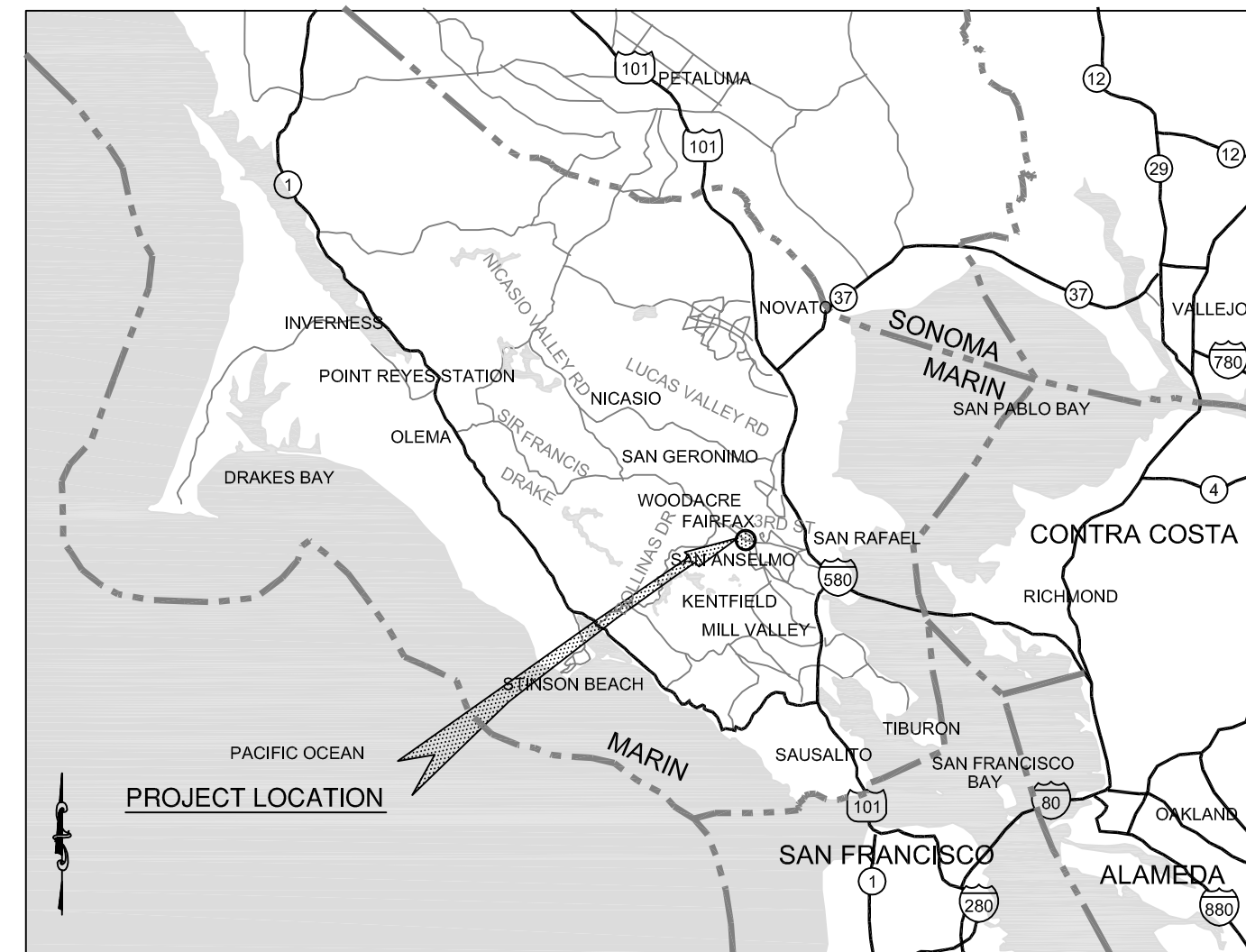
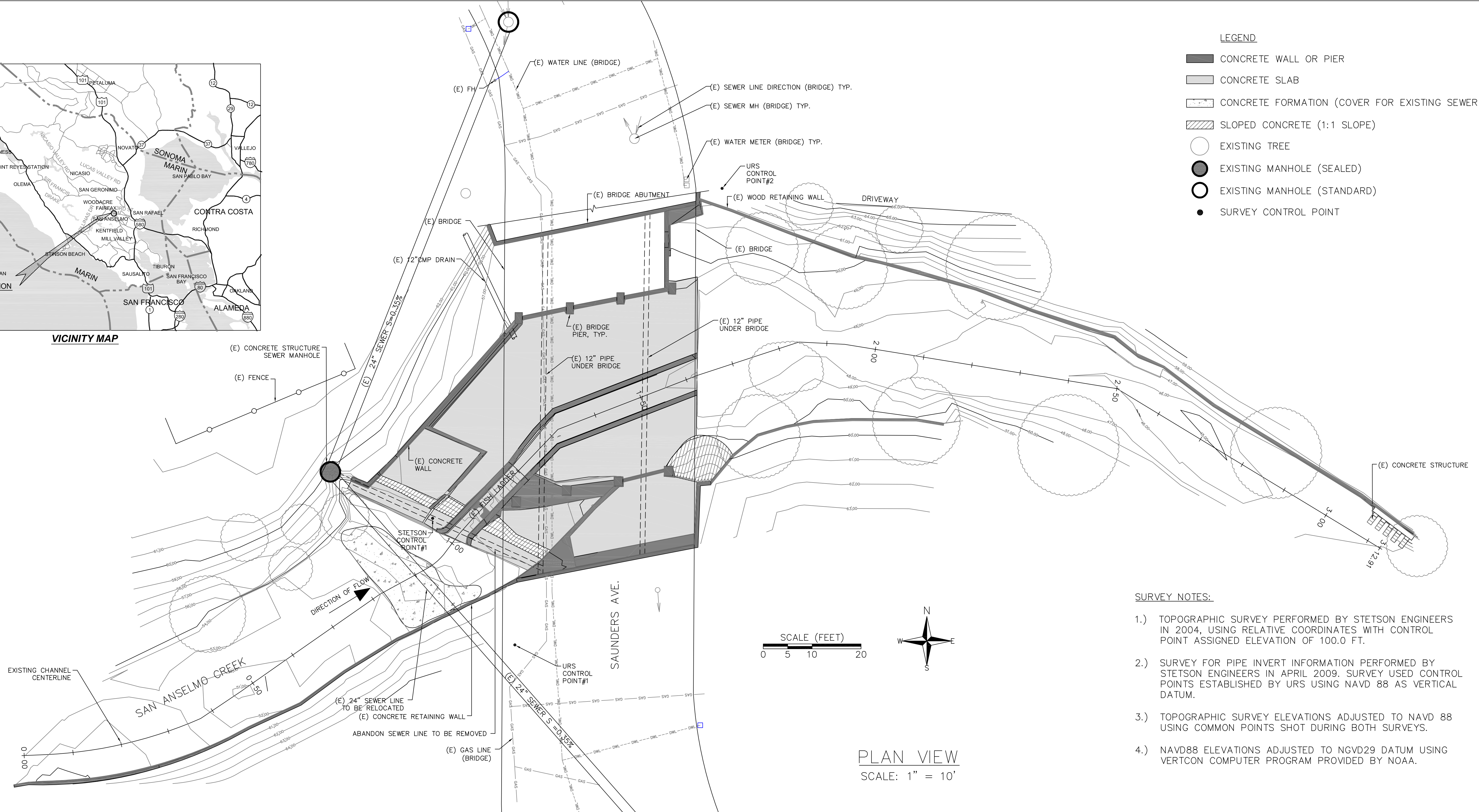


