza DATE 12/15			PLANNING STUDY	
CHECKED BY I. Chernioglo DATE 12/15			LAST CHANCE GRADE	
APPROVED X DATE X			UNIT: 3586	BRIDGE No. 2b
ORIGINAL SCALE IN INCHES 0 1 2 3		SCALE: AS SHOWN		PROJECT No. & PHASE: 011500099K

USERNAME => s117840 DATE PLOTTED => 29-FEB-2016 TIME PLOTTED => 14:44

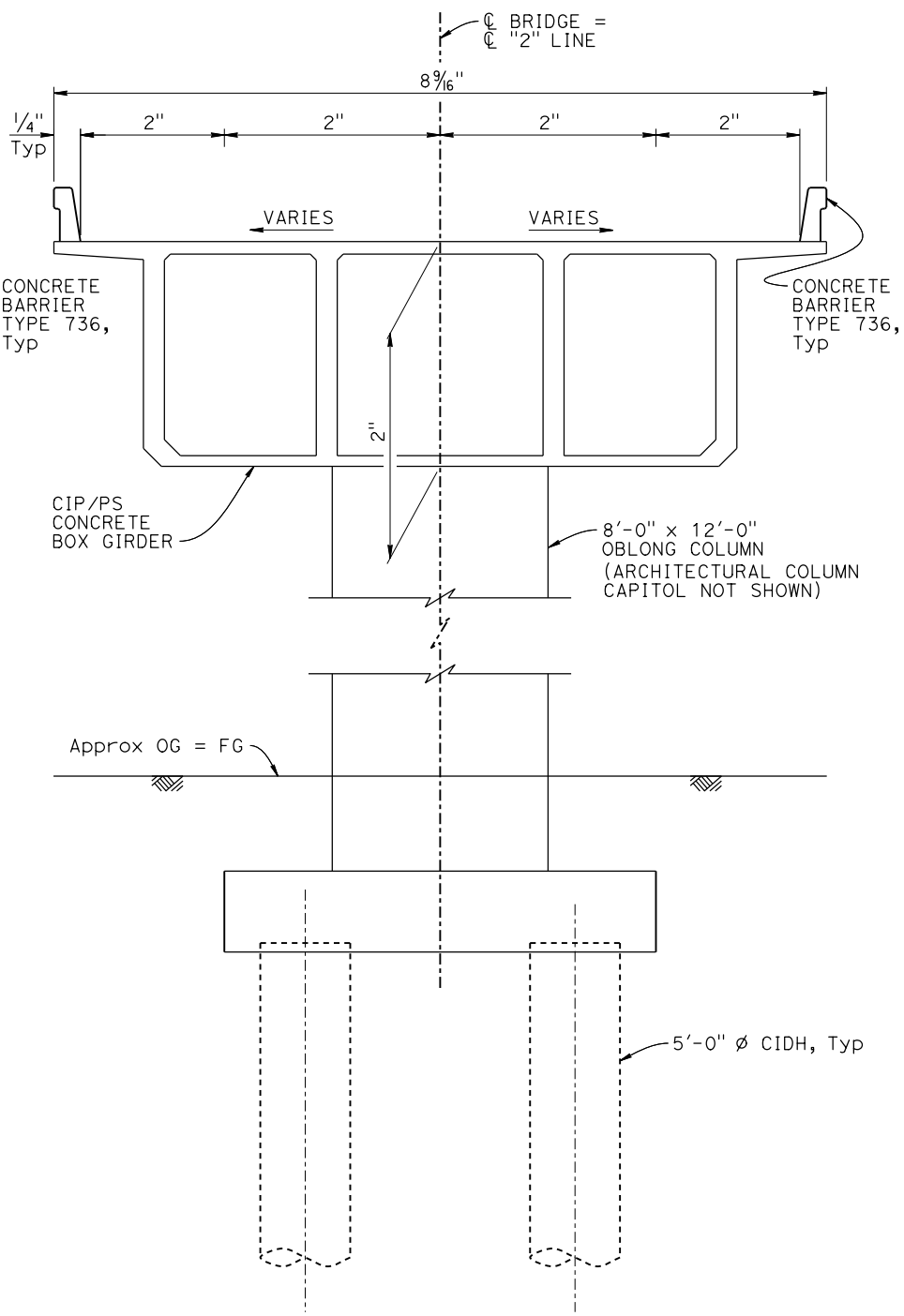
DIST	COUNTY	ROUTE	POST MILE
01	DN	101	XXXX



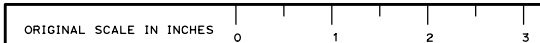
BENTS 2 AND 7 (APPROACH SPANS)
TYPICAL SECTION
 1" = 5'



BENTS 3 AND 6 ("SUPER BENT")
TYPICAL SECTION
 1" = 5'



BENTS 4 AND 5 (MAIN SPANS)
TYPICAL SECTION
 1" = 5'

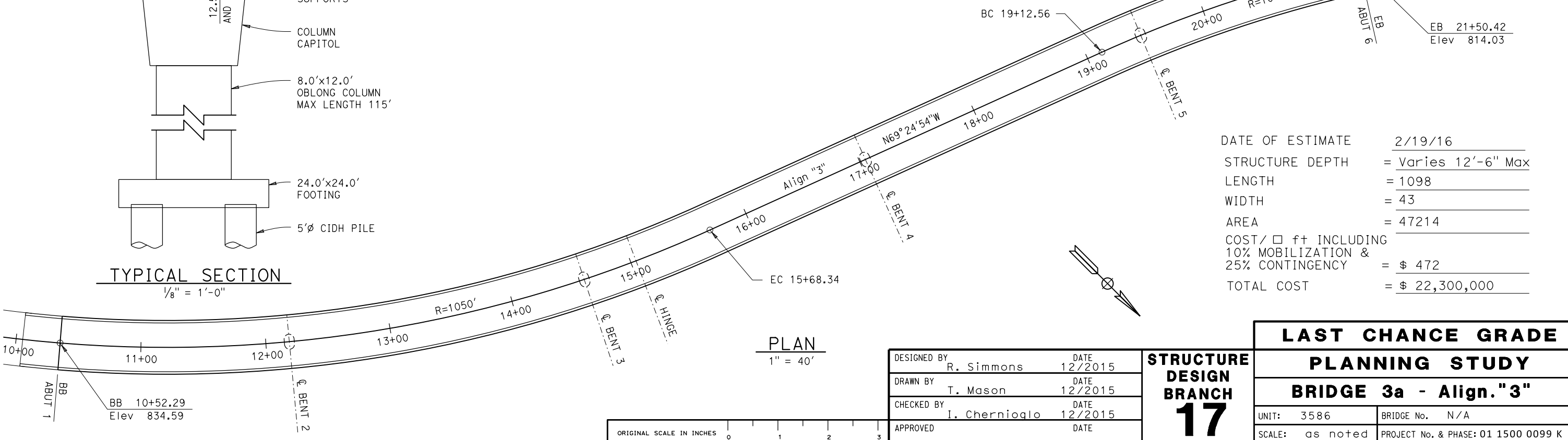
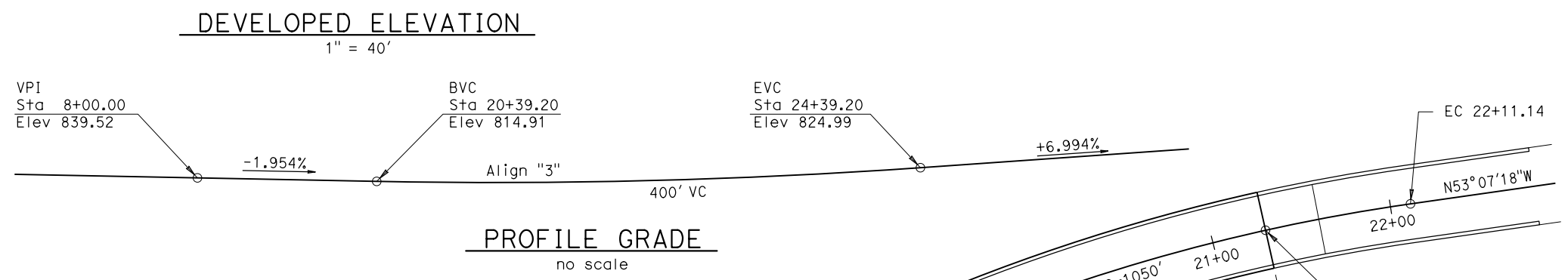
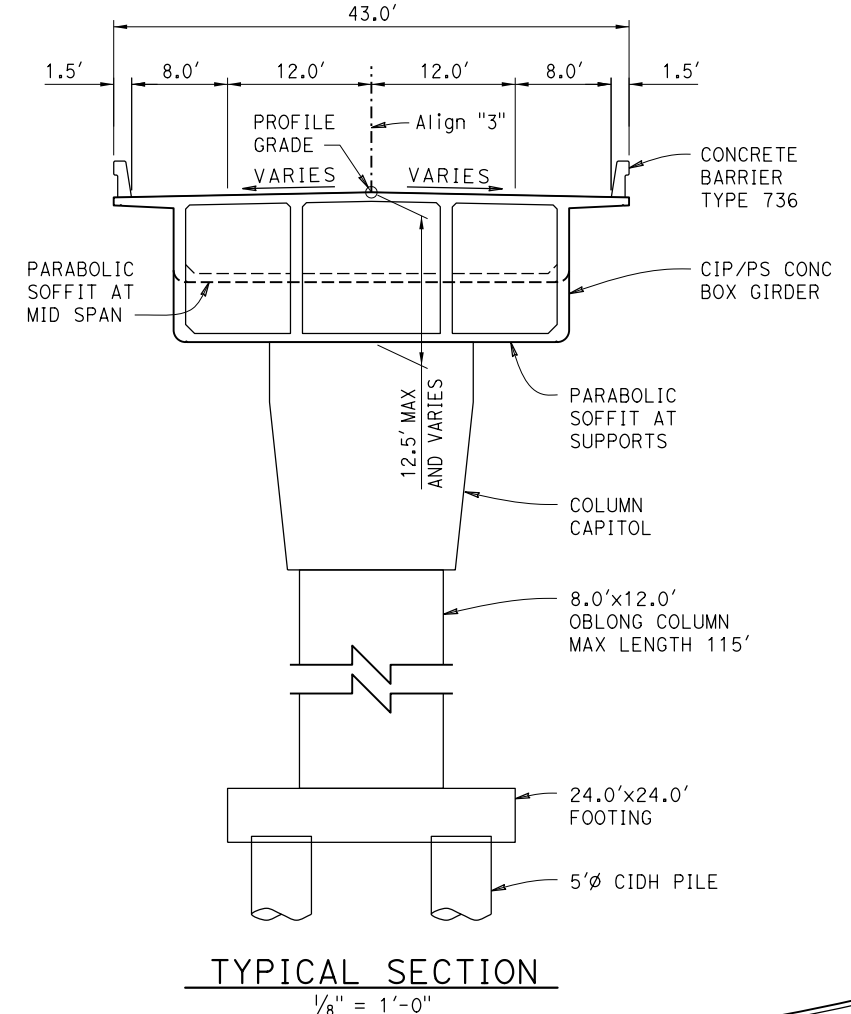
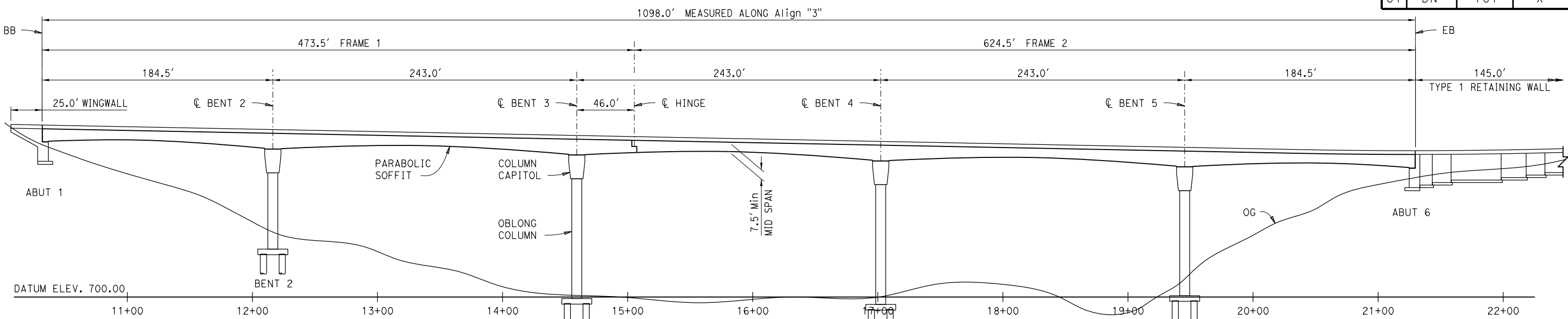


