

# NOVATO CREEK

## 2021 CONDITION HYDROGRAPHIC SURVEY

### BEL MARIN KEYS COMMUNITY SERVICES DISTRICT

#### #4 MONTEGO KEY

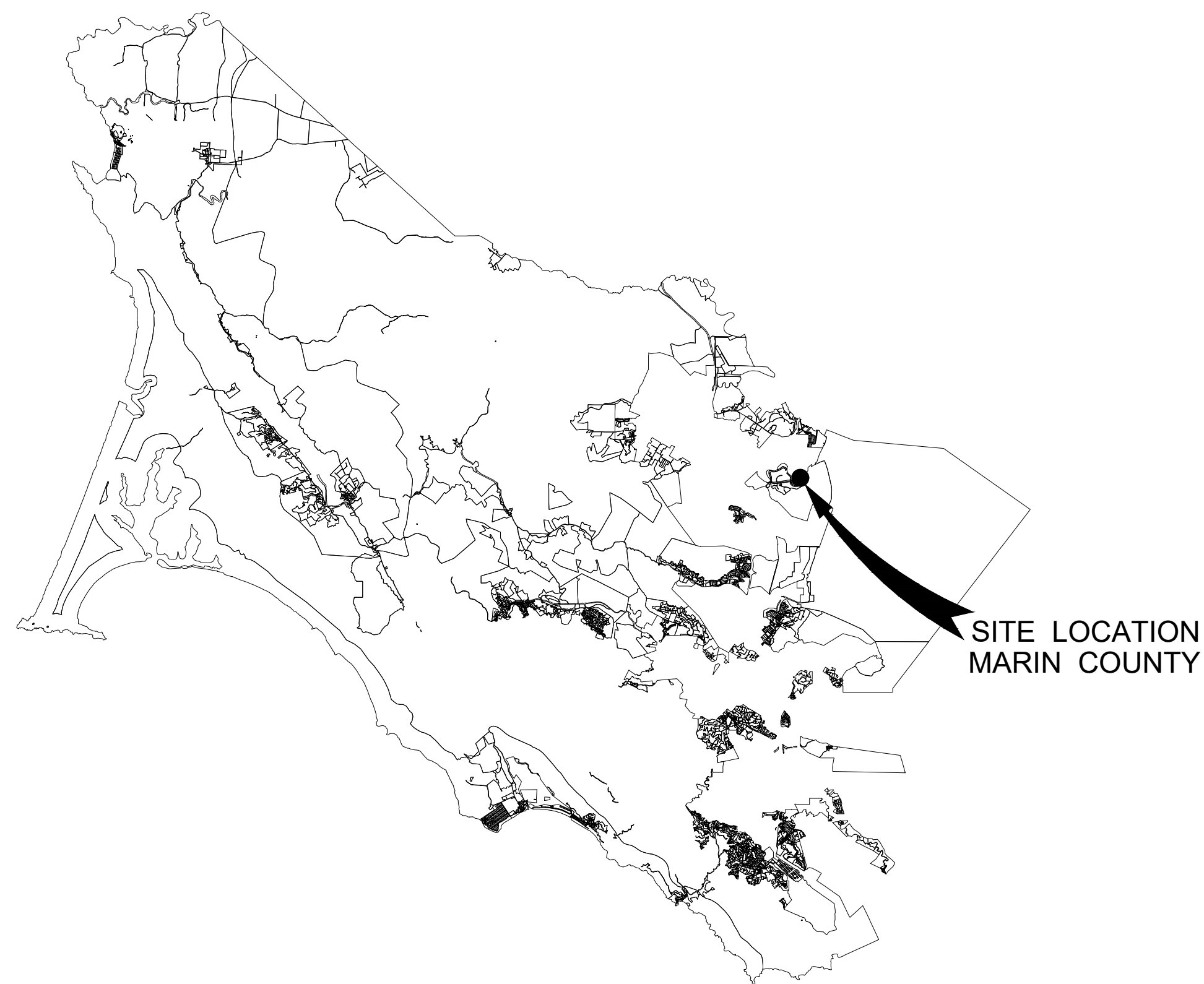
#### NOVATO, CA 94949

JULY, 2021

Prepared By



PROJECT NUMBER: 19B038



COUNTY LOCATION MAP  
NOT TO SCALE



SITE LOCATION MAP  
T. N. , R. E.

| INDEX       |   |           |
|-------------|---|-----------|
| DRAWING NO. | DESCRIPTION   | SHEET NO. |
| G-001       | TITLE SHEET   | 1         |
| G-001       | GENERAL NOTES & LEGENDS                                   | 2         |
| SV-101      | CHANNEL SITE PLAN AND CROSS SECTIONS STA 213+00 TO 194+00 | 3         |
| SV-102      | CHANNEL SITE PLAN AND CROSS SECTIONS STA 194+00 TO 173+00 | 4         |
| SV-103      | CHANNEL SITE PLAN AND CROSS SECTIONS STA 173+00 TO 153+00 | 5         |
| SV-104      | CHANNEL SITE PLAN AND CROSS SECTIONS STA 153+00 TO 133+00 | 6         |
| SV-105      | CHANNEL SITE PLAN AND CROSS SECTIONS STA 133+00 TO 113+00 | 7         |
| SV-106      | CHANNEL SITE PLAN AND CROSS SECTIONS STA 113+00 TO 93+00  | 8         |
| SV-107      | CHANNEL SITE PLAN AND CROSS SECTIONS STA 93+00 TO 72+00   | 9         |
| SV-108      | CHANNEL SITE PLAN AND CROSS SECTIONS STA 72+00 TO 52+00   | 10        |
| SV-109      | CHANNEL SITE PLAN AND CROSS SECTIONS STA 52+00 TO 32+00   | 11        |
| SV-110      | CHANNEL SITE PLAN AND CROSS SECTIONS STA 32+00 TO 12+00   | 12        |
| SV-111      | CHANNEL SITE PLAN AND CROSS SECTIONS STA 12+00 TO 0+00    | 13        |

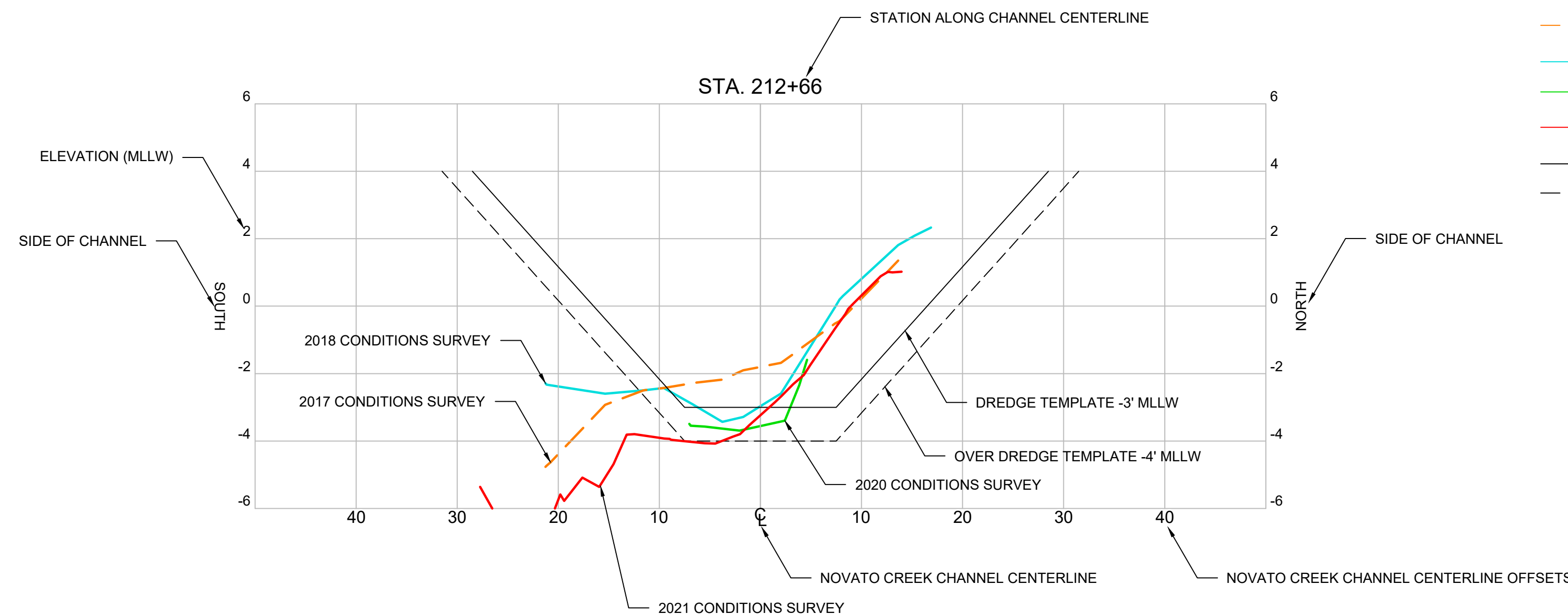


**NOTES:**

- SINGLEBEAM SWEEP BATHYMETRIC DATA WERE COLLECTED BY CLE ENGINEERING ON OCTOBER 20, 23 AND 24TH, 2017.
- THE SINGLEBEAM BATHYMETRIC SONAR SYSTEM WAS COMPRISED OF THREE TELEDYNE CVM SHALLOW WATER SINGLEBEAM ECHO SOUNDERS (200 KHZ, 3° BEAM ANGLE), LEICA SYSTEM 1200 RTK FOR POSITIONING (H AND V), HEMISPHERE DGPS PROVIDING HEAVE PITCH AND ROLL CORRECTIONS, AND HYPACK 2017 HYDROGRAPHIC SURVEY ACQUISITION SOFTWARE.
- MULTIBEAM BATHYMETRIC DATA WERE COLLECTED BY FOTH INFRASTRUCTURE AND ENVIRONMENT, LLC. ON OCTOBER 9 AND 10TH, 2018.
- ALL MOTION FOR OCTOBER 2018 MULTIBEAM CONDITION SURVEY DATA SUPPLIED TO SURVEY COMPUTER BY APPLANIX POS MV.
- SHORE LINE TOPOGRAPHY IN SOME AREAS WAS TAKEN FROM AERIAL SURVEY IN 2002 AND MAY VARY IN SUBSEQUENT YEARS, 2005 CONDITIONS WERE NOT VERIFIED.
- DEPTHS SHOWN HEREON REPRESENT BOTTOM SOUNDINGS USING A 400 KHZ TRANSDUCER. THE ELEVATIONS SHOWN INDICATE BOTTOM CONDITIONS ONLY, AND NOT NECESSARILY INDICATE THAT THE BOTTOM MATERIALS ARE CAPABLE OF SUSTAINING LOADS OR SUPPORTING SIDE SLOPES.
- THE INFORMATION SHOWN ON THIS PLAN REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATE INDICATED, AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS PRESENT AT THAT TIME. INTERPOLATED INFORMATION BETWEEN SOUNDINGS MAY NOT REPRESENT ACTUAL CONDITIONS. OBSTRUCTIONS OR ROCK OUTCROPPINGS MAY EXIST THAT ARE NOT SHOWN. THIS PLAN SHOULD NOT BE USED FOR NAVIGATION.
- CONTRACTOR IS ADVISED THAT WATER REFERENCE ELEVATIONS VARY FROM ONE END OF NOVATO CREEK TO THE OTHER BY AS MUCH AS TWO FEET AT PEAK TIDAL FLOWS.
- SOUNDINGS ARE REFERENCED TO FT. MLLW BASED ON THE SURVEY PK NAIL LOCATED ON THE WESTERLY SIDE OF THE PILE WITHIN THE NORTH LOCK.
- HORIZONTAL COORDINATES ARE DISPLAYED IN CALIFORNIA COORDINATE SYSTEM STATE PLANE ZONE 3 NAD-83.
- SURVEY VESSEL, EQUIPMENT AND PROTOCOLS CONFORM TO CLASS 1 SPECIFICATIONS AS OUTLINED IN THE U.S. ARMY CORPS OF ENGINEERS SURVEY MANUAL (EM 1110-2-1003, JANUARY 2002).

**TYPICAL CHANNEL CROSS SECTION**

NOTE: PROFILES ARE VIEWED FROM DOWNSTREAM FACING UPSTREAM



**LEGEND**

- 2017 CONDITION SURVEY
- 2018 CONDITION SURVEY
- 2020 CONDITION SURVEY
- 2021 CONDITION SURVEY
- DREDGE TEMPLATE -3' MLLW
- OVER DREDGE TEMPLATE -4' MLLW
- NORTH ARROW
- TIMBER PILE

**BATHYMETRY INDEX SHEET (FT) (MLLW)**

| ID | MIN. EL.    | MAX. EL.    | COLOR |
|----|-------------|-------------|-------|
| 1  | <= -10.500' | >= -10.500' | 218   |
| 2  | -10.500'    | -10.000'    | 228   |
| 3  | -10.000'    | -9.500'     | 238   |
| 4  | -9.500'     | -9.000'     | 248   |
| 5  | -9.000'     | -8.500'     | 246   |
| 6  | -8.500'     | -8.000'     | 244   |
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| 13 | -5.000'     | -4.500'     | 190   |
| 14 | -4.500'     | -4.000'     | 180   |
| 15 | -4.000'     | -3.500'     | 170   |
| 16 | -3.500'     | -3.000'     | 160   |
| 17 | -3.000'     | -2.500'     | 150   |
| 18 | -2.500'     | -2.000'     | 140   |
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| 20 | -1.500'     | -1.000'     | 120   |
| 21 | -1.000'     | -0.500'     | 110   |
| 22 | -0.500'     | 0.000'      | 100   |
| 23 | 0.000'      | 0.500'      | 90    |
| 24 | 0.500'      | 1.000'      | 80    |
| 25 | 1.000'      | 1.500'      | 70    |
| 26 | 1.500'      | 2.000'      | 60    |
| 27 | 2.000'      | 2.500'      | 62    |
| 28 | 2.500'      | 3.000'      | 64    |
| 29 | 3.000'      | 3.500'      | 66    |
| 30 | >= 3.500'   |             | 68    |

**2021 SURVEY NOTES:**

- PROJECT NAME: NOVATO CREEK 2021 CONDITIONS SURVEY
- PROJECT NUMBER: 19B038
- PLOT SCALE: 1"=40'
- SURVEY DATES: JUNE 29, 2021
- SURVEYOR: J. KULPA-CINQUINI
- VESSEL:
- TRANS./FATH.: 400 KHZ, RESON T-50
- WEATHER COND:
- PROJECT DATUM: MLLW
- COORD. SYSTEM: CALIFORNIA COORDINATE SYSTEM STATE PLANE 3 NAD-83
- DATA REDUCTION:
- BENCHMARK: SURVEYS TIED TO SURVEY PK NAIL LOCATED ON THE WESTERLY SIDE OF THE PILE WITHIN THE NORTH LOCK

**2020 SURVEY NOTES:**

- PROJECT NAME: NOVATO CREEK 2020 CONDITIONS SURVEY
- PROJECT NUMBER: 19B038
- PLOT SCALE: 1"=40'
- SURVEY DATES: JUNE 25-26, 2020
- SURVEYOR: BAY MARINE SERVICES
- VESSEL:
- TRANS./FATH.: 200KHZ, ROSS
- WEATHER COND:
- PROJECT DATUM: MLLW
- COORD. SYSTEM: CALIFORNIA COORDINATE SYSTEM STATE PLANE 3 NAD-83
- DATA REDUCTION:
- BENCHMARK: SURVEYS TIED TO SURVEY PK NAIL LOCATED ON THE WESTERLY SIDE OF THE PILE WITHIN THE NORTH LOCK

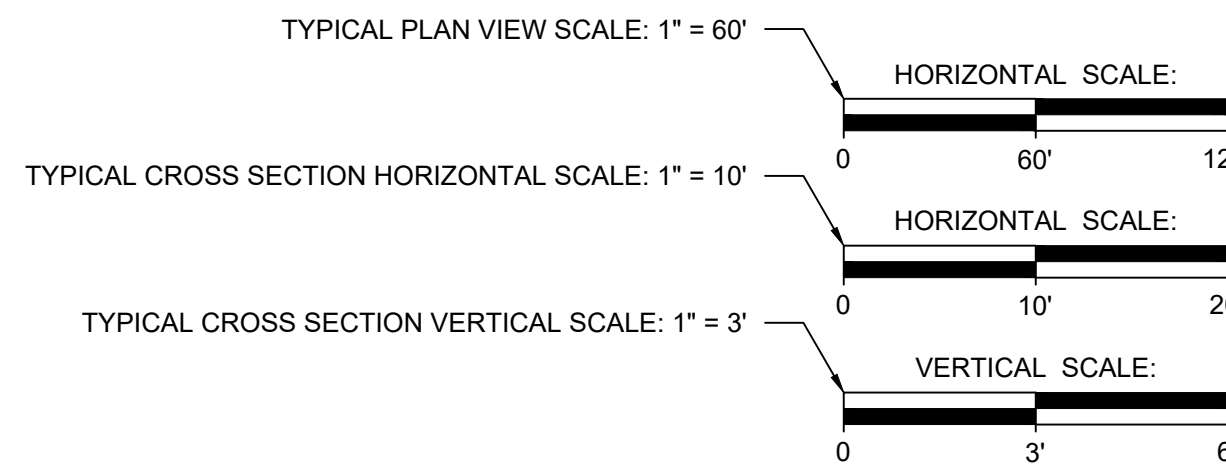
**2018 SURVEY NOTES:**

- PROJECT NAME: NOVATO CREEK 2018 CONDITIONS SURVEY
- PROJECT NUMBER:
- PLOT SCALE: 1"=40'
- SURVEY DATES: OCTOBER 9-10, 2018
- SURVEYOR:
- VESSEL:
- TRANS./FATH.: 400 KHZ
- WEATHER COND:
- PROJECT DATUM: MLLW
- COORD. SYSTEM: CALIFORNIA COORDINATE SYSTEM STATE PLANE 3 NAD-83
- DATA REDUCTION:
- BENCHMARK: SURVEYS TIED TO SURVEY PK NAIL LOCATED ON THE WESTERLY SIDE OF THE PILE WITHIN THE NORTH LOCK

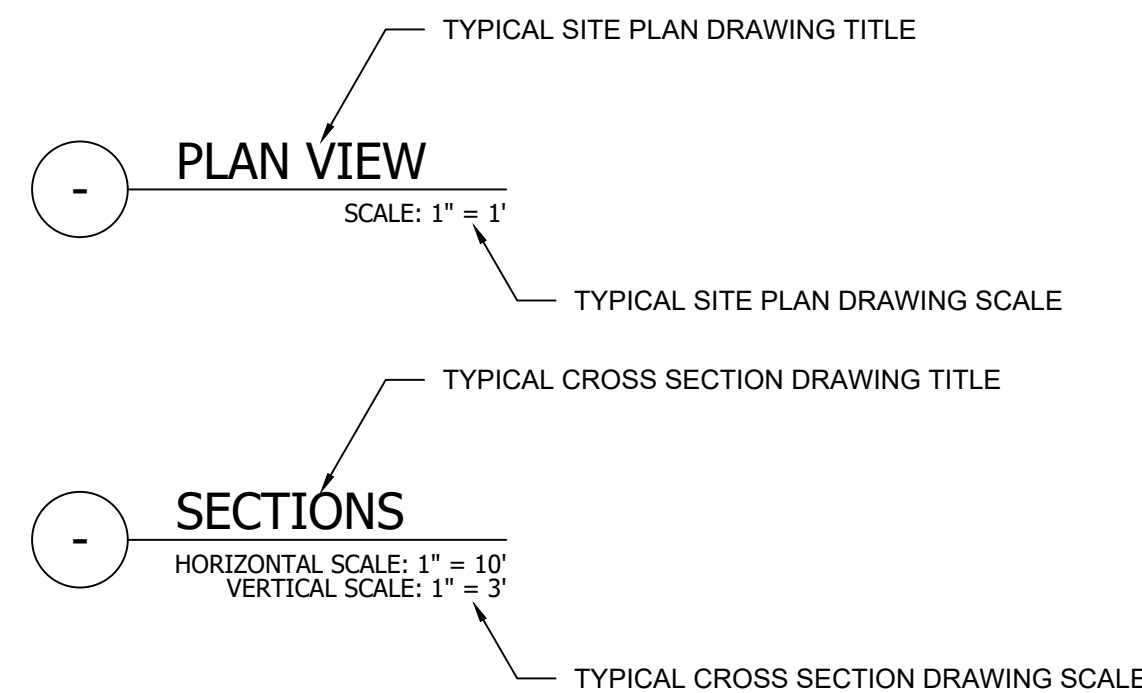
**2017 SURVEY NOTES:**

- PROJECT NAME: NOVATO CREEK 2017 CONDITIONS SURVEY
- PROJECT NUMBER:
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- VESSEL:
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- WEATHER COND:
- PROJECT DATUM: MLLW
- COORD. SYSTEM: CALIFORNIA COORDINATE SYSTEM STATE PLANE 3 NAD-83
- DATA REDUCTION:
- BENCHMARK: SURVEYS TIED TO SURVEY PK NAIL LOCATED ON THE WESTERLY SIDE OF THE PILE WITHIN THE NORTH LOCK

**DRAWING SCALES**



**DRAWING TITLES**



| NO. | BY | DATE |
|-----|----|------|
| △   | -  | -    |
| △   | -  | -    |
| △   | -  | -    |
| △   | -  | -    |

RECORD DRAWING OF COMPLETED CONSTRUCTION BY: \_\_\_\_\_

RECORD DRAWINGS OF COMPLETED CONSTRUCTION CONFORMING TO CONTRACTOR AND / OR OWNERS RECORDS.

BY \_\_\_\_\_ DATE \_\_\_\_\_

**NOVATO CREEK**  
**2021 CONDITION HYDROGRAPHIC SURVEY**  
 BEL MARIN KEYS COMMUNITY SERVICES DISTRICT  
 #4 MONTEGO KEY  
 NOVATO, CA 94949

|          | BY       | DATE          |
|----------|----------|---------------|
| SURVEYED | CINQUINI | JUNE 29, 2021 |
| DRAWN    | HAC      | MAY 27, 2021  |
| DESIGNED | -        | -             |
| CHECKED  | MECA     | MAY 27, 2021  |

**GENERAL NOTES & LEGENDS**

PROJECT ID: 19B038

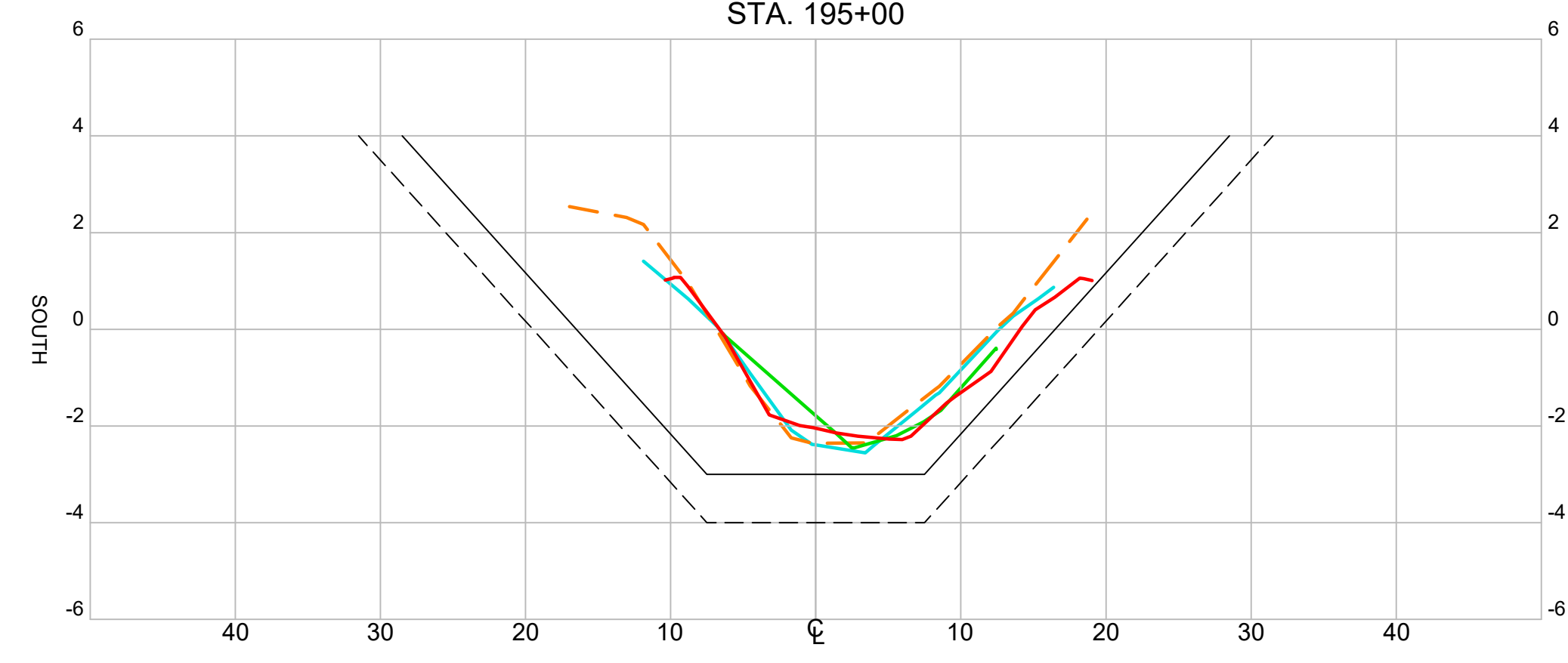
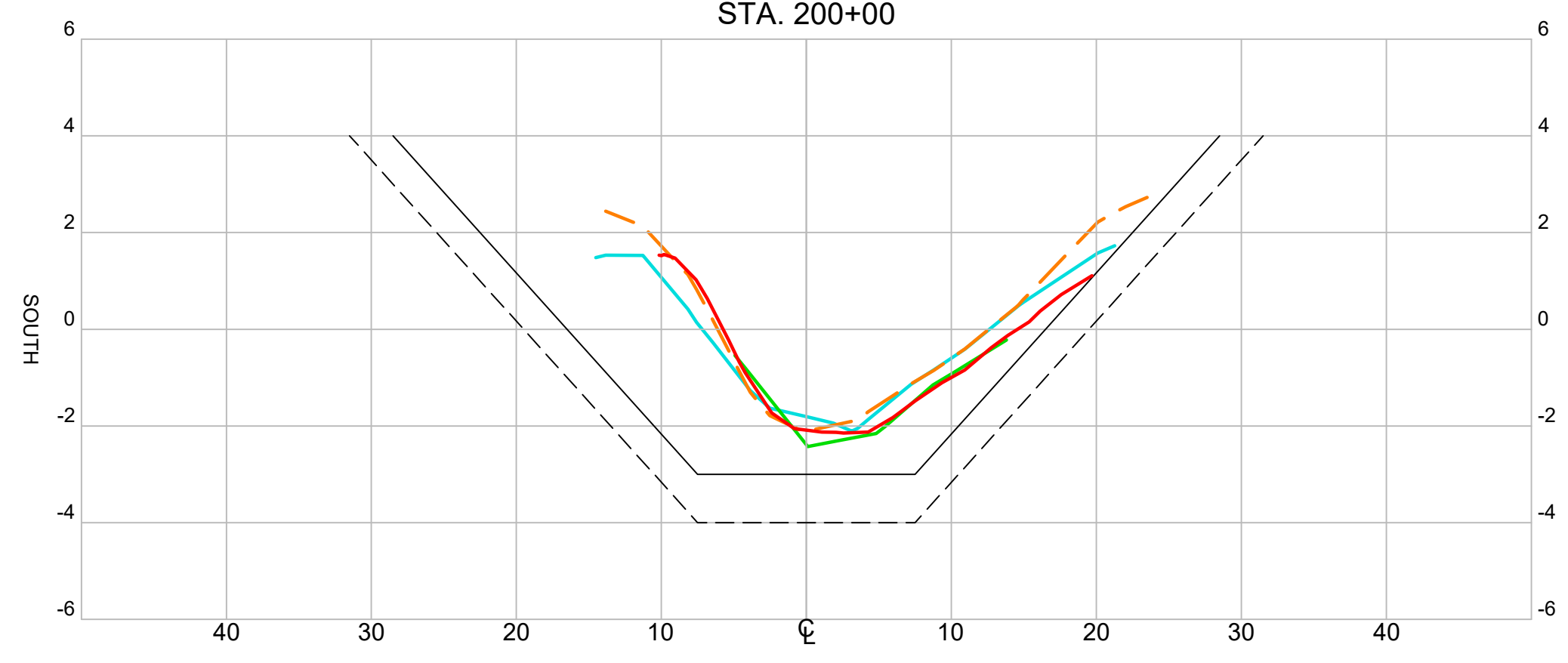
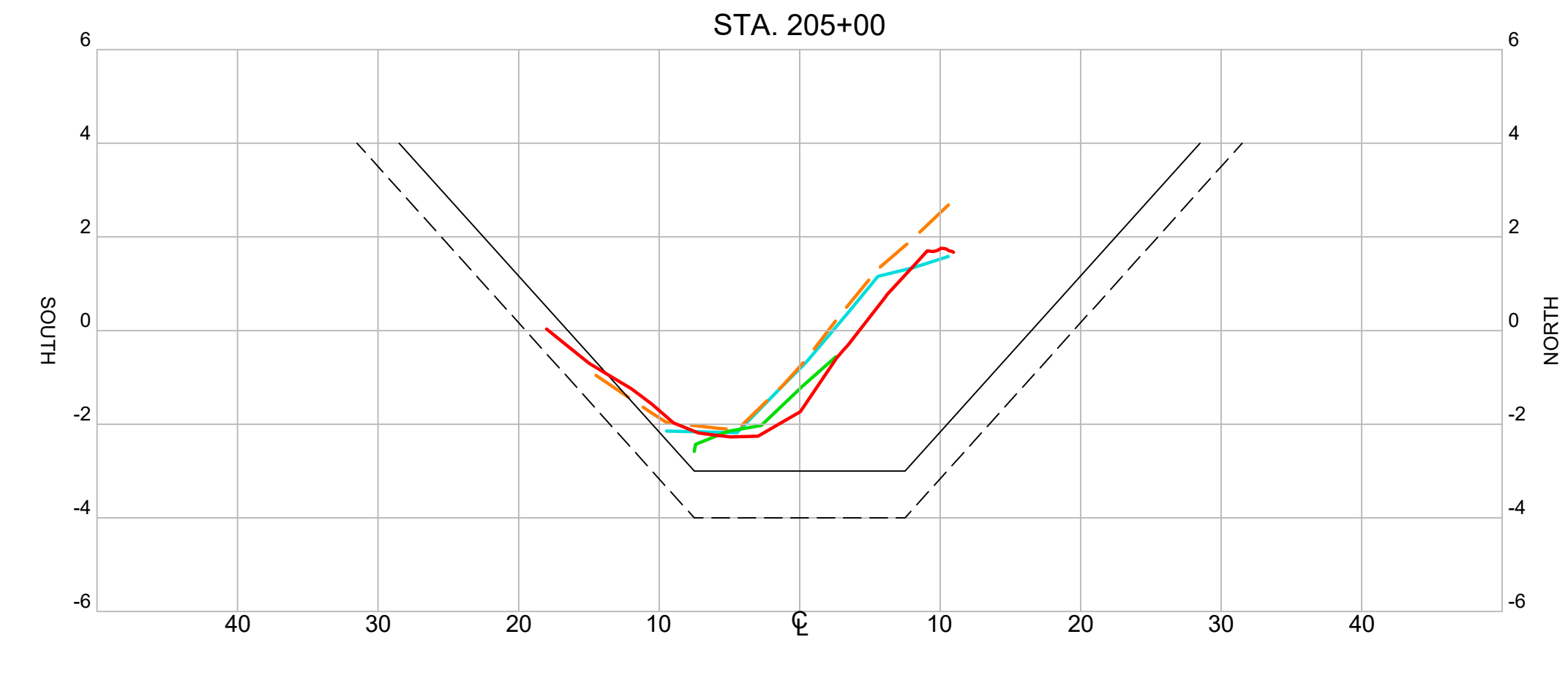
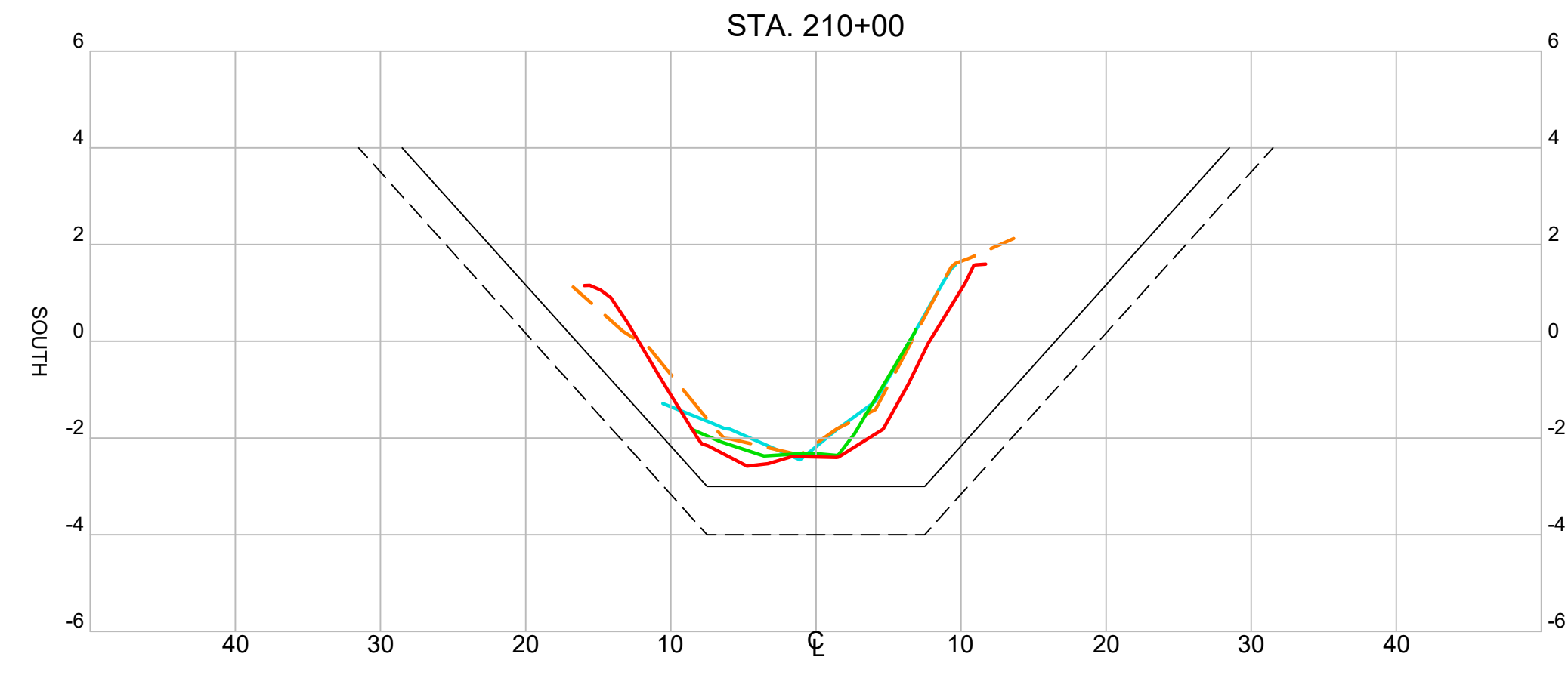
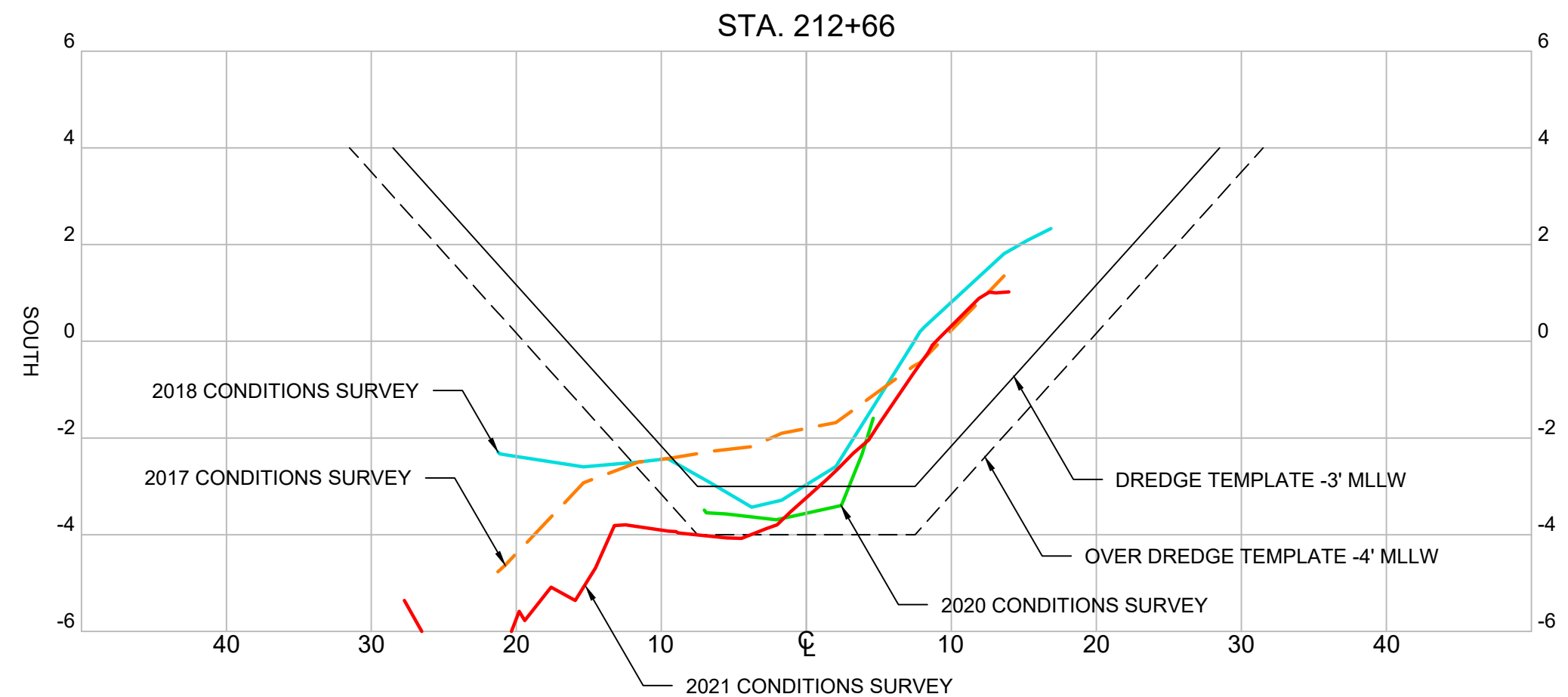
**G-002**