PROFILE AT EXISTING SAN ANSELMO CREEK CHANNEL CENTERLINE ALIGNMENT

SCALE: 1" = 10'



VICINITY MAP



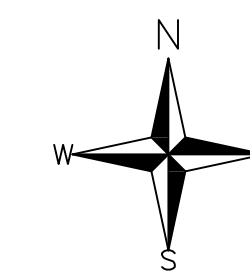
LEGEND

- CONCRETE WALL OR PIER
- CONCRETE SLAB
- CONCRETE FORMATION (COVER FOR EXISTING SEWER LINE)
- SLOPED CONCRETE (1:1 SLOPE)
- EXISTING TREE
- EXISTING MANHOLE (SEALED)
- EXISTING MANHOLE (STANDARD)
- SURVEY CONTROL POINT

SURVEY NOTES:

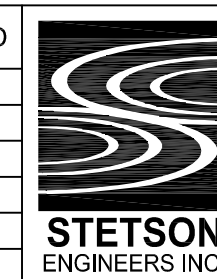
- TOPOGRAPHIC SURVEY PERFORMED BY STETSON ENGINEERS IN 2004, USING RELATIVE COORDINATES WITH CONTROL POINT ASSIGNED ELEVATION OF 100.0 FT.
- SURVEY FOR PIPE INVERT INFORMATION PERFORMED BY STETSON ENGINEERS IN APRIL 2009. SURVEY USED CONTROL POINTS ESTABLISHED BY URS USING NAVD 88 AS VERTICAL DATUM.
- TOPOGRAPHIC SURVEY ELEVATIONS ADJUSTED TO NAVD 88 USING COMMON POINTS SHOT DURING BOTH SURVEYS.
- NAVD88 ELEVATIONS ADJUSTED TO NGVD29 DATUM USING VERTCON COMPUTER PROGRAM PROVIDED BY NOAA.

SCALE (FEET)
0 5 10 20

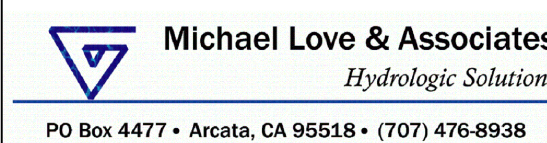


PLAN VIEW
SCALE: 1" = 10'

DESIGNED:	J.D. M.L.	No.	DATE	REVISION	BY	APPROVED
DRAFTED:	G.T.					
CHECKED:	J.D.					



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CONCEPT DESIGN - SAUNDERS AVE.
FISH LADDER REPLACEMENT
SAN ANSELMO CREEK, SAN ANSELMO CA

EXISTING CONDITION MAP
PLAN VIEW AND PROFILE

DATE:	AUG 19, 2009
SCALE:	AS INDICATED
PROJECT No.:	2128-3

SHEET
1 OF 4

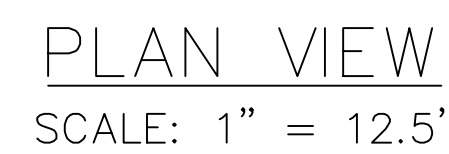


SCALE: 1" = 10'



HDPE PIPE TO BE CONSTRUCTED
USING FUSION WELDED JOINTS

- 1) SEWER NEEDS TO BE RELOCATED FOR INSTALLATION OF ROUGHENED RAMP FOR FISH PASSAGE.
- 2) NEW SEWER TO CROSS RIVER APPROXIMATELY 22 FT @ CENTERLINE UPSTREAM OF PRESENT LOCATION
- 3) SEWER IS TO BE 26" IN SIZE AND BE CONSTRUCTED AT 0.30% TO 0.33% SLOPE WITH A CONCRETE ENCASEMENT WITHIN CHANNEL
- 4) CURRENT CAPACITY OF SEWER PIPE IS APPROXIMATELY 12.4 CFS. CAPACITY OF SEWER PIPE WITH NEW SIZE AND SLOPE IS APPROX. 13.6 CFS.
- 5) INVERTS OF PIPES ARE FROM SURVEY PERFORMED BY STETSON ENGINEERS INC. ON APRIL 27, 2009.
- 6) CURVED PIPE TO BE CONSTRUCTED WITH HDPE PIPE WITH INDICATED CURVATURE
- 7) PIPE CROSSING CREEK BED TO BE CONSTRUCTED OF 26" STEEL PIPE. THICKNESS OF STEEL PIPE WALL = 0.38 INCHES

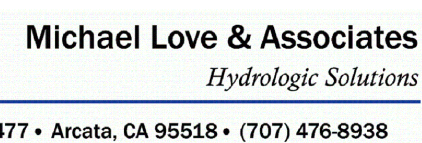


PLAN VIEW
SCALE: 1" = 12.5'



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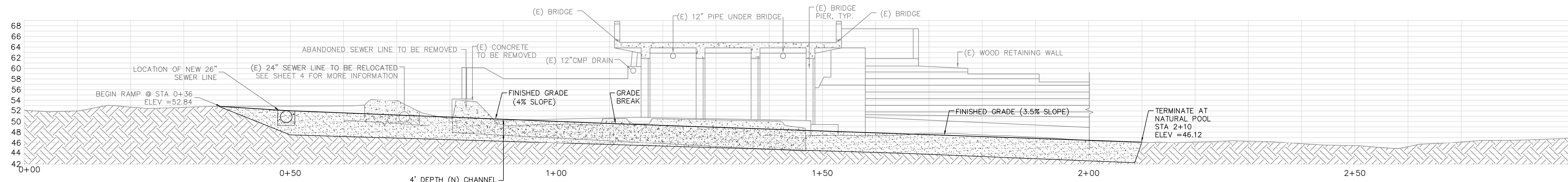
CONCEPT DESIGN - SAUNDERS AVE.
FISH LADDER REPLACEMENT
SAN ANSELMO CREEK, SAN ANSELMO CA