DESIGNED BY	R. Simmons	DATE	12/15
DRAWN BY	G. Souza	DATE	12/15
CHECKED BY	I. Chernioglo	DATE	12/15
APPROVED	X	DATE	X

**STRUCTURE
 DESIGN
 BRANCH
 17**

SHEET 2 OF 2	
PLANNING STUDY	
LAST CHANCE GRADE	
UNIT: 3586	BRIDGE No. 2b
SCALE: AS SHOWN	PROJECT No. & PHASE: 0115000099K

DIST	COUNTY	ROUTE	POST MILE
01	DN	101	X

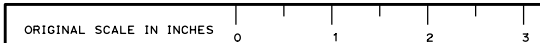


DATE OF ESTIMATE	2/19/16
STRUCTURE DEPTH	= Varies 12'-6" Max
LENGTH	= 1098
WIDTH	= 43
AREA	= 47214
COST/□ ft INCLUDING 10% MOBILIZATION & 25% CONTINGENCY	= \$ 472
TOTAL COST	= \$ 22,300,000

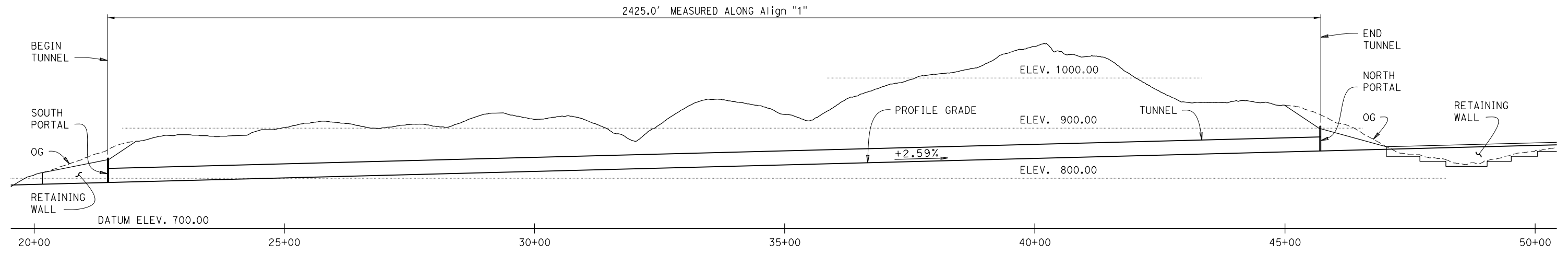
LAST CHANCE GRADE	
PLANNING STUDY	
BRIDGE 3a - Align."3"	
UNIT: 3586	BRIDGE No. N/A
SCALE: as noted	PROJECT No. & PHASE: 01 1500 0099 K

DESIGNED BY	R. Simmons	DATE	12/2015
DRAWN BY	T. Mason	DATE	12/2015
CHECKED BY	I. Chernioglo	DATE	12/2015
APPROVED		DATE	

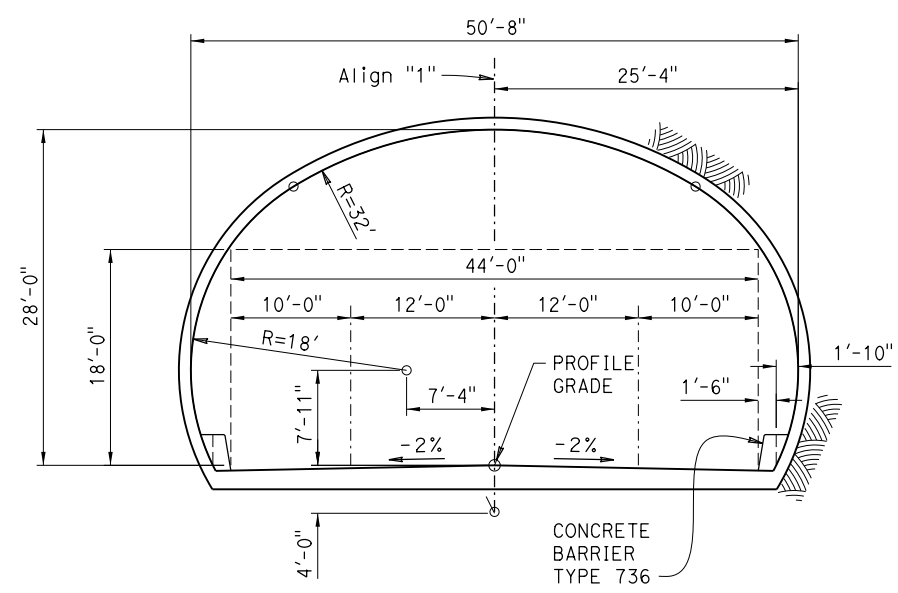
STRUCTURE DESIGN BRANCH
17



DIST	COUNTY	ROUTE	POST MILE
01	DN	101	X



DEVELOPED LONGITUDINAL SECTION
1" = 100'



TUNNEL SECTION
1/8" = 1'-0"

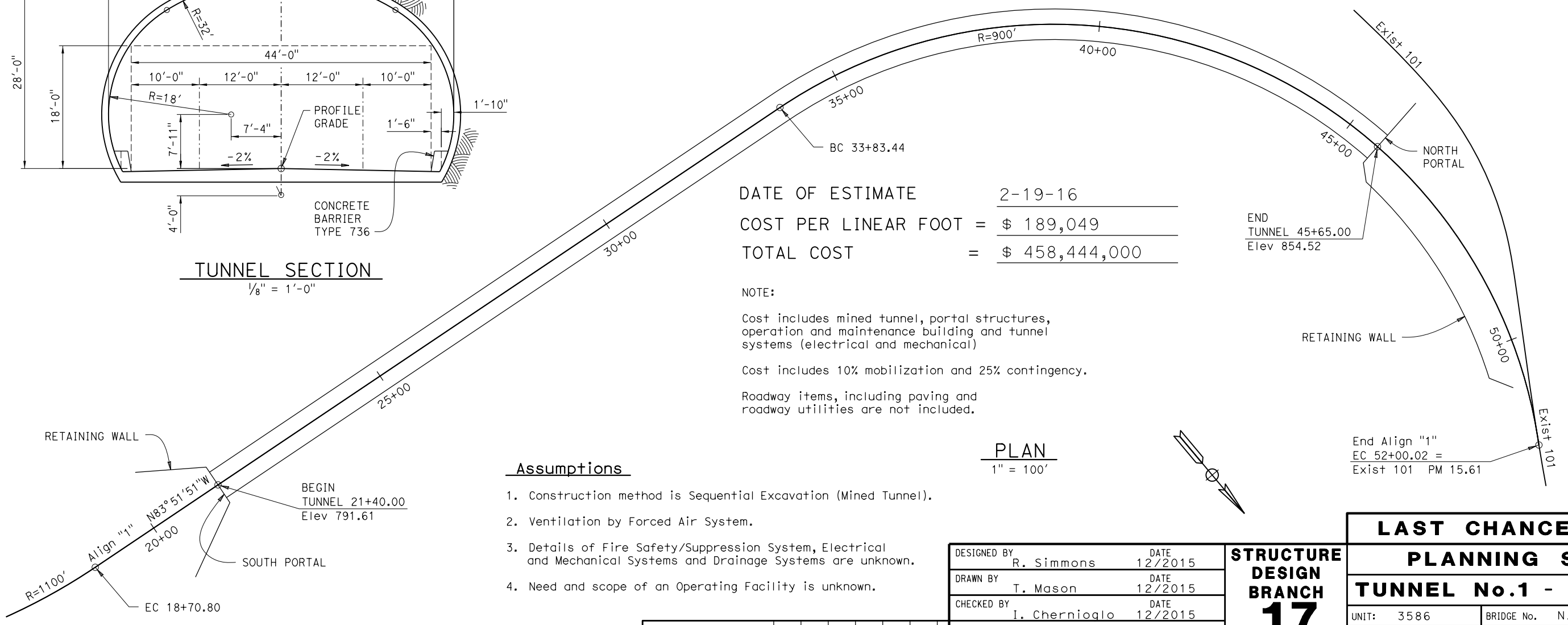
DATE OF ESTIMATE 2-19-16
 COST PER LINEAR FOOT = \$ 189,049
 TOTAL COST = \$ 458,444,000

NOTE:
 Cost includes mined tunnel, portal structures, operation and maintenance building and tunnel systems (electrical and mechanical)
 Cost includes 10% mobilization and 25% contingency.
 Roadway items, including paving and roadway utilities are not included.