SHEET 2 OF 13





**PLAN VIEW**  
 SCALE: 1" = 60'  
 HORIZONTAL SCALE:  
 0 60' 120'



**BATHYMETRY INDEX SHEET (FT) (MLLW)**

| ID | MIN. EL.    | MAX. EL. | COLOR | ID | MIN. EL.  | MAX. EL. | COLOR |
|----|-------------|----------|-------|----|-----------|----------|-------|
| 1  | <= -10.500' | 218      |       | 16 | -3.500'   | -3.000'  | 160   |
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**SECTIONS**  
 HORIZONTAL SCALE: 1" = 10'  
 VERTICAL SCALE: 1" = 3'

| NO. | BY | DATE |
|-----|----|------|
| △   | -  | -    |
| △   | -  | -    |
| △   | -  | -    |
| △   | -  | -    |

RECORD DRAWING OF COMPLETED CONSTRUCTION BY:  
 RECORD DRAWINGS OF COMPLETED CONSTRUCTION CONFORMING TO CONTRACTOR AND/OR OWNERS RECORDS.  
 BY \_\_\_\_\_ DATE \_\_\_\_\_

**NOVATO CREEK**  
**2021 CONDITION HYDROGRAPHIC SURVEY**  
 BEL MARIN KEYS COMMUNITY SERVICES DISTRICT  
 #4 MONTEGO KEY  
 NOVATO, CA 94949

MARIN CALIFORNIA

|          | BY       | DATE          |
|----------|----------|---------------|
| SURVEYED | CINQUINI | JUNE 29, 2021 |
| DRAWN    | HAC      | MAY 27, 2021  |
| DESIGNED | -        | -             |
| CHECKED  | MEC4     | MAY 27, 2021  |

**Foth**  
 Foth Infrastructure & Environment, LLC  
 384 Bel Marin Keys Boulevard, Suite 140  
 Novato, CA 94949  
 Phone: 415.884.8011

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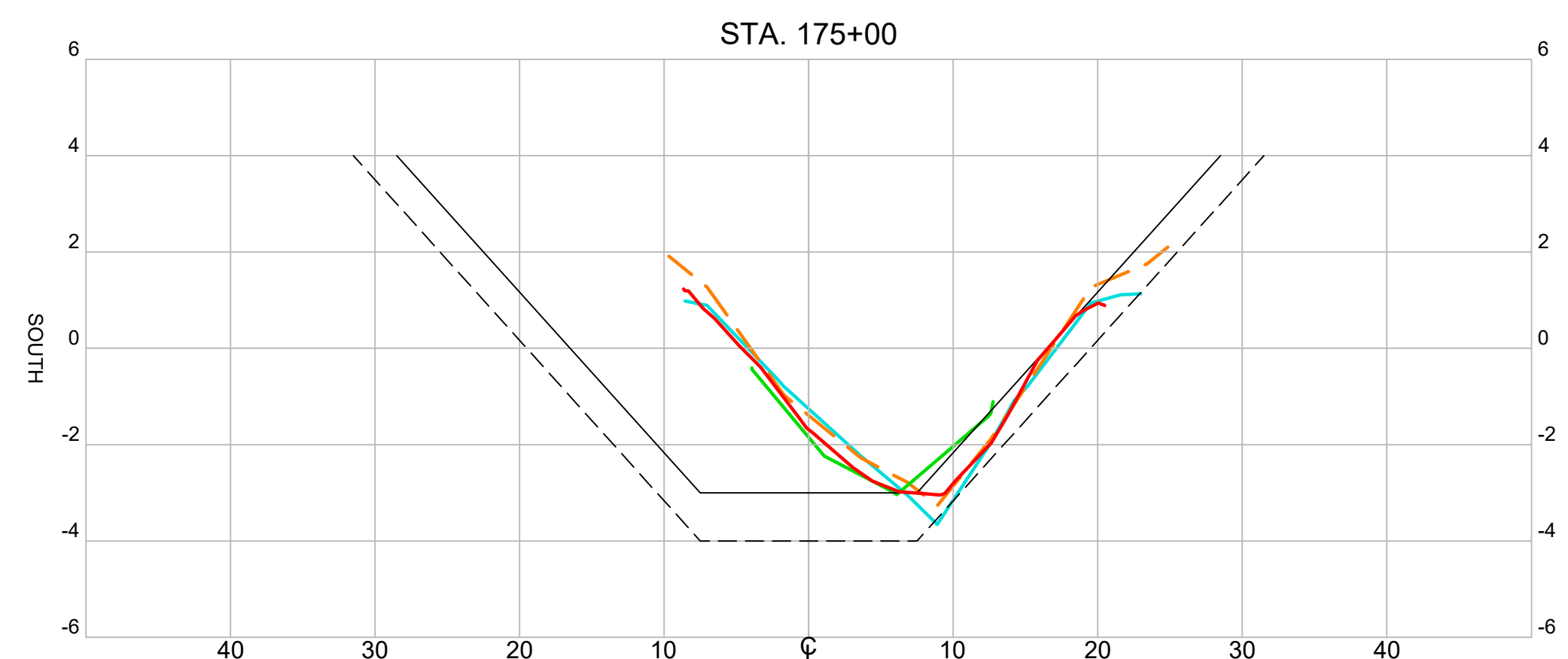
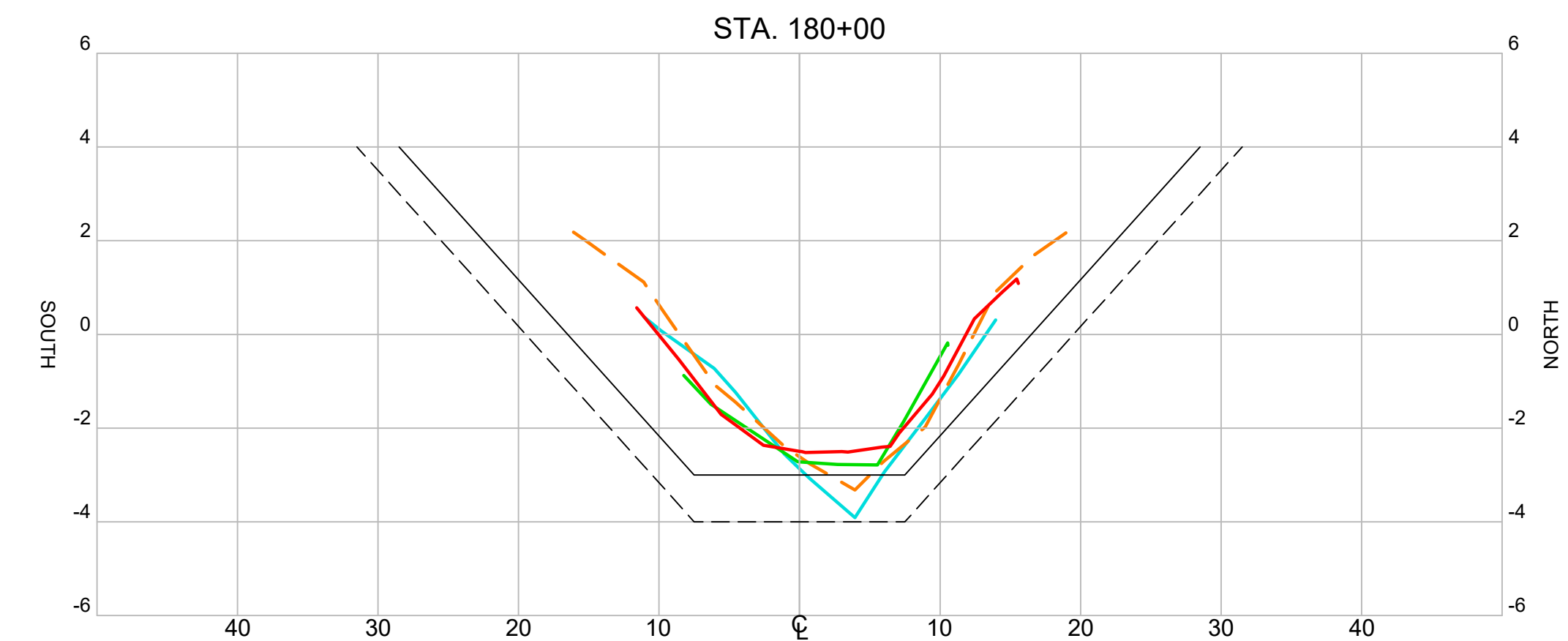
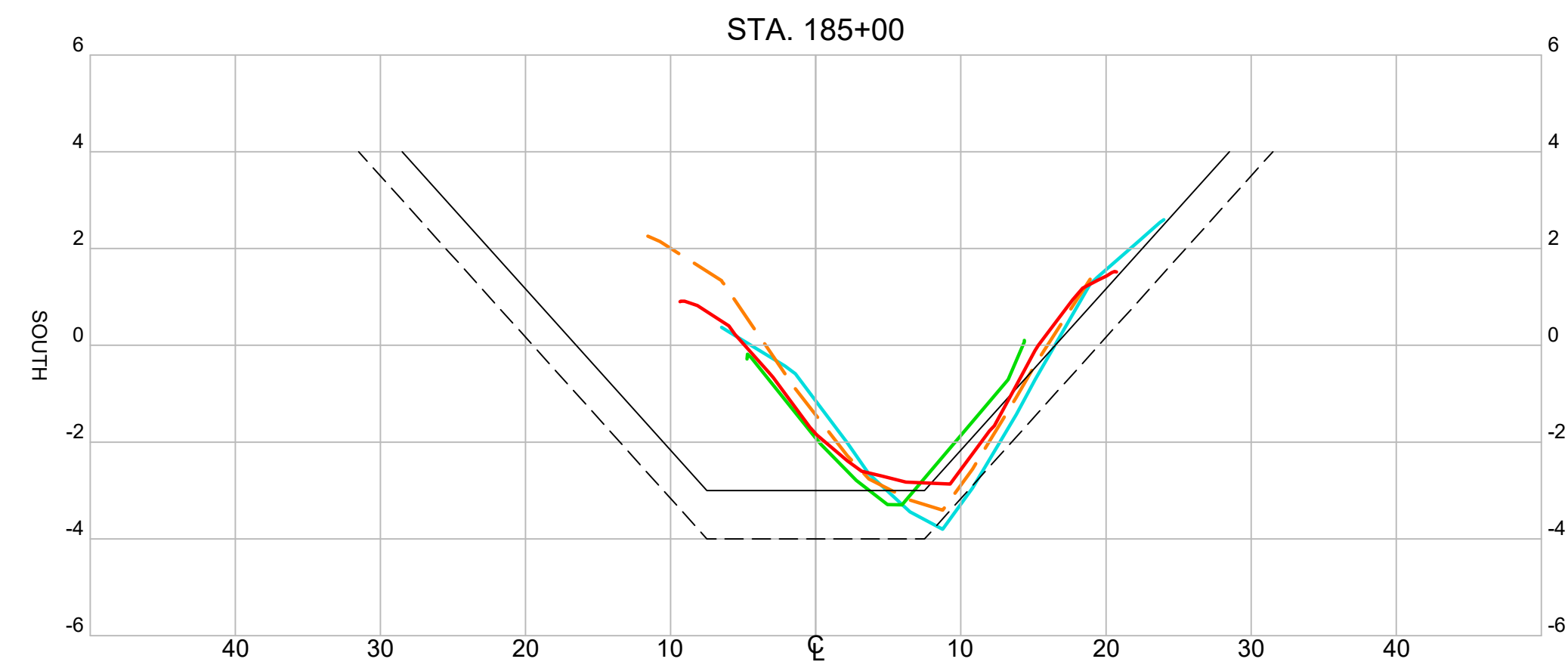
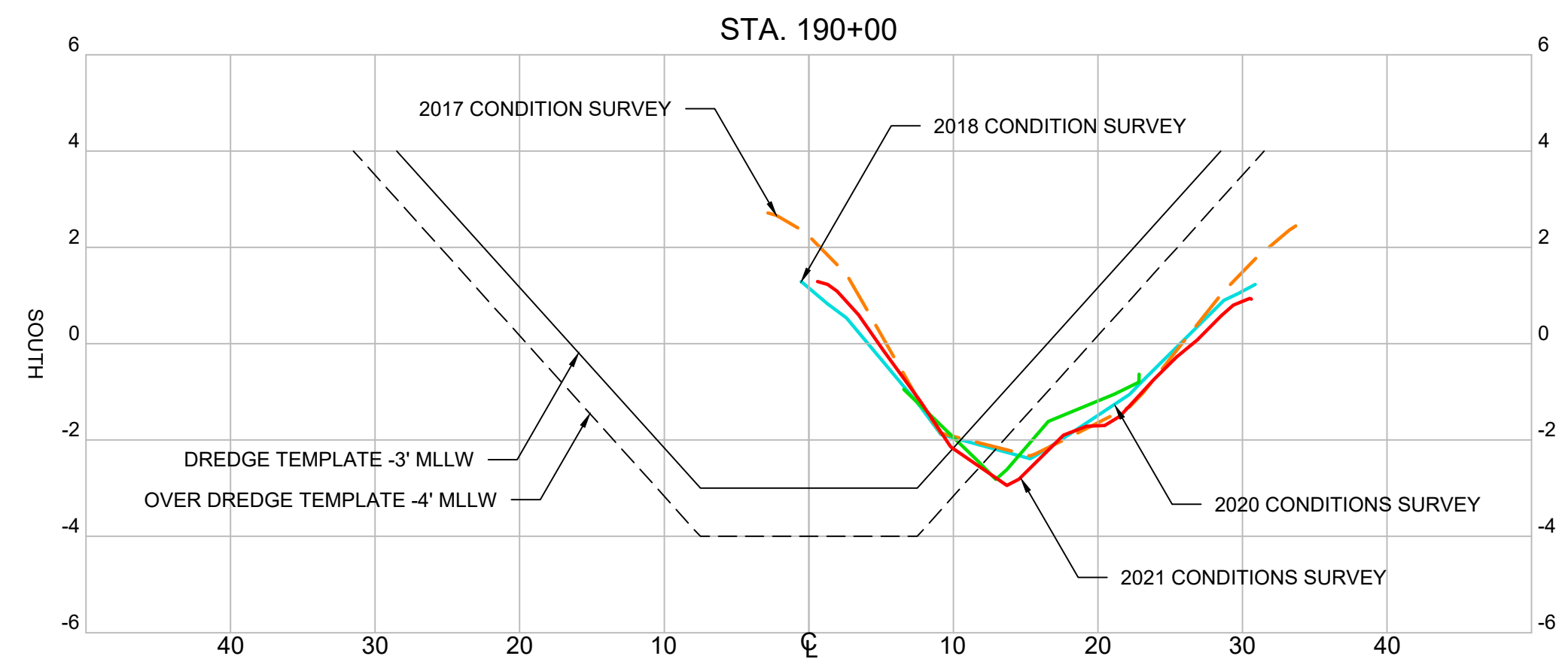
**CHANNEL SITE PLAN AND CROSS SECTIONS**  
 STA 213+00 TO 194+00

PROJECT ID: 19B038

**SV-101**

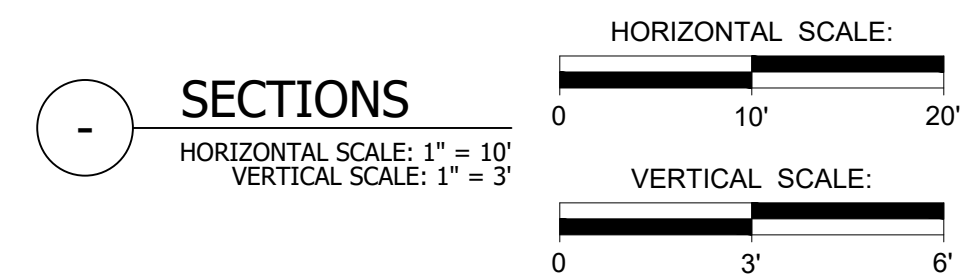
SHEET 3 OF 13





**BATHYMETRY INDEX SHEET (FT.) (MLLW)**

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| NO. | BY | DATE |
|-----|----|------|
| 1   | -  | -    |
| 2   | -  | -    |
| 3   | -  | -    |
| 4   | -  | -    |

RECORD DRAWING OF COMPLETED CONSTRUCTION BY: \_\_\_\_\_

RECORD DRAWINGS OF COMPLETED CONSTRUCTION CONFORMING TO CONTRACTOR AND/OR OWNERS RECORDS. BY: \_\_\_\_\_ DATE: \_\_\_\_\_

**NOVATO CREEK**  
**2021 CONDITION HYDROGRAPHIC SURVEY**  
 BEL MARIN KEYS COMMUNITY SERVICES DISTRICT  
 #4 MONTEGO KEY  
 NOVATO, CA 94949

MARIN CALIFORNIA

|          | BY      | DATE          |
|----------|---------|---------------|
| SURVEYED | CINGUNI | JUNE 29, 2021 |
| DRAWN    | HAC     | MAY 27, 2021  |
| DESIGNED | -       | -             |
| CHECKED  | MEC4    | MAY 27, 2021  |

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**CHANNEL SITE PLAN AND CROSS SECTIONS**  
**STA 194+00 TO 173+00**

PROJECT ID: 19B038

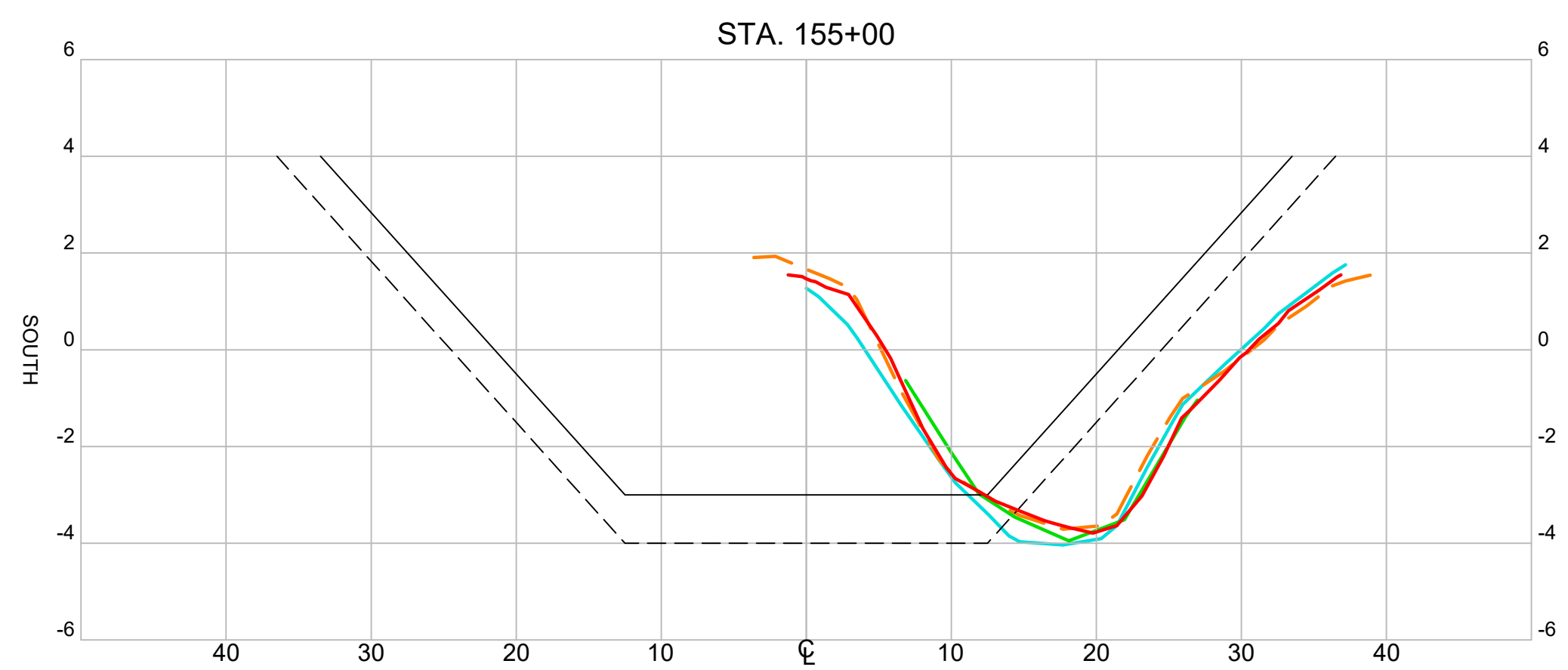
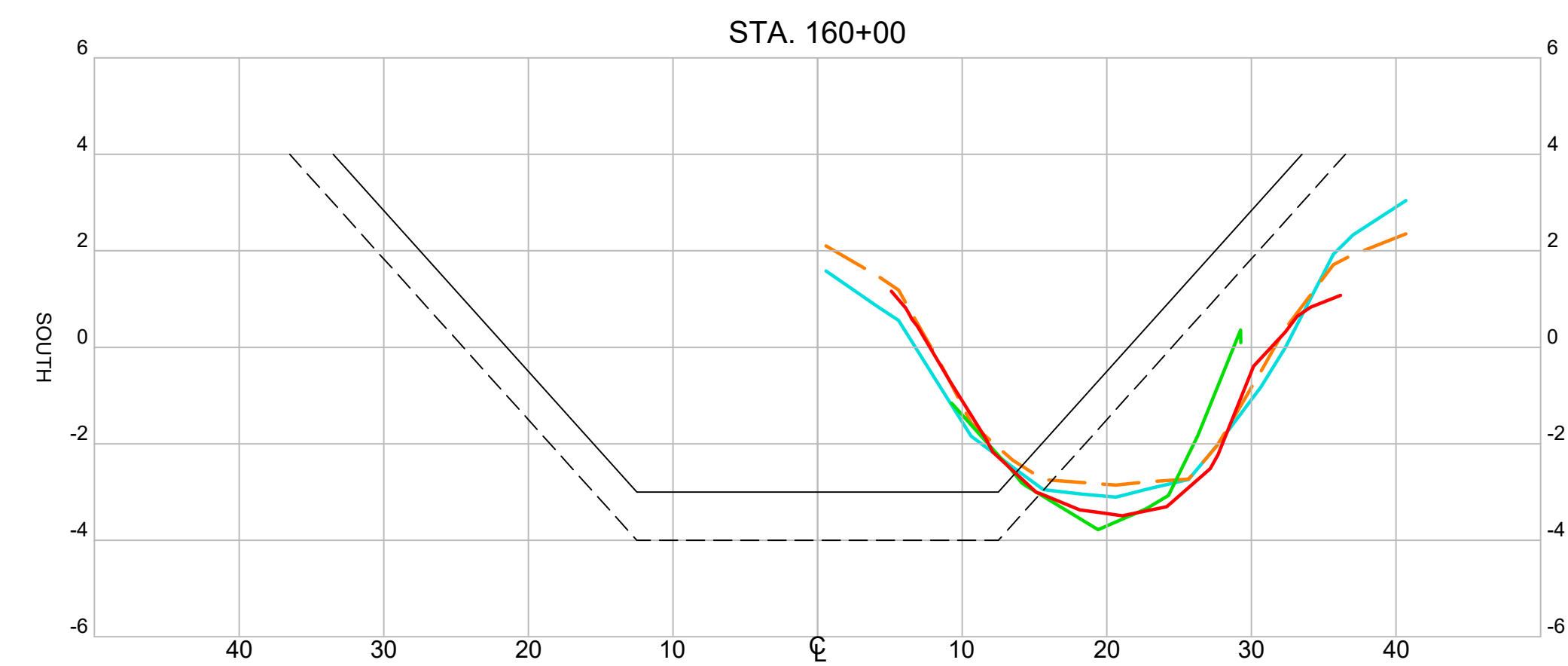
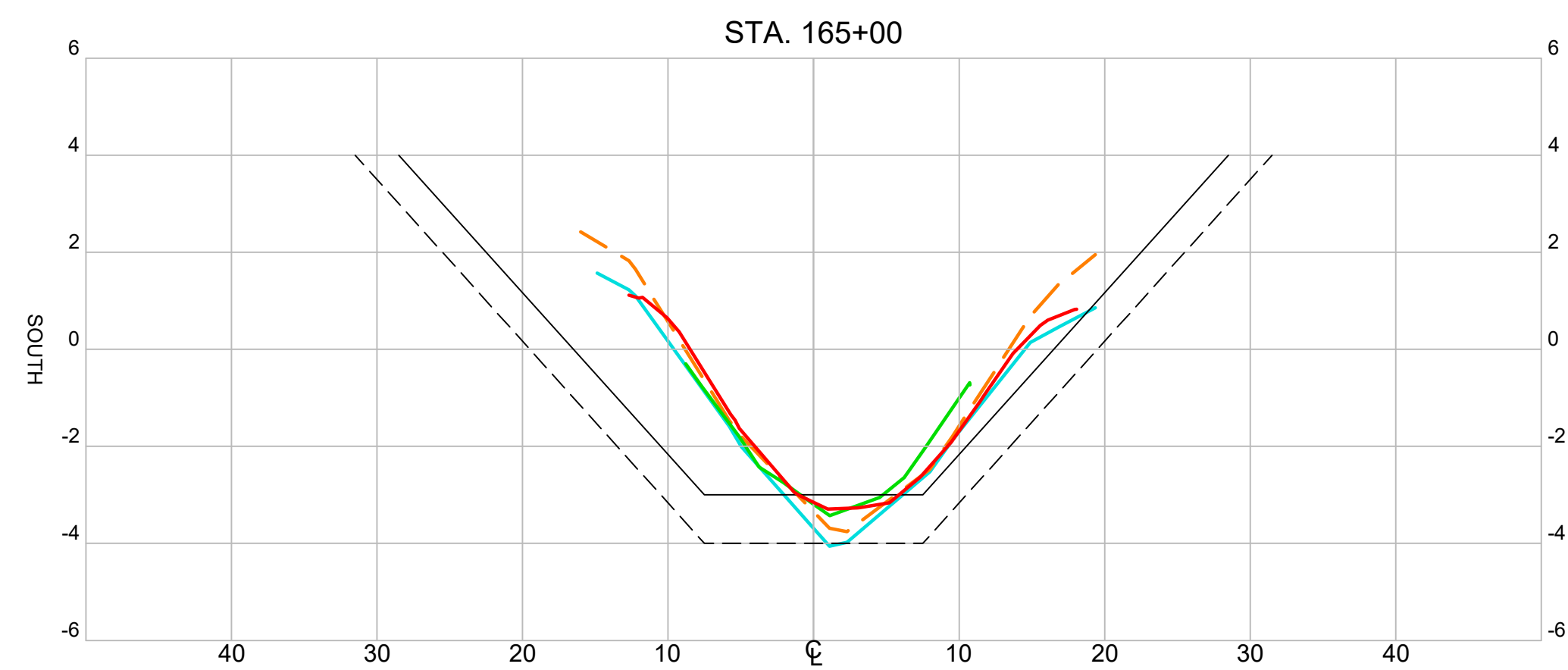
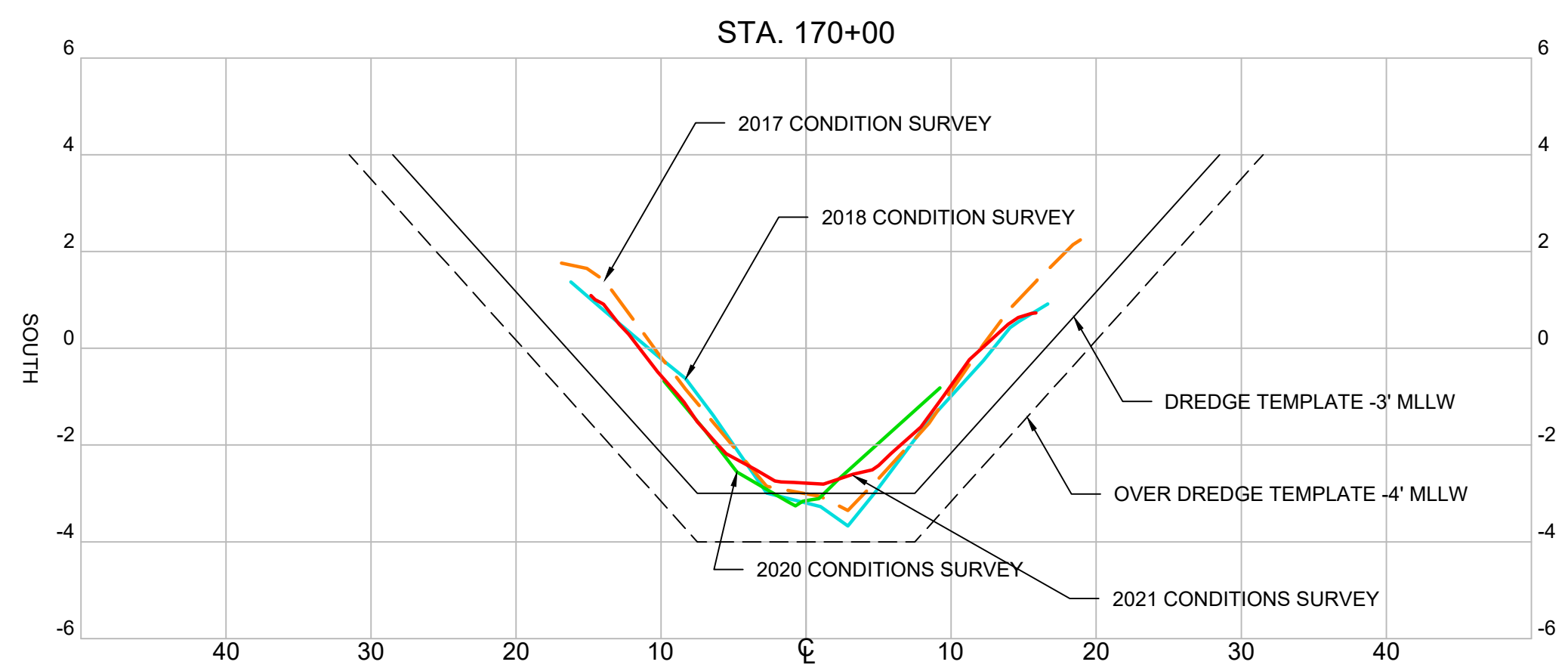
**SV-102**