SEWER RELOCATION PLAN
PLAN VIEW AND PROFILE

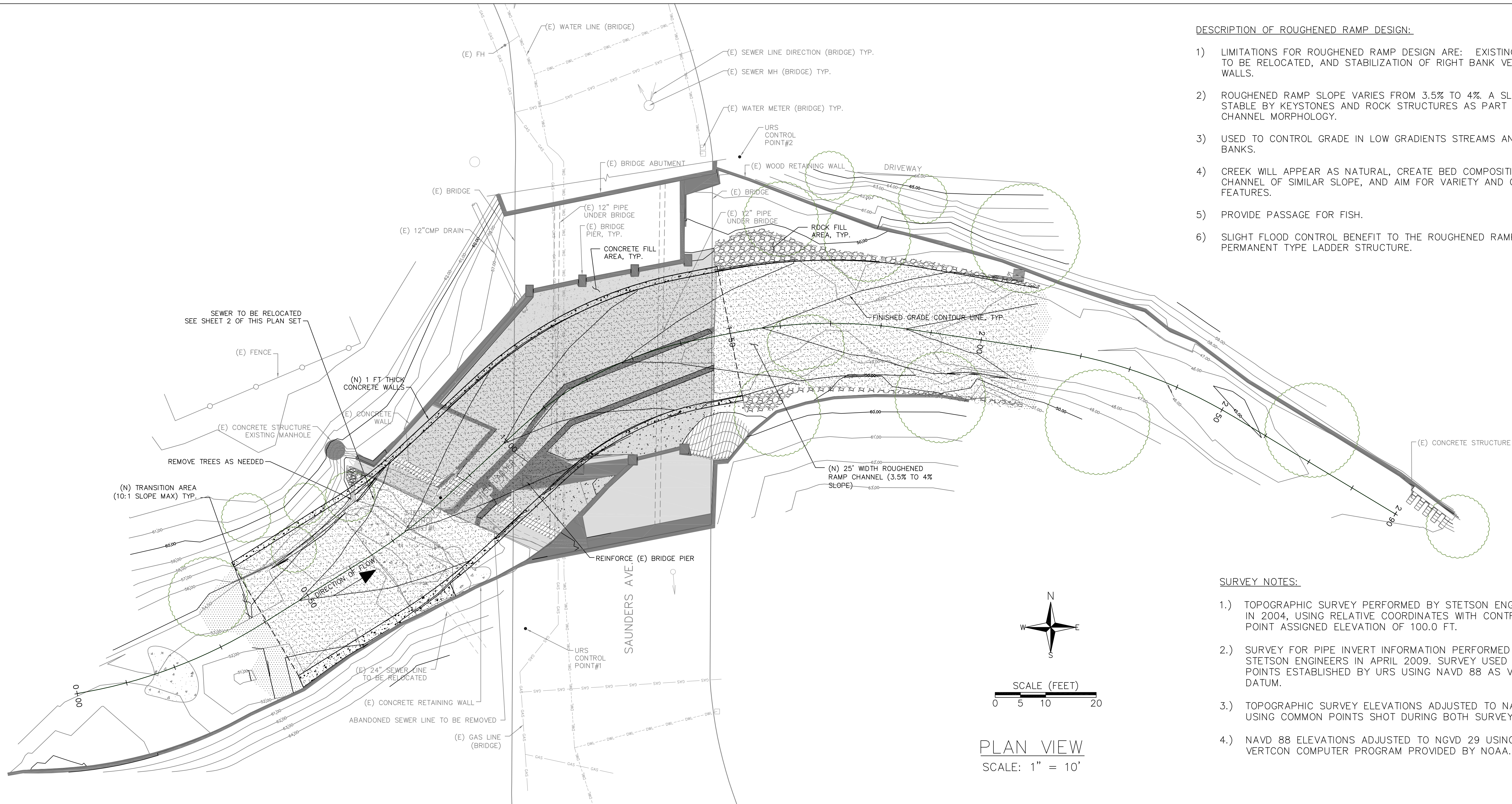
DATE:	NOV 16, 2009
SCALE:	AS INDICATED
PROJECT No.:	2128-3

SHEET
2 OF 4

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PROFILE AT NEW CHANNEL CENTERLINE ALIGNMENT SCALE: 1" = 10'



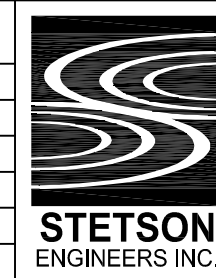
DESCRIPTION OF ROUGHENED RAMP DESIGN:

- 1) LIMITATIONS FOR ROUGHENED RAMP DESIGN ARE: EXISTING SEWER LINE WOULD HAVE TO BE RELOCATED, AND STABILIZATION OF RIGHT BANK VERTICAL CONCRETE RETAINING WALLS.
- 2) ROUGHENED RAMP SLOPE VARIES FROM 3.5% TO 4%. A SLOPE THAT CAN BE MADE STABLE BY KEYSTONES AND ROCK STRUCTURES AS PART OF A SIMULATED STEEP CHANNEL MORPHOLOGY.
- 3) USED TO CONTROL GRADE IN LOW GRADIENTS STREAMS AND DESIGN WITH CONFINED BANKS.
- 4) CREEK WILL APPEAR AS NATURAL, CREATE BED COMPOSITION SIMILAR TO NATURAL CHANNEL OF SIMILAR SLOPE, AND AIM FOR VARIETY AND COMPLEXITY WITHIN BED FEATURES.
- 5) PROVIDE PASSAGE FOR FISH.
- 6) SLIGHT FLOOD CONTROL BENEFIT TO THE ROUGHENED RAMP DESIGN COMPARED TO A PERMANENT TYPE LADDER STRUCTURE.

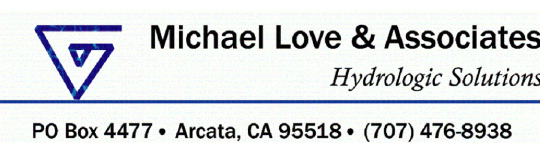
SURVEY NOTES:

- 1.) TOPOGRAPHIC SURVEY PERFORMED BY STETSON ENGINEERS IN 2004, USING RELATIVE COORDINATES WITH CONTROL POINT ASSIGNED ELEVATION OF 100.0 FT.
- 2.) SURVEY FOR PIPE INVERT INFORMATION PERFORMED BY STETSON ENGINEERS IN APRIL 2009. SURVEY USED CONTROL POINTS ESTABLISHED BY URS USING NAVD 88 AS VERTICAL DATUM.
- 3.) TOPOGRAPHIC SURVEY ELEVATIONS ADJUSTED TO NAVD 88 USING COMMON POINTS SHOT DURING BOTH SURVEYS.
- 4.) NAVD 88 ELEVATIONS ADJUSTED TO NGVD 29 USING VERTCON COMPUTER PROGRAM PROVIDED BY NOAA.

DESIGNED:	J.D.	No.	DATE	REVISION	BY	APPROVED
DRAFTED:	G.T.					
CHECKED:	J.D.					