Assumptions

1. Construction method is Sequential Excavation (Mined Tunnel).
2. Ventilation by Forced Air System.
3. Details of Fire Safety/Suppression System, Electrical and Mechanical Systems and Drainage Systems are unknown.
4. Need and scope of an Operating Facility is unknown.

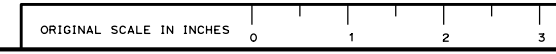
PLAN
1" = 100'



LAST CHANCE GRADE	
PLANNING STUDY	
TUNNEL No.1 - Align."1"	
UNIT: 3586	BRIDGE No. N/A
SCALE: as noted	PROJECT No. & PHASE: 01 1500 0099 K

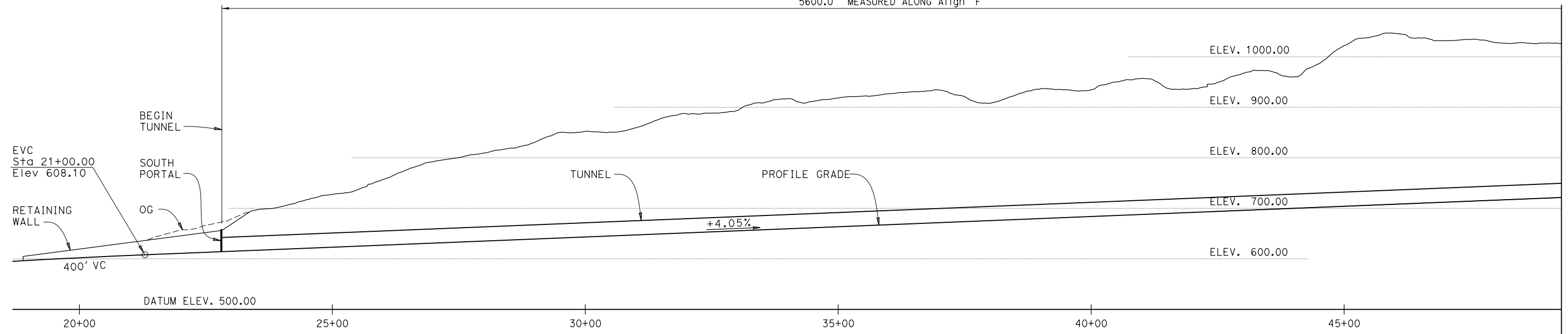
DESIGNED BY R. Simmons	DATE 12/2015
DRAWN BY T. Mason	DATE 12/2015
CHECKED BY I. Chernioglo	DATE 12/2015
APPROVED	DATE

STRUCTURE DESIGN BRANCH 17



DIST	COUNTY	ROUTE	POST MILE
01	DN	101	X

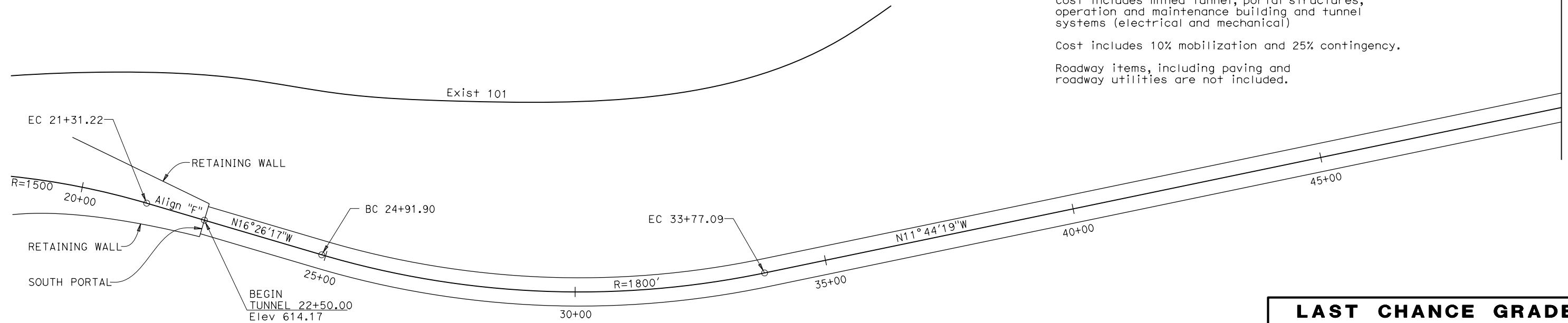
5600.0' MEASURED ALONG Align "F"



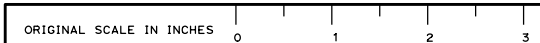
DEVELOPED LONGITUDINAL SECTION
1" = 100'

DATE OF ESTIMATE	2-19-16
COST PER LINEAR FOOT =	\$ 174,655
TOTAL COST =	\$ 978,070,000

NOTE:
Cost includes mined tunnel, portal structures, operation and maintenance building and tunnel systems (electrical and mechanical)
Cost includes 10% mobilization and 25% contingency.
Roadway items, including paving and roadway utilities are not included.



PLAN
1" = 100'



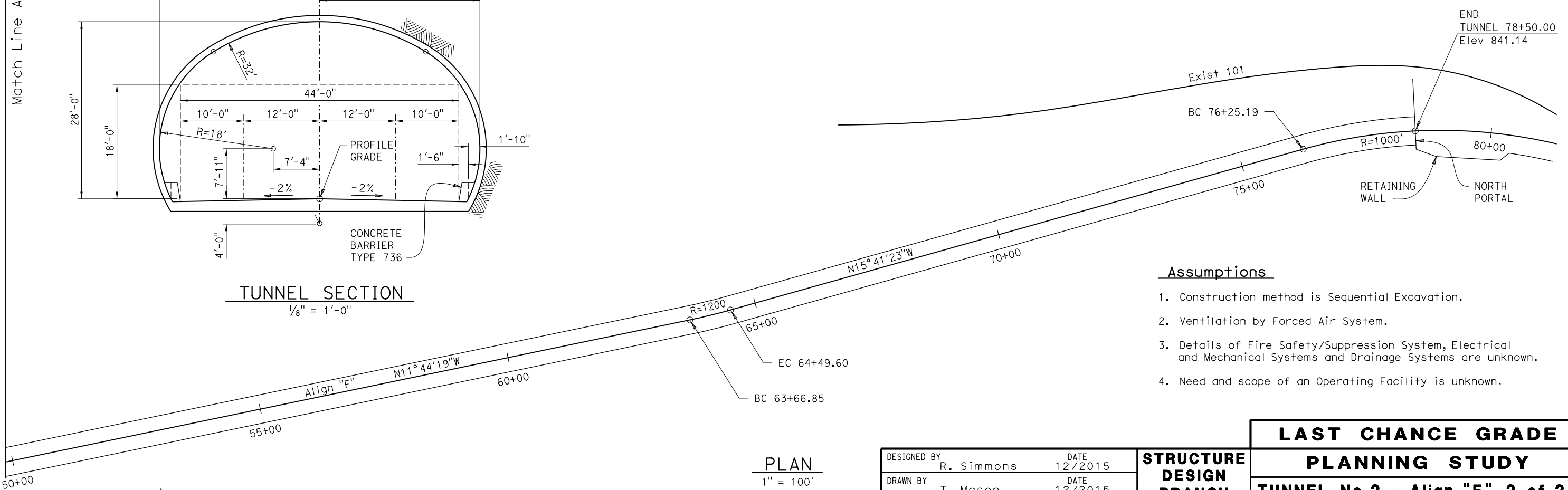
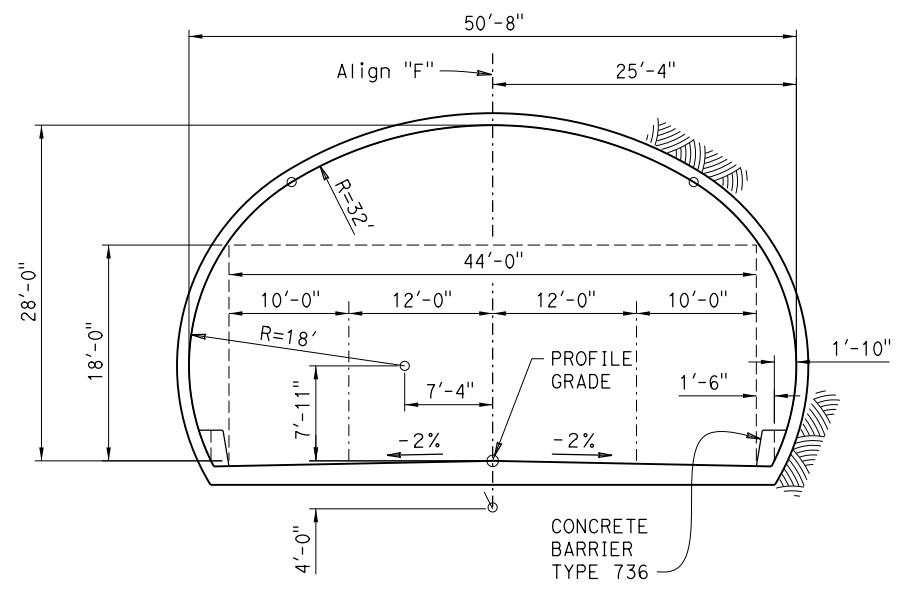
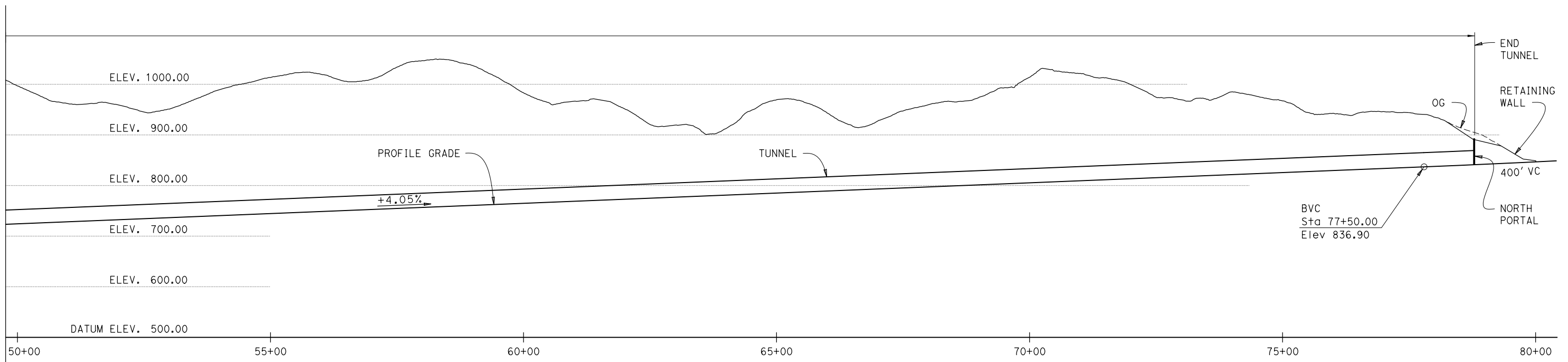
DESIGNED BY R. Simmons	DATE 12/2015
DRAWN BY T. Mason	DATE 12/2015
CHECKED BY I. Chernioglo	DATE 12/2015
APPROVED	DATE

STRUCTURE DESIGN BRANCH 17

LAST CHANCE GRADE	
PLANNING STUDY	
TUNNEL No.2 - Align."F" 1 of 2	
UNIT: 3586	BRIDGE No. N/A
SCALE: as noted	PROJECT No. & PHASE: 01 1500 0099 K

Match Line A

DIST	COUNTY	ROUTE	POST MILE
01	DN	101	X

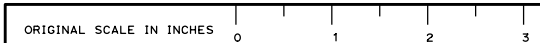


- Assumptions**
1. Construction method is Sequential Excavation.
 2. Ventilation by Forced Air System.
 3. Details of Fire Safety/Suppression System, Electrical and Mechanical Systems and Drainage Systems are unknown.
 4. Need and scope of an Operating Facility is unknown.