SHEET 4 OF 13





**PLAN VIEW**  
 SCALE: 1" = 60'  
 HORIZONTAL SCALE:  
 0 60' 120'



**BATHYMETRY INDEX SHEET (FT) (MLLW)**

| ID | MIN. EL.   | MAX. EL. | COLOR | ID | MIN. EL.  | MAX. EL. | COLOR |
|----|------------|----------|-------|----|-----------|----------|-------|
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| 15 | -4.000'    | -3.500'  | 170   | 30 | >= 3.500' |          | 68    |

**SECTIONS**  
 HORIZONTAL SCALE: 1" = 10'  
 VERTICAL SCALE: 1" = 3'

| NO. | BY | DATE |
|-----|----|------|
| △   | -  | -    |
| △   | -  | -    |
| △   | -  | -    |
| △   | -  | -    |

RECORD DRAWING OF COMPLETED CONSTRUCTION BY:  
 RECORD DRAWINGS OF COMPLETED CONSTRUCTION CONFORMING TO CONTRACTOR AND/OR OWNERS RECORDS.  
 BY \_\_\_\_\_ DATE \_\_\_\_\_

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**2021 CONDITION HYDROGRAPHIC SURVEY**  
 BEL MARIN KEYS COMMUNITY SERVICES DISTRICT  
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 NOVATO, CA 94949

MARIN CALIFORNIA

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| CHECKED  | MEC4     | MAY 27, 2021  |

**Foth**  
 Foth Infrastructure & Environment, LLC  
 384 Bel Marin Keys Boulevard, Suite 140  
 Novato, CA 94949  
 Phone: 415.884.8011

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**CHANNEL SITE PLAN AND CROSS SECTIONS**  
**STA 173+00 TO 153+00**

PROJECT ID: 19B038

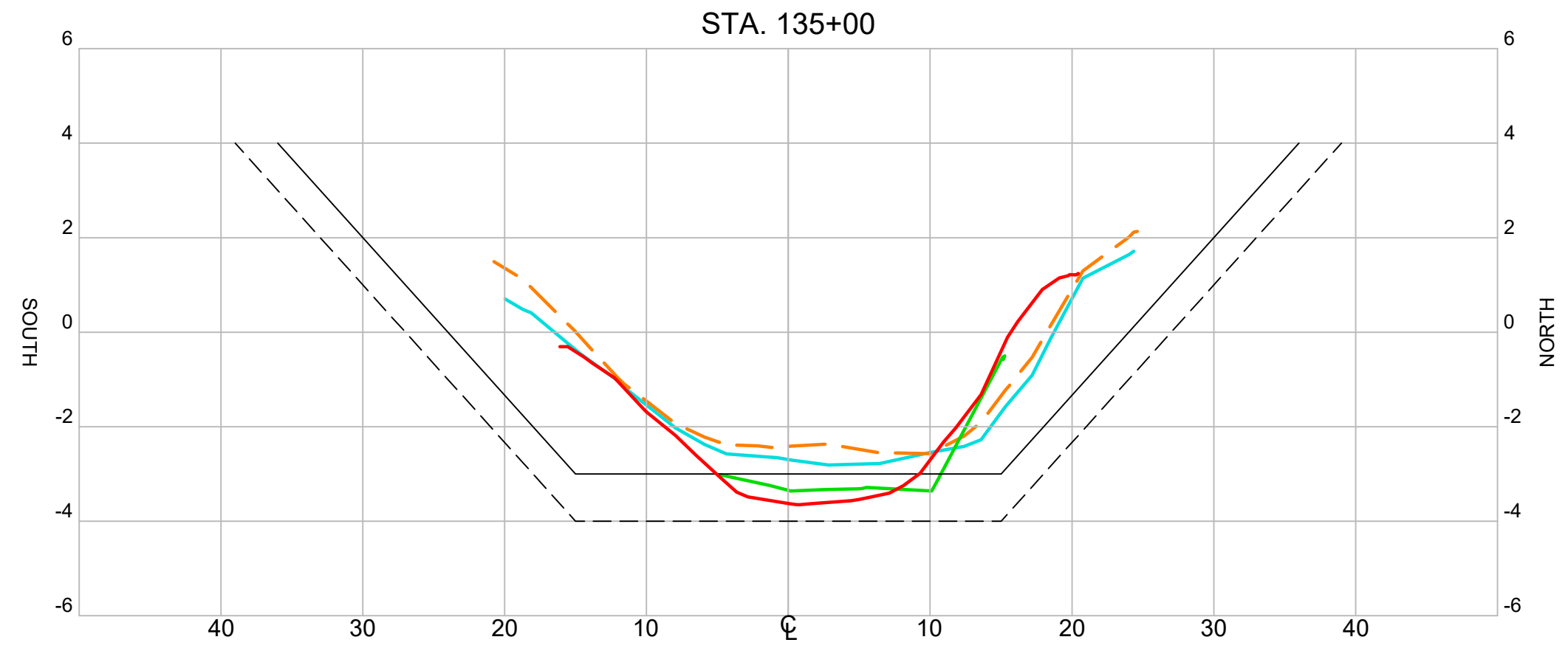
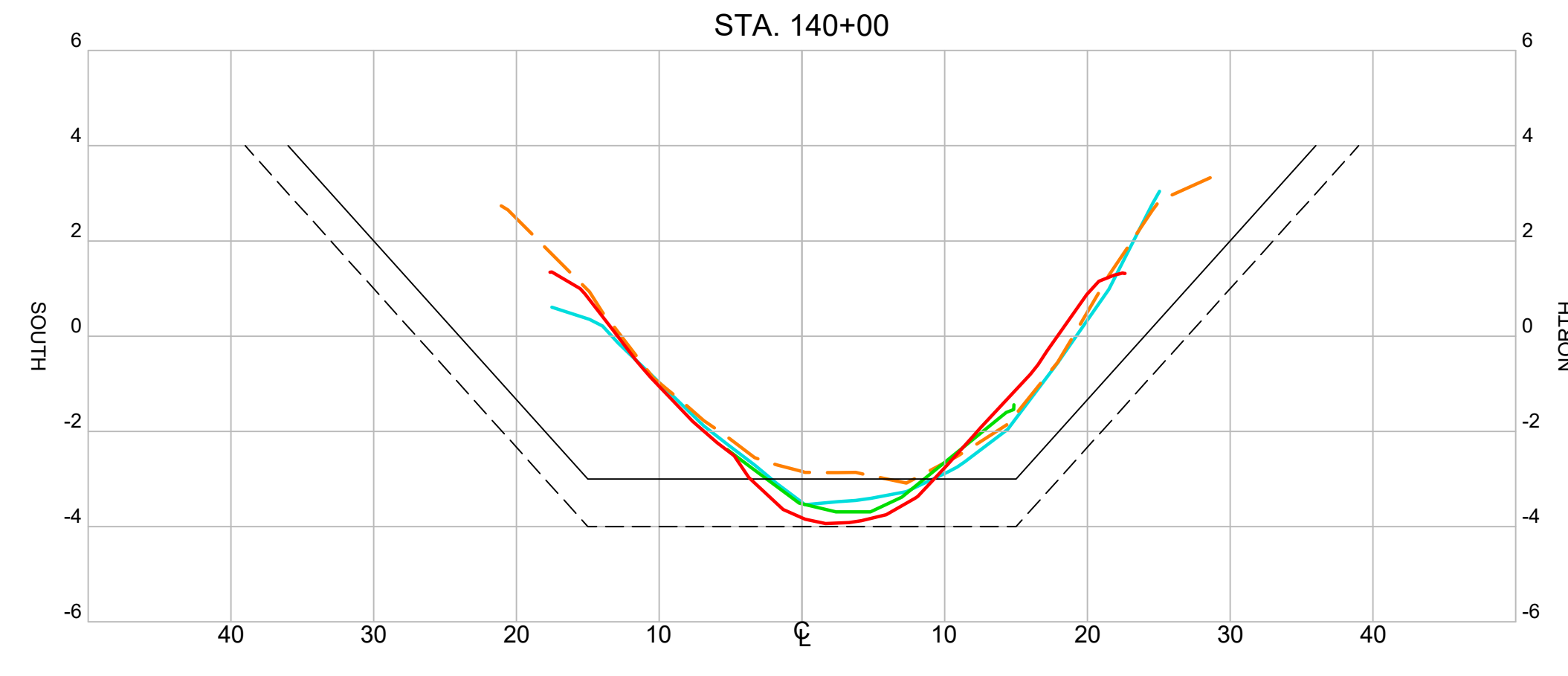
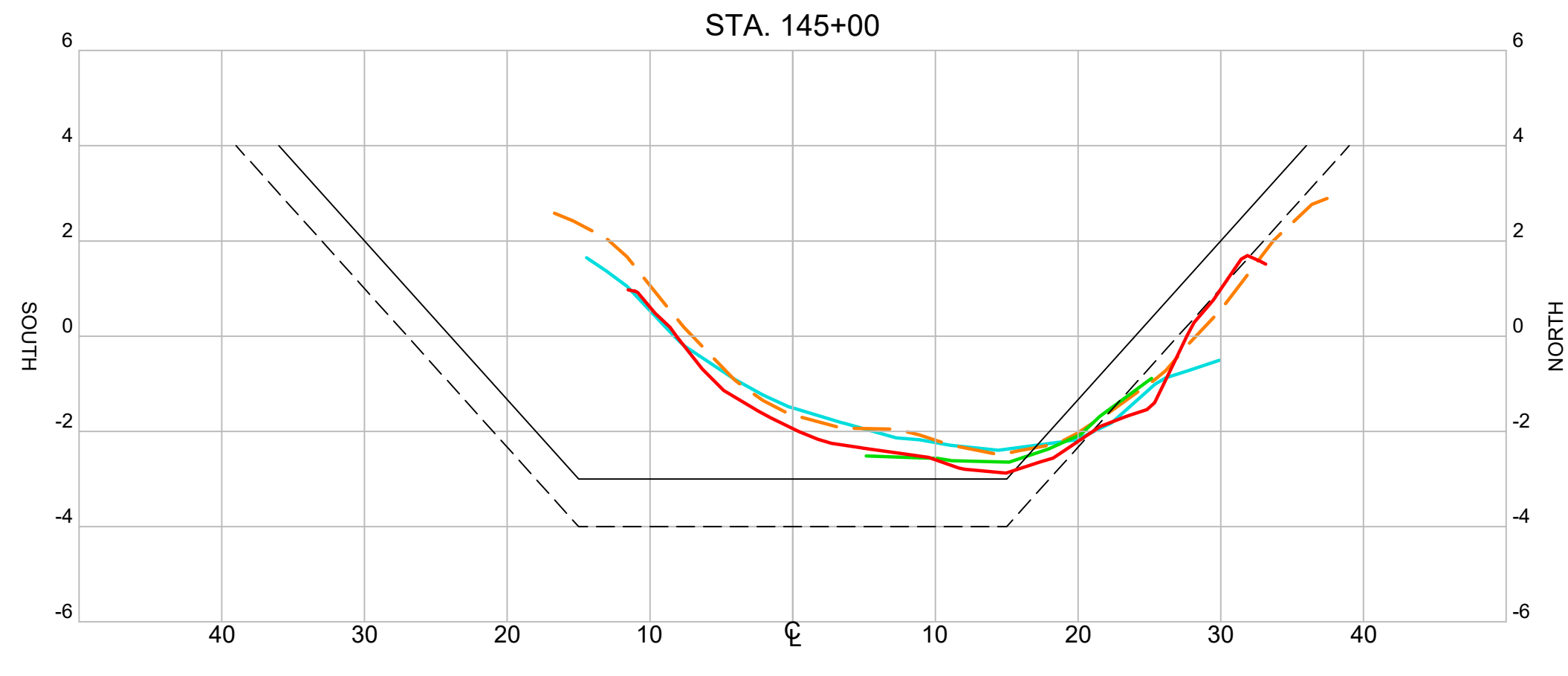
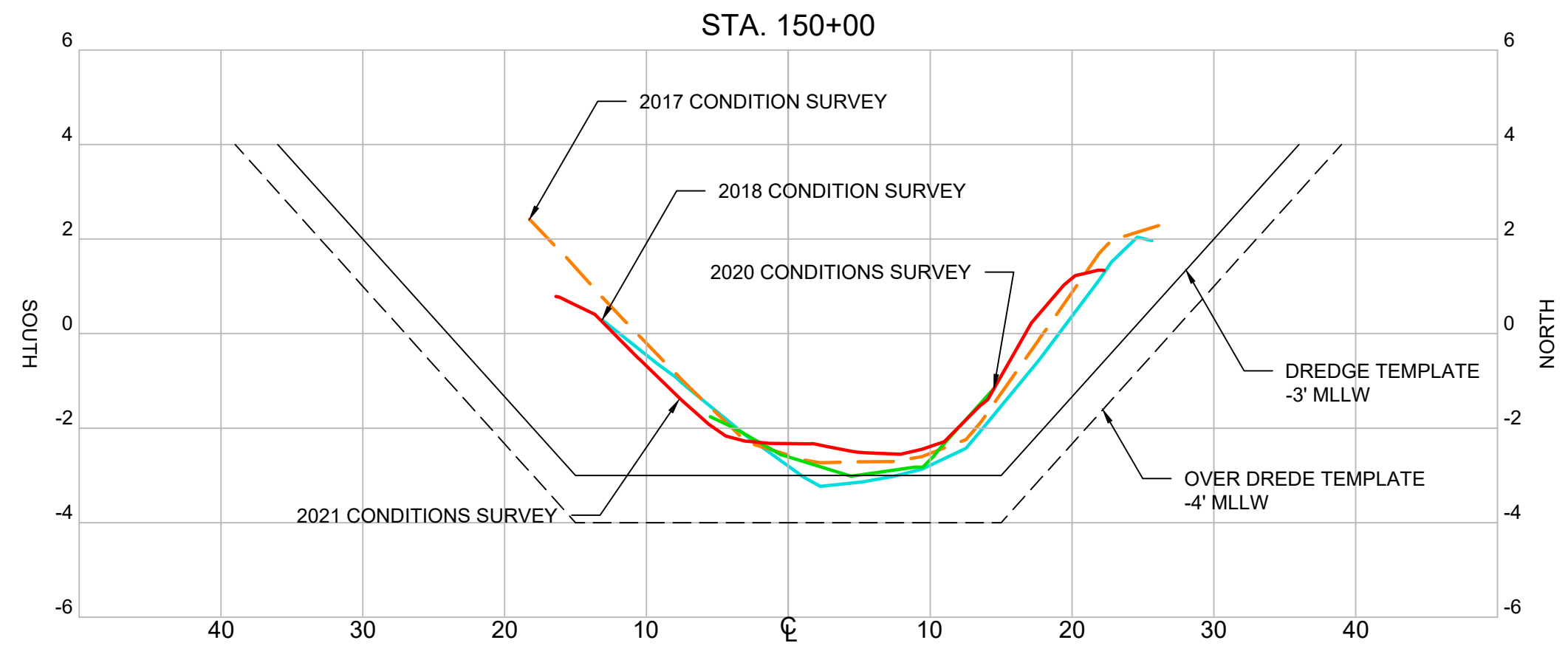
**SV-103**

SHEET 5 OF 13





**PLAN VIEW**  
 SCALE: 1" = 60'  
 HORIZONTAL SCALE:  
 0 60' 120'



**BATHYMETRY INDEX SHEET (FT) (MLLW)**

| ID | MIN. EL.   | MAX. EL. | COLOR | ID | MIN. EL.  | MAX. EL. | COLOR |
|----|------------|----------|-------|----|-----------|----------|-------|
| 1  | <=-10.500' | 218      |       | 16 | -3.500'   | -3.000'  | 160   |
| 2  | -10.500'   | -10.000' | 228   | 17 | -3.000'   | -2.500'  | 150   |
| 3  | -10.000'   | -9.500'  | 238   | 18 | -2.500'   | -2.000'  | 140   |
| 4  | -9.500'    | -9.000'  | 248   | 19 | -2.000'   | -1.500'  | 130   |
| 5  | -9.000'    | -8.500'  | 246   | 20 | -1.500'   | -0.500'  | 120   |
| 6  | -8.500'    | -8.000'  | 244   | 21 | -1.000'   | -0.500'  | 110   |
| 7  | -8.000'    | -7.500'  | 242   | 22 | -0.500'   | 0.000'   | 100   |
| 8  | -7.500'    | -7.000'  | 240   | 23 | 0.000'    | 0.500'   | 90    |
| 9  | -7.000'    | -6.500'  | 230   | 24 | 0.500'    | 1.000'   | 80    |
| 10 | -6.500'    | -6.000'  | 220   | 25 | 1.000'    | 1.500'   | 70    |
| 11 | -6.000'    | -5.500'  | 210   | 26 | 1.500'    | 2.000'   | 60    |
| 12 | -5.500'    | -5.000'  | 200   | 27 | 2.000'    | 2.500'   | 62    |
| 13 | -5.000'    | -4.500'  | 190   | 28 | 2.500'    | 3.000'   | 64    |
| 14 | -4.500'    | -4.000'  | 180   | 29 | 3.000'    | 3.500'   | 66    |
| 15 | -4.000'    | -3.500'  | 170   | 30 | >= 3.500' |          | 68    |

**SECTIONS**  
 HORIZONTAL SCALE: 1" = 10'  
 VERTICAL SCALE: 1" = 3'  
 HORIZONTAL SCALE:  
 0 10' 20'  
 VERTICAL SCALE:  
 0 3' 6'

| NO. | BY | DATE |
|-----|----|------|
| △   | -  | -    |
| △   | -  | -    |
| △   | -  | -    |
| △   | -  | -    |

RECORD DRAWING OF COMPLETED CONSTRUCTION BY:  
 RECORD DRAWINGS OF COMPLETED CONSTRUCTION CONFORMING TO CONTRACTOR AND/OR OWNERS RECORDS.  
 BY \_\_\_\_\_ DATE \_\_\_\_\_

**NOVATO CREEK**  
**2021 CONDITION HYDROGRAPHIC SURVEY**  
 BEL MARIN KEYS COMMUNITY SERVICES DISTRICT  
 #4 MONTEGO KEY  
 NOVATO, CA 94949

MARIN CALIFORNIA

|          | BY       | DATE          |
|----------|----------|---------------|
| SURVEYED | CINQUINI | JUNE 29, 2021 |
| DRAWN    | HAC      | MAY 27, 2021  |
| DESIGNED | -        | -             |
| CHECKED  | MEC4     | MAY 27, 2021  |

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**CHANNEL SITE PLAN AND CROSS SECTIONS**  
**STA 153+00 TO 133+00**

PROJECT ID: 19B038

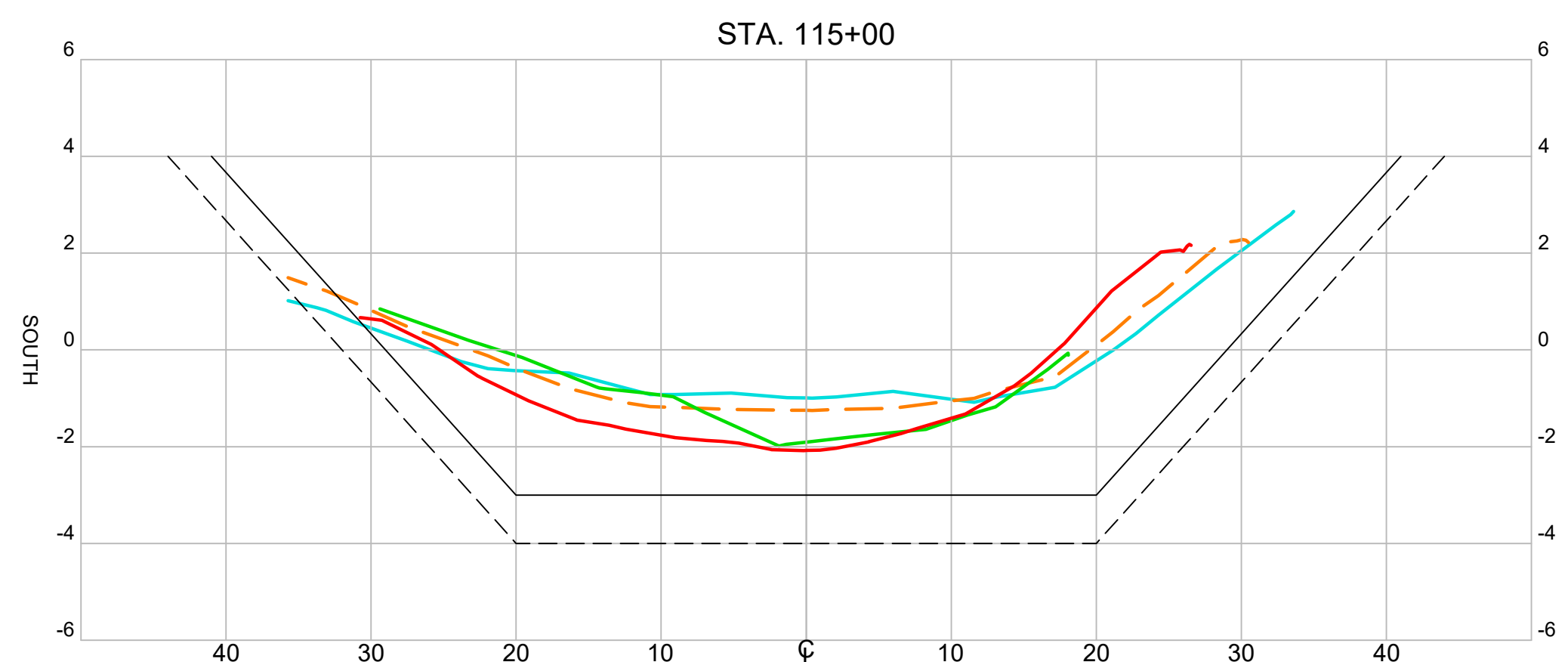
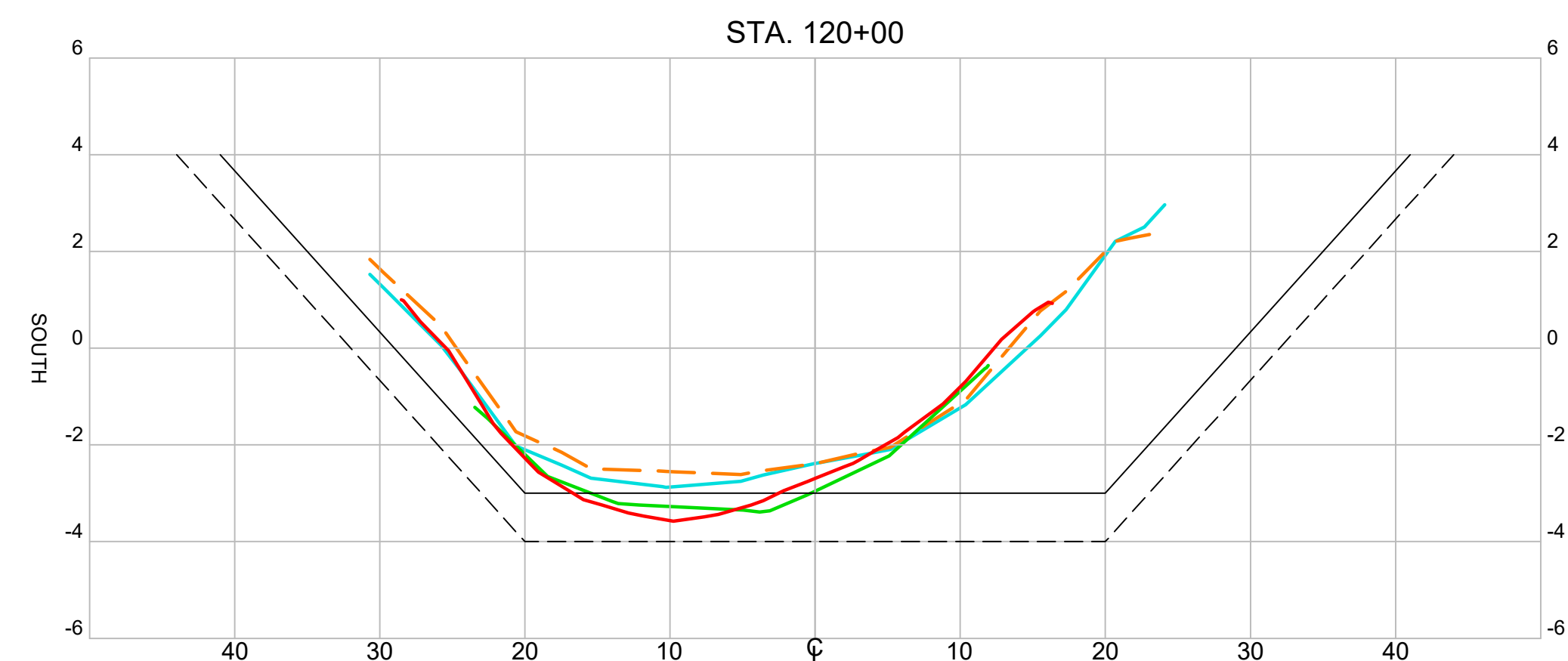
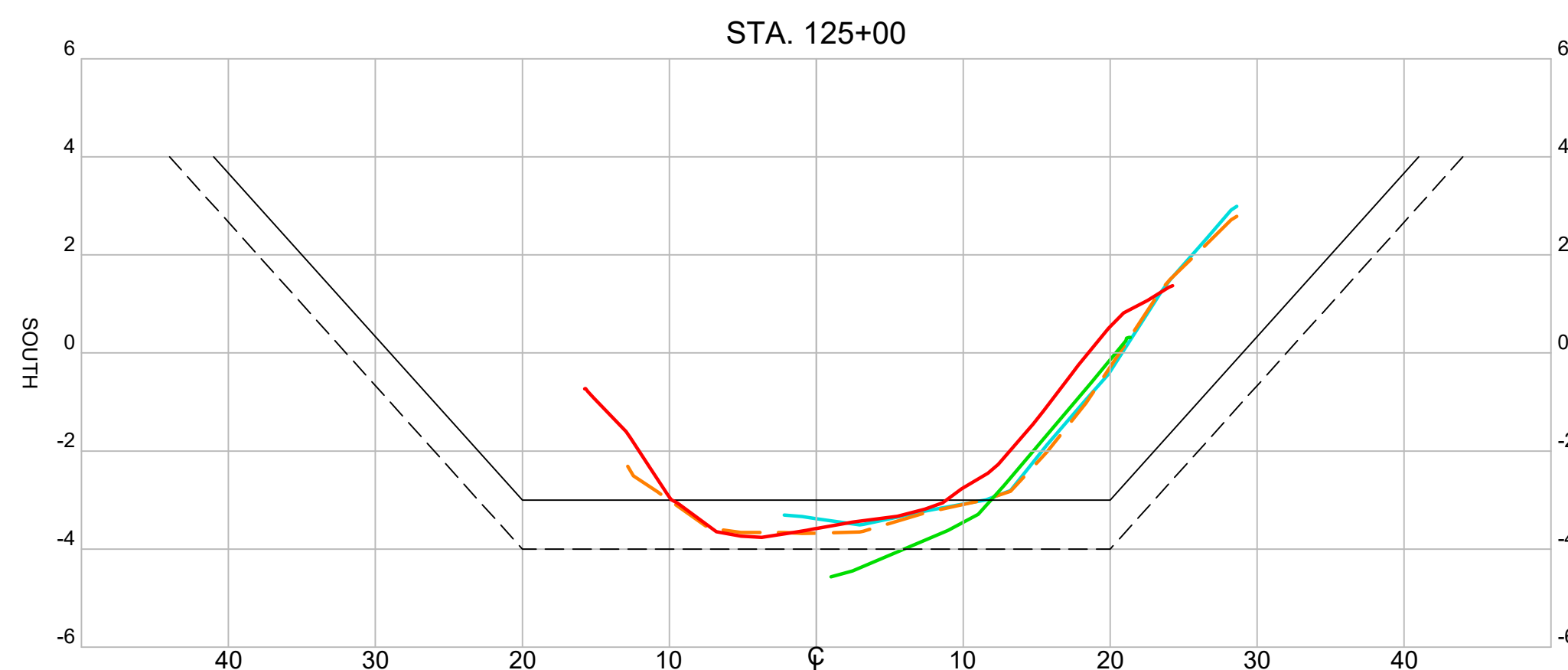
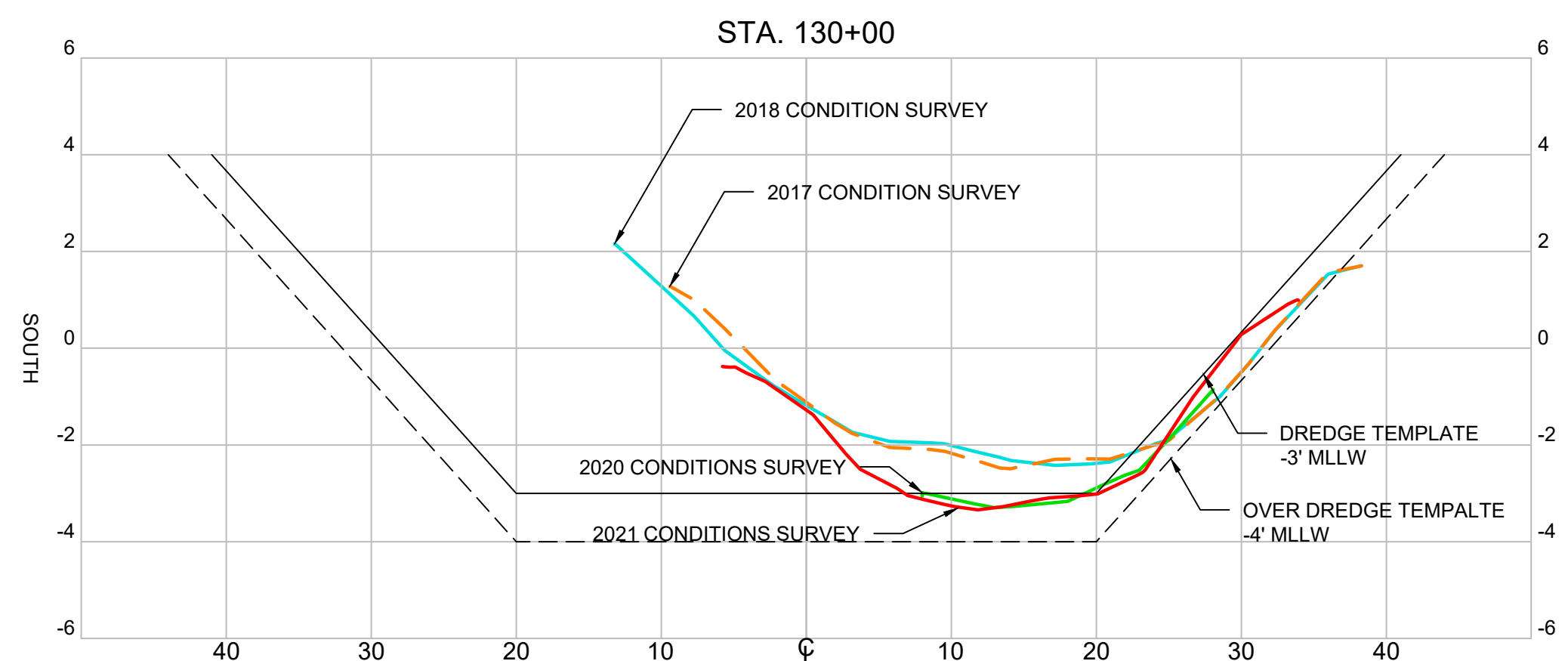
**SV-104**