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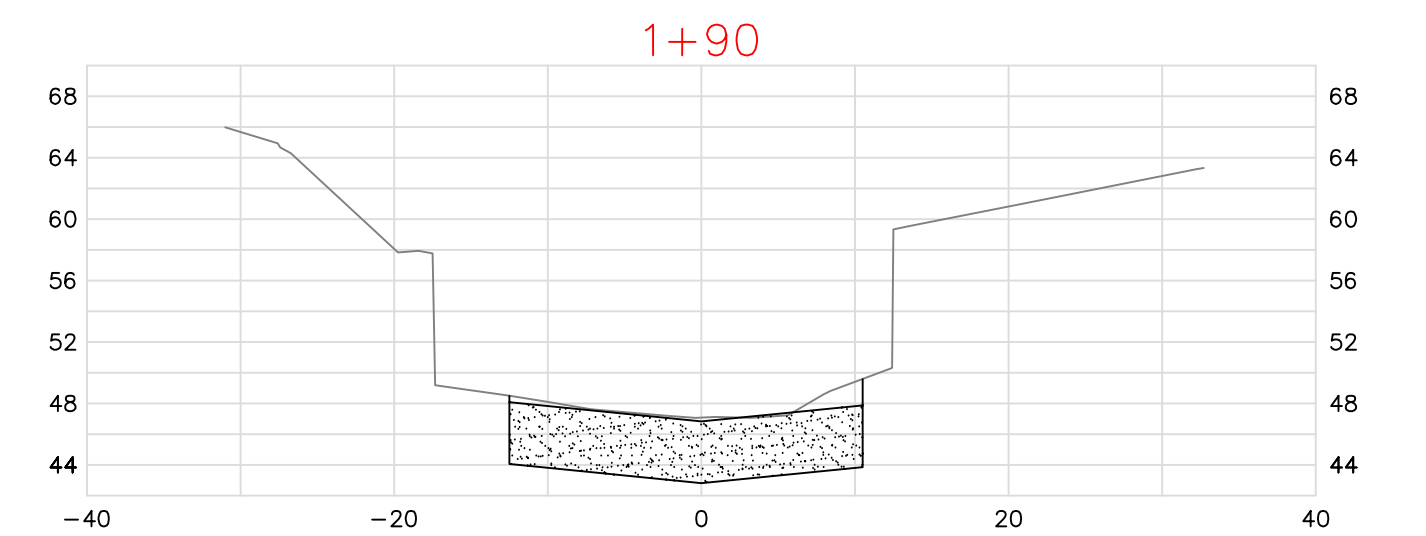
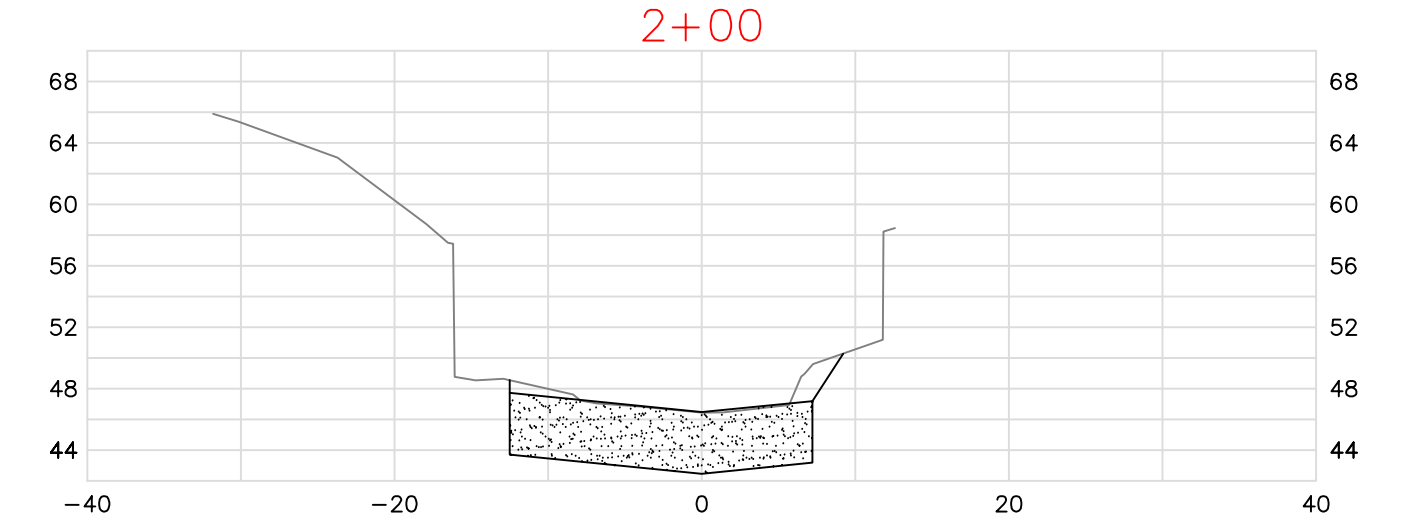
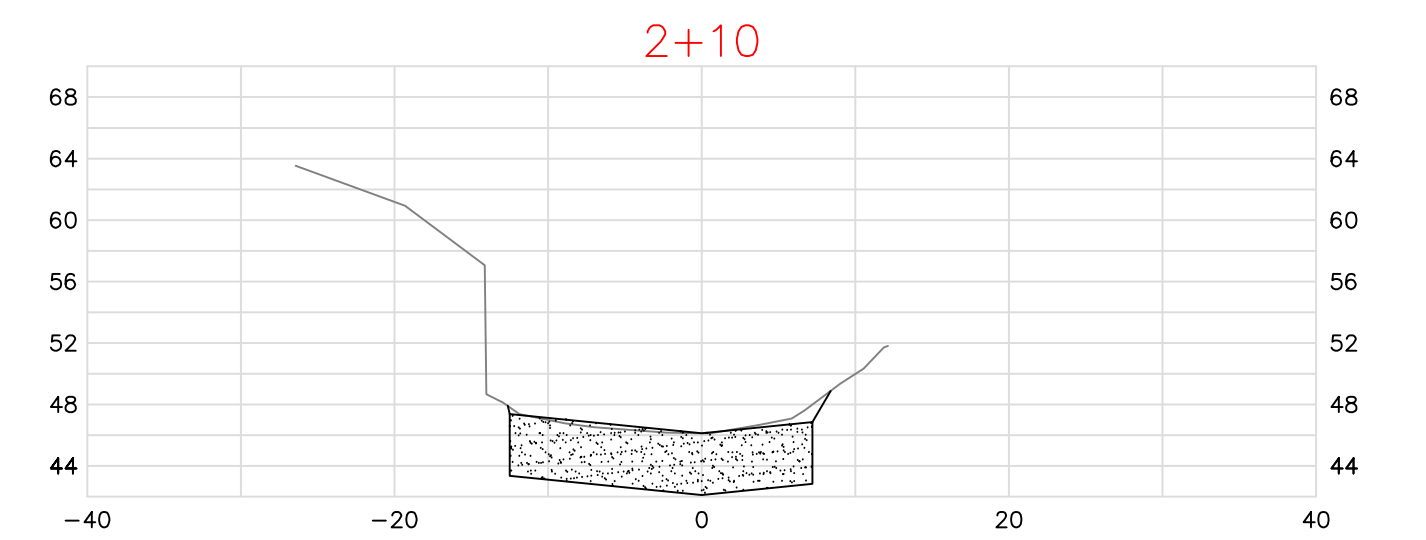