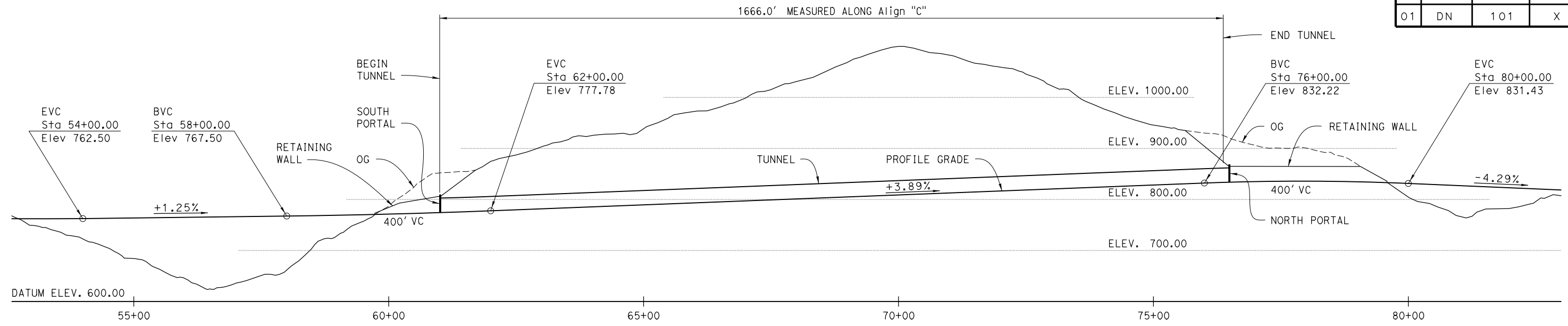
DESIGNED BY R. Simmons	DATE 12/2015
DRAWN BY T. Mason	DATE 12/2015
CHECKED BY I. Cherniogo	DATE 12/2015
APPROVED	DATE

STRUCTURE DESIGN BRANCH 17

LAST CHANCE GRADE	
PLANNING STUDY	
TUNNEL No.2 - Align."F" 2 of 2	
UNIT: 3586	BRIDGE No. N/A
SCALE: as noted	PROJECT No. & PHASE: 01 1500 0099 K



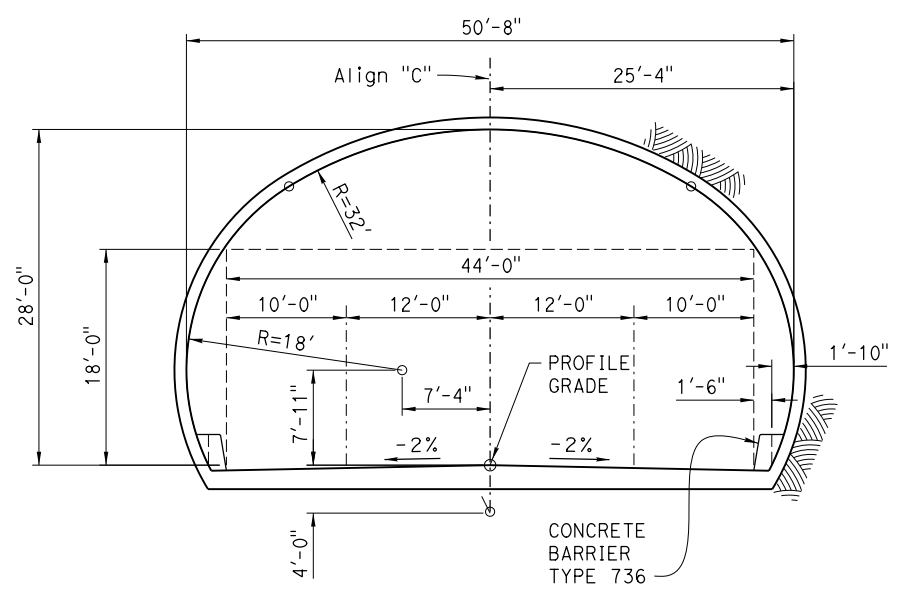
DIST	COUNTY	ROUTE	POST MILE
01	DN	101	X



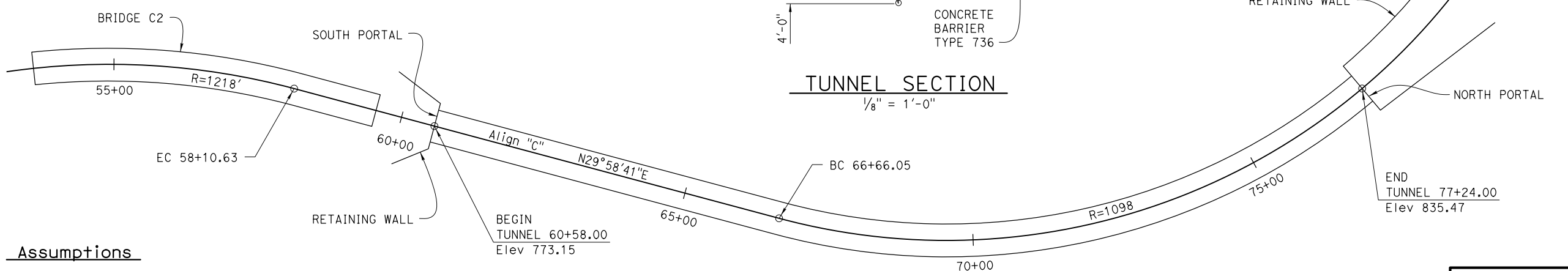
DATE OF ESTIMATE 2-19-16
 COST PER LINEAR FOOT = \$ 201,658
 TOTAL COST = \$ 335,962,000

NOTE:
 Cost includes mined tunnel, portal structures, operation and maintenance building and tunnel systems (electrical and mechanical)
 Cost includes 10% mobilization and 25% contingency.
 Roadway items, including paving and roadway utilities are not included.

DEVELOPED LONGITUDINAL SECTION
 1" = 100'



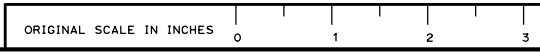
TUNNEL SECTION
 1/8" = 1'-0"



Assumptions

1. Construction method is Sequential Excavation.
2. Ventilation by Forced Air System.
3. Details of Fire Safety/Suppression System, Electrical and Mechanical Systems and Drainage Systems are unknown.
4. Need and scope of an Operating Facility is unknown.

PLAN
 1" = 100'



DESIGNED BY R. Simmons	DATE 12/2015
DRAWN BY T. Mason	DATE 12/2015
CHECKED BY I. Cherniogo	DATE 12/2015
APPROVED	DATE

STRUCTURE DESIGN BRANCH
17

LAST CHANCE GRADE	
PLANNING STUDY	
TUNNEL No.3 - Align."C"	
UNIT: 3586	BRIDGE No. N/A
SCALE: as noted	PROJECT No. & PHASE: 01 1500 0099 K

Memorandum

*Serious drought
Help Save Water!*

To: MR. GUDMUND SETBERG
Office Chief
Office of Bridge Design North

Date: February 25, 2016

Attention: Gary Joe
Rodney Simmons

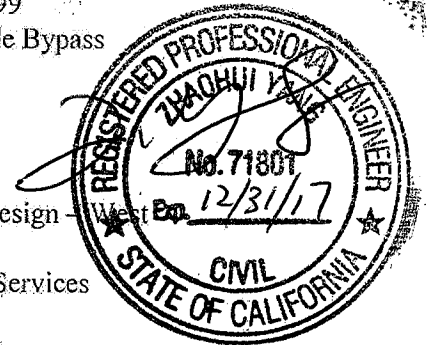
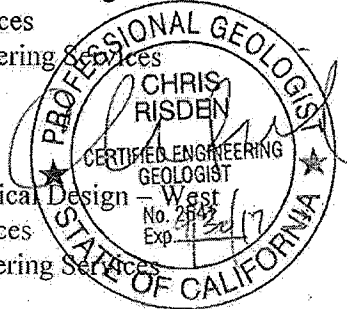
File: 04-DN-101 (PM 12.57/22.7)
EA 01-0F280K
E-FIS 0115000099
Last Chance Grade Bypass

From: MATTHEW GAFFNEY MB
Engineering Geologist
Office of Geotechnical Design - West
Geotechnical Services
Division of Engineering Services

SUNNY YANG
Transportation Engineer
Office of Geotechnical Design - West
Geotechnical Services
Division of Engineering Services

CHRIS RISDEN
Chief, Branch B
Office of Geotechnical Design - West
Geotechnical Services
Division of Engineering Services

H. Nikou
HOOSHMAND NIKOUI
Chief, Branch A
Office of Geotechnical Design - West
Geotechnical Services
Division of Engineering Services



Subject: **STRUCTURE PRELIMINARY GEOTECHNICAL REPORT FOR LAST CHANCE GRADE BYPASS - TUNNELS**

This memo is in response to your request for preliminary foundation recommendations for the structures in the proposed Last Chance Grade Bypass project. The project is on Route 101, between Eureka and Crescent City along the North Coast of California (Figure 1). This report only covers the proposed tunnel structures. The proposed bridges are covered in a separate report.

1. SCOPE OF WORK

Currently, six alternative realignments are under consideration for the new bypass. Mr. Charlie Narwold from Branch F of Geotechnical Design West (previously Branch B of Geotechnical Design North) prepared a Preliminary Geotechnical Report on February 25, 2015 (attached). That report discussed the geology and observations in the vicinity of the proposed realignments. In this report, we provide more details on site geology and tunnel structures. Additional discussions about the proposed bridges will be provided in a separate report.