SHEET 6 OF 13





**PLAN VIEW**  
 SCALE: 1" = 60'  
 HORIZONTAL SCALE:  
 0 60' 120'



**BATHYMETRY INDEX SHEET (FT.) (MLLW)**

| ID | MIN. EL.    | MAX. EL. | COLOR | ID | MIN. EL.  | MAX. EL. | COLOR |
|----|-------------|----------|-------|----|-----------|----------|-------|
| 1  | <= -10.500' | 218      |       | 16 | -3.500'   | -3.000'  | 160   |
| 2  | -10.500'    | -10.000' | 228   | 17 | -3.000'   | -2.500'  | 150   |
| 3  | -10.000'    | -9.500'  | 238   | 18 | -2.500'   | -2.000'  | 140   |
| 4  | -9.500'     | -9.000'  | 248   | 19 | -2.000'   | -1.500'  | 130   |
| 5  | -9.000'     | -8.500'  | 246   | 20 | -1.500'   | -0.500'  | 120   |
| 6  | -8.500'     | -8.000'  | 244   | 21 | -1.000'   | -0.500'  | 110   |
| 7  | -8.000'     | -7.500'  | 242   | 22 | -0.500'   | 0.000'   | 100   |
| 8  | -7.500'     | -7.000'  | 240   | 23 | 0.000'    | 0.500'   | 90    |
| 9  | -7.000'     | -6.500'  | 230   | 24 | 0.500'    | 1.000'   | 80    |
| 10 | -6.500'     | -6.000'  | 220   | 25 | 1.000'    | 1.500'   | 70    |
| 11 | -6.000'     | -5.500'  | 210   | 26 | 1.500'    | 2.000'   | 60    |
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| 13 | -5.000'     | -4.500'  | 190   | 28 | 2.500'    | 3.000'   | 64    |
| 14 | -4.500'     | -4.000'  | 180   | 29 | 3.000'    | 3.500'   | 66    |
| 15 | -4.000'     | -3.500'  | 170   | 30 | >= 3.500' |          | 68    |

**SECTIONS**  
 HORIZONTAL SCALE: 1" = 10'  
 VERTICAL SCALE: 1" = 3'

| NO. | BY | DATE |
|-----|----|------|
| △   | -  | -    |
| △   | -  | -    |
| △   | -  | -    |
| △   | -  | -    |

RECORD DRAWING OF COMPLETED CONSTRUCTION BY:  
 RECORD DRAWINGS OF COMPLETED CONSTRUCTION CONFORMING TO CONTRACTOR AND/OR OWNERS RECORDS.  
 BY \_\_\_\_\_ DATE \_\_\_\_\_

**NOVATO CREEK**  
**2021 CONDITION HYDROGRAPHIC SURVEY**  
 BEL MARIN KEYS COMMUNITY SERVICES DISTRICT  
 #4 MONTEGO KEY  
 NOVATO, CA 94949

MARIN CALIFORNIA

|          | BY       | DATE          |
|----------|----------|---------------|
| SURVEYED | CINQUINI | JUNE 29, 2021 |
| DRAWN    | HAC      | MAY 27, 2021  |
| DESIGNED | -        | -             |
| CHECKED  | MEC4     | MAY 27, 2021  |

**Foth**  
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 384 Bel Marin Keys Boulevard, Suite 140  
 Novato, CA 94949  
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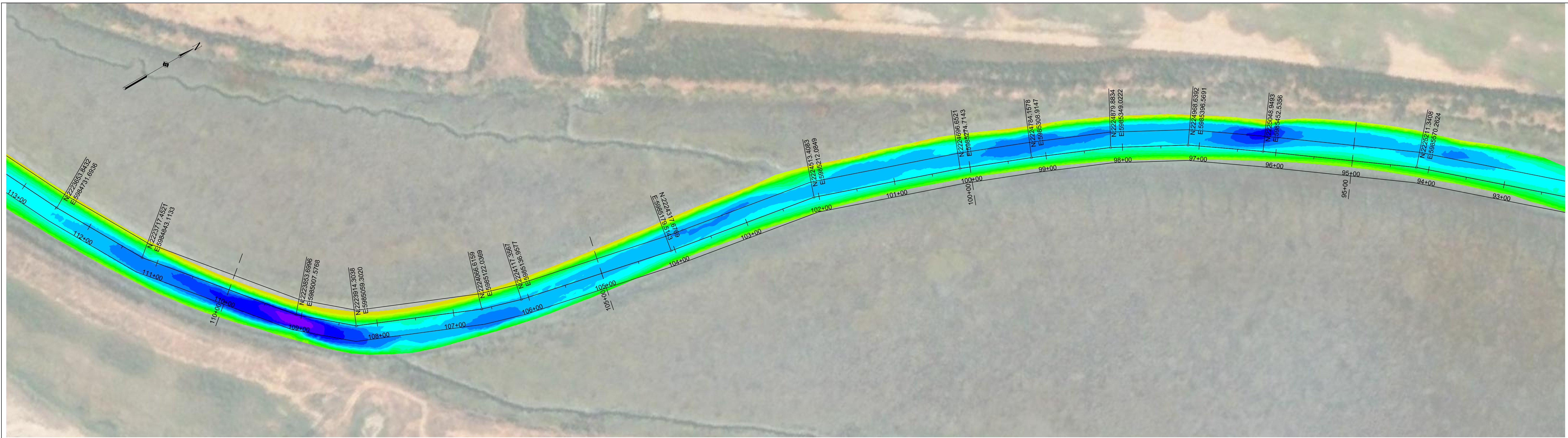
**CHANNEL SITE PLAN AND CROSS SECTIONS**  
**STA 133+00 TO 113+00**

PROJECT ID: 19B038

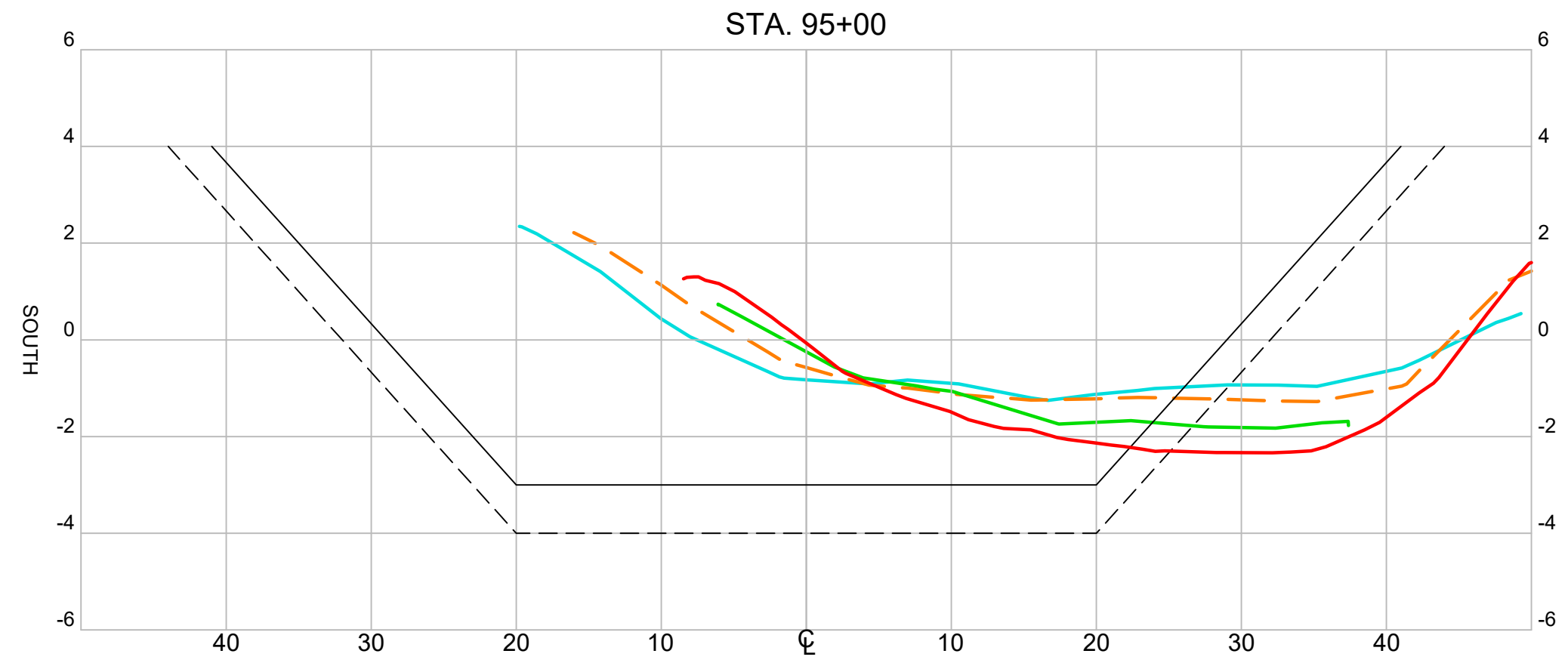
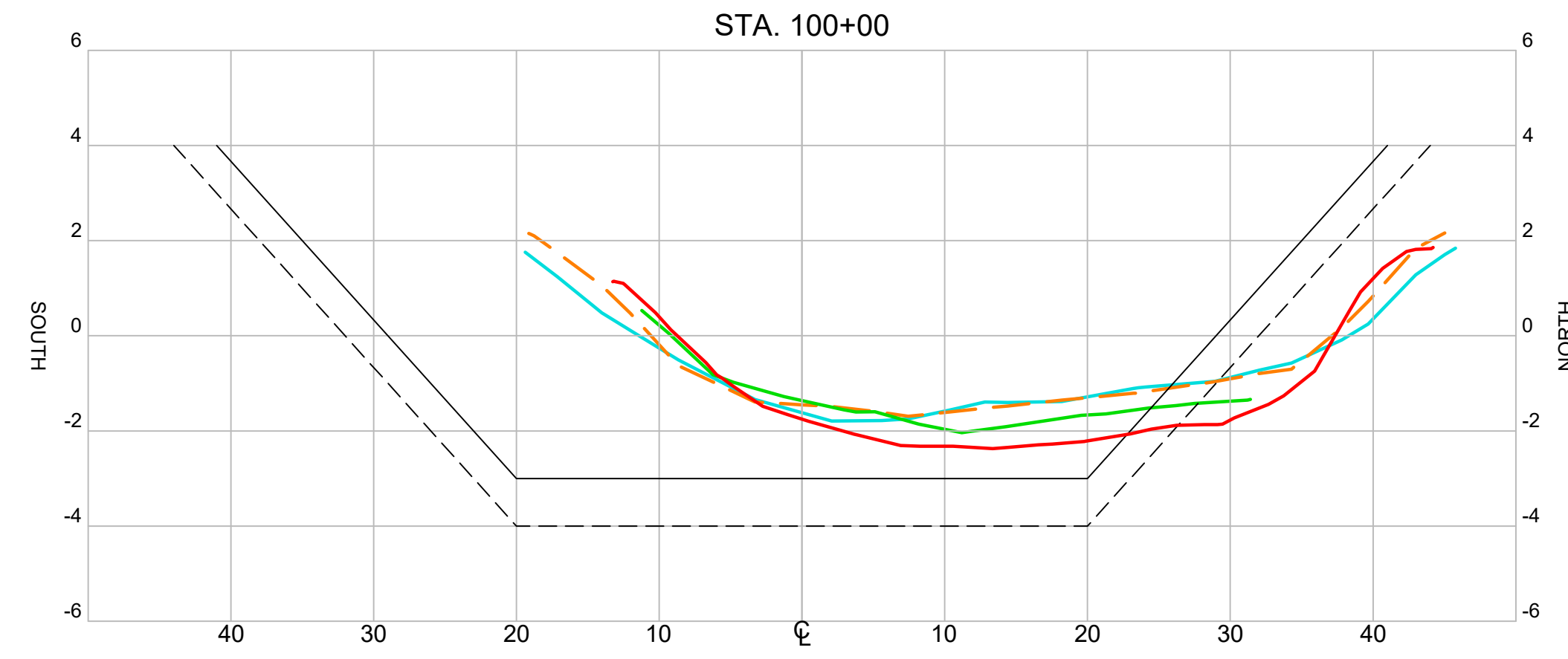
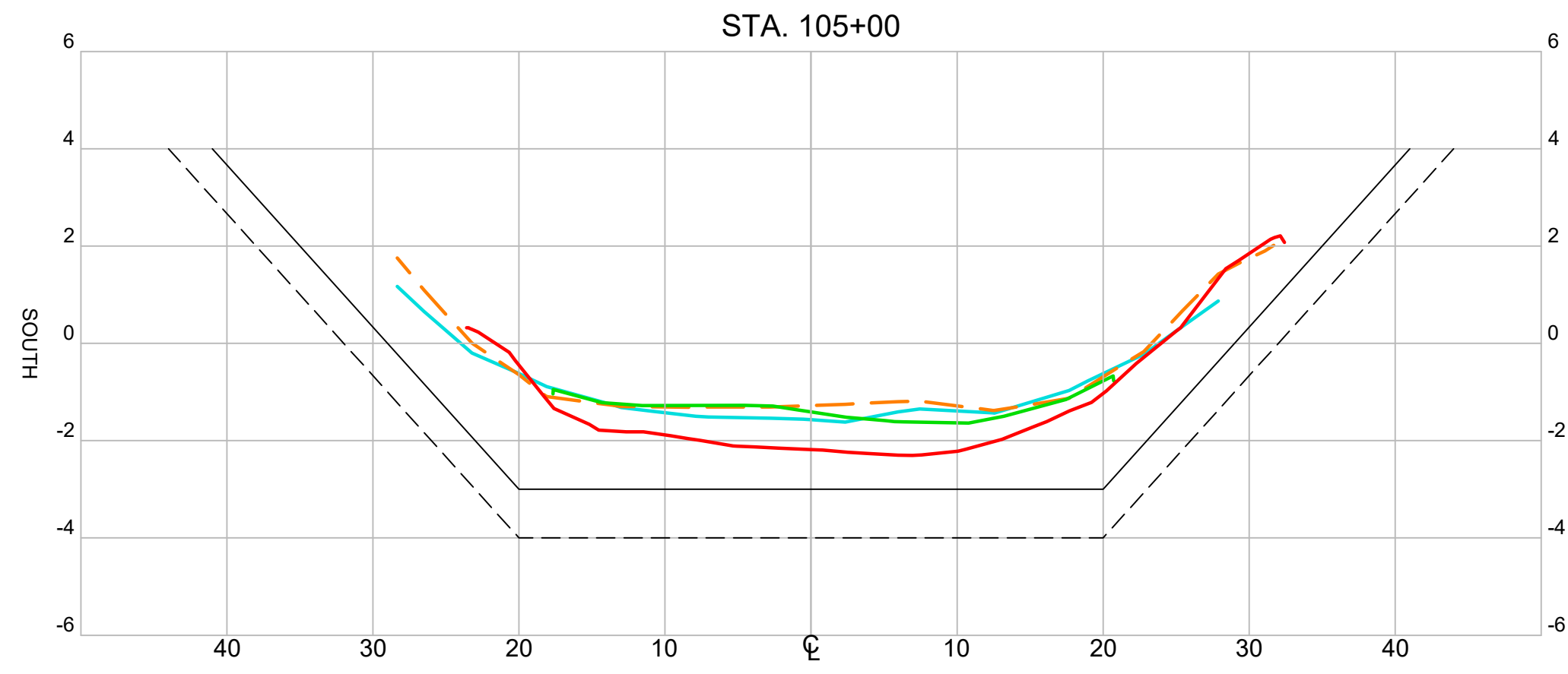
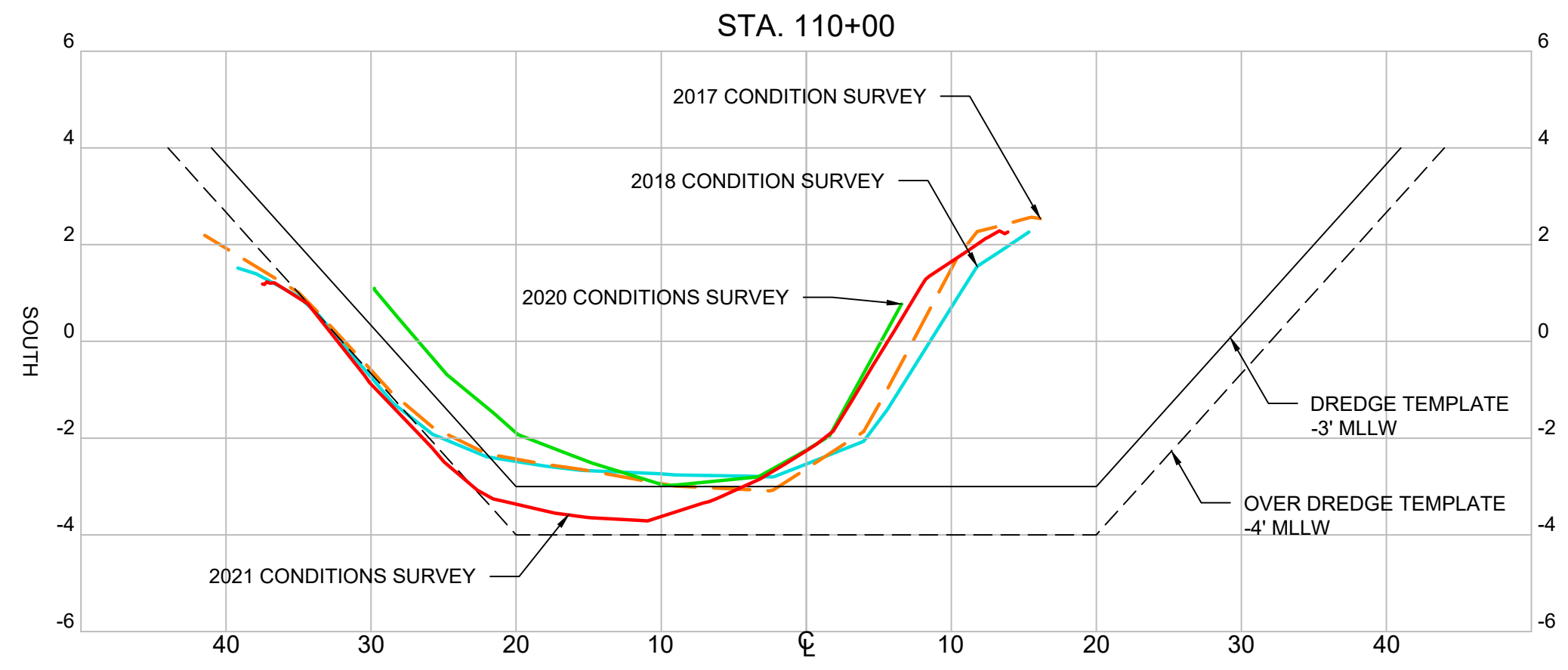
**SV-105**

SHEET 7 OF 13





**PLAN VIEW**  
 SCALE: 1" = 60'  
 HORIZONTAL SCALE:  
 0 60' 120'



**BATHYMETRY INDEX SHEET (FT) (MLLW)**

| ID | MIN. EL.    | MAX. EL. | COLOR | ID | MIN. EL.  | MAX. EL. | COLOR |
|----|-------------|----------|-------|----|-----------|----------|-------|
| 1  | <= -10.500' | 218      |       | 16 | -3.500'   | -3.000'  | 160   |
| 2  | -10.500'    | -10.000' | 228   | 17 | -3.000'   | -2.500'  | 150   |
| 3  | -10.000'    | -9.500'  | 238   | 18 | -2.500'   | -2.000'  | 140   |
| 4  | -9.500'     | -9.000'  | 248   | 19 | -2.000'   | -1.500'  | 130   |
| 5  | -9.000'     | -8.500'  | 246   | 20 | -1.500'   | -1.000'  | 120   |
| 6  | -8.500'     | -8.000'  | 244   | 21 | -1.000'   | -0.500'  | 110   |
| 7  | -8.000'     | -7.500'  | 242   | 22 | -0.500'   | 0.000'   | 100   |
| 8  | -7.500'     | -7.000'  | 240   | 23 | 0.000'    | 0.500'   | 90    |
| 9  | -7.000'     | -6.500'  | 230   | 24 | 0.500'    | 1.000'   | 80    |
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| 14 | -4.500'     | -4.000'  | 180   | 29 | 3.000'    | 3.500'   | 66    |
| 15 | -4.000'     | -3.500'  | 170   | 30 | >= 3.500' |          | 68    |

**SECTIONS**  
 HORIZONTAL SCALE: 1" = 10'  
 VERTICAL SCALE: 1" = 3'

| NO. | BY | DATE |
|-----|----|------|
| △   | -  | -    |
| △   | -  | -    |
| △   | -  | -    |
| △   | -  | -    |

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 RECORD DRAWINGS OF COMPLETED CONSTRUCTION CONFORMING TO CONTRACTOR AND/OR OWNERS RECORDS.  
 BY \_\_\_\_\_ DATE \_\_\_\_\_

**NOVATO CREEK**  
**2021 CONDITION HYDROGRAPHIC SURVEY**  
 BEL MARIN KEYS COMMUNITY SERVICES DISTRICT  
 #4 MONTEGO KEY  
 NOVATO, CA 94949

MARIN CALIFORNIA

|          | BY       | DATE          |
|----------|----------|---------------|
| SURVEYED | CINQUINI | JUNE 29, 2021 |
| DRAWN    | HAC      | MAY 27, 2021  |
| DESIGNED | -        | -             |
| CHECKED  | MEC4     | MAY 27, 2021  |

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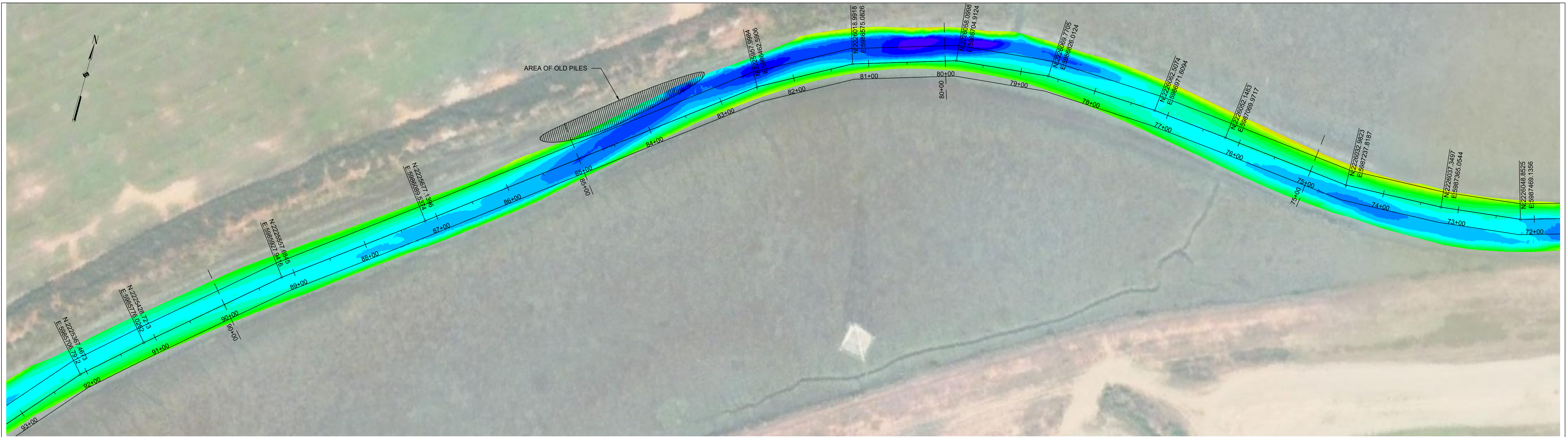
**CHANNEL SITE PLAN AND CROSS SECTIONS**  
**STA 113+00 TO 93+00**