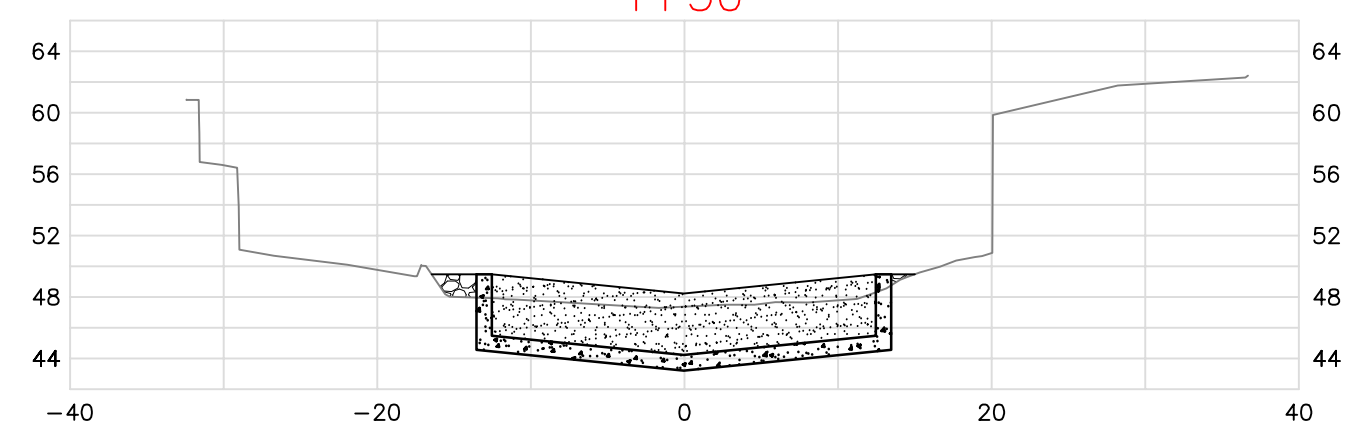
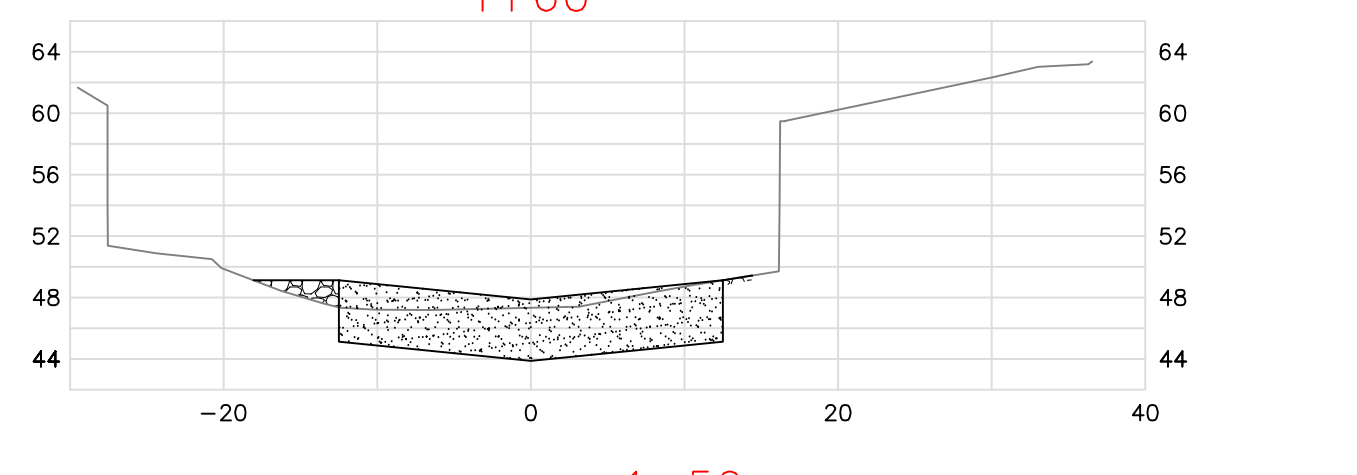
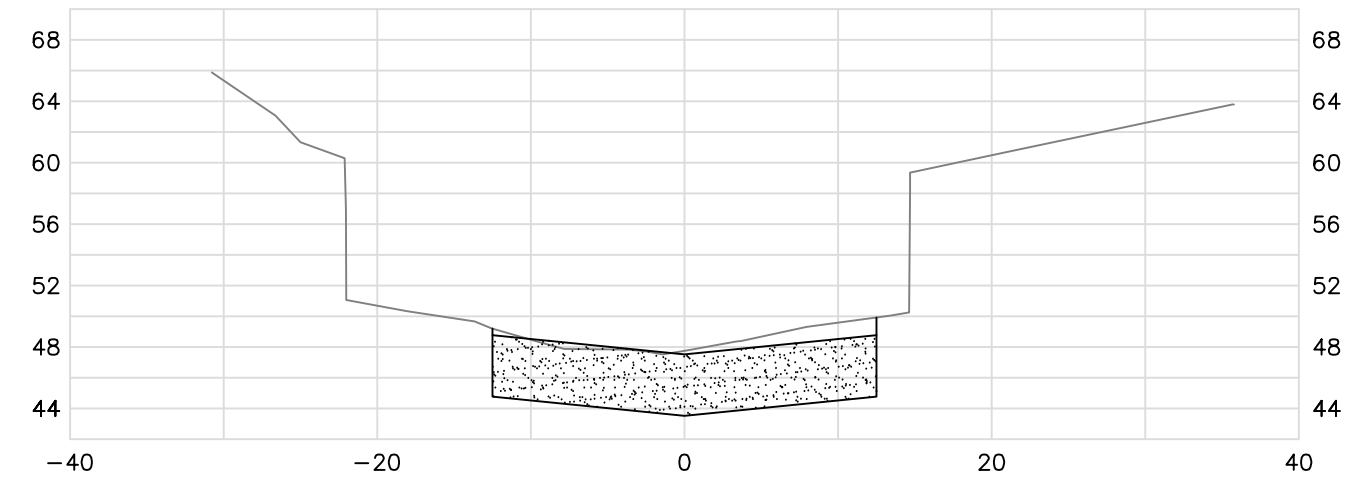
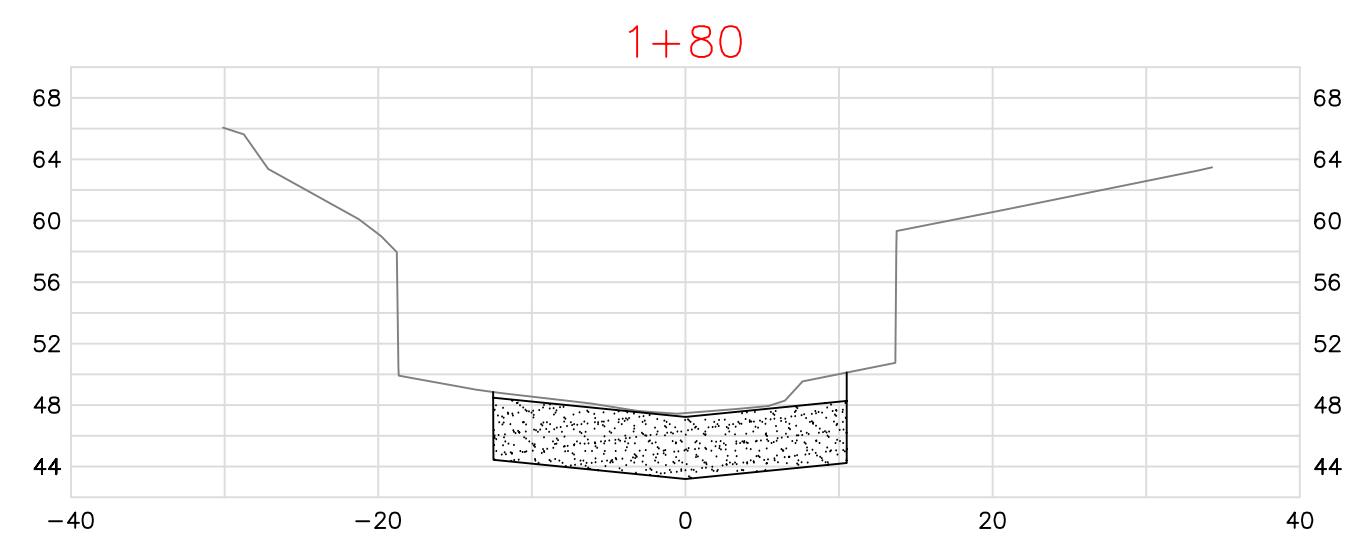
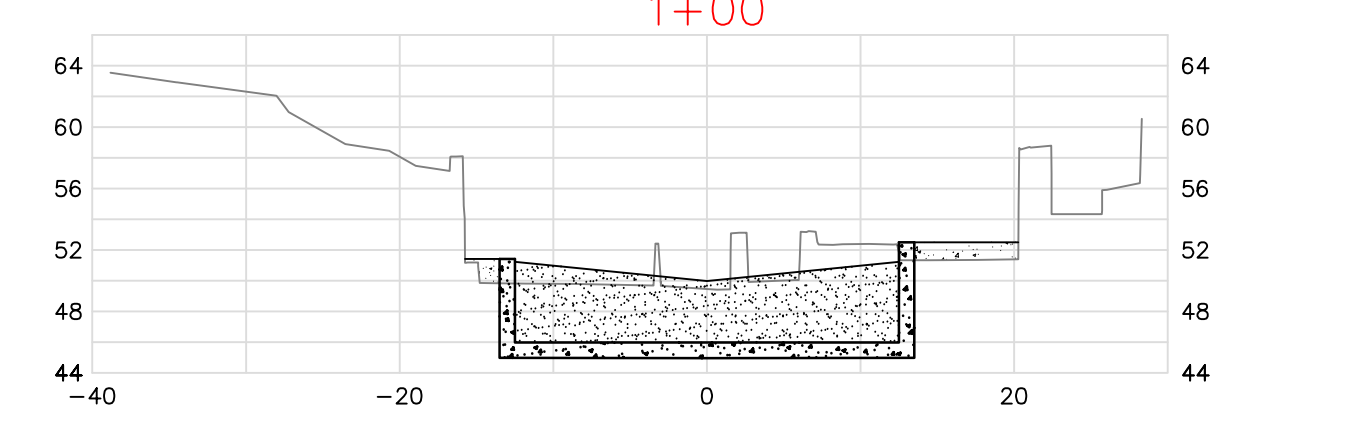