2. PROJECT DESCRIPTION

US Route 101 along Last Chance Grade is a two lane roadway traversing steep coastline. The highway is bordered to the east by Del Norte Coast Redwood State Park. In recognition of the

MR. GUDMUND SETBERG
Attn: Gary Joe / Rodney Simmons
February 25, 2016
Page 2

rare ecosystem found in the park, the United Nations designated it a World Heritage Site (WHS) on September 5, 1980 and an International Biosphere Reserve on June 30, 1983.

The highway has for years been plagued by numerous landslides and has been the site of various repairs to maintain the route, especially between PM 14.3 and 15.6. This project proposes to bypass the slide-prone segment of the existing alignment with a new alignment. Six alternatives are labeled A-1, A-2, F, C-3, C-4, and C-5 respectively. Each of these alignments consists of new roadway and new structures. Alignment F traverses the Del Norte Coast Redwoods State Park. The other alignments are partially within the State Park and partially within private properties owned by logging companies. Segments within the Park property will have severe access issues, while those outside the park may be accessed by limited logging roads.

Construction of the tunnels will use the Sequential Excavation Method (also known as the New Austrian Tunnel Method), with cut-and-cover sections of tunnel at each portal. Proposed tunnel geometries include two 12-foot lanes and 10-foot shoulders on either side. Further description of the three tunnels involved in the alternatives are summarized below.

Table 1. Tunnel Structures Involved in Alternative Realignment

Tunnel	Alignment	Length (ft)	South Portal Elev. (ft)	North Portal Elev. (ft)	Gradient
1	A-1	2425	791.61	854.52	2.59%
2	F	5600	614.17	841.14	4.05%
3	C-3, C-4, C-5	1666	773.15	835.47	3.89%

We studied the following materials for preparation of this SPGR:

- California Geological Survey (CGS) Special Report 184: Landslides in The Highway 101 Corridor Between Wilson Creek and Crescent City, Del Norte County, California (Wills, 2000)
- Documents relating to the Last Chance Grade project history and realignment available through District 1 (http://www.dot.ca.gov/dist1/d1projects/last_chance_grade/).

3. EXCEPTION TO POLICY

There is no known exception to Department policy relating to investigation or design of the realignments.

MR. GUDMUND SETBERG
Attn: Gary Joe / Rodney Simmons
February 25, 2016
Page 3

4. FIELD INVESTIGATION AND TESTING PROGRAM

No geotechnical investigation has been conducted along any of the alternative realignments. See Section 12 below for more information.

5. LABORATORY TESTING PROGRAM

No laboratory testing has been conducted for the current project. See Section 12 below for more information.

6. SITE GEOLOGY AND SUBSURFACE CONDITIONS

California Geological Survey Special Report 184, Landslides in the Highway 101 Corridor between Wilson Creek and Crescent City, Del Norte County, California (2000) includes a geologic map and a landslide map that encompasses the proposed realignments. The maps are based on a compilation of previous mapping, interpretation of aerial photographs and field mapping. The landslides identified in the landslide map are classified and mapped based on their geomorphology. Detailed geotechnical data required to evaluate the probability of movement of the landslides were not collected as part of the investigation. Figure 2 presents geology.

The geologic map indicates bedrock beneath the proposed alignments is either Franciscan Complex Broken Formation or Franciscan Complex Mélange. The Broken Formation typically consists of hard sandstone blocks separated by weak beds of shale and shear zones. Landslides within the Broken Formation tend to be deep seated. The Northern and Southern Last Chance Grade Landslides along the existing Highway 101 alignment are located within the Broken Formation. The Mélange typically consists of highly sheared shale and argillite. Landslides in the Mélange are typically earthflows. The existing Highway 101 alignment immediately north of Wilson Creek is located within an active earthflow. The remaining mapped portion are alluvium deposits within the active stream channels, which consist of unconsolidated sand and gravels.

The geology associated with each tunnel is listed below:

Tunnel 1: Traverses roughly southeast to northwest and straddles the Franciscan Mélange (eastern section) and the Broken Formation (western section). The proposed north portal will be located within the active earthflows of Last Chance Grade.

Tunnel 2: Traverses south to north through the Broken Formation. Both the proposed south and north portals will be located in active earth flows of Last Chance Grade.

Tunnel 3: Traverses roughly south to north through Franciscan Mélange. The proposed north portal will be located within a mapped landslide of unknown age or activity.

MR. GUDMUND SETBERG
Attn: Gary Joe / Rodney Simmons
February 25, 2016
Page 4

7. SCOUR EVALUATION

Scour does not apply to tunnels.

8. CORROSION EVALUATION

No corrosion data is available at this time.

9. PRELIMINARY SEISMIC STUDY

Seismicity information was not requested at this time.

10. AS-BUILT FOUNDATION DATA

No as-built structure information is available along any of the alternative alignments.

11. PRELIMINARY FOUNDATION RECOMMENDATIONS

As described in Section 6 above, the north portal of Tunnel 1 and both portals of Tunnel 2 are located in active earth flow zones. The north portal of Tunnel 3 is located in a potentially active landslide zone. However, the available geology information is not sufficient to determine whether any of these three alternatives is feasible or not. A more comprehensive feasibility study is needed to determine the viability of each alternative. Note that a tunnel alignment is generally easier to adjust to avoid geologically hazardous areas.

12. ADDITIONAL FIELD WORK AND LABORATORY TESTING

Several additional reports are necessary for the design and construction of the proposed tunnel(s). These include Geotechnical Design Report for the tunnel(s) as well as separate Foundation Reports for the portals, and a Geotechnical Baseline Report. It is assumed that these reports will be completed by a consultant with expertise in tunneling. The following is a general discussion of field and laboratory work necessary for these reports.

Field Mapping

Geologic mapping of the surface geology will be completed for each tunnel, portal, and surrounding area. This mapping will determine extent of geologic formations present at the surface, determine geologic structures that may impact the tunnel at depth, identify discontinuity features in the rock formations that impacts behavior of the rock at depth (joint orientations, etc.).

MR. GUDMUND SETBERG
Attn: Gary Joe / Rodney Simmons
February 25, 2016
Page 5

Drilling and In Situ Testing

Drilling and sampling of the subsurface is necessary to characterize the strength parameters of geologic formations along the tunnel alignments and provide data for the design of initial and final tunnel lining. At least one hole at each portal is necessary for the portal design, and perhaps more depending on the complexity of the design and nature of the subsurface. Sampling at portals could include Standard Penetration Testing (SPT), rock core, as well as bulk samples. Testing could include any standard test for the design and construction of retaining walls: unconfined compression testing, Rock Quality Designation (RQD), corrosion, consolidation, etc.

For tunnel design, drilling will be done from along the alignment at the surface. Drilling may be vertical or inclined, depending on the structure of the geologic material. Drilled holes can be up to 1000 feet in length, however, it may be more economical to include more, shorter holes as core recovery and in situ testing can be time consuming in very long drill holes. At each portal, horizontal holes may be drilled along the proposed alignment. Rock cores will be logged and described focusing on weathering, discontinuities, rock hardness, RQD, and rock strength. Sampling will focus on rock cores for further strength testing. In situ analyses may include modulus determination to evaluate ground behavior and packer testing to evaluate rock permeability.

Reporting

Reports will include a Geotechnical Data Report and Geotechnical Design Reports, Hydraulics Reports, Seismic Design, a Geotechnical Baseline Report and others. The reports provide the analyses for estimating rock behavior during excavation of the tunnel opening, design of the initial lining, and design of the final lining. Geologic formations will be assigned Rock Mass Types (RMT's) based on their engineering properties. Ground Support Categories (GSC's) can then be determined based on anticipated behaviors of similar RMT's. A Geotechnical Baseline Report (GBR) will be used for bidding purposes as well as a basis for unanticipated conditions found in the tunnel during construction. The GBR is common to the tunneling industry. It defines minima and maxima for various rock properties to be used in disputes.

Involvement of Geotechnical Services

Because consultants will provide the bulk of the investigation and tunnel design, the Office of Geotechnical Design will have limited involvement other than oversight. There may be opportunities to partner with the consultants on the investigation. Recently completed tunnel projects in the state have required extensive geotechnical involvement in the early phases, leading to higher than normal oversight hours.

MR. GUDMUND SETBERG

Attn: Gary Joe / Rodney Simmons

February 25, 2016

Page 6

The Preliminary Geotechnical Recommendations included in this report are based on specific project information regarding structure type and structure location that has been provided by the Office of Structure Design Branch 17. If you have any questions or require further information, please contact Matthew Gaffney at (510) 622-1777, Sunny Yang at (510) 286-4808, Chris Riden at (510) 622-8757 or Hooshmand Nikoui at (510) 286-4811.

c: TJPokrywka, CNarwold, CRiden, MGaffney, HNikoui, Daily File
Sebastian Cohen, Project Manager
Talitha Hodgson, A.P. Senior
Carlson Schrieve, Design Engineer
John Fujimoto, Project Liaison Engineer
Daniel Speer, District Materials Supervisor

SYang/mm

Memorandum

*Serious drought
Help Save Water!*

To: MR. GUDMUND SETBERG
Office Chief
Office of Bridge Design North

Date: February 24, 2016

Attention: Gary Joe
Rodney Simmons

File: 04-DN-101 (PM 12.57/22.7)
EA 01-0F280K
E-FIS 0115000099
Last Chance Grade Bypass

From: SUNNY YANG
Transportation Engineer
Office of Geotechnical Design
Geotechnical Services
Division of Engineering Services
H. Nikou
HOOSHMAND NIKOUI
Chief, Branch A
Office of Geotechnical Design – West
Geotechnical Services
Division of Engineering Services



MATTHEW GAFFNEY
Engineering Geologist
Office of Geotechnical Design – West
Geotechnical Services
Division of Engineering Services
CHRIS RISDEN
Chief, Branch B
Office of Geotechnical Design – West
Geotechnical Services
Division of Engineering Services



Subject: **STRUCTURE PRELIMINARY GEOTECHNICAL REPORT FOR LAST CHANCE GRADE BYPASS**

This memo is in response to your request for preliminary foundation recommendations for the structures in the proposed Last Chance Grade Bypass project. The project is on Route 101, between Eureka and Crescent City along the North Coast of California (Figure 1). This report only covers the proposed bridge structures. The proposed tunnels are covered in a separate report.