PROJECT ID: 19B038

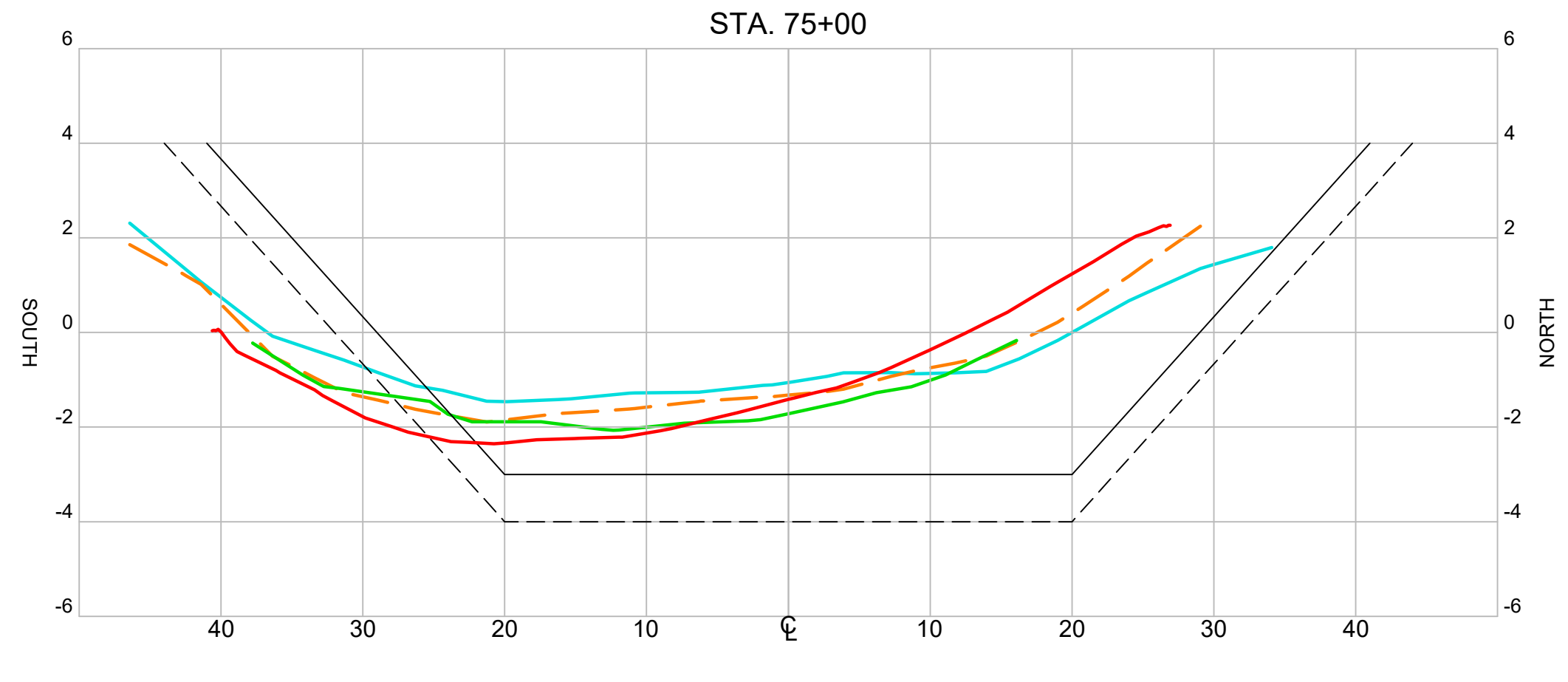
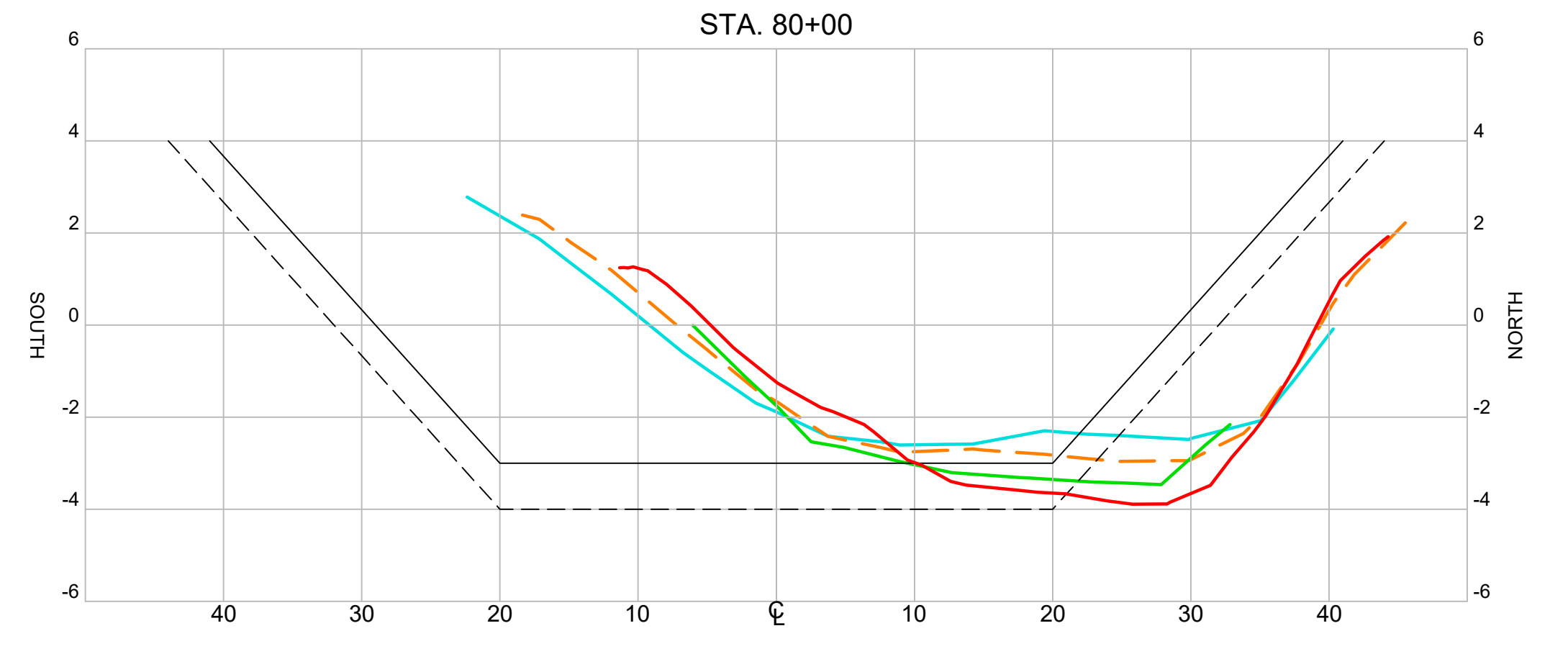
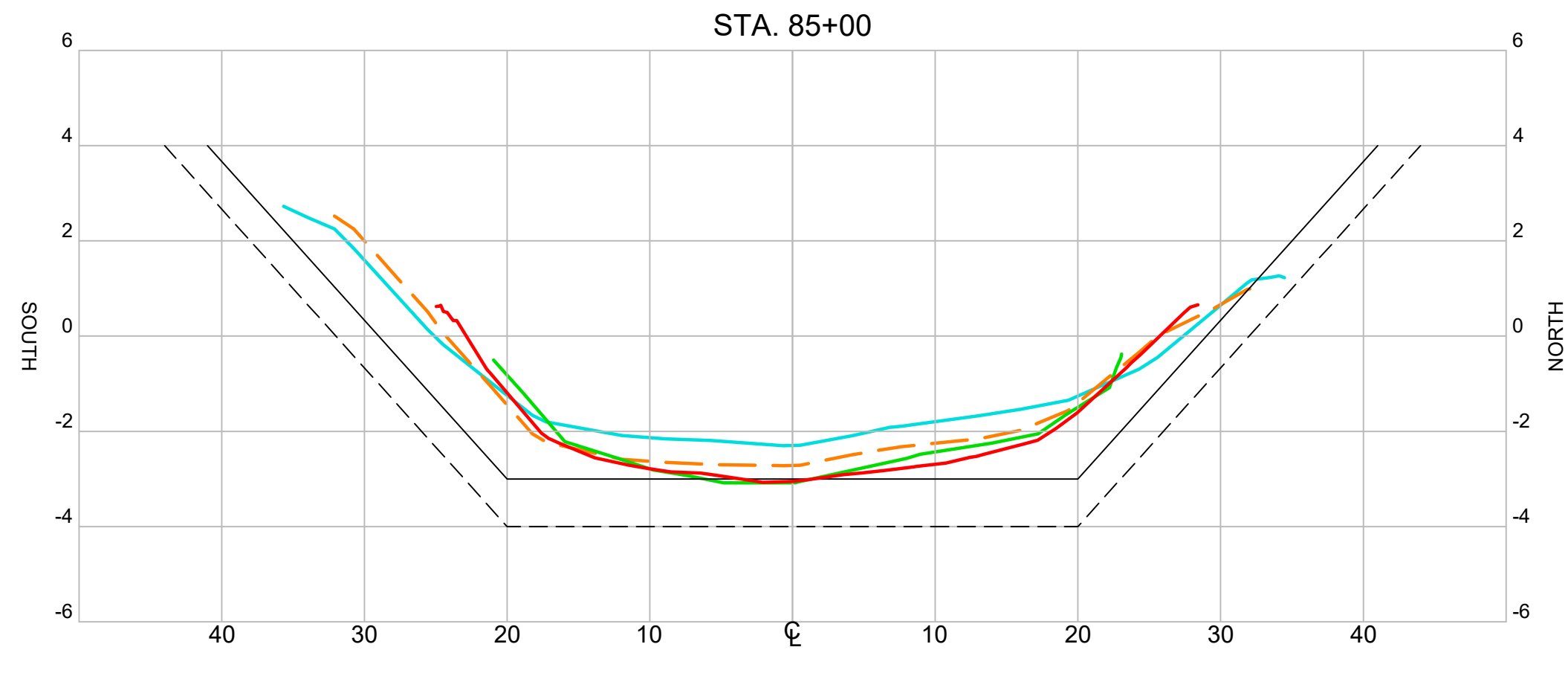
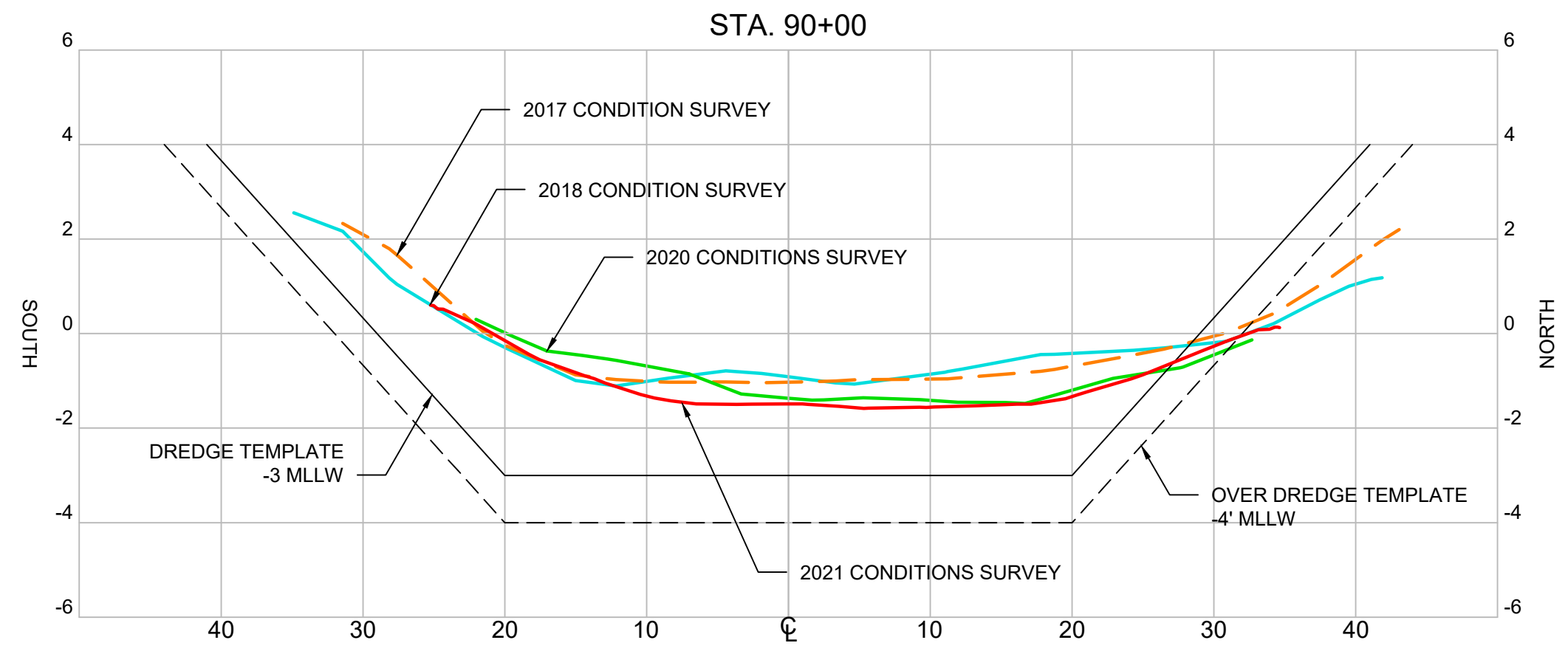
**SV-106**

SHEET 8 OF 13





**PLAN VIEW**  
 SCALE: 1" = 60'  
 HORIZONTAL SCALE:  
 0 60' 120'



**BATHYMETRY INDEX SHEET (FT) (MLLW)**

| ID | MIN. EL.   | MAX. EL. | COLOR | ID | MIN. EL.  | MAX. EL. | COLOR |
|----|------------|----------|-------|----|-----------|----------|-------|
| 1  | <=-10.500' | 218      |       | 16 | -3.500'   | -3.000'  | 160   |
| 2  | -10.500'   | -10.000' | 228   | 17 | -3.000'   | -2.500'  | 150   |
| 3  | -10.000'   | -9.500'  | 238   | 18 | -2.500'   | -2.000'  | 140   |
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| 5  | -9.000'    | -8.500'  | 246   | 20 | -1.500'   | -0.500'  | 120   |
| 6  | -8.500'    | -8.000'  | 244   | 21 | -1.000'   | -0.500'  | 110   |
| 7  | -8.000'    | -7.500'  | 242   | 22 | -0.500'   | 0.000'   | 100   |
| 8  | -7.500'    | -7.000'  | 240   | 23 | 0.000'    | 0.500'   | 90    |
| 9  | -7.000'    | -6.500'  | 230   | 24 | 0.500'    | 1.000'   | 80    |
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| 13 | -5.000'    | -4.500'  | 190   | 28 | 2.500'    | 3.000'   | 64    |
| 14 | -4.500'    | -4.000'  | 180   | 29 | 3.000'    | 3.500'   | 66    |
| 15 | -4.000'    | -3.500'  | 170   | 30 | >= 3.500' |          | 68    |

**SECTIONS**  
 HORIZONTAL SCALE: 1" = 10'  
 VERTICAL SCALE: 1" = 3'  
 HORIZONTAL SCALE:  
 0 10' 20'  
 VERTICAL SCALE:  
 0 3' 6'

| NO. | BY | DATE |
|-----|----|------|
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| △   | -  | -    |
| △   | -  | -    |
| △   | -  | -    |

RECORD DRAWING OF COMPLETED CONSTRUCTION BY:  
 RECORD DRAWINGS OF COMPLETED CONSTRUCTION CONFORMING TO CONTRACTOR AND/OR OWNERS RECORDS.  
 BY \_\_\_\_\_ DATE \_\_\_\_\_

**NOVATO CREEK**  
**2021 CONDITION HYDROGRAPHIC SURVEY**  
 BEL MARIN KEYS COMMUNITY SERVICES DISTRICT  
 #4 MONTEGO KEY  
 NOVATO, CA 94949

MARIN CALIFORNIA

|          | BY       | DATE          |
|----------|----------|---------------|
| SURVEYED | CINQUINI | JUNE 29, 2021 |
| DRAWN    | HAC      | MAY 27, 2021  |
| DESIGNED | -        | -             |
| CHECKED  | MEC4     | MAY 27, 2021  |

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 Novato, CA 94949  
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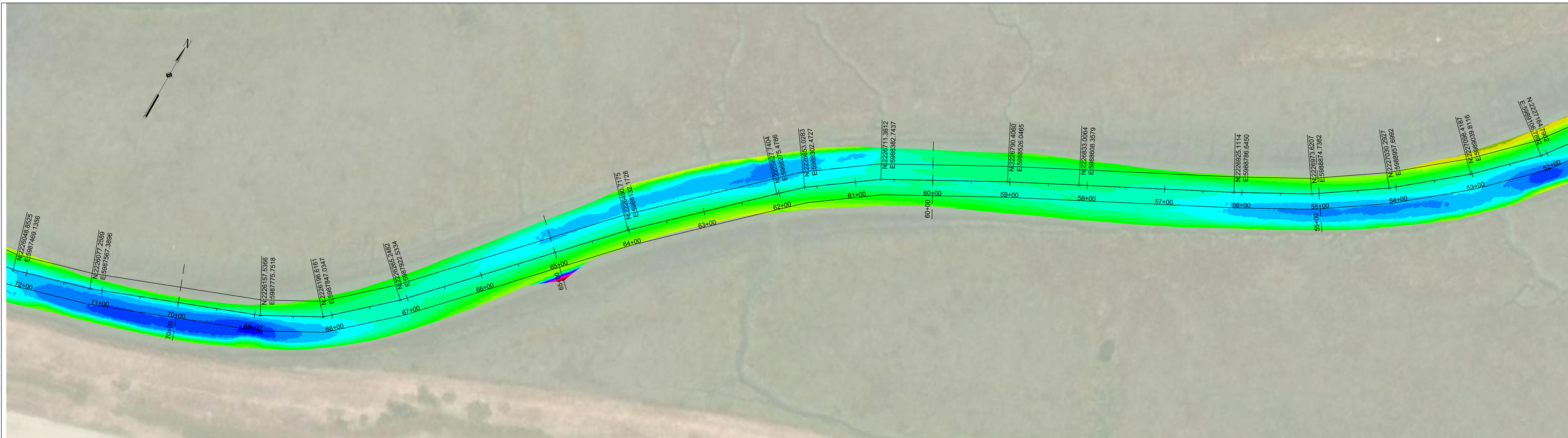
**CHANNEL SITE PLAN AND CROSS SECTIONS**  
**STA 93+00 TO 72+00**

PROJECT ID: 19B038

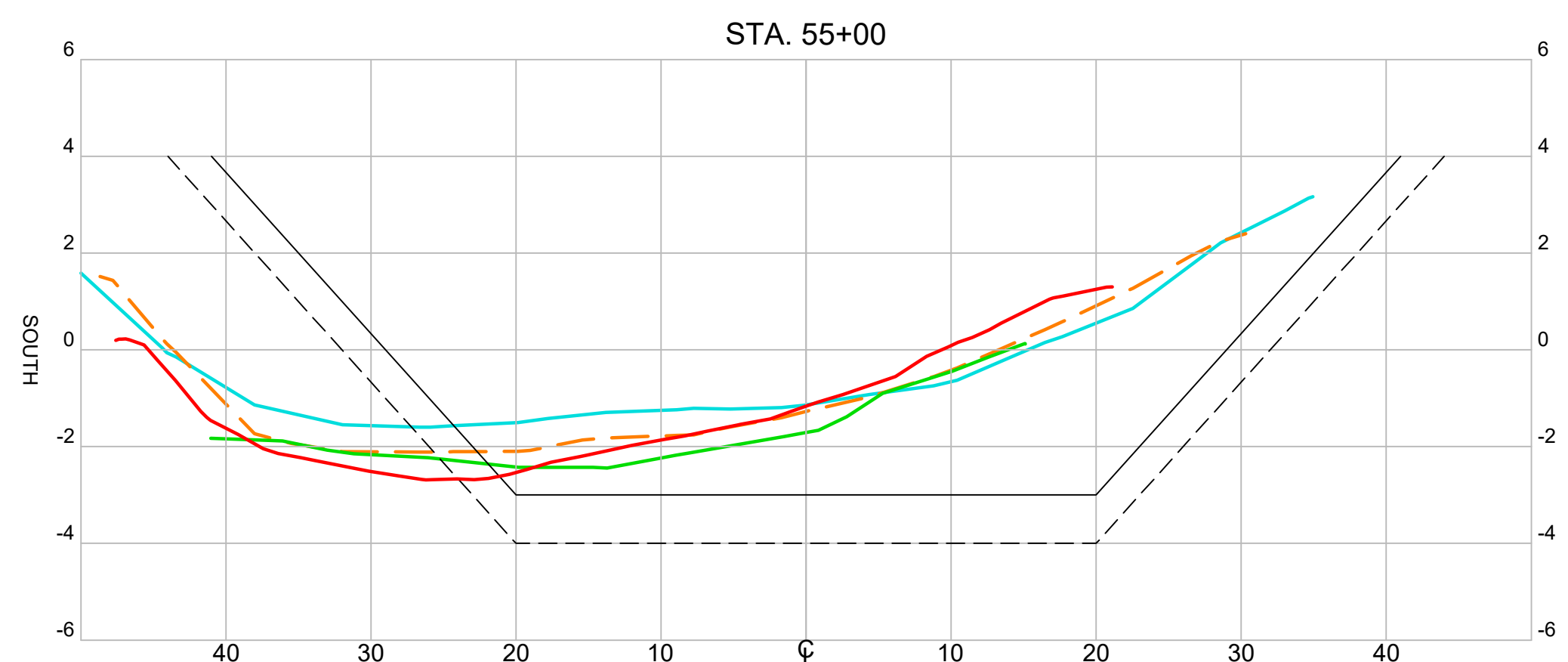
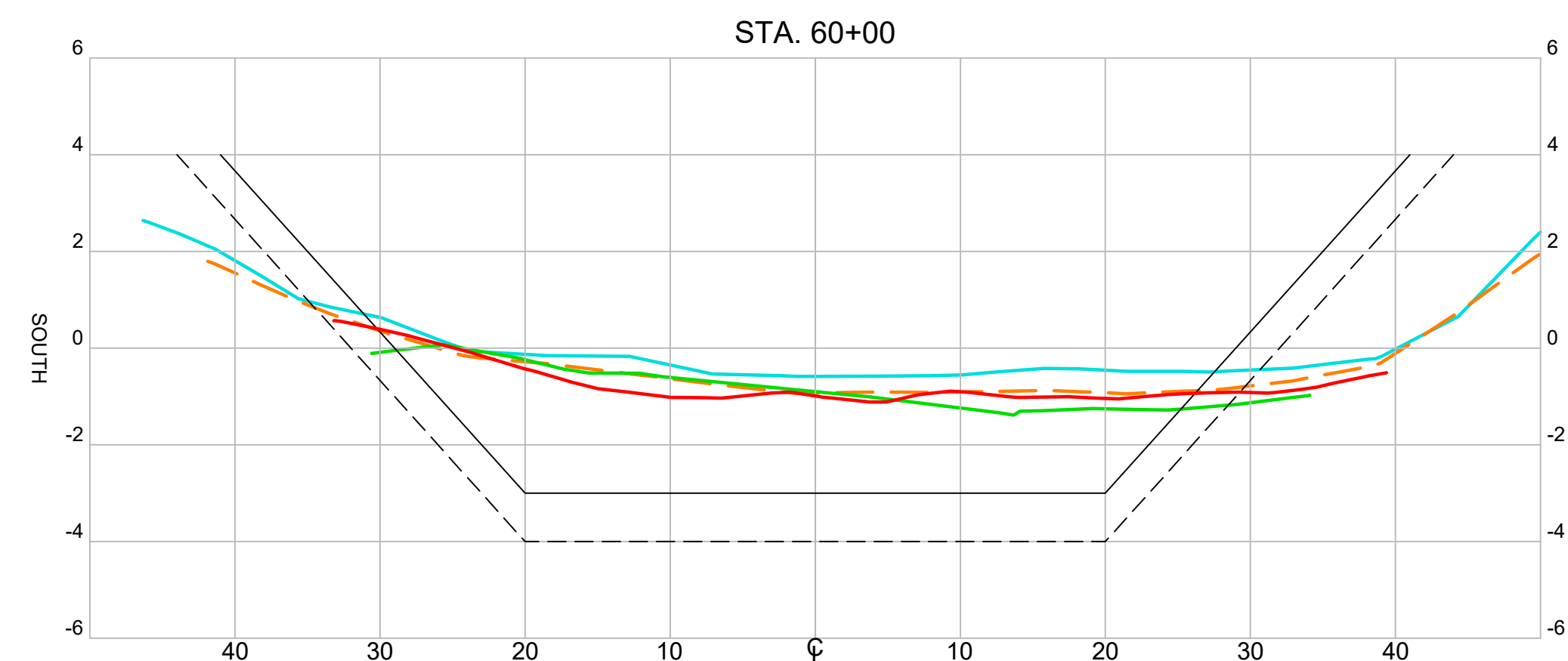
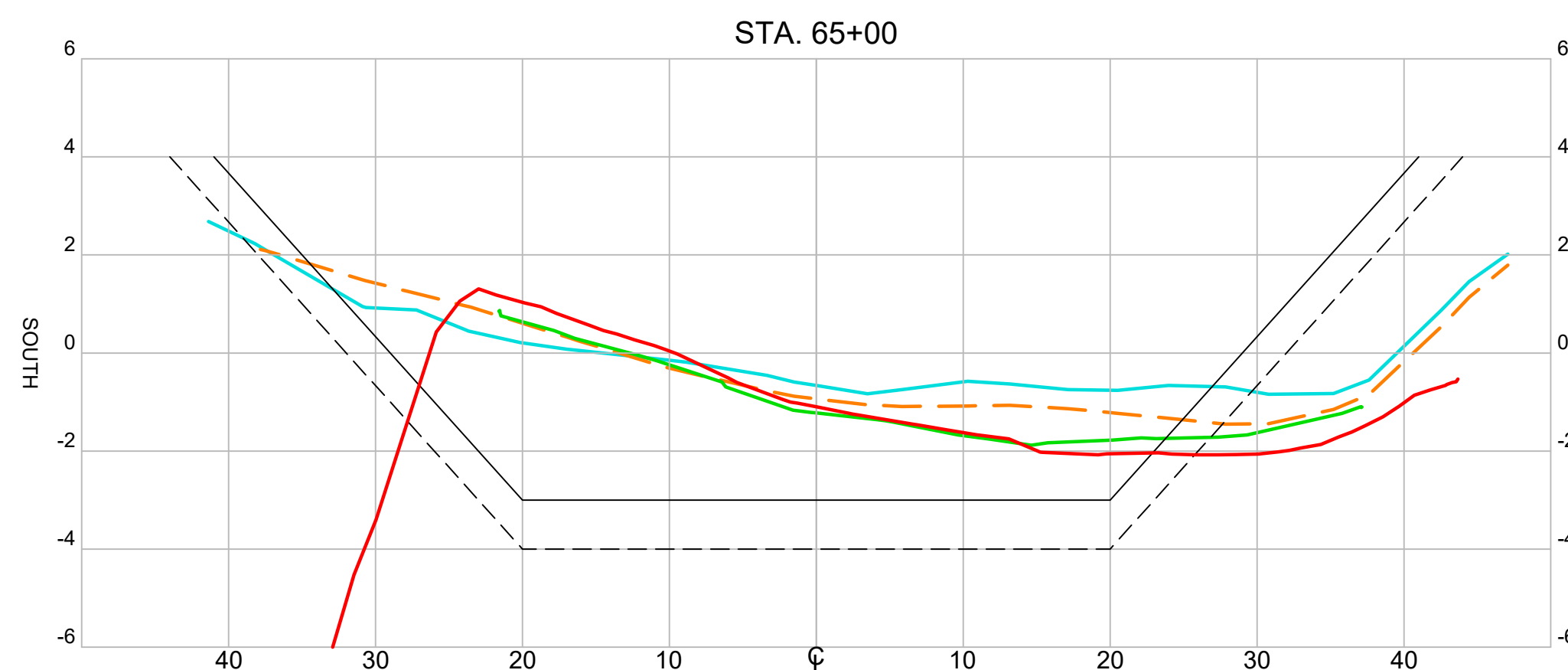
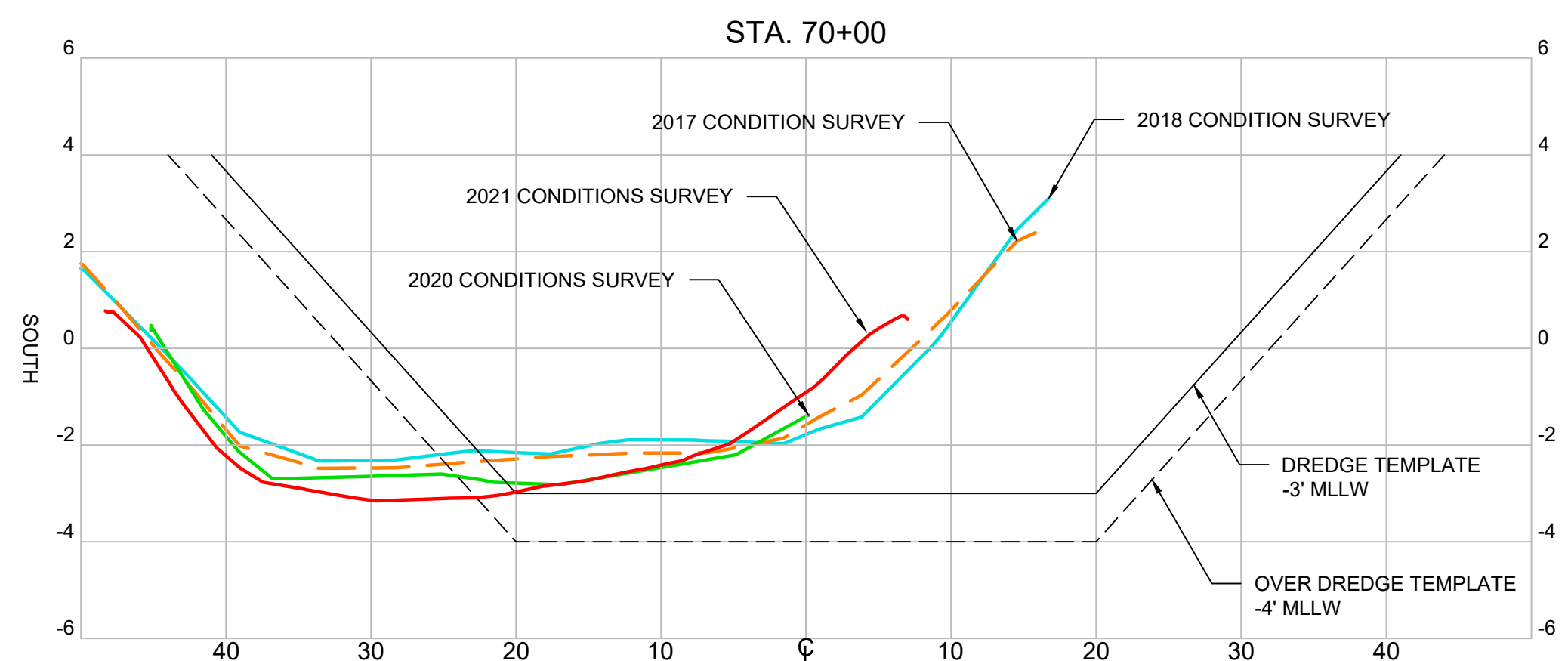
**SV-107**

SHEET 9 OF 13





**PLAN VIEW**  
 SCALE: 1" = 60'  
 HORIZONTAL SCALE:  
 0 60' 120'



**BATHYMETRY INDEX SHEET (FT) (MLLW)**

| ID | MIN. EL.   | MAX. EL. | COLOR | ID | MIN. EL.  | MAX. EL. | COLOR |
|----|------------|----------|-------|----|-----------|----------|-------|
| 1  | <=-10.500' | 218      |       | 16 | -3.500'   | -3.000'  | 160   |
| 2  | -10.500'   | -10.000' | 228   | 17 | -3.000'   | -2.500'  | 150   |
| 3  | -10.000'   | -9.500'  | 238   | 18 | -2.500'   | -2.000'  | 140   |
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**SECTIONS**  
 HORIZONTAL SCALE: 1" = 10'  
 VERTICAL SCALE: 1" = 3'

| NO. | BY | DATE |
|-----|----|------|
| △   | -  | -    |
| △   | -  | -    |
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 BY \_\_\_\_\_ DATE \_\_\_\_\_

**NOVATO CREEK**  
**2021 CONDITION HYDROGRAPHIC SURVEY**  
 BEL MARIN KEYS COMMUNITY SERVICES DISTRICT  
 #4 MONTEGO KEY  
 NOVATO, CA 94949

MARIN CALIFORNIA

|          | BY       | DATE          |
|----------|----------|---------------|
| SURVEYED | CINQUINI | JUNE 29, 2021 |
| DRAWN    | HAC      | MAY 27, 2021  |
| DESIGNED | -        | -             |
| CHECKED  | MEC4     | MAY 27, 2021  |

**Foth**  
 Foth Infrastructure & Environment, LLC  
 384 Bel Marin Keys Boulevard, Suite 140  
 Novato, CA 94949  
 Phone: 415.884.8011