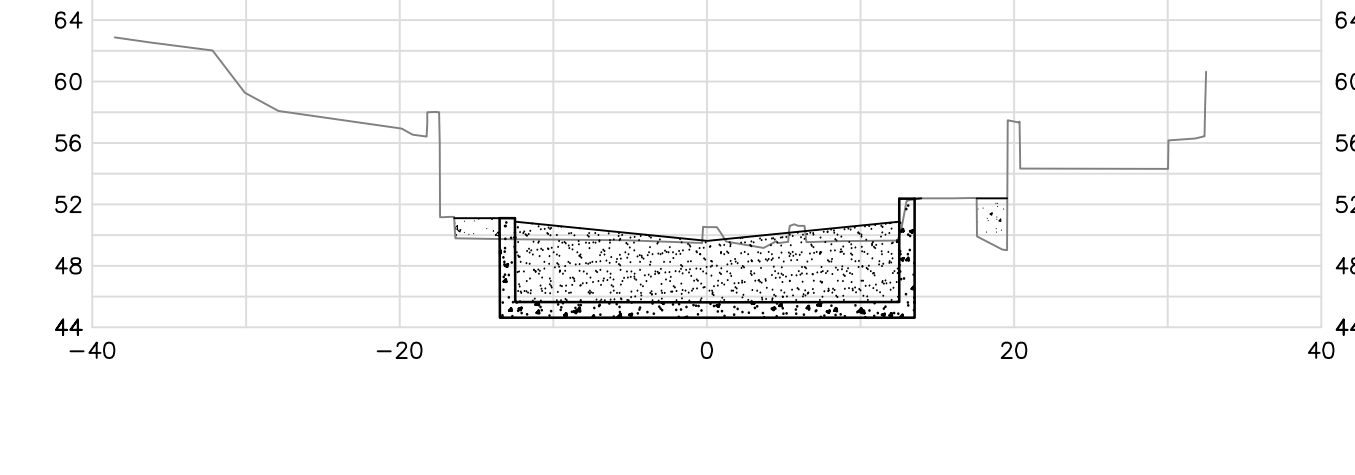
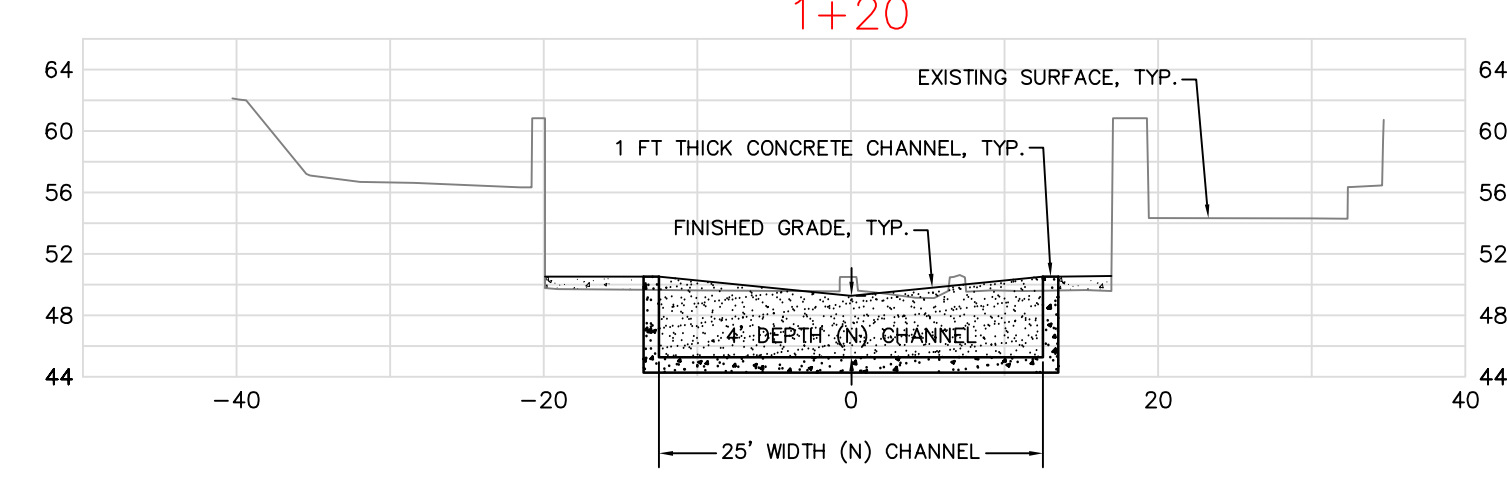
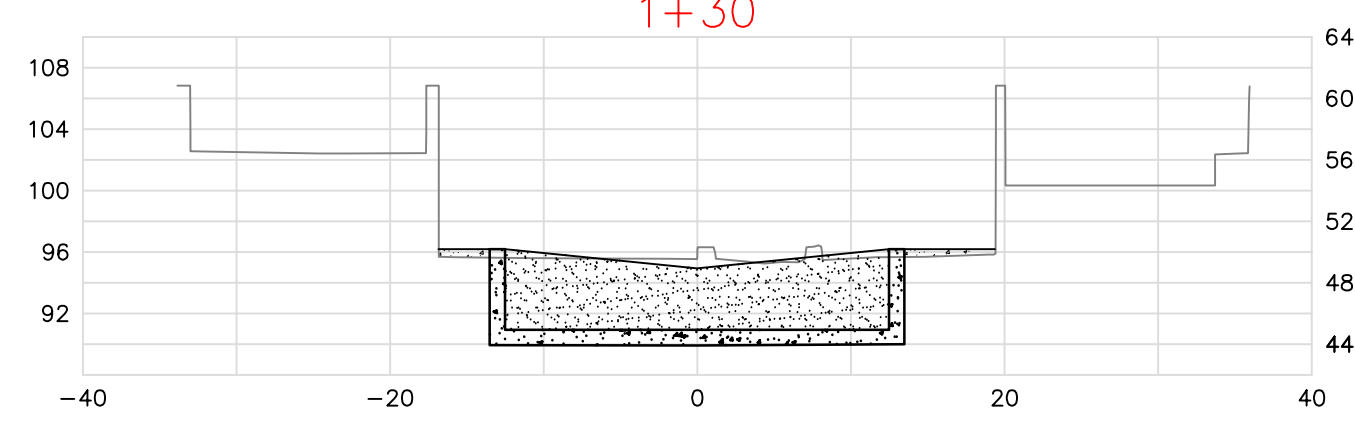
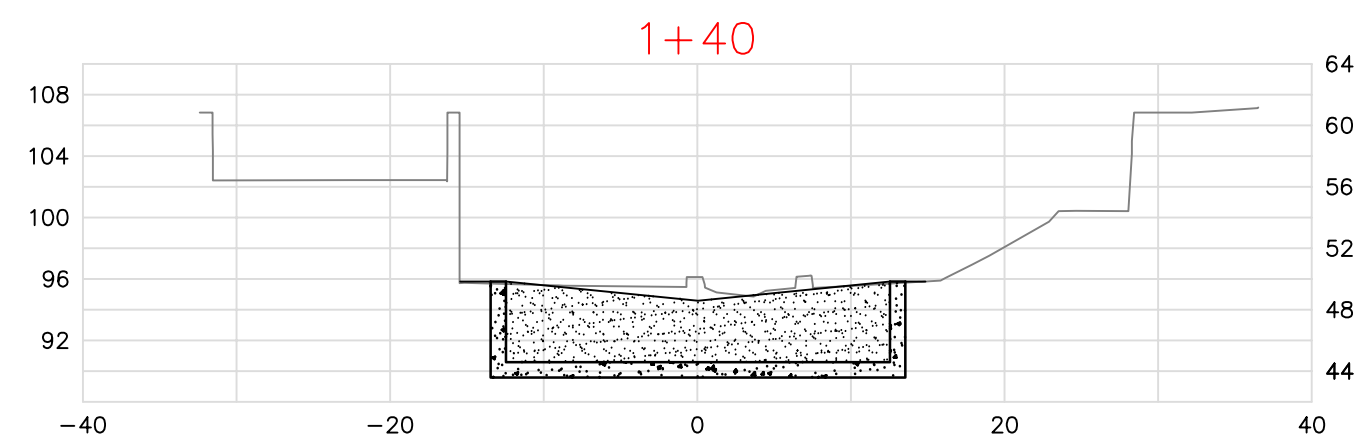