1. SCOPE OF WORK

Currently, six alternative realignments are under consideration for the new bypass. Mr. Charlie Narwold from Branch F of Geotechnical Design West (previously Branch B of Geotechnical Design North) prepared a Preliminary Geotechnical Report on February 25, 2015 (attached). That report discussed the geology and observations in the vicinity of the proposed realignments. In this report, we provided more comments on site geology and bridge foundations, as well as resource estimate for Geotechnical Services. Additional discussions about the proposed tunnels will be provided in a separate report.

2. PROJECT DESCRIPTION

US Route 101 along Last Chance Grade is a two lane roadway traversing steep coastline. The highway is bordered to the east by Del Norte Coast Redwood State Park. In recognition of the

MR. GUDMUND SETBERG
Attn: Gary Joe / Rodney Simmons
February 24, 2016
Page 2

rare ecosystem found in the park, the United Nations designated it a World Heritage Site (WHS) on September 5, 1980 and an International Biosphere Reserve on June 30, 1983.

The highway has for years been plagued by numerous landslides and has been the site of various repairs to maintain the route, especially between PM 14.3 and 15.6. This project proposes to bypass the slide-prone segment of the existing alignment with a new alignment. Each of these alignments consists of new roadway and new structures. The number of structures involved in each of the alternatives are summarized below.

Table 1. Structures Involved in Alternative Realignment

Alternative	Bridges	Tunnels
A-1	One bridge, length 347'	One tunnel, length 2425'
A-2	Two bridges, lengths 344' and 1106'	None
F	None	One tunnel, length 5600'
C-3	Four bridges, lengths 466' to 1098'	One tunnel, length 1666'
C-4	Five bridges, lengths 466' to 596'	One tunnel, length 1666'
C-5	Eleven bridges, lengths 150' to 596'	One tunnel, length 1666'

Alignment F traverses the Del Norte Coast Redwoods State Park. The other alignments are partially within the State Park and partially within private properties owned by logging companies. Segments within the Park property will have severe access issues, while those outside the park may be accessed by limited logging roads.

We studied the following materials for preparation of this SPGR:

- California Geological Survey (CGS) Special Report 184: Landslides in The Highway 101 Corridor Between Wilson Creek and Crescent City, Del Norte County, California (Wills, 2000)
- Documents relating to the Last Chance Grade project history and realignment available through District 1 (http://www.dot.ca.gov/dist1/d1projects/last_chance_grade/).
- As-built LOTBs and geotechnical investigation and design reports from previous projects constructed on the existing alignment within the project limits, available at Caltrans Digital Archive of Geotechnical Data (GeoDOG) and Document Retrieval System.

3. EXCEPTION TO POLICY

There is no known exception to Department policy relating to investigation or design of the realignments.

4. FIELD INVESTIGATION AND TESTING PROGRAM

No geotechnical investigation has been conducted along any of the alternative realignments. Once the new alignment is selected, we will develop a field investigation and testing program to collect field information. See Section 12 below for more information.

5. LABORATORY TESTING PROGRAM

A laboratory testing program will be conducted for the current project. See Section 12 below for more information.

6. SITE GEOLOGY AND SUBSURFACE CONDITIONS

California Geological Survey Special Report 184, Landslides in the Highway 101 Corridor between Wilson Creek and Crescent City, Del Norte County, California (2000) includes a geologic map and a landslide map that encompasses the proposed realignments. The maps are based on a compilation of previous mapping, interpretation of aerial photographs and field mapping. The landslides identified in the landslide map are classified and mapped based on their geomorphology. Detailed geotechnical data required to evaluate the probability of movement of the landslides were not collected as part of the investigation. Figure 2 presents geology.

The geologic map indicates bedrock beneath the proposed alignments is either Franciscan Complex Broken Formation or Franciscan Complex Mélange. The Broken Formation typically consists of hard sandstone blocks separated by weak beds of shale and shear zones. Landslides within the Broken Formation tend to be deep seated. The Northern and Southern Last Chance Grade Landslides along the existing Highway 101 alignment are located within the Broken Formation. The Mélange typically consists of highly sheared shale and argillite. Landslides in the Mélange are typically earthflows. The existing Highway 101 alignment immediately north of Wilson Creek is located within an active earthflow. The remaining mapped portion are alluvium deposits within the active stream channels, which consist of unconsolidated sand and gravels.

The geology associated with each bridge structure is listed in Table 2.

Table 2: Geology at Bridge Locations

Bridge Number	Geology
1a	Mélange
2a	Mélange; north abutment within a shallow slide
2b	Mélange; north abutment within the Broken Formation
C1	Mélange; north abutment within a shallow slide

C2	Mélange
C3	Mélange
3a	Mélange; south abutment within Broken Formation
4a	Mélange; south abutment within Broken Formation
4b	South half within Mélange; north half within a shallow slide
5b	Mélange
5c	Broken Formation
5d	Broken Formation and alluvium deposits
5e	Broken Formation
5f	Broken Formation
5g	Broken Formation

Subsurface Conditions

No subsurface soil data is available at this time. Based on the as-built LOTBs collected from previous projects along the existing alignment, the subsurface materials typically consist of colluvium soils (sand, gravel, clay, silt) with thickness varying from zero to more than 50 feet, underlain by bedrocks of three major types: sandstone, greywacke, and shale. Note that the colluvium soils at the existing alignment are likely landslide debris. On the realignment routes, the bedrock is expected to be near ground surface typically.

Groundwater

No groundwater data is available at this time. Groundwater data will be collected as part of the field investigation program to be developed (see Section 12).

7. SCOUR EVALUATION

No scour information is available at this time. Final scour recommendations should be furnished in the Structure Hydraulics Report for each structure.

8. CORROSION EVALUATION

No corrosion data is available at this time. Corrosion samples will be collected and tested as part of the field and laboratory investigation program to be developed (see Section 12).

9. PRELIMINARY SEISMIC STUDY

Seismicity information was not requested at this time.

MR. GUDMUND SETBERG
Attn: Gary Joe / Rodney Simmons
February 24, 2016
Page 5

10. AS-BUILT FOUNDATION DATA

No as-built structure information is available along any of the alternative alignments. As mentioned above, many retaining wall structures have been built along the existing alignment. Most of these structures used CIDH piles (with or without tiebacks) as foundations.

11. PRELIMINARY FOUNDATION RECOMMENDATIONS

Structure Design has provided us with preliminary plans of the bridge structures and preliminary loads. Refer to Table 2. For all bridges, CIDH pile extension or pile group are a viable foundation choice. CIDH pile construction may encounter the challenge of high groundwater level and the potential of caving in. For cost estimate purposes, the CIDH piles may be assumed 4 to 6 feet in diameter with a length-to-diameter ratio of 20. For smaller bridges, spread footing may also be considered. Driven pile is generally not viable. However, it may be considered if field exploration indicates thick layers of soil materials (alluvium, colluvium) at certain locations.

Some of the bridges also have wing walls / retaining walls near the abutments. For the time being, Standard Caltrans retaining walls with spread footing can be assumed for these walls.

12. ADDITIONAL FIELD WORK AND LABORATORY TESTING

For the Final Foundation Report, a field investigation program will be developed to characterize the site and obtain information concerning subsurface conditions, ground water conditions, corrosion potential, site-specific seismic data and other pertinent geologic information. One mud rotary boring up to 100 feet depth may be required at each foundation support (bents and abutments) of the proposed bridges. The locations of some of the borings will require significant clearing and grading of working pads. Other locations will require the drill rig and support vehicles to be flown in with a helicopter.

Borings should be drilled at or near the proposed support locations to a maximum depth of 100 feet. The subsurface investigation should provide adequate information to describe the soil and rock conditions, and obtain geology and groundwater information for seismic analyses.

Laboratory testing of soil/rock samples may include, but not limited to:

- Corrosion tests
- Strength tests (pocket penetrometer, unconfined compression)
- Index tests (unit weight, water content, gradation, Atterberg limits)
- Consolidation tests

MR. GUDMUND SETBERG
 Attn: Gary Joe / Rodney Simmons
 February 24, 2016
 Page 6

A request for a Foundation Report should include a General Plan (GP), Foundation Plan (FP), and any additional plans available for the proposed structures. The District Project Manager should be aware that several permits will be required to commence the drilling and should plan to schedule sufficient time (a minimum of three months) for obtaining the permits. Encroachment, right of entry and sensitive environmental permits may be required for the drilling in the District/County. In addition to the permits, sufficient time needs to be scheduled for utility clearances, site access and site hazardous assessment reports. If a site hazardous assessment report for soil and groundwater contamination is available, it should be communicated to our Office prior to starting the subsurface investigation.

Estimate of Geotechnical Services Resources Required

The following are resource estimates for the Foundation Reports. The estimated time and duration are based upon the following assumptions:

- 1) Structure Design will provide all information required by Geotechnical Services.
- 2) The Department will provide the appropriate resources (funding, staff, and equipment) for the project.
- 3) The District will provide the necessary support services as stated above.

The tables below present the Geotechnical Services (GS) resource estimate necessary to complete the various alignments. Note that this does not include the tunnel portion of the alignments which will be covered in a separate report. The resource estimate includes cost centers 3650 (Geotechnical Support/Drafting), 3656 (Drilling Services), and 3660 (Geotechnical Design West). The resource estimate does not include cost of C-57 consultation and, if necessary, cost of equipment mobilization and lane closure work. The resource estimate is based on our understanding of the current scope of the project. If scope changes occur, revisions to the estimated hours will be necessary.

Table 3. Alignment A-1: One bridge, 3 borings

Unit		Task												
		100	150	160	185	230	240	250	255	270	275	285	290	Total
GS Support and Drafting	3650	0	0	0	0	0	300	0	0	0	0	0	0	300
Drilling	3656	0	0	0	0	0	480	0	0	0	0	0		480
GDW	3660	40	0	80	80	0	400	40	40	0	200	50	40	970
Total Hours		40	0	80	80	0	1180	40	40	0	200	50	40	1750

- Notes:
- (1) Includes one 100-foot mud rotary borings necessary for each bent and abutment.
 - (2) Additional cost will be required for clearing and grubbing for drilling service to obtain access to the site
 - (3) The request for the FR should be forwarded to Geotechnical Services a minimum of twelve (12) weeks before the requested due date.
 - (4) This estimate is preliminary and is subject to revision.