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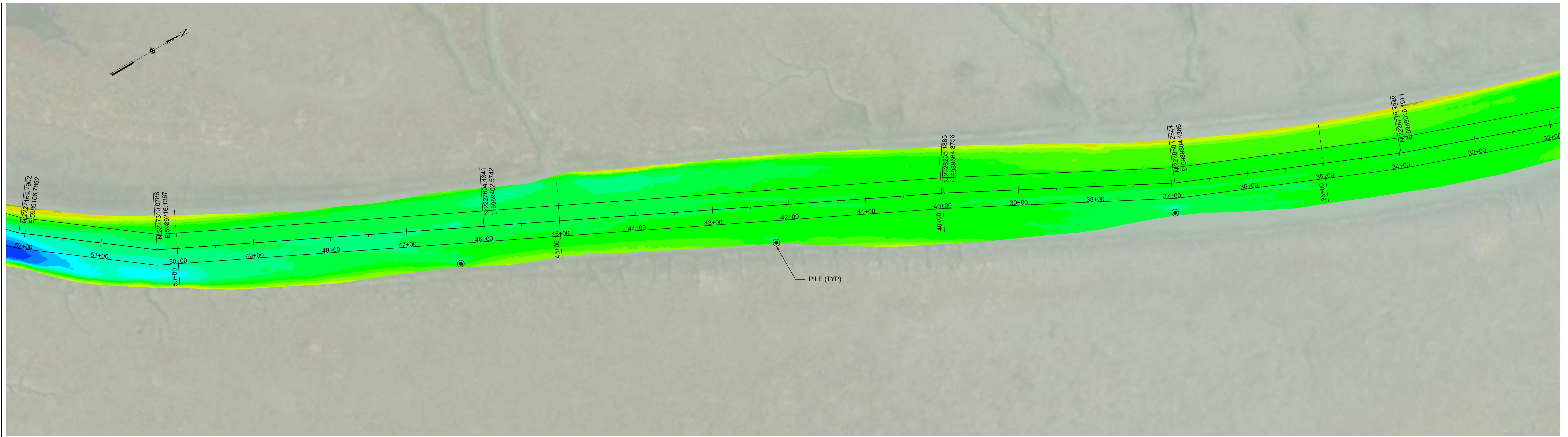
**CHANNEL SITE PLAN AND CROSS SECTIONS**  
**STA 72+00 TO 52+00**

PROJECT ID: 19B038

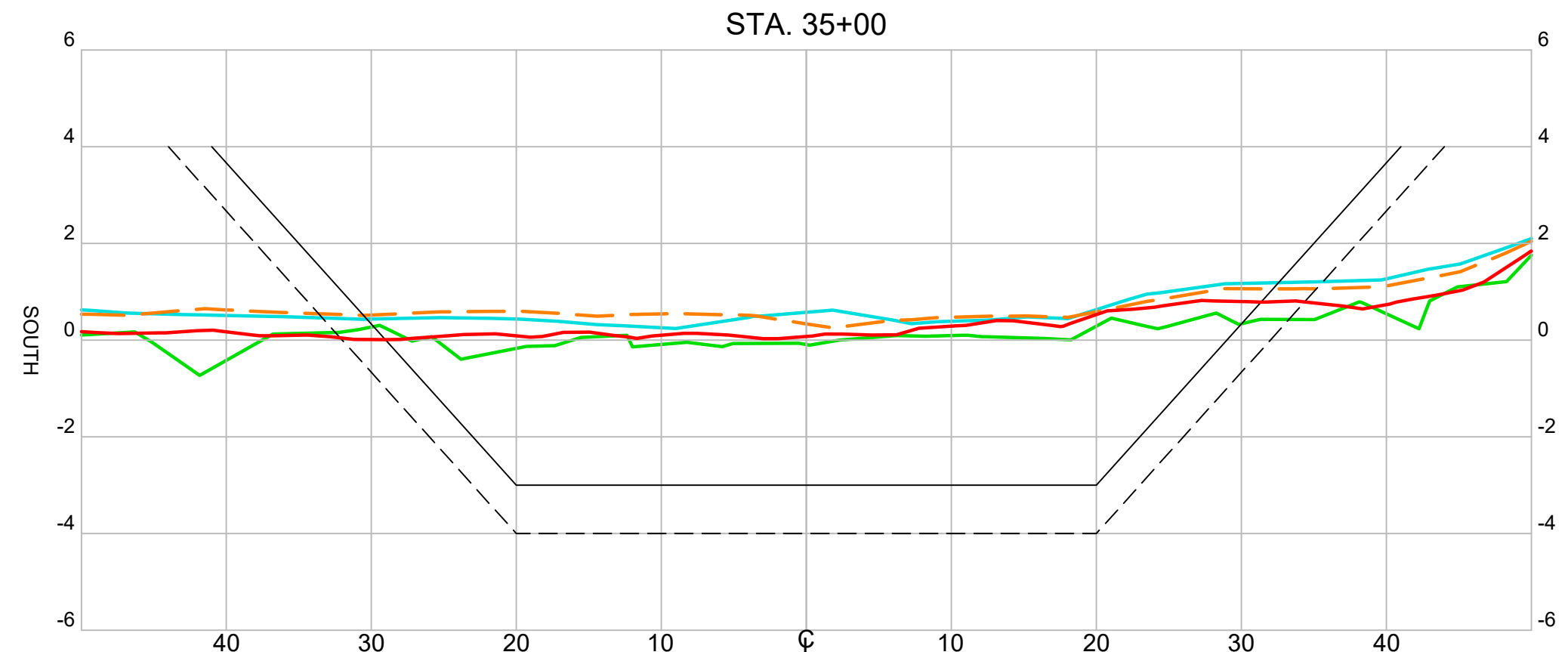
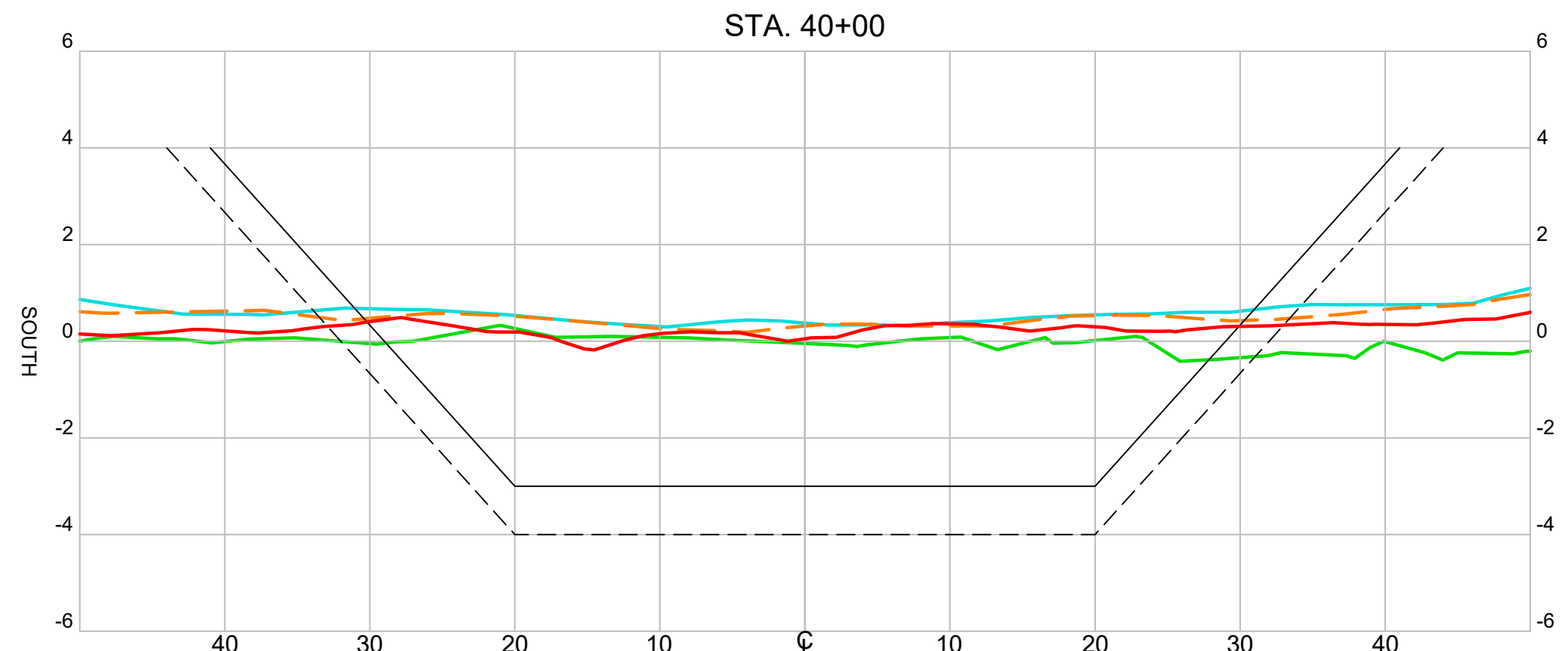
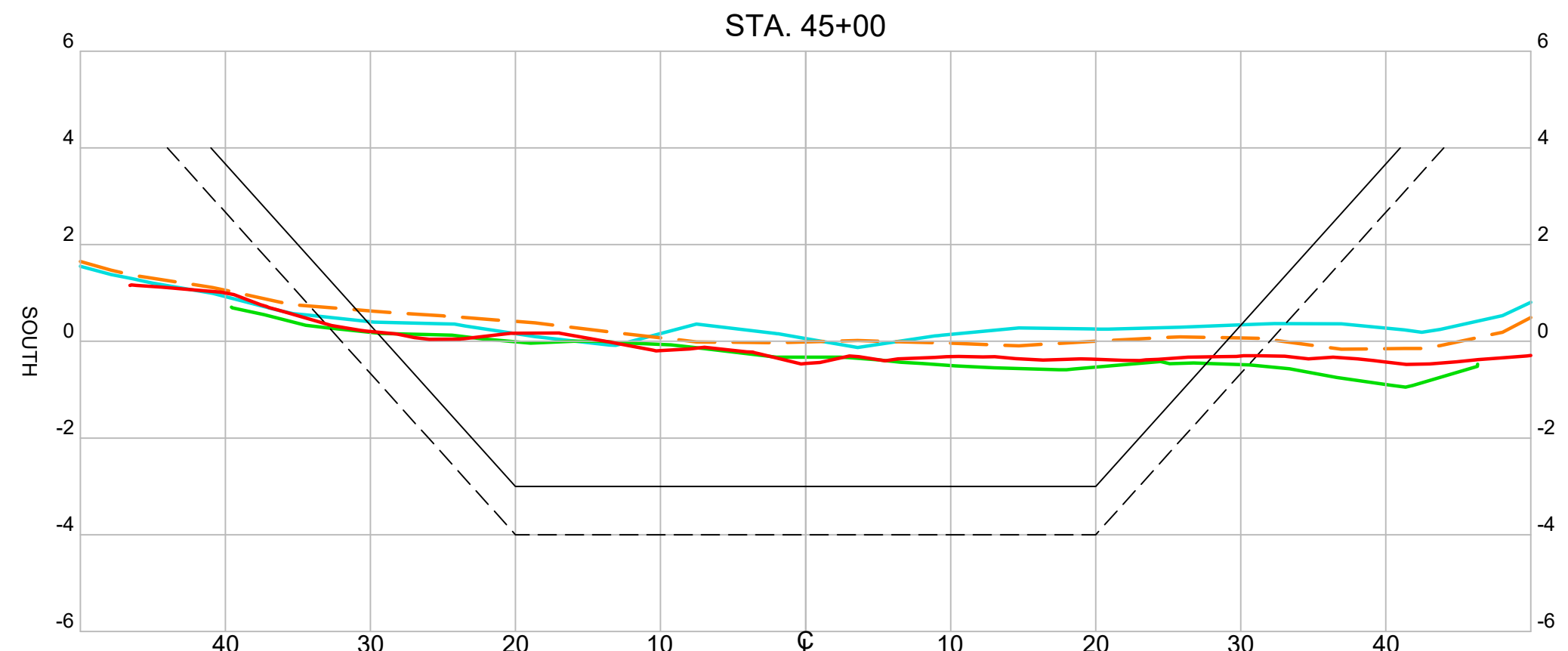
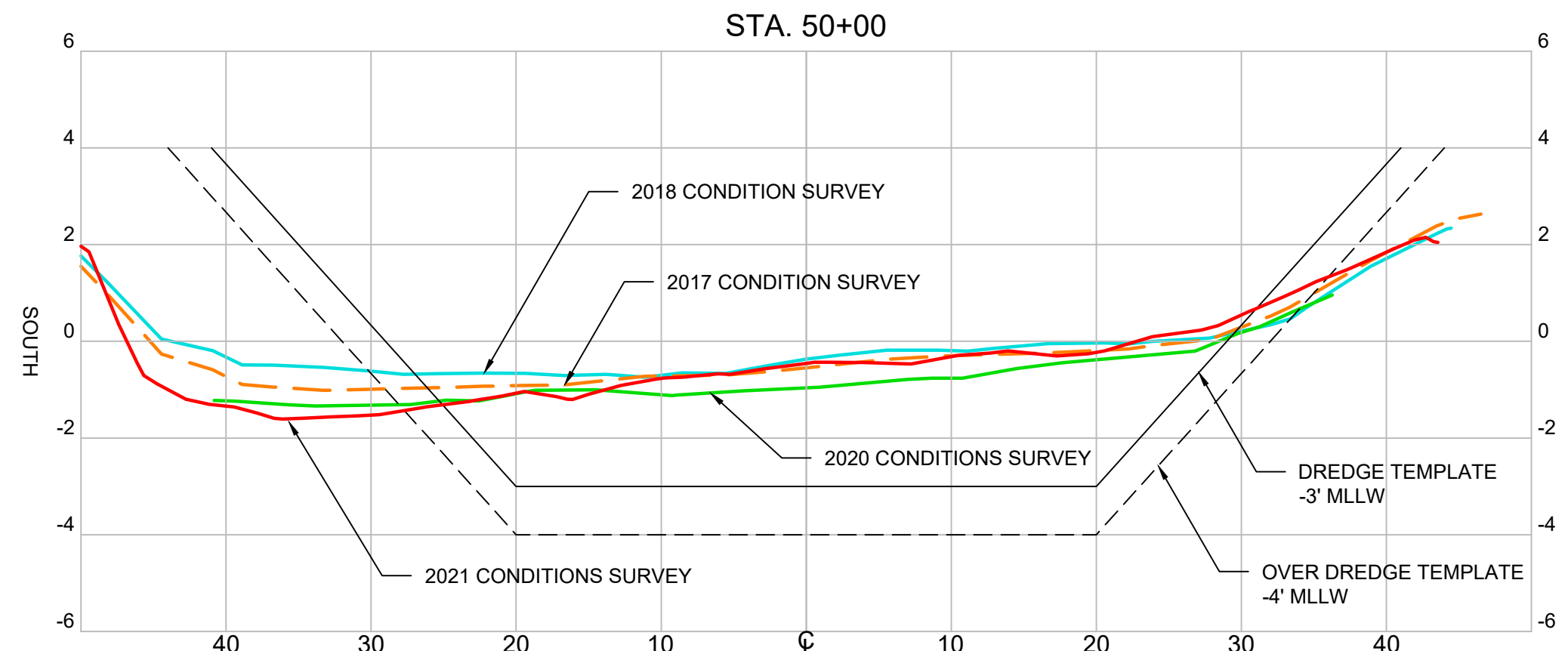
**SV-108**

SHEET 10 OF 13





**PLAN VIEW**  
 SCALE: 1" = 60'  
 HORIZONTAL SCALE:  
 0 60' 120'



**BATHYMETRY INDEX SHEET (FT) (MLLW)**

| ID | MIN. EL.   | MAX. EL. | COLOR | ID | MIN. EL.  | MAX. EL. | COLOR |
|----|------------|----------|-------|----|-----------|----------|-------|
| 1  | <=-10.500' | 218      |       | 16 | -3.500'   | -3.000'  | 160   |
| 2  | -10.500'   | -10.000' | 228   | 17 | -3.000'   | -2.500'  | 150   |
| 3  | -10.000'   | -9.500'  | 238   | 18 | -2.500'   | -2.000'  | 140   |
| 4  | -9.500'    | -9.000'  | 248   | 19 | -2.000'   | -1.500'  | 130   |
| 5  | -9.000'    | -8.500'  | 246   | 20 | -1.500'   | -1.000'  | 120   |
| 6  | -8.500'    | -8.000'  | 244   | 21 | -1.000'   | -0.500'  | 110   |
| 7  | -8.000'    | -7.500'  | 242   | 22 | -0.500'   | 0.000'   | 100   |
| 8  | -7.500'    | -7.000'  | 240   | 23 | 0.000'    | 0.500'   | 90    |
| 9  | -7.000'    | -6.500'  | 230   | 24 | 0.500'    | 1.000'   | 80    |
| 10 | -6.500'    | -6.000'  | 220   | 25 | 1.000'    | 1.500'   | 70    |
| 11 | -6.000'    | -5.500'  | 210   | 26 | 1.500'    | 2.000'   | 60    |
| 12 | -5.500'    | -5.000'  | 200   | 27 | 2.000'    | 2.500'   | 62    |
| 13 | -5.000'    | -4.500'  | 190   | 28 | 2.500'    | 3.000'   | 64    |
| 14 | -4.500'    | -4.000'  | 180   | 29 | 3.000'    | 3.500'   | 66    |
| 15 | -4.000'    | -3.500'  | 170   | 30 | >= 3.500' |          | 68    |

**SECTIONS**  
 HORIZONTAL SCALE: 1" = 10'  
 VERTICAL SCALE: 1" = 3'

| NO. | BY | DATE |
|-----|----|------|
| △   | -  | -    |
| △   | -  | -    |
| △   | -  | -    |
| △   | -  | -    |

RECORD DRAWING OF COMPLETED CONSTRUCTION BY:  
 RECORD DRAWINGS OF COMPLETED CONSTRUCTION CONFORMING TO CONTRACTOR AND/OR OWNERS RECORDS.  
 BY \_\_\_\_\_ DATE \_\_\_\_\_

**NOVATO CREEK**  
**2021 CONDITION HYDROGRAPHIC SURVEY**  
 BEL MARIN KEYS COMMUNITY SERVICES DISTRICT  
 #4 MONTEGO KEY  
 NOVATO, CA 94949

MARIN CALIFORNIA

|          | BY       | DATE          |
|----------|----------|---------------|
| SURVEYED | CINQUINI | JUNE 29, 2021 |
| DRAWN    | HAC      | MAY 27, 2021  |
| DESIGNED | -        | -             |
| CHECKED  | MEC4     | MAY 27, 2021  |

**Foth**  
 Foth Infrastructure & Environment, LLC  
 384 Bel Marin Keys Boulevard, Suite 140  
 Novato, CA 94949  
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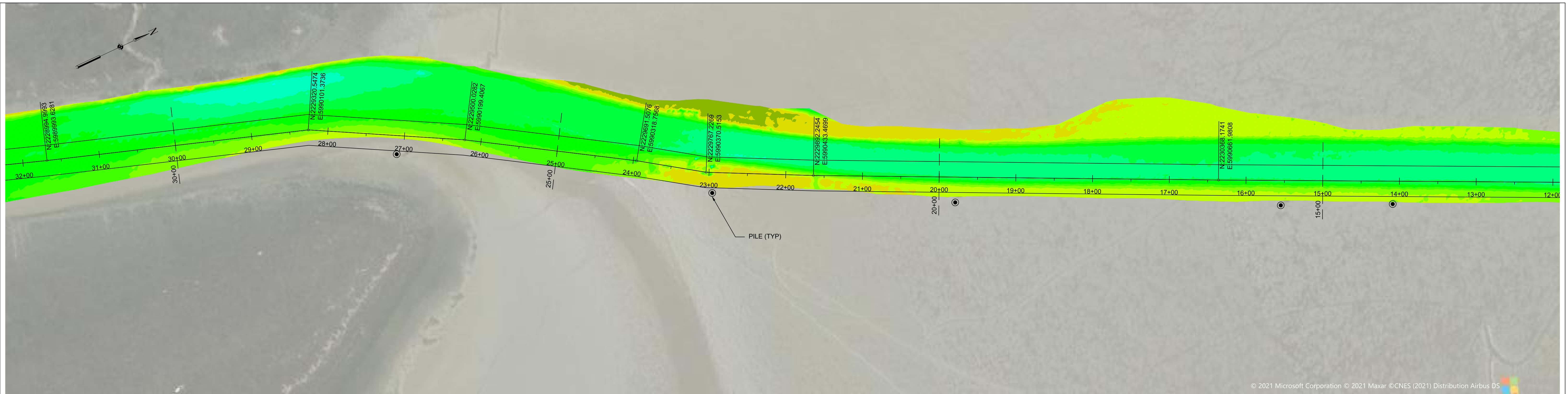
**CHANNEL SITE PLAN AND CROSS SECTIONS**  
**STA 52+00 TO 32+00**

PROJECT ID: 19B038

**SV-109**

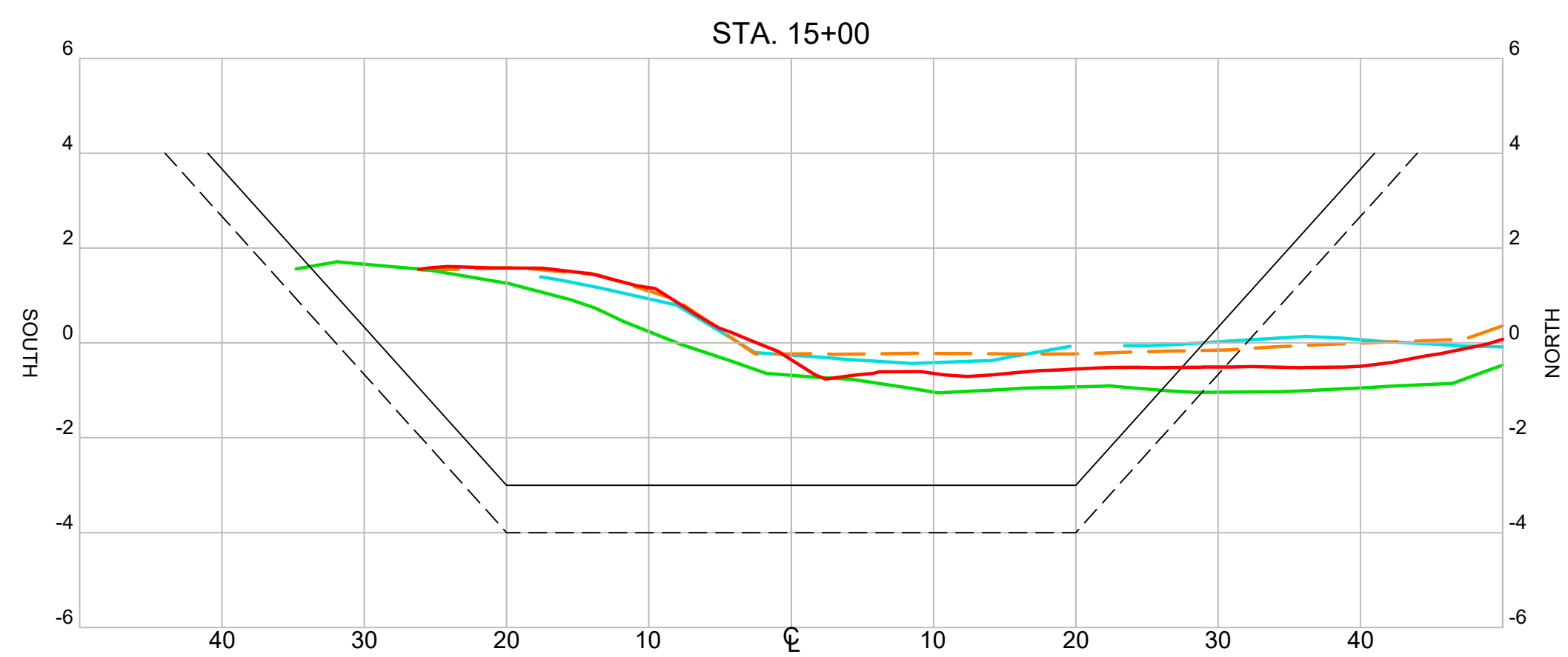
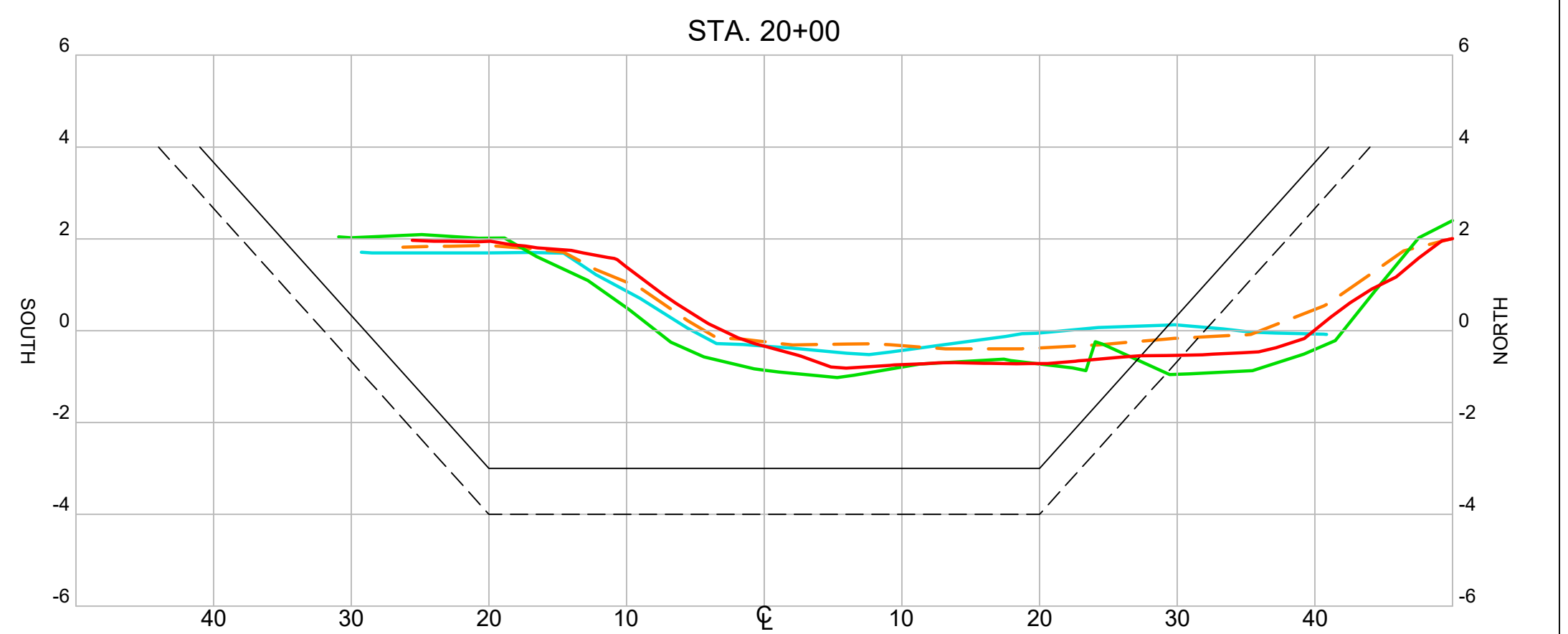
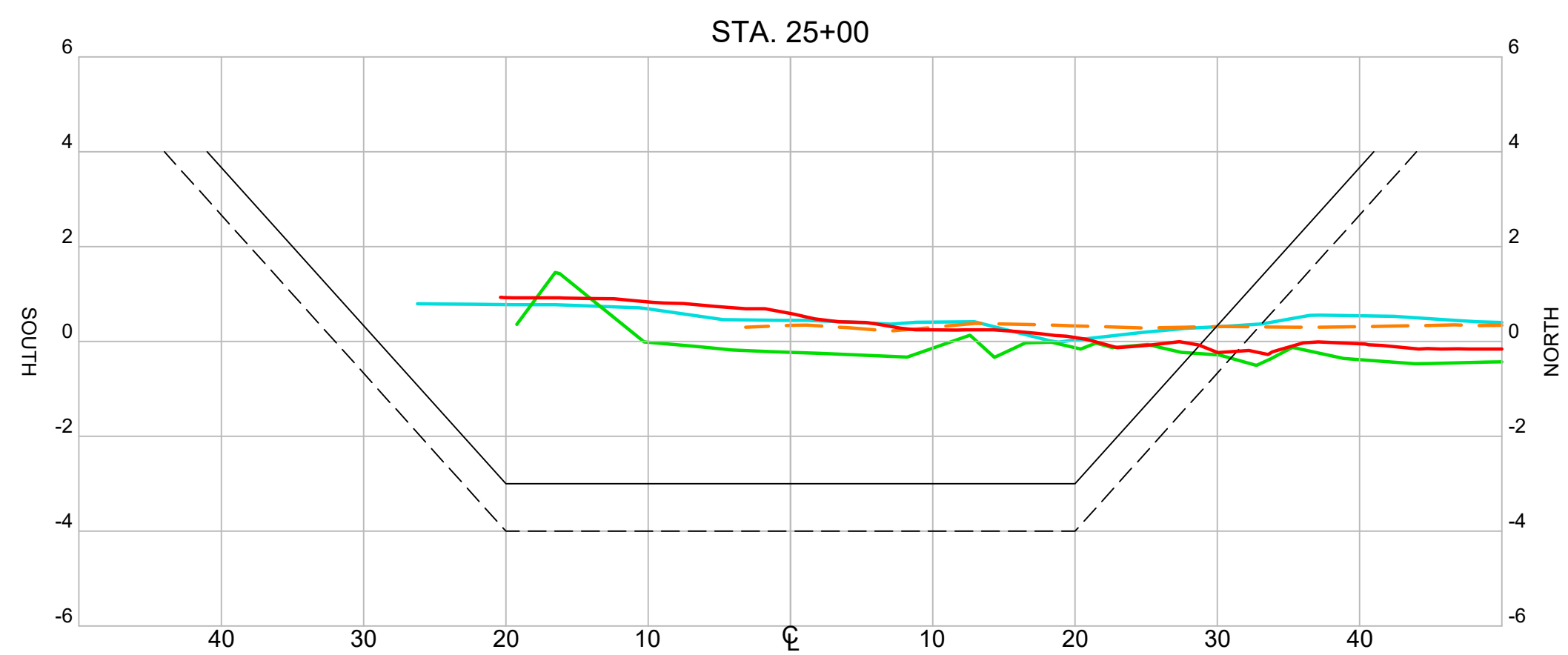
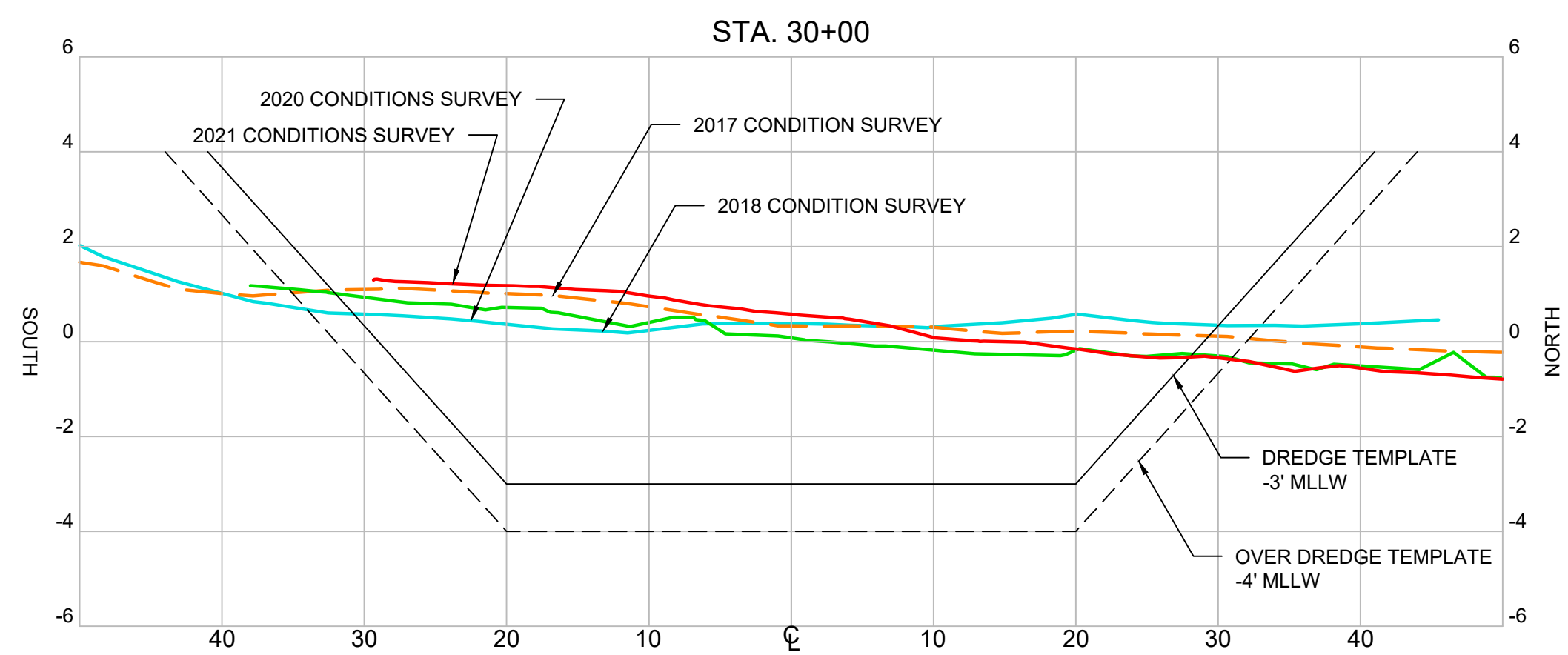
SHEET 11 OF 13