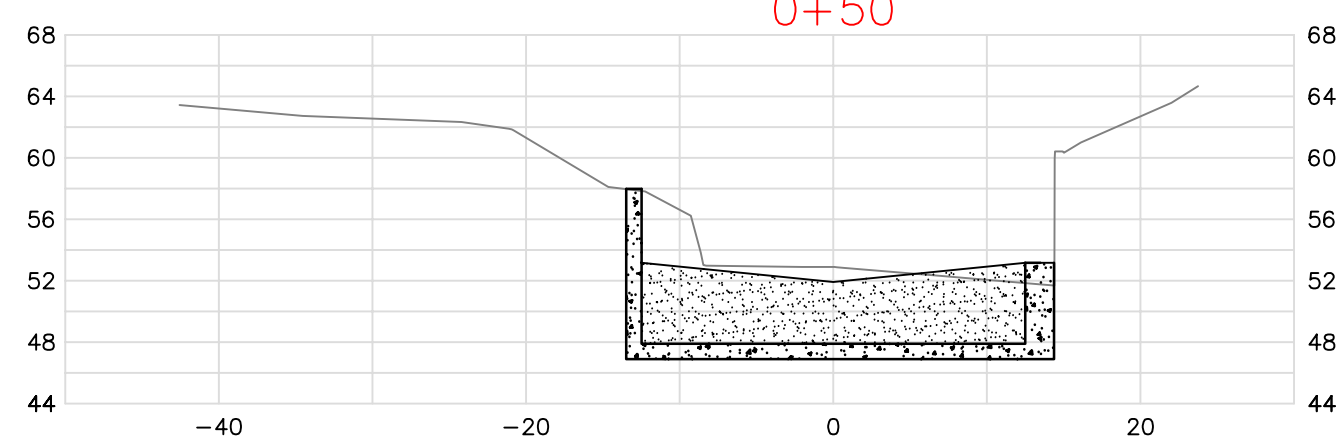
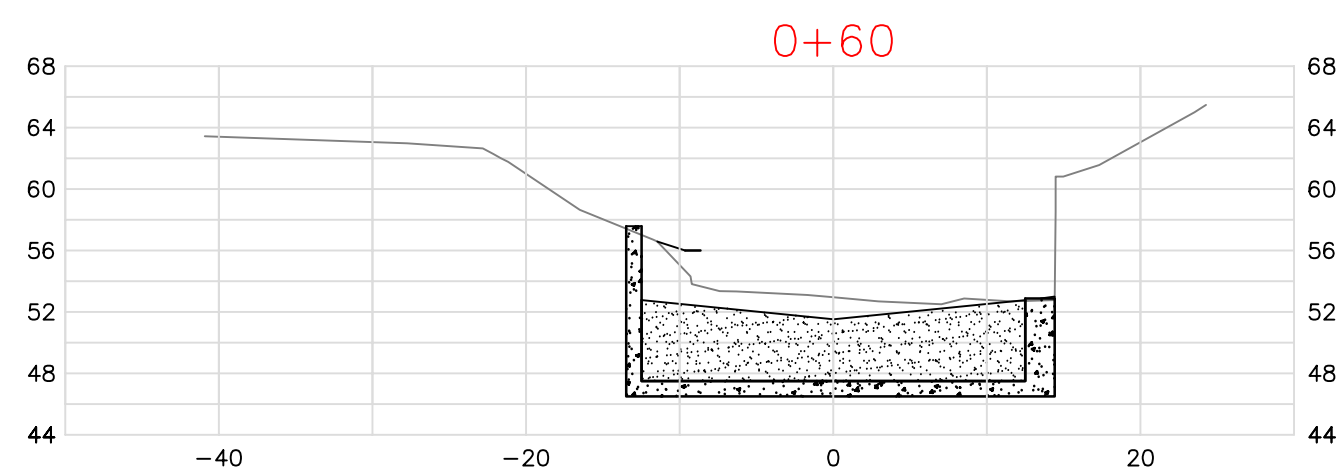
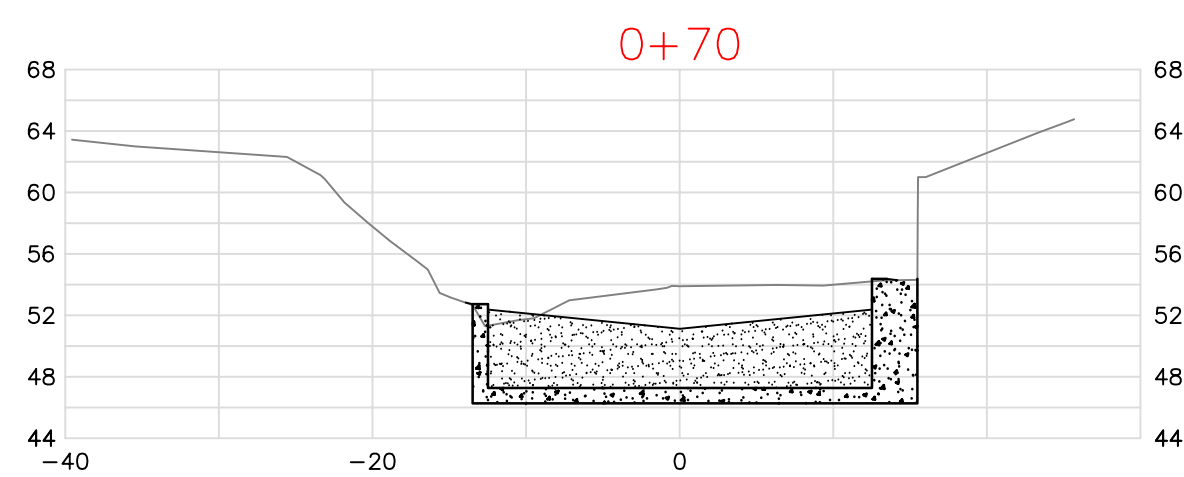
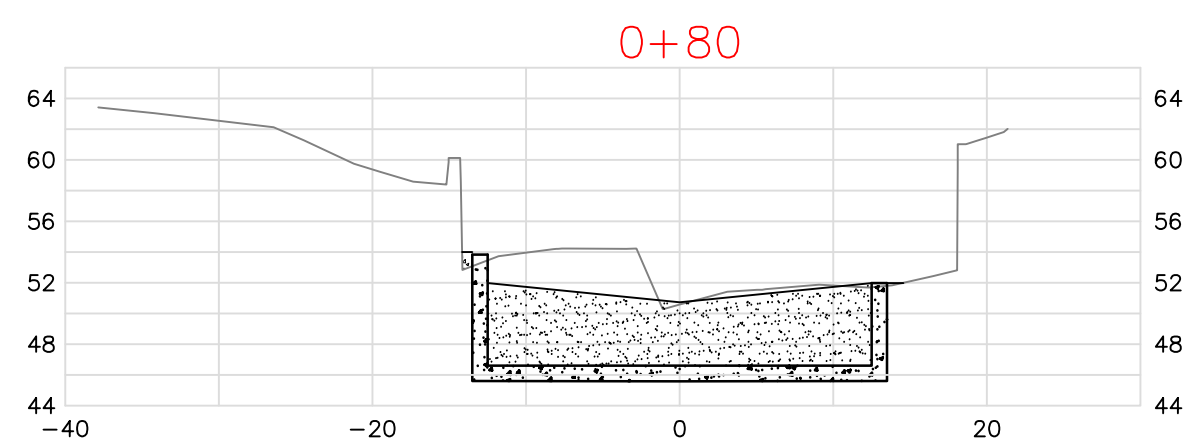
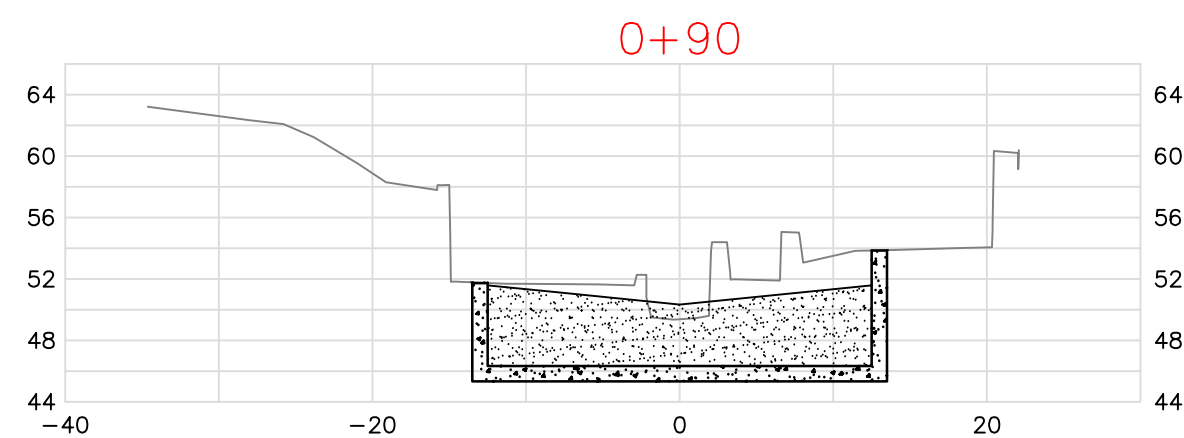