Table 4. Alignment A-2: Two bridges, 11 borings

Unit		Task												
		100	150	160	185	230	240	250	255	270	275	285	290	Total
GS Support and Drafting	3650	0	0	0	0	0	500	0	0	0	0	0	0	500
Drilling	3656	0	0	0	0	0	1760	0	0	0	0	0		1760
GDW	3660	40	0	80	80	0	1200	40	40	0	200	50	40	1770
Total Hours		40	0	80	80	0	3460	40	40	0	200	50	40	4030

Table 5. Alignment C-3: Four bridges, 17 borings

Unit		Task												
		100	150	160	185	230	240	250	255	270	275	285	290	Total
GS Support and Drafting	3650	0	0	0	0	0	600	0	0	0	0	0	0	600
Drilling	3656	0	0	0	0	0	2720	0	0	0	0	0		2720
GDW	3660	40	0	80	80	0	1600	40	40	0	200	50	40	2170
Total Hours		40	0	80	80	0	5320	40	40	0	200	50	40	5490

Table 6. Alignment C-4: Five bridges, 20 borings

Unit		Task												
		100	150	160	185	230	240	250	255	270	275	285	290	Total
GS Support and Drafting	3650	0	0	0	0	0	700	0	0	0	0	0	0	700
Drilling	3656	0	0	0	0	0	3200	0	0	0	0	0		3200
GDW	3660	40	0	80	80	0	2000	40	40	0	200	50	40	2570
Total Hours		40	0	80	80	0	5900	40	40	0	200	50	40	6470

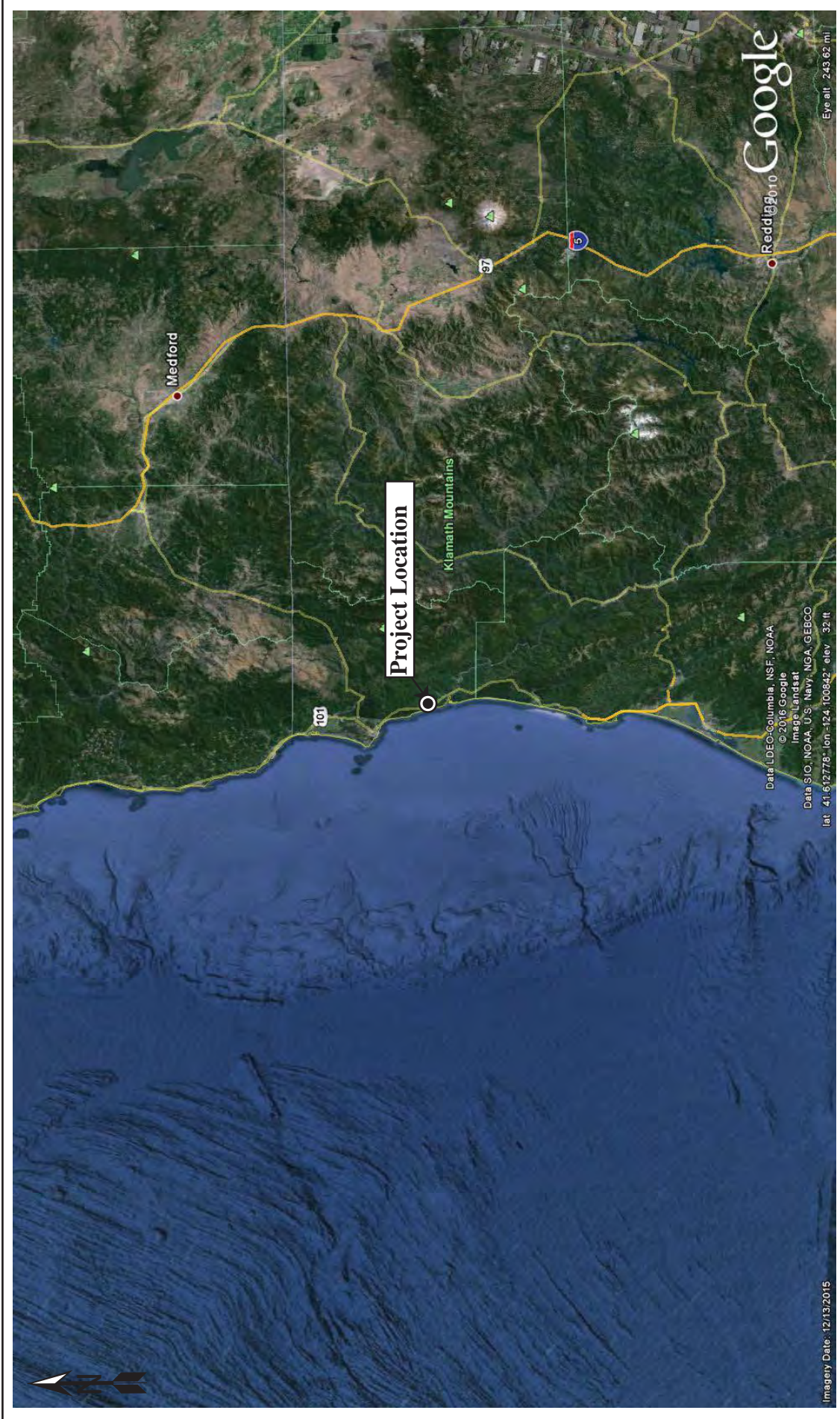
Table 7. Alignment C-5: Eleven bridges, 42 borings

Unit		Task												
		100	150	160	185	230	240	250	255	270	275	285	290	Total
GS Support and Drafting	3650	0	0	0	0	0	1000	0	0	0	0	0	0	1000
Drilling	3656	0	0	0	0	0	6720	0	0	0	0	0		6720
GDW	3660	40	0	80	80	0	5000	40	40	0	200	50	40	5570
Total Hours		40	0	80	80	0	11720	40	40	0	200	50	40	13290

The Preliminary Geotechnical Recommendations included in this report are based on specific project information regarding structure type and structure location that has been provided by the Office of Structure Design Branch 17. If you have any questions or require further information, please contact Matthew Gaffney at (510) 622-1777, Sunny Yang at (510) 286-4808, Chris Ridsen at (510) 622-8757 or Hooshmand Nikoui at (510) 286-4811.

c: TJPokrywka, CRidsen, MGaffney, HNikoui, CNarwold, Daily File

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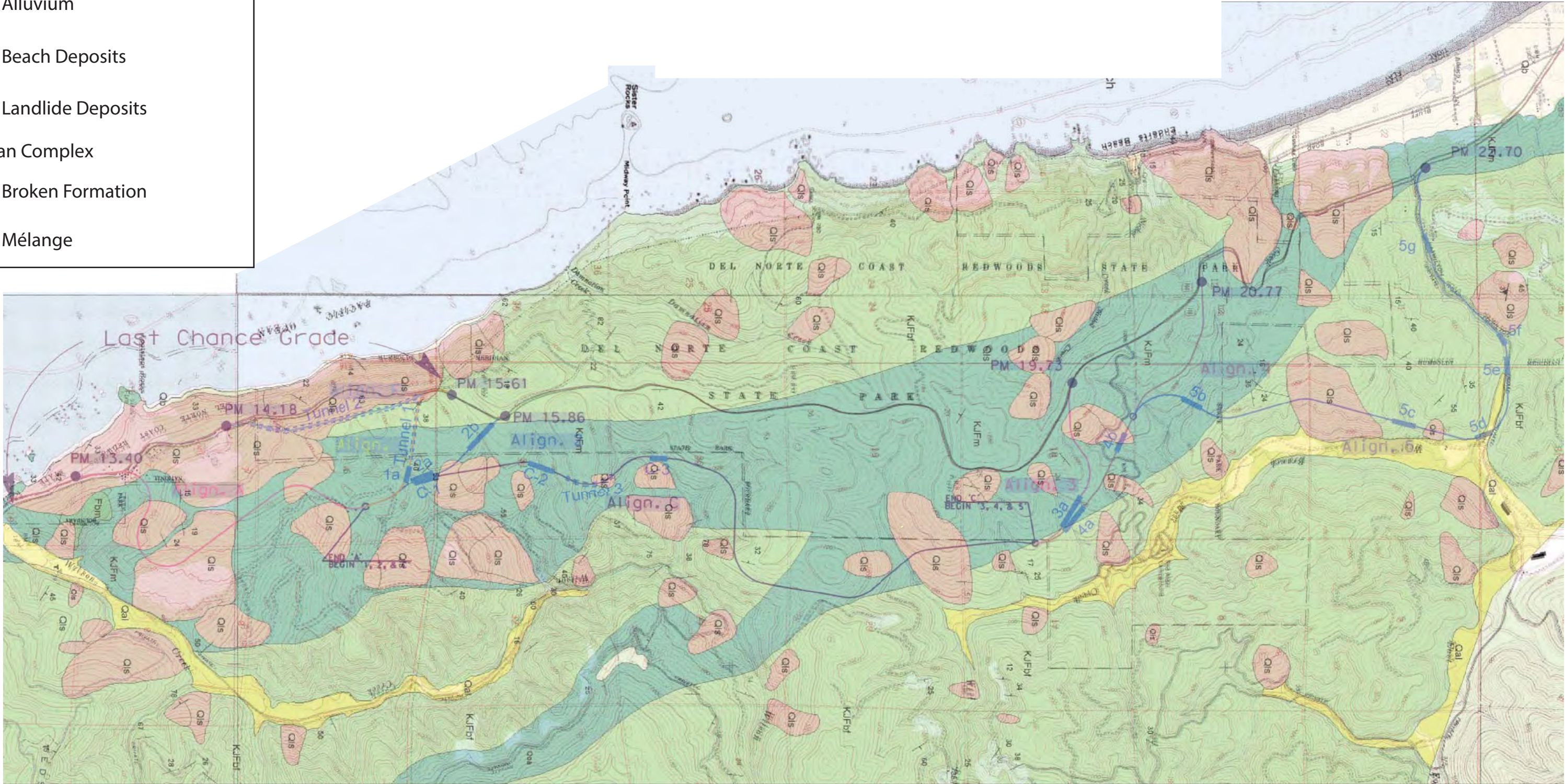
<p>SCALE</p>  <p>0 30 miles</p>	<p>DIVISION OF ENGINEERING SERVICES GEOTECHNICAL SERVICES GEOTECHNICAL DESIGN - WEST – BRANCH B</p>		<p>LOCATION MAP</p>
<p>01-DN-101 0111000066</p> <p>PM 12.5/ 16.3 February 2016</p>			

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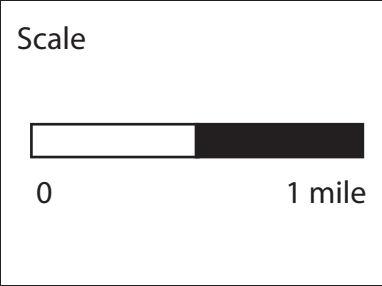
- Qal Alluvium
- Qb Beach Deposits
- Qls Landslide Deposits

Franciscan Complex

- KJFbf Broken Formation
- KJFm Mélange



Reference
 California Geological Survey (CGS) Special Report 184 Landslides in The Highway 101 Corridor Between Wilson Creek And Crescent City, Del Norte County, California (Wills, 2000)



DIVISION OF ENGINEERING SERVICES
 GEOTECHNICAL SERVICES
 GEOTECHNICAL DESIGN - WEST - BRANCH B

Geology	
01-DN-101	0111000066
PM 12.5/ 16.3	February 2016
Figure 2	

DEPARTMENT OF TRANSPORTATION**M e m o r a n d u m**

*Serious drought.
Help Save Water!*

To: Talitha Hodgson
Project Manager

Date: February 25, 2015

File: 01-DN-101-PM 12.5/16.3
EFIS ID: 0114000066
Last Chance Grade EFS

Attn: Jeffrey Pimentel, Project Engineer
Advance Planning

From: **DEPARTMENT OF TRANSPORTATION**
DIVISION OF ENGINEERING SERVICES
GEOTECHNICAL SERVICES
OFFICE OF GEOTECHNICAL DESIGN NORTH

Subject: Preliminary Geotechnical Evaluation of Proposed Realignment

Introduction

This memorandum summarizes the results of a preliminary geotechnical evaluation of the currently proposed realignments of Highway 101 that bypass Last Chance Grade in Den Norte County, California. The proposed realignments are shown on Figures 1 and 2. The information contained in this memorandum is based on a review of existing Caltrans reports, California Geological Survey Special Report 184 (Wills, 2000), the landslide map provided by Green Diamond Resource Company and plan maps, profiles and typical cross sections of the proposed realignments. No field investigation was conducted in preparation of this Memorandum.