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**PLAN VIEW**  
SCALE: 1" = 60'  
HORIZONTAL SCALE:  
0 60' 120'



**BATHYMETRY INDEX SHEET (FT.) (MLLW)**

| ID | MIN. EL.   | MAX. EL. | COLOR | ID | MIN. EL.  | MAX. EL. | COLOR |
|----|------------|----------|-------|----|-----------|----------|-------|
| 1  | <=-10.500' | 218      |       | 16 | -3.500'   | -3.000'  | 160   |
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| 5  | -9.000'    | -8.500'  | 246   | 20 | -1.500'   | -0.500'  | 120   |
| 6  | -8.500'    | -8.000'  | 244   | 21 | -1.000'   | -0.500'  | 110   |
| 7  | -8.000'    | -7.500'  | 242   | 22 | -0.500'   | 0.000'   | 100   |
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| 9  | -7.000'    | -6.500'  | 230   | 24 | 0.500'    | 1.000'   | 80    |
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| 15 | -4.000'    | -3.500'  | 170   | 30 | >= 3.500' |          | 68    |

**SECTIONS**  
HORIZONTAL SCALE: 1" = 10'  
VERTICAL SCALE: 1" = 3'  
HORIZONTAL SCALE:  
0 10' 20'  
VERTICAL SCALE:  
0 3' 6'

| NO. | BY | DATE |
|-----|----|------|
| △   | -  | -    |
| △   | -  | -    |
| △   | -  | -    |
| △   | -  | -    |

RECORD DRAWING OF COMPLETED CONSTRUCTION BY:  
RECORD DRAWINGS OF COMPLETED CONSTRUCTION CONFORMING TO CONTRACTOR AND/OR OWNERS RECORDS.  
BY \_\_\_\_\_ DATE \_\_\_\_\_

**NOVATO CREEK**  
**2021 CONDITION HYDROGRAPHIC SURVEY**  
BEL MARIN KEYS COMMUNITY SERVICES DISTRICT  
#4 MONTEGO KEY  
NOVATO, CA 94949

MARIN CALIFORNIA

|          | BY       | DATE          |
|----------|----------|---------------|
| SURVEYED | CINQUINI | JUNE 29, 2021 |
| DRAWN    | HAC      | MAY 27, 2021  |
| DESIGNED | -        | -             |
| CHECKED  | MEC4     | MAY 27, 2021  |

**Foth**  
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384 Bel Marin Keys Boulevard, Suite 140  
Novato, CA 94949  
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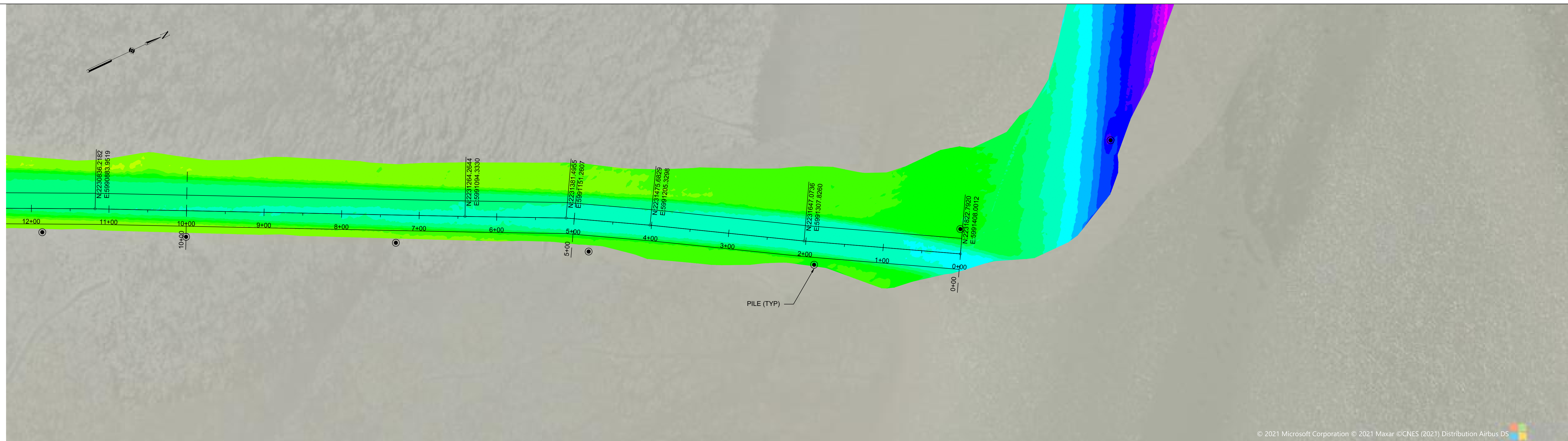
**CHANNEL SITE PLAN AND CROSS SECTIONS**  
**STA 32+00 TO 12+00**

PROJECT ID: 19B038

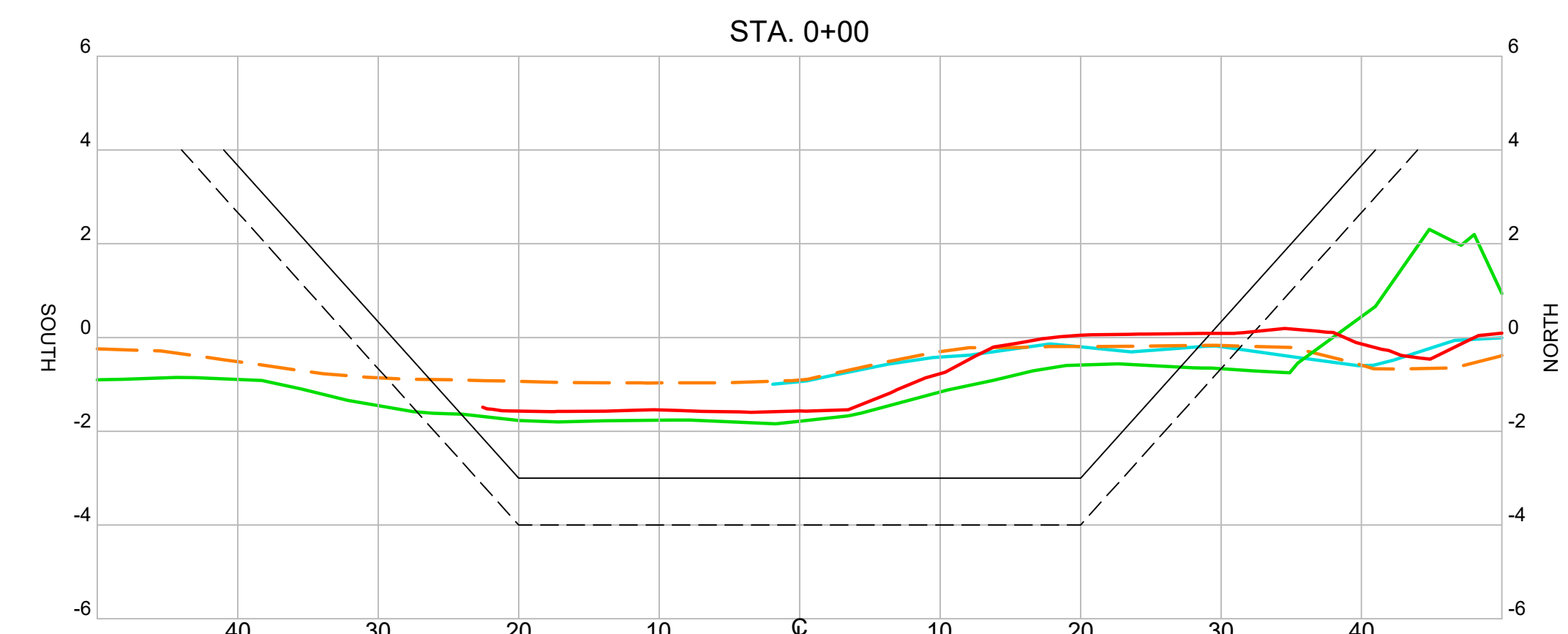
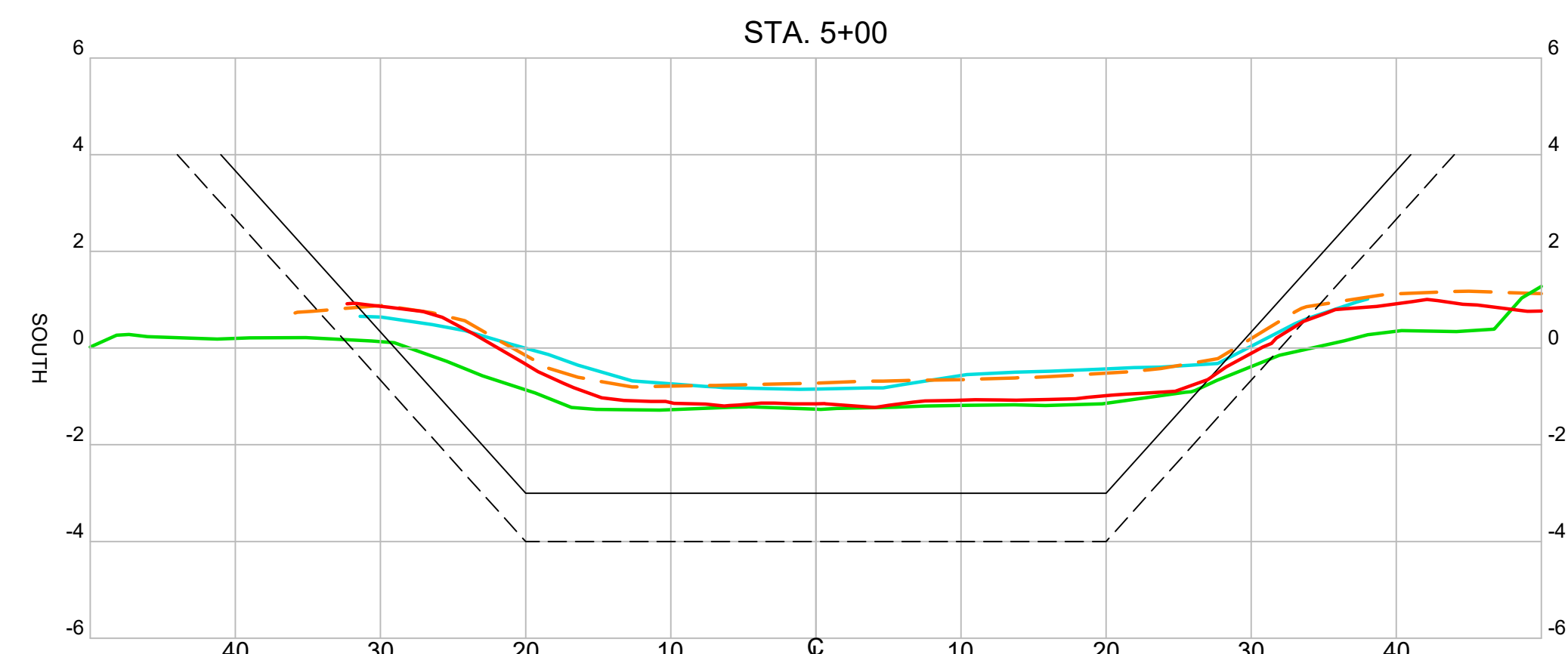
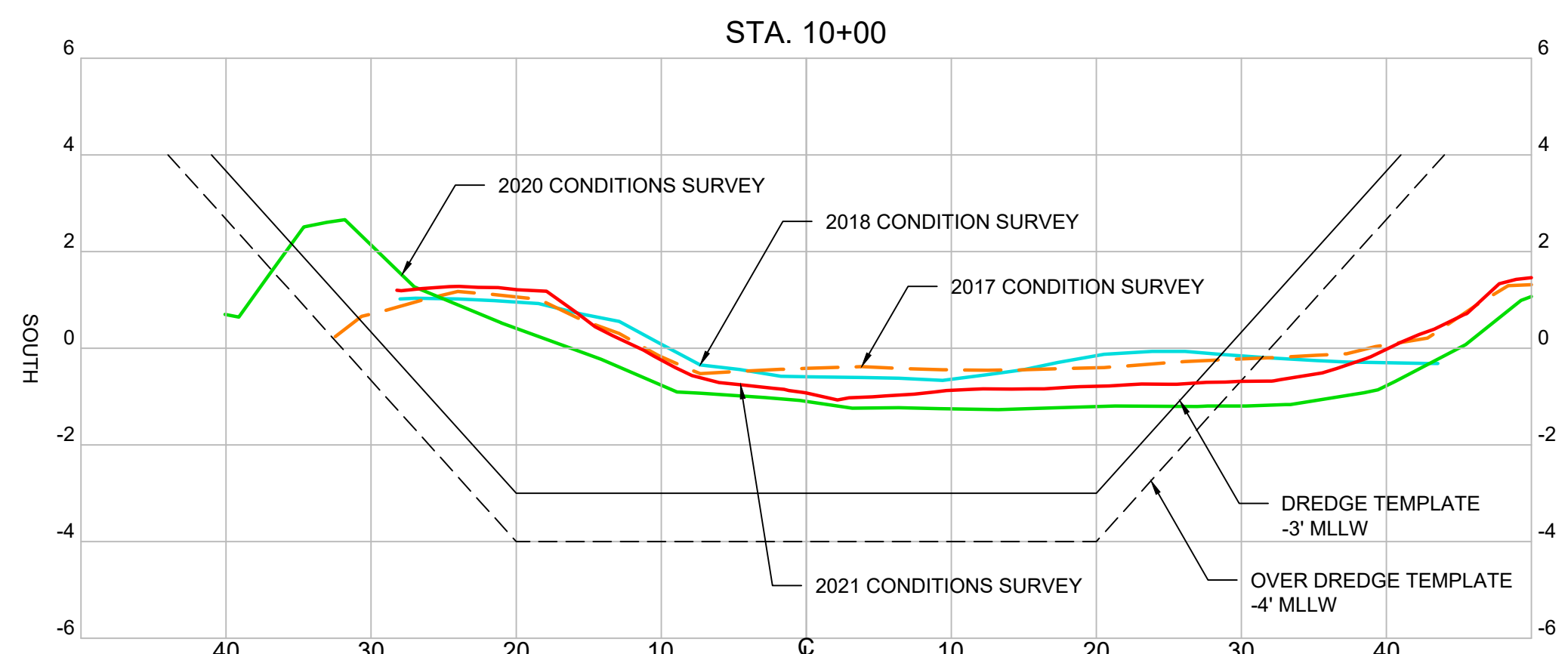
**SV-110**

SHEET 12 OF 13





PLAN VIEW  
SCALE: 1" = 60'  
HORIZONTAL SCALE:  
0 60' 120'



BATHYMETRY INDEX SHEET (FT.) (MLLW)

| ID | MIN. EL. | MAX. EL.   | COLOR | ID | MIN. EL.  | MAX. EL. | COLOR |
|----|----------|------------|-------|----|-----------|----------|-------|
| 1  |          | <=-10.500' | 218   | 16 | -3.500'   | -3.000'  | 160   |
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| 3  | -10.000' | -9.500'    | 238   | 18 | -2.500'   | -2.000'  | 140   |
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| 5  | -9.000'  | -8.500'    | 246   | 20 | -1.500'   | -0.500'  | 120   |
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| 15 | -4.000'  | -3.500'    | 170   | 30 | >= 3.500' |          | 68    |

SECTIONS  
HORIZONTAL SCALE: 1" = 10'  
VERTICAL SCALE: 1" = 3'  
HORIZONTAL SCALE:  
0 10' 20'  
VERTICAL SCALE:  
0 3' 6'

| NO. | BY | DATE |
|-----|----|------|
| △   | -  | -    |
| △   | -  | -    |
| △   | -  | -    |
| △   | -  | -    |

RECORD DRAWING OF COMPLETED CONSTRUCTION BY:  
RECORD DRAWINGS OF COMPLETED CONSTRUCTION CONFORMING TO CONTRACTOR AND/OR OWNERS RECORDS.  
BY \_\_\_\_\_ DATE \_\_\_\_\_

**NOVATO CREEK**  
**2021 CONDITION HYDROGRAPHIC SURVEY**  
BEL MARIN KEYS COMMUNITY SERVICES DISTRICT  
#4 MONTEGO KEY  
NOVATO, CA 94949

MARIN CALIFORNIA

|          | BY       | DATE          |
|----------|----------|---------------|
| SURVEYED | CINQUINI | JUNE 29, 2021 |
| DRAWN    | HAC      | MAY 27, 2021  |
| DESIGNED | -        | -             |
| CHECKED  | MEC4     | MAY 27, 2021  |

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384 Bel Marin Keys Boulevard, Suite 140  
Novato, CA 94949  
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**CHANNEL SITE PLAN AND CROSS SECTIONS**  
**STA 12+00 TO 0+00**

PROJECT ID: 19B038

**SV-111**

SHEET 13 OF 13



NOVATO CREEK:  
DETAILED OUTER  
CHANNEL ALIGNMENT





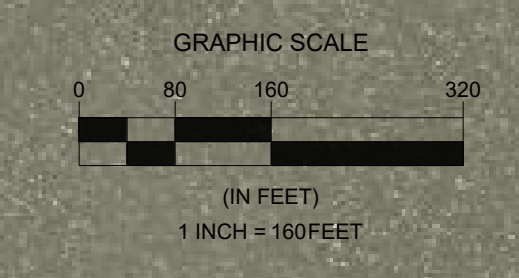
**NOVATO CREEK NAVIGATION  
NOVATO, CA  
NOVATO CREEK PILING TO  
CHANNEL DISTANCE**



DATUM OFFSETS

|       |             |
|-------|-------------|
| MLLW  | NAVD88      |
| 6.12  | -6.29 MHHW  |
| 5.54  | -5.17 MHW   |
| -0.17 | 0.00 NAVD88 |
| 1.03  | 1.20 MLW    |
| 0.00  | -0.17 MLLW  |

OFFSETS TAKEN FROM  
VDATUM ONLINE  
ON 08/06/21  
LAT: 38.109883 LONG: -122.488994



| REVISIONS |             |
|-----------|-------------|
| NO.       | DESCRIPTION |
|           |             |
|           |             |
|           |             |
|           |             |
|           |             |

| DATE OF PREPARATION |      |
|---------------------|------|
| BY                  | DATE |
|                     |      |

|          |     |
|----------|-----|
| SURVEYED |     |
| DRAWN    | TJM |
| DESIGNED |     |
| CHECKED  |     |

SHEET TITLE:  
**SITE PLAN**

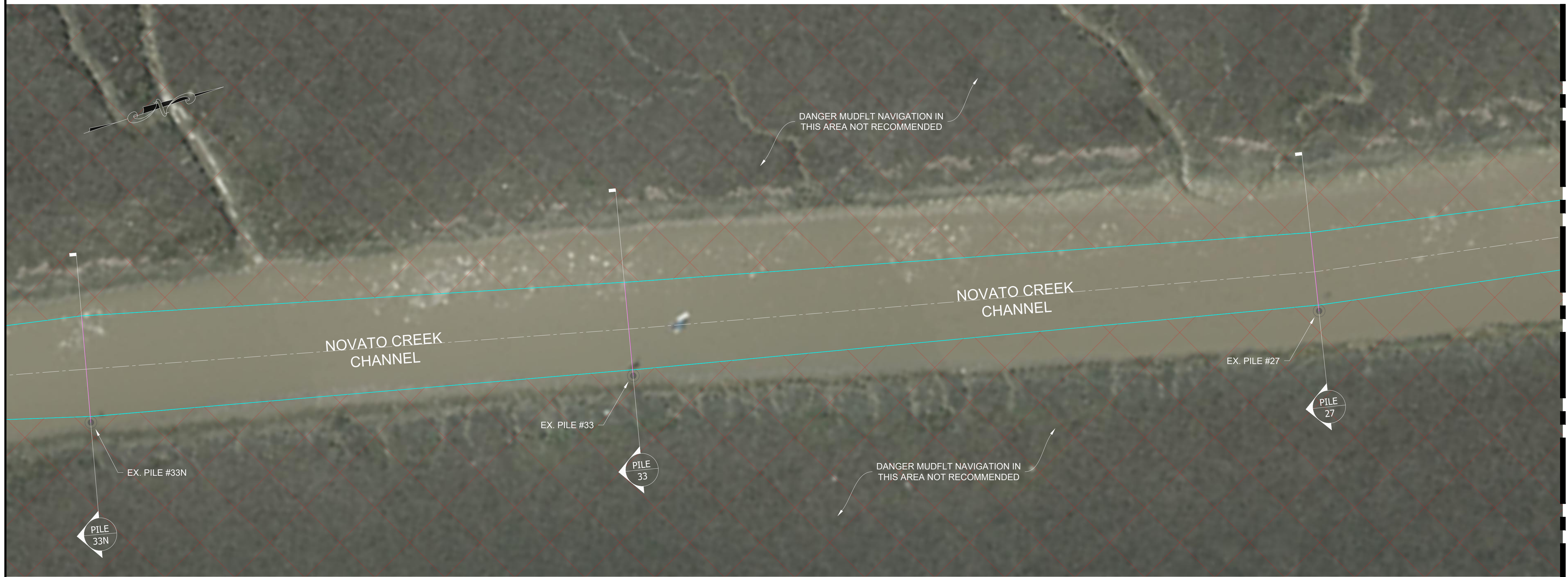
ISSUANCE:  
**(PURPOSE FOR  
ISSUANCE)**

PROJECT NO: 02107.100  
SHEET NUMBER  
**1**



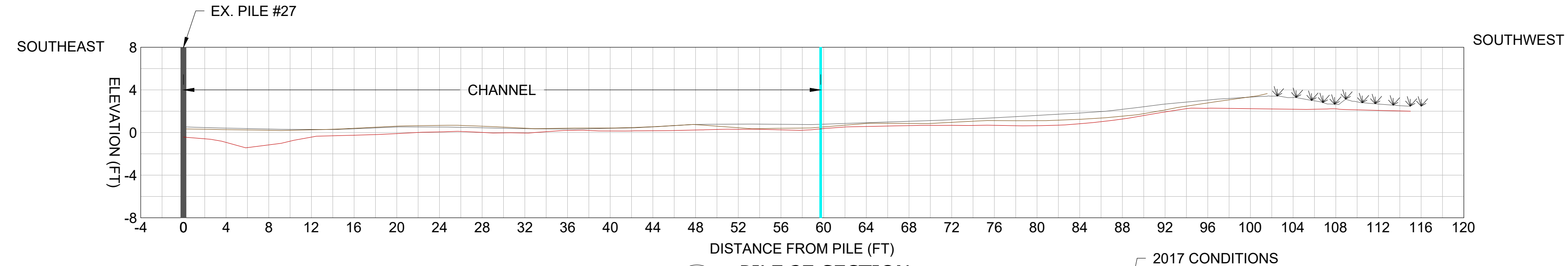


**NOVATO CREEK NAVIGATION  
NOVATO, CA  
NOVATO CREEK PILING TO  
CHANNEL DISTANCE**

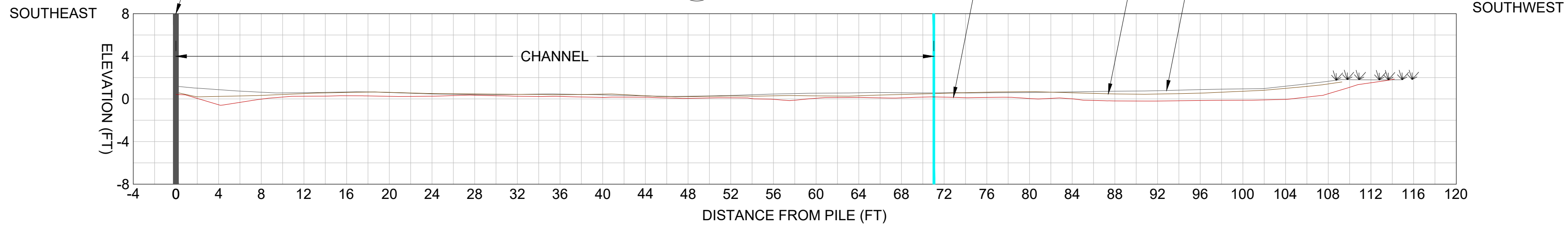


MATCHLINE SHEET 3

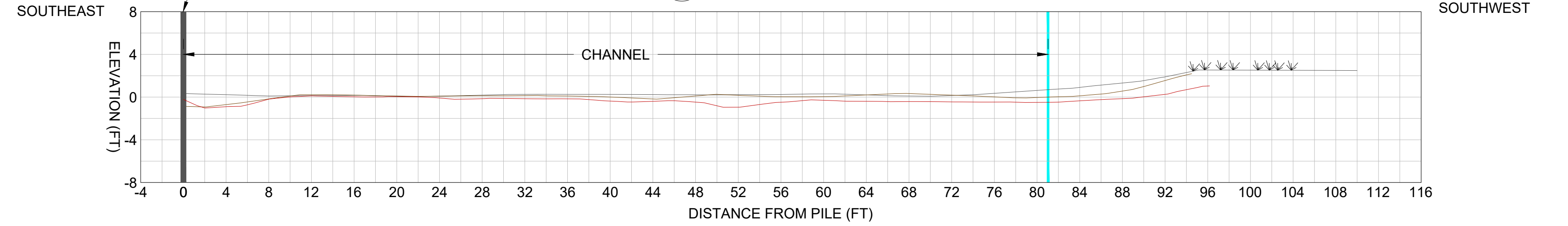
**PILES #27 TO #33N**  
SCALE: 1" = 40'



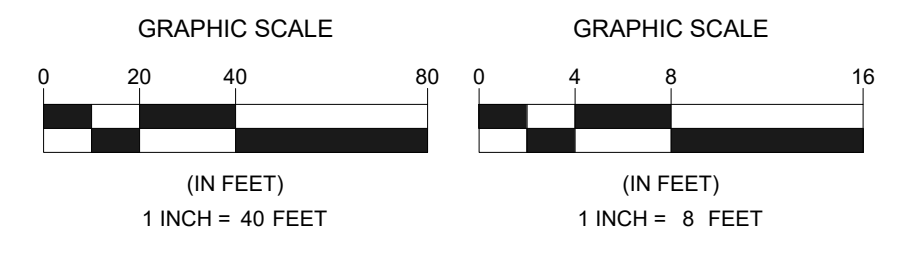
**27 PILE 27 SECTION**  
SCALE: 1" = 8'



**33 PILE 33 SECTION**  
SCALE: 1" = 8'



**33N PILE 33N SECTION**  
SCALE: 1" = 8'

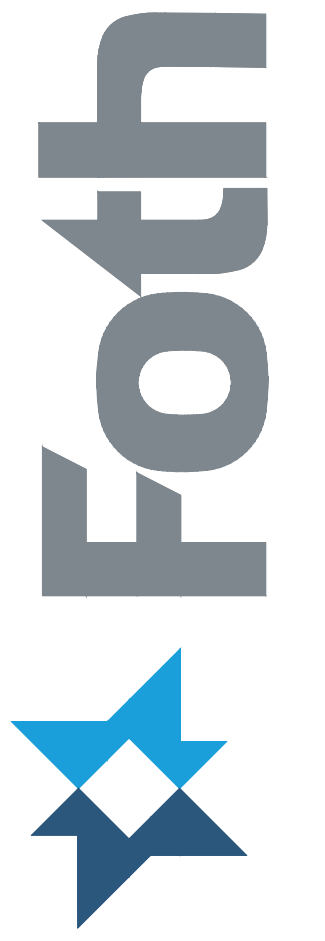


| REVISIONS |             |
|-----------|-------------|
| NO.       | DESCRIPTION |
|           |             |
|           |             |
|           |             |
|           |             |
|           |             |
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| DATE OF PREPARATION |      |  |
|---------------------|------|--|
| BY                  | DATE |  |
|                     |      |  |
|                     |      |  |
|                     |      |  |
|                     |      |  |

|                               |           |
|-------------------------------|-----------|
| SHEET TITLE:                  |           |
| PILE LOCATION SECTIONS        |           |
| ISSUANCE:                     |           |
| <b>(PURPOSE FOR ISSUANCE)</b> |           |
| PROJECT NO:                   | 02107.100 |
| SHEET NUMBER                  | 2         |





**NOVATO CREEK NAVIGATION  
NOVATO, CA  
NOVATO CREEK PILING TO  
CHANNEL DISTANCE**

| REVISIONS |             |
|-----------|-------------|
| NO.       | DESCRIPTION |
|           |             |
|           |             |
|           |             |
|           |             |
|           |             |

| DATE OF PREPARATION |      |
|---------------------|------|
| BY                  | DATE |
|                     |      |

SHEET TITLE:  
**PILE LOCATION  
SECTIONS**

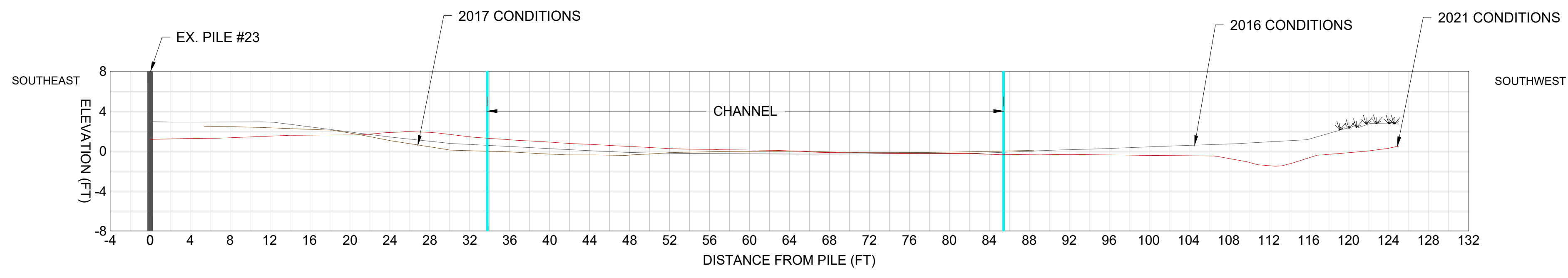
ISSUANCE:  
**(PURPOSE FOR  
ISSUANCE)**