CONCEPT DESIGN - SAUNDERS AVE.
FISH LADDER REPLACEMENT
SAN ANSELMO CREEK, SAN ANSELMO CA

ROUGHENED RAMP
CONCEPTUAL DESIGN
PLAN VIEW AND PROFILE

DATE: AUG 19, 2009
SCALE: AS INDICATED
PROJECT No.: 2128-3

SHEET
3 OF 4

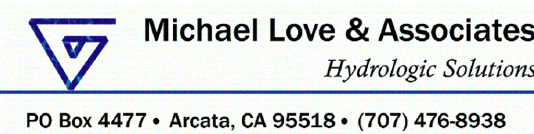


CROSS-SECTIONS
SCALE: 1" = 12.5'

DESIGNED:	J.D. M.L.	No.	DATE	REVISION	BY	APPROVED
DRAFTED:	G.T.					
CHECKED:	J.D.					



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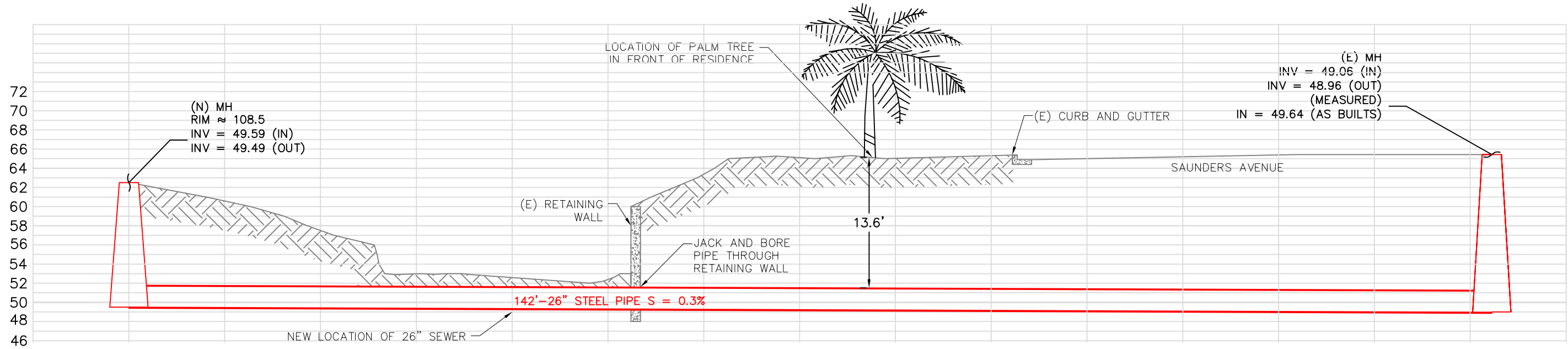
CONCEPT DESIGN - SAUNDERS AVE.
FISH LADDER REPLACEMENT
SAN ANSELMO CREEK, SAN ANSELMO CA

ROUGHENED RAMP
CONCEPTUAL DESIGN
CROSS-SECTIONS

DATE: AUG 19, 2009
SCALE: AS INDICATED
PROJECT No.: 2128-3

SHEET
4 OF 4

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CROSS-SECTION
SCALE: 1" = 5'

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DESIGNED:	J.D. M.L.	No.	DATE	REVISION	BY	APPROVED
DRAFTED:	G.T.					
CHECKED:	J.D.					



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Hydrologic Solutions
PO Box 4477 • Arcata, CA 95518 • (707) 476-8938

CONCEPT DESIGN - SAUNDERS AVE.
FISH LADDER REPLACEMENT
SAN ANSELMO CREEK, SAN ANSELMO CA

ROUGHENED CHANNEL ALTERNATIVE
CONCEPTUAL DESIGN
CROSS-SECTION

DATE: OCT 13, 2009
SCALE: AS INDICATED
PROJECT No.: 2128-3

SHEET
1 OF 1