This preliminary evaluation focused on identifying existing geologic conditions that could significantly impact the design and performance of the proposed realignments. The intent of this evaluation is to determine if any of the proposed realignments are not feasible based on existing geologic data. A summary of geological conditions identified along the proposed realignments that are considered significant in terms of determining their feasibility is provided in the observations section below.

Geology in the vicinity of the proposed realignments

California Geological Survey Special Report 184, Landslides in the Highway 101 Corridor between Wilson Creek and Crescent City, Del Norte County, California (2000) includes a geologic map and a landslide map that encompasses the proposed realignments. The maps are based on a compilation of previous mapping, interpretation of aerial photographs and field mapping.

The geologic map indicates bedrock beneath the proposed alignments is either Franciscan Complex Broken Formation or Melange. The Broken formation typically consists of hard sandstone blocks separated by weak beds of shale and shear zones. Landslides within the Broken formation tend to be deep seated. The Northern and Southern Last Chance Grade Landslides along the existing Highway 101 alignment are located within the Broken Formation. The Melange typically consists of highly sheared shale and argillite. Landslides in the Melange are typically earthflows. The existing Highway 101 alignment immediately north of Wilson Creek is located within an active earthflow.

The landslides identified in the landslide map are classified and mapped based on their geomorphology. Detailed geotechnical data required to evaluate the probability of movement of the landslides were not collected as part of the investigation.

Observations

With the exception of the existing active landslides along the coast, almost all the landslides that the proposed realignments traverse are mapped as probable or questionable, dormant-mature, deep (>50 feet) rockslides (Wills, 2000).

Alternatives A and C between Station 0 and Station 16 are located within an active earthflow and will traverse what is mapped as a probable dormant landslide between approximately Station 26 and Station 42 (Figure 1). The portion of the realignments within the active earthflow will be prone to deformation similar to what is occurring along the existing Highway 101 alignment immediately north of Wilson Creek which requires frequent maintenance. A typical cross section through the probable dormant landslide at approximately Station 37 indicates a 1.5(H):1(V) cutslope would have a vertical height of approximately 200 feet.

Alternative A-1 is a proposed tunnel alignment. The proposed tunnel is approximately 2000 feet in length. Tunnel designs require collecting geotechnical data along the proposed alignment. Horizontal and inclined borings potentially up to 1000 feet in length could be drilled from the ends of the proposed tunnel outside the limits of the continuous old growth Redwood.

Alternative B traverses what is mapped as large probable dormant landslide between approximately Station 56 and Station 87. Portions of Alternatives A, B and C also traverse the

landslide (Figure 1). Review of typical sections at approximately Station 52 and Station 70 along Alternatives A and C indicate a 1.5(H):1(V) cutslope would have a vertical height of approximately 400 feet.

Alternative F is a proposed tunnel alignment. Preliminary cross sections indicate the tunnel would be inboard of the inferred failure surface of the Northern and Southern Last Chance Grade Landslide but the southern portal and a portion of the tunnel would be within the limits of an active earthflow.

Conclusions

The only proposed realignment that does not seem feasible based on a review of available geotechnical data is Alternative F. The southern portal and the portion of the tunnel located within the earthflow would not be feasible unless the potential impacts of the earthflow could be mitigated. In addition, the northern portion of the tunnel and portal would need to be located outside the limits of the northern Last Chance Grade Landslide. It may be possible but an extensive geotechnical investigation would be required to determine if this alternative is feasible.

Cuts on the order of 400 feet in height would be required for some of the currently proposed realignments. The cuts may be feasible from a geotechnical standpoint but may not be practical due to the large excavation volumes. Whether or not landslide mitigation will be required for a given realignment will depend mainly on the stability of the existing slopes, the magnitude of the proposed cuts and fills and the groundwater conditions.

With the exception of Alignment F, there is not sufficient data to determine the feasibility of the proposed realignments based on geotechnical considerations alone. A field investigation that includes subsurface drilling will aid in determining the feasibility of the proposed realignments.

If you have any questions or require additional assistance, please contact me at (707) 445-6036.



CHARLIE NARWOLD
Senior Engineering Geologist
Office of Geotechnical Design North
Branch B



References

Wills, C. J., "California Geological Survey Special Report 184, Landslides in the Highway 101 Corridor between Wilson Creek and Crescent City, Del Norte County, California," 2000.

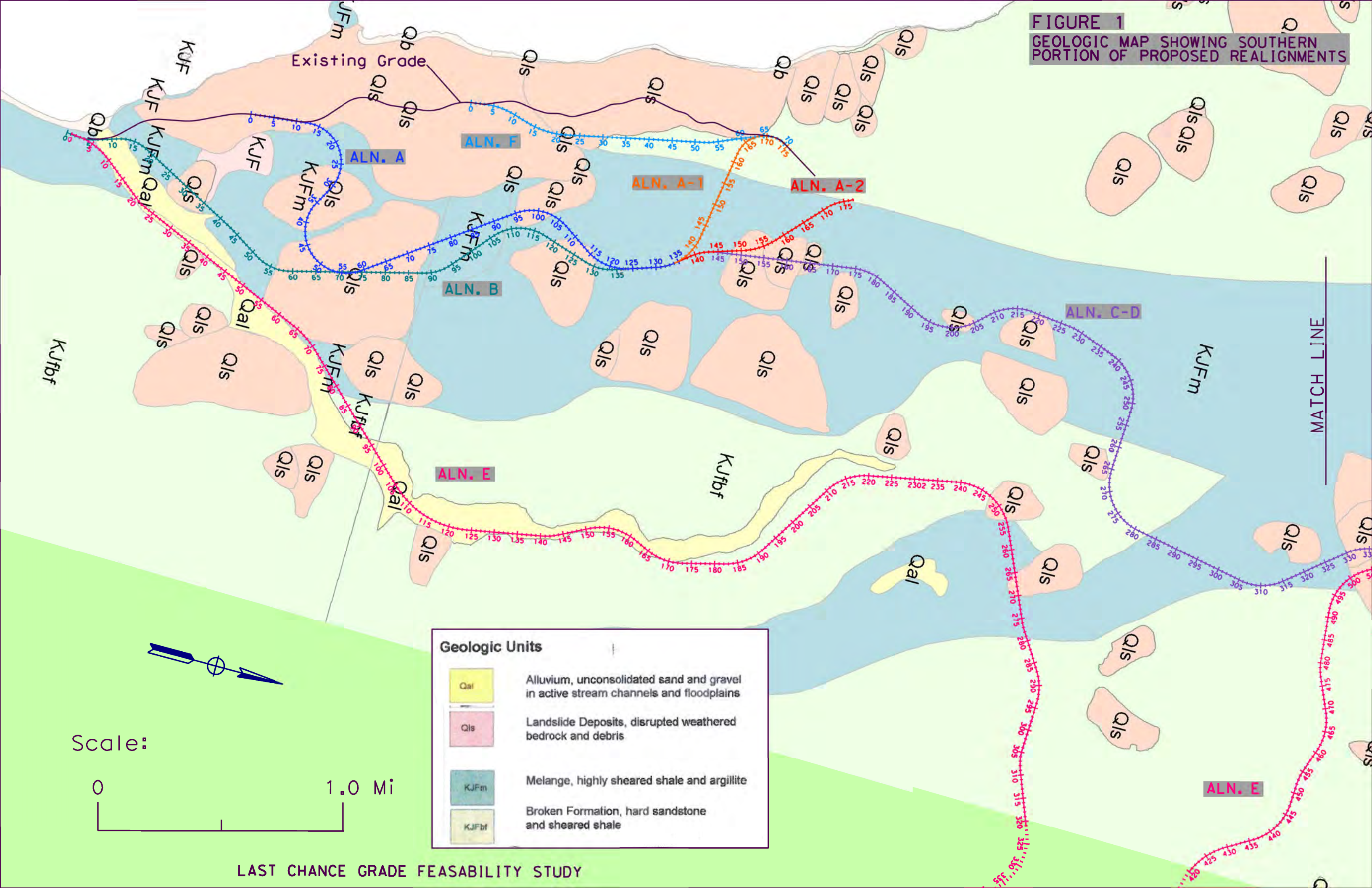
List of Figures

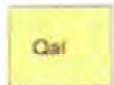
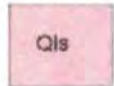

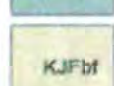
Figure 1 - Geologic Map of Northern Portion of Proposed Realignment.

Figure 2 - Geologic Map of Southern Portion of Proposed Realignment.

C: Project File

FIGURE 1
GEOLOGIC MAP SHOWING SOUTHERN
PORTION OF PROPOSED REALIGNMENTS



Geologic Units	
	Qal Alluvium, unconsolidated sand and gravel in active stream channels and floodplains
	Qls Landslide Deposits, disrupted weathered bedrock and debris
	KJFm Melange, highly sheared shale and argillite
	KJFbf Broken Formation, hard sandstone and sheared shale

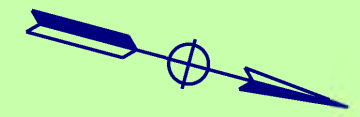


FIGURE 2
GEOLOGIC MAP SHOWING NORTHERN
PORTION OF PROPOSED REALIGNMENTS