PROJECT NO: 02107.100

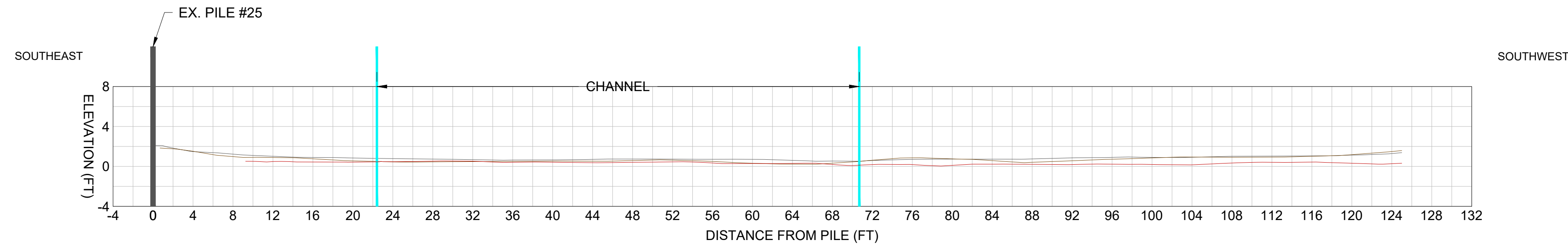
SHEET NUMBER  
**3**



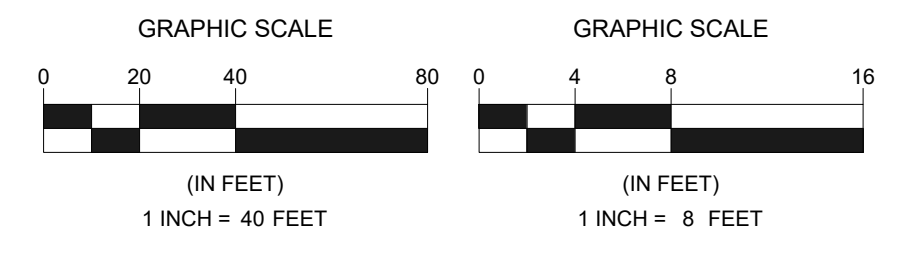
**PILES #23 & #25**  
SCALE: 1" = 40'



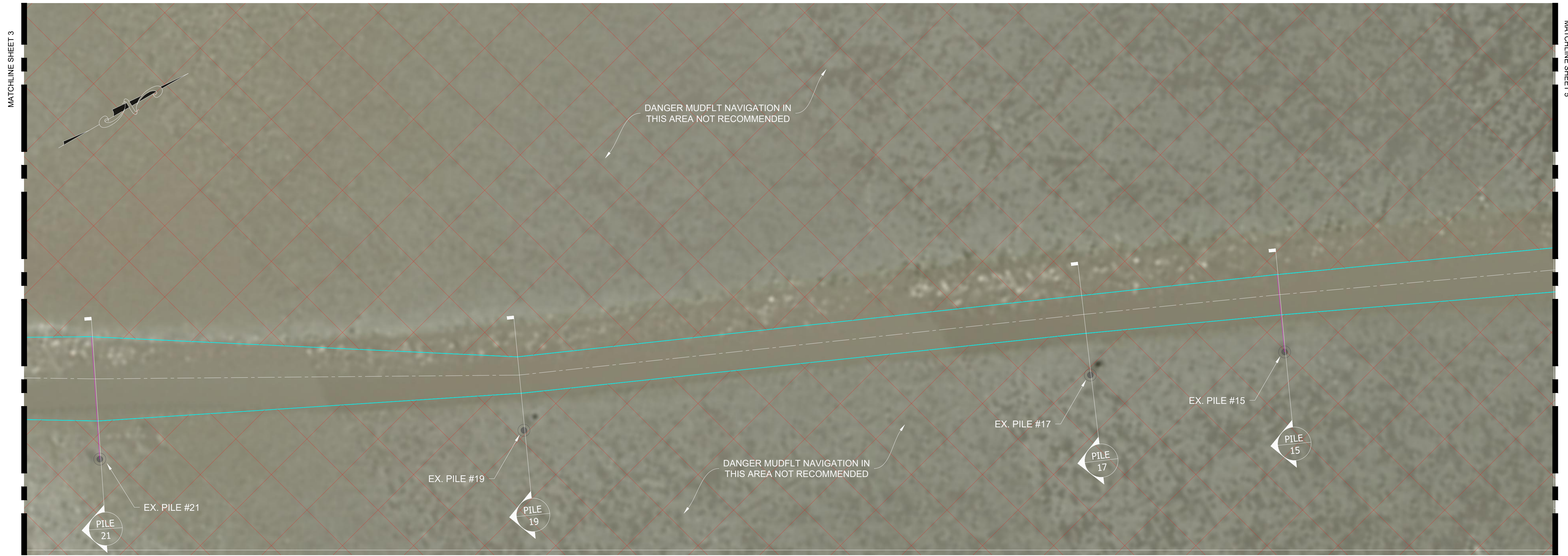
**23 PILE 23 SECTION**  
SCALE: 1" = 8'



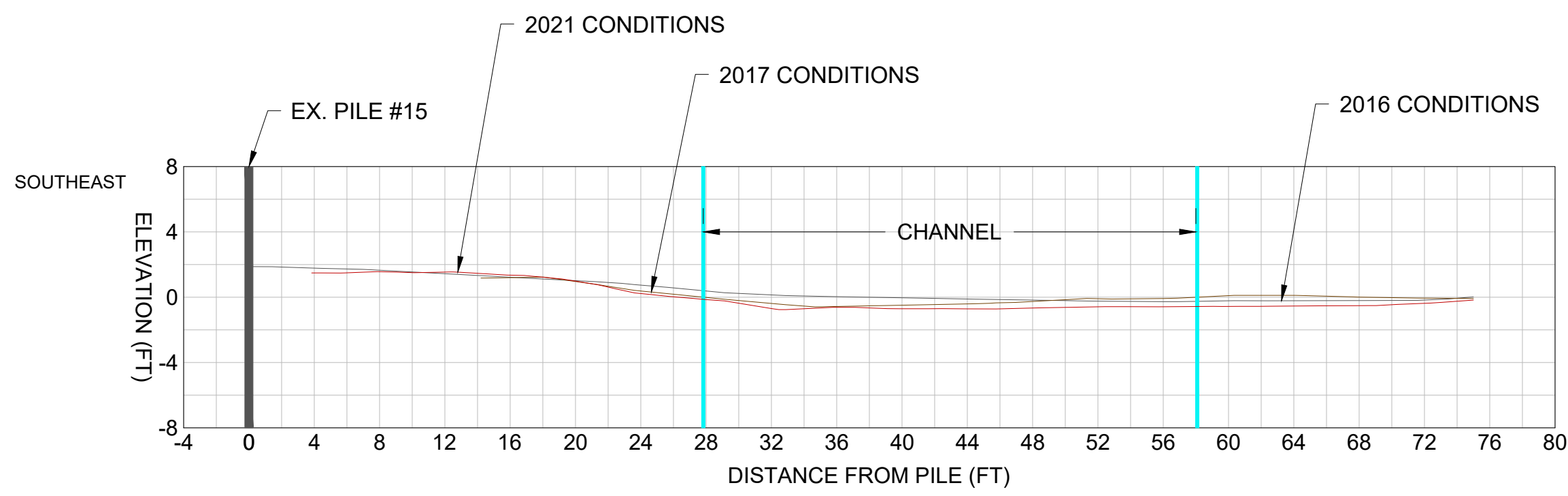
**25 PILE 25 SECTION**  
SCALE: 1" = 8'



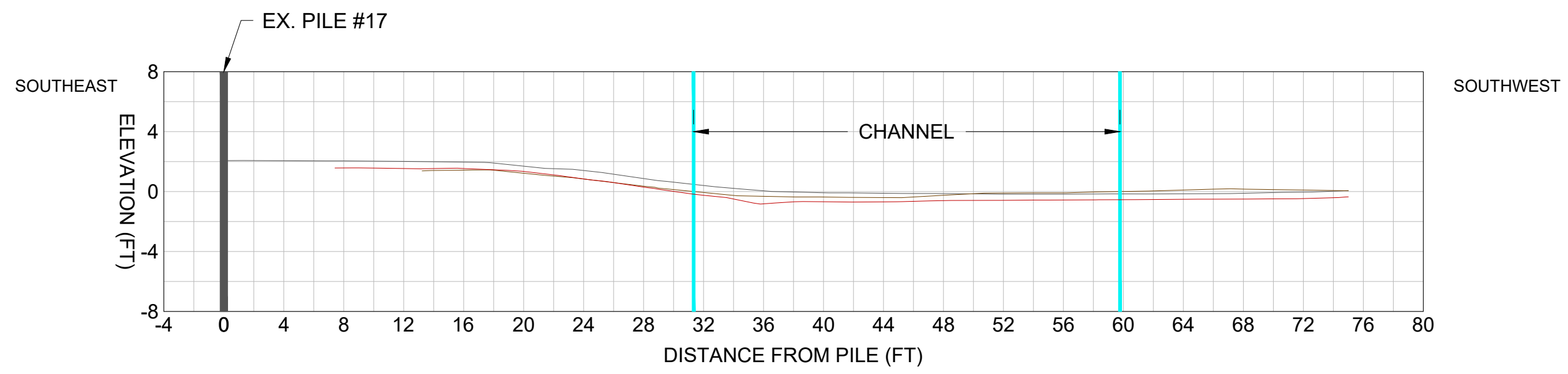




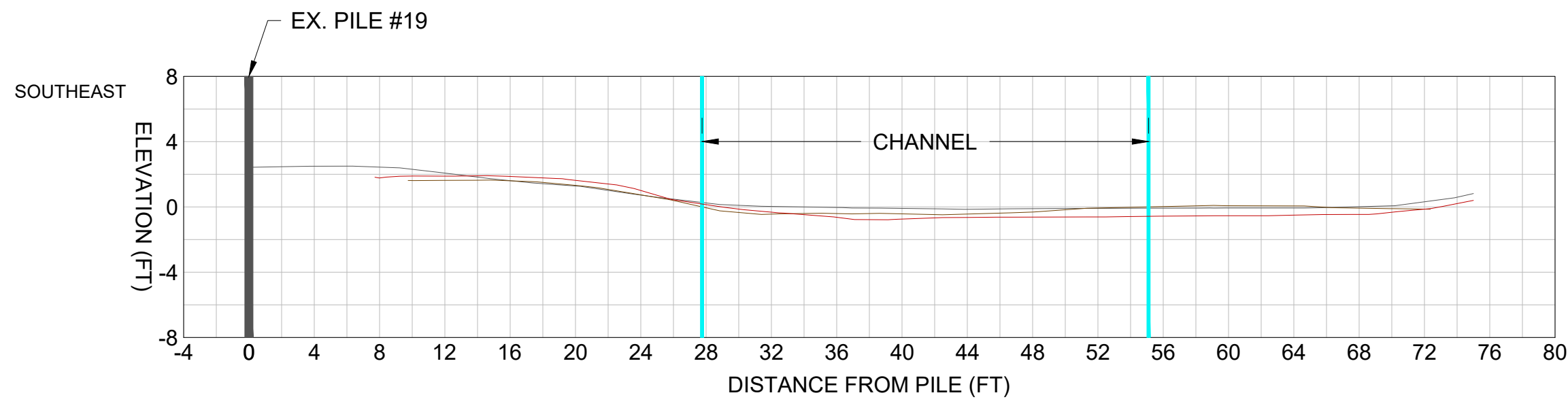
PILES #15 TO #21  
SCALE: 1" = 40'



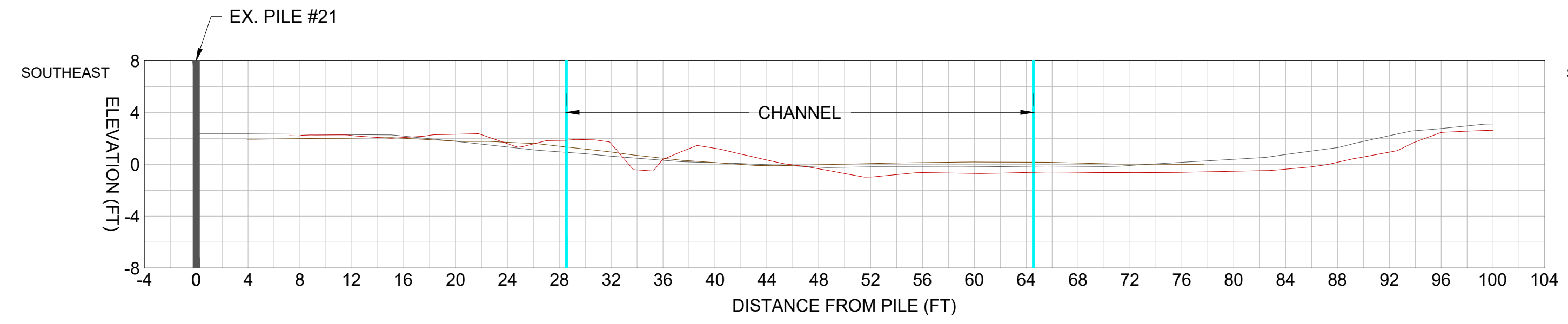
15 PILE 15 SECTION  
SCALE: 1" = 8'



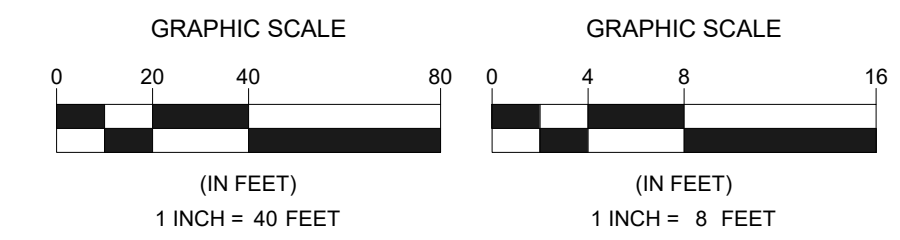
17 PILE 17 SECTION  
SCALE: 1" = 8'



19 PILE 19 SECTION  
SCALE: 1" = 8'



21 PILE 21 SECTION  
SCALE: 1" = 8'



| NO. | BY | DATE | DESCRIPTION |
|-----|----|------|-------------|
|     |    |      |             |
|     |    |      |             |
|     |    |      |             |
|     |    |      |             |

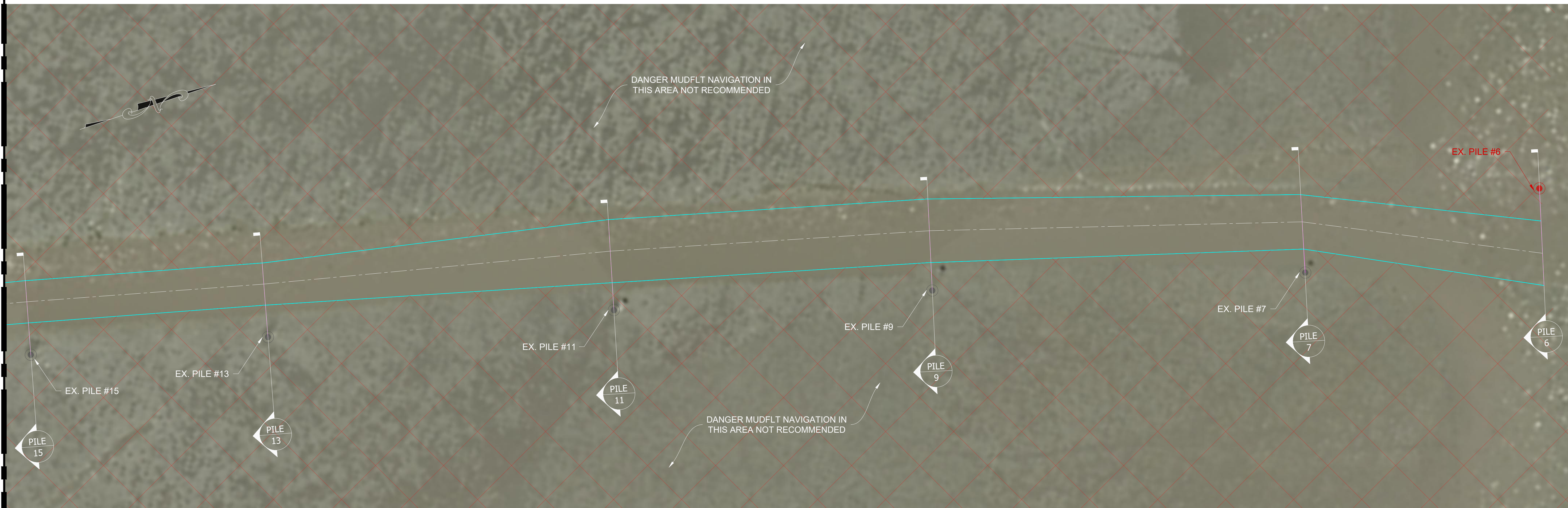
| DATE OF PREPARATION |      |
|---------------------|------|
| BY                  | DATE |
|                     |      |

|          |     |
|----------|-----|
| SURVEYED |     |
| DRAWN    | TJM |
| DESIGNED |     |
| CHECKED  |     |

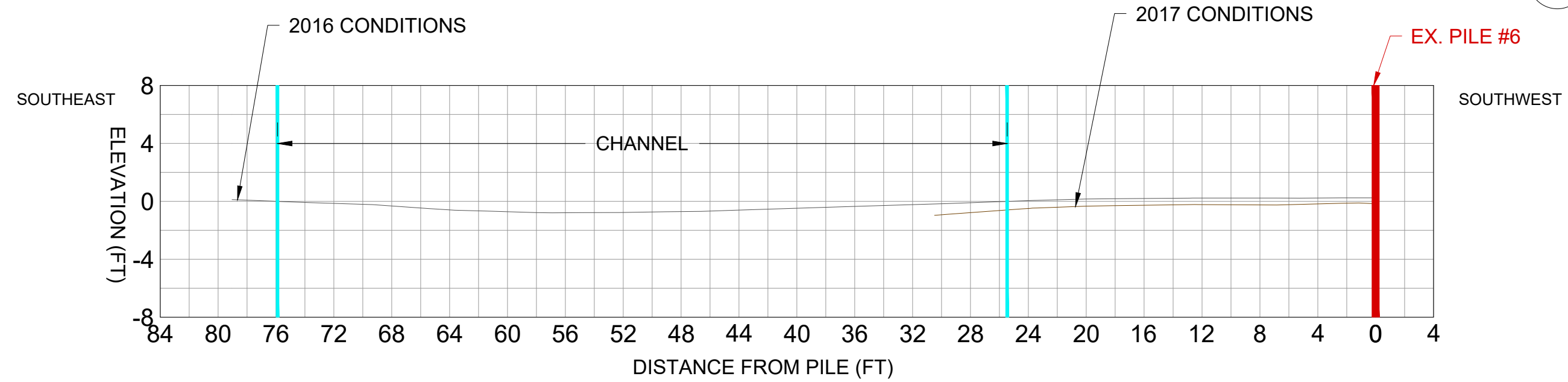
ISSUANCE:  
**(PURPOSE FOR ISSUANCE)**

PROJECT NO: 02107.100  
SHEET NUMBER

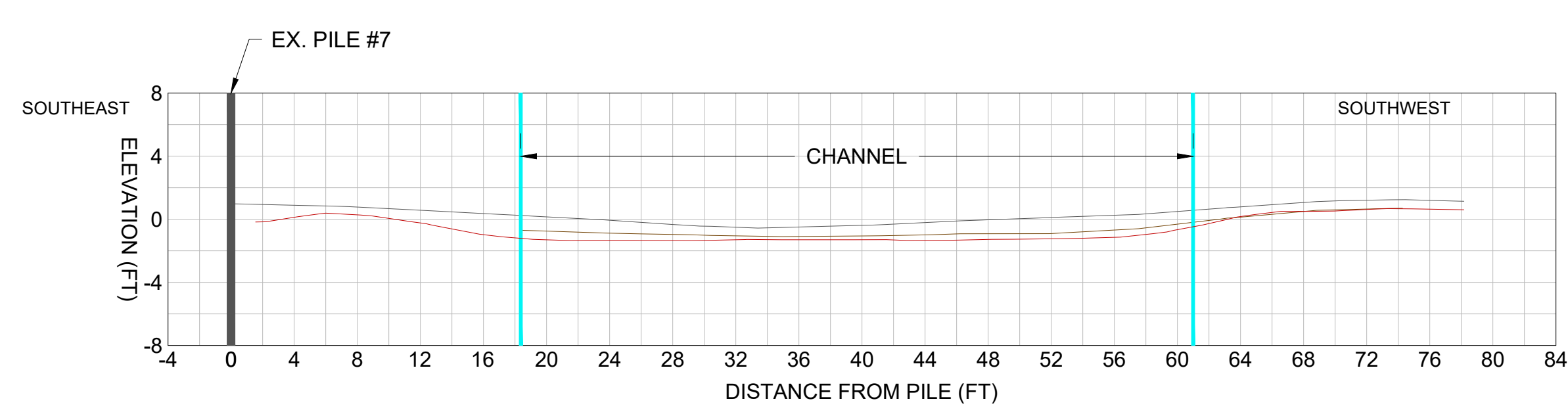




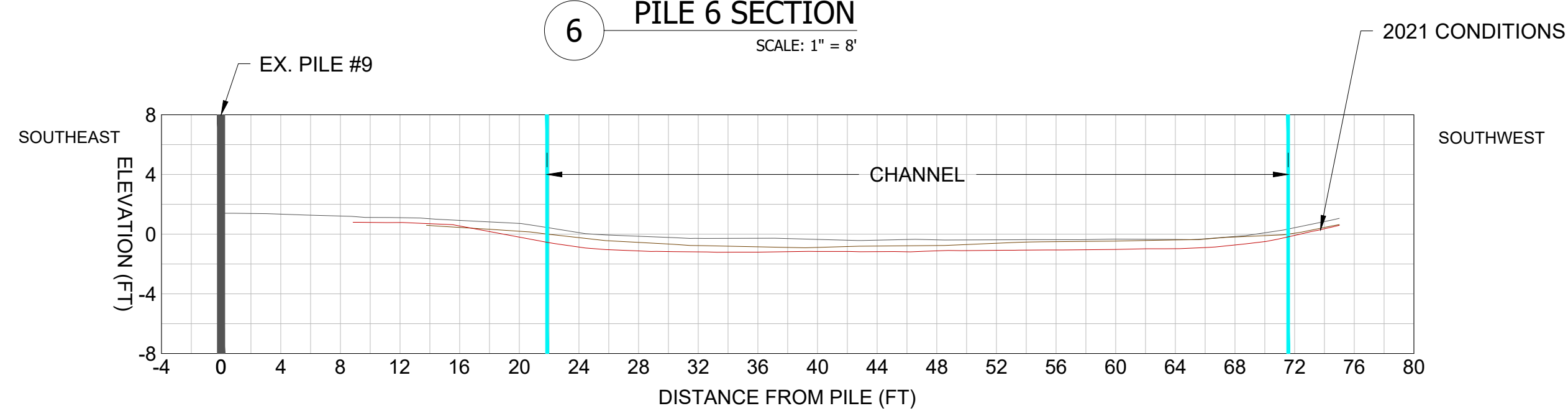
PILES #6 TO #15  
SCALE: 1" = 40'



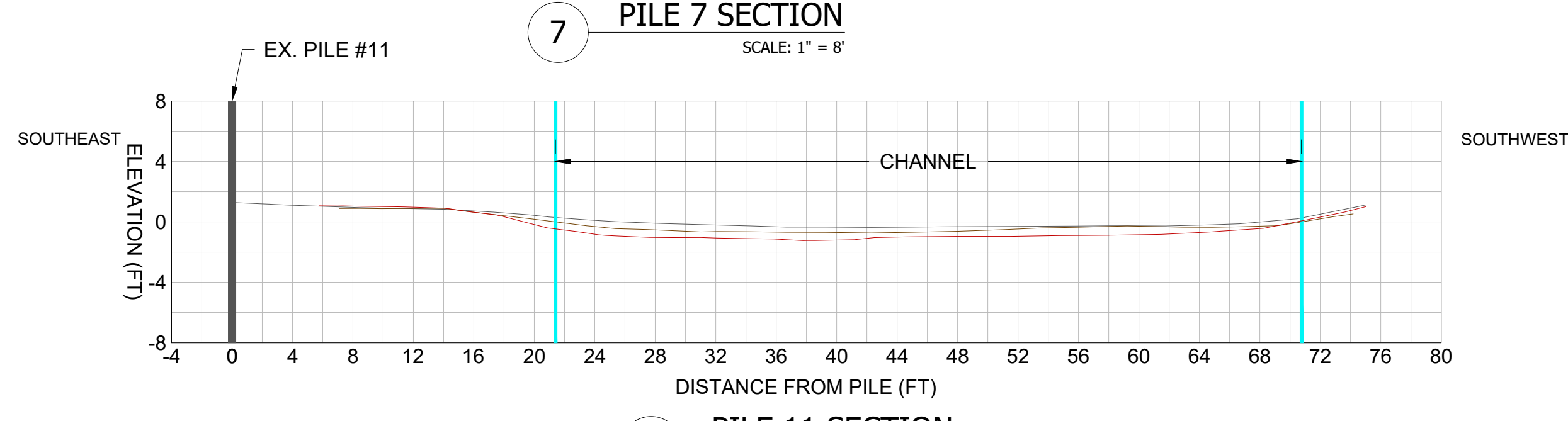
6 PILE 6 SECTION  
SCALE: 1" = 8'



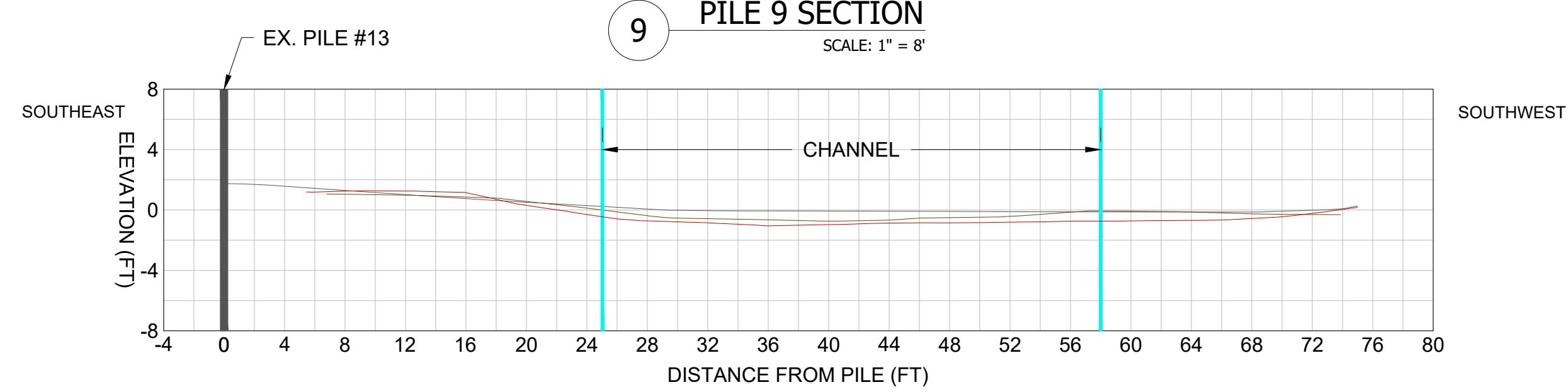
7 PILE 7 SECTION  
SCALE: 1" = 8'



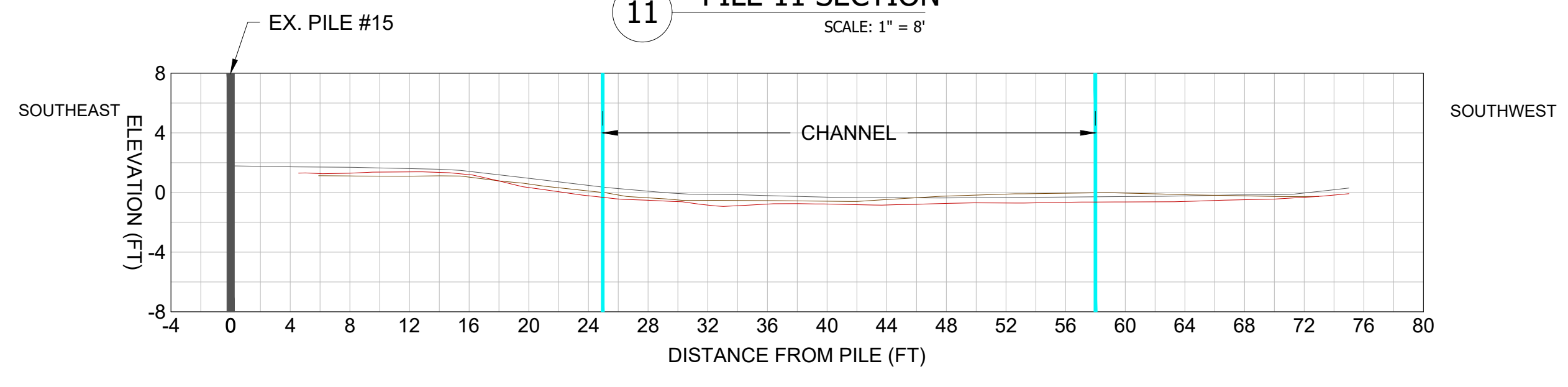
9 PILE 9 SECTION  
SCALE: 1" = 8'



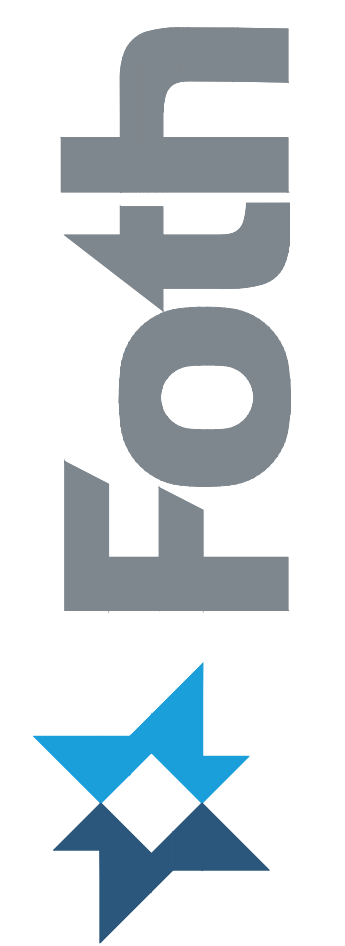
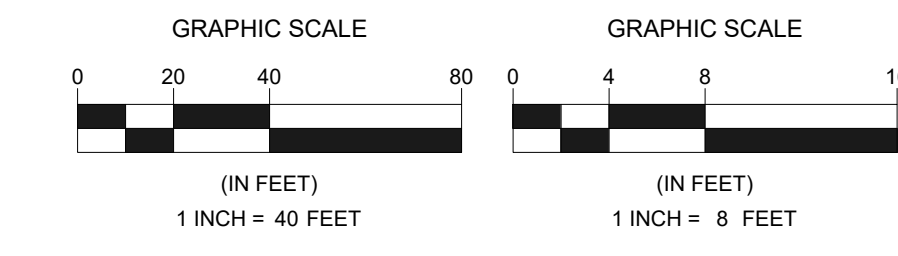
11 PILE 11 SECTION  
SCALE: 1" = 8'



13 PILE 13 SECTION  
SCALE: 1" = 8'



15 PILE 15 SECTION  
SCALE: 1" = 8'



NOVATO CREEK NAVIGATION  
NOVATO, CA  
NOVATO CREEK PILING TO  
CHANNEL DISTANCE

| NO. | BY | DATE | DESCRIPTION |
|-----|----|------|-------------|
|     |    |      |             |
|     |    |      |             |
|     |    |      |             |
|     |    |      |             |

| DATE OF PREPARATION |      |
|---------------------|------|
| BY                  | DATE |
|                     |      |

SHEET TITLE:  
**PILE LOCATION SECTIONS**

ISSUANCE:  
**(PURPOSE FOR ISSUANCE)**

PROJECT NO: 02107.100  
SHEET NUMBER