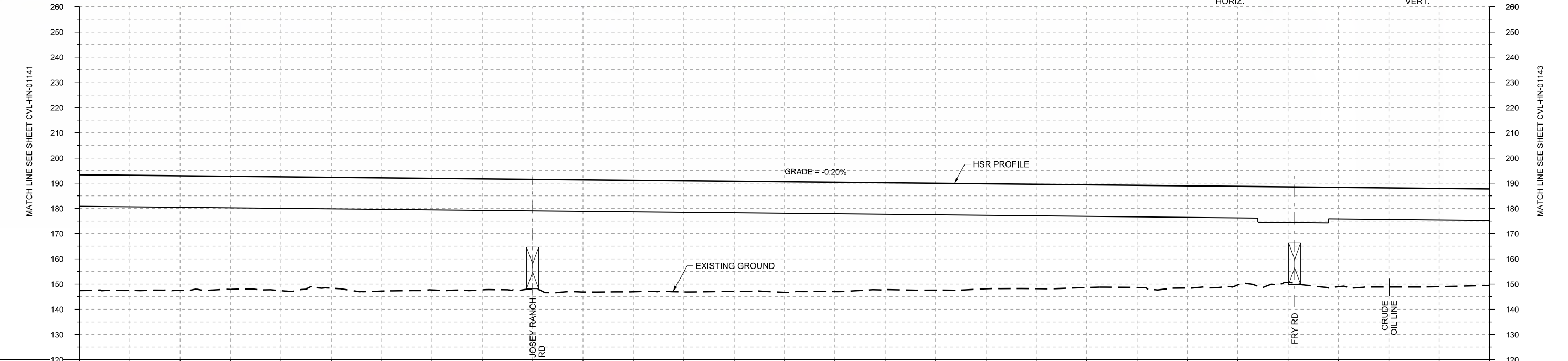
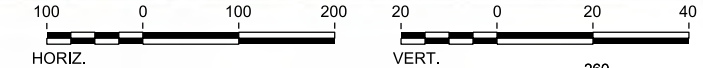


PLAN



PROFILE

|                |             |            |            |            |            |                   |            |       |       |       |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|----------------|-------------|------------|------------|------------|------------|-------------------|------------|-------|-------|-------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| STATIONING     | HN1 940+00  | HN1 945+00 | HN1 950+00 | HN1 955+00 | HN1 960+00 | HN1 965+00        | HN1 968+00 |       |       |       |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| HOR. ALIGNMENT | L=1610      |            | L=11600.34 |            |            | R=18700<br>L=8617 |            |       |       |       |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| VER. ALIGNMENT | G=-0.200%   |            | G=-0.200%  |            |            | G=-0.200%         |            |       |       |       |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| CUT AND FILL   | +45.9       | +45.6      | +45.4      | +44.8      | +45.1      | +43.9             | +44.9      | +44.2 | +44.0 | +43.4 | +44.4       | +44.2 | +44.0 | +43.6 | +43.8 | +43.3 | +42.3 | +42.3 | +41.6 | +41.3 | +40.7 | +40.6 | +40.5 | +39.0 | +37.8 | +39.4 | +39.3 | +38.9 | +38.3 |
| TYP. SECTION   | VIADUCT (N) |            |            |            |            |                   |            |       |       |       | VIADUCT (E) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
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DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

**ARUP**

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www.freese.com  
Texas Registered Engineering Firm: F-2144

Client

**TEXAS CENTRAL**

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

Drawing Title

**HOUSTON SEGMENT CIVIL PLAN AND PROFILE**  
HN1 940+00 TO HN1 968+00

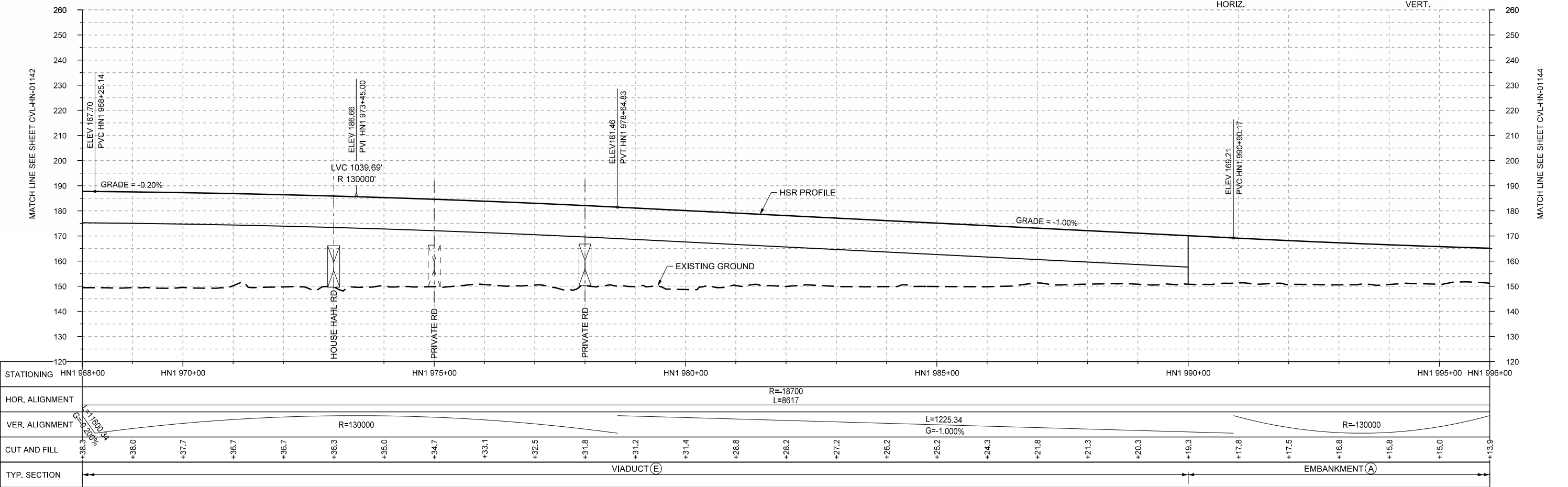
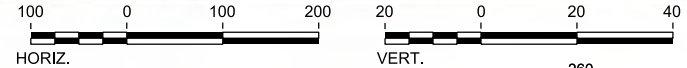
Scale  
AS SHOWN

Drawing Status  
**FINAL DRAFT**

|        |              |     |
|--------|--------------|-----|
| Job No | Drawing No   | Rev |
| 234180 | CVL-HN-01142 | 01  |



PLAN



PROFILE

| REV | DATE | BY | CHK | APP | DESCRIPTION |
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DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**



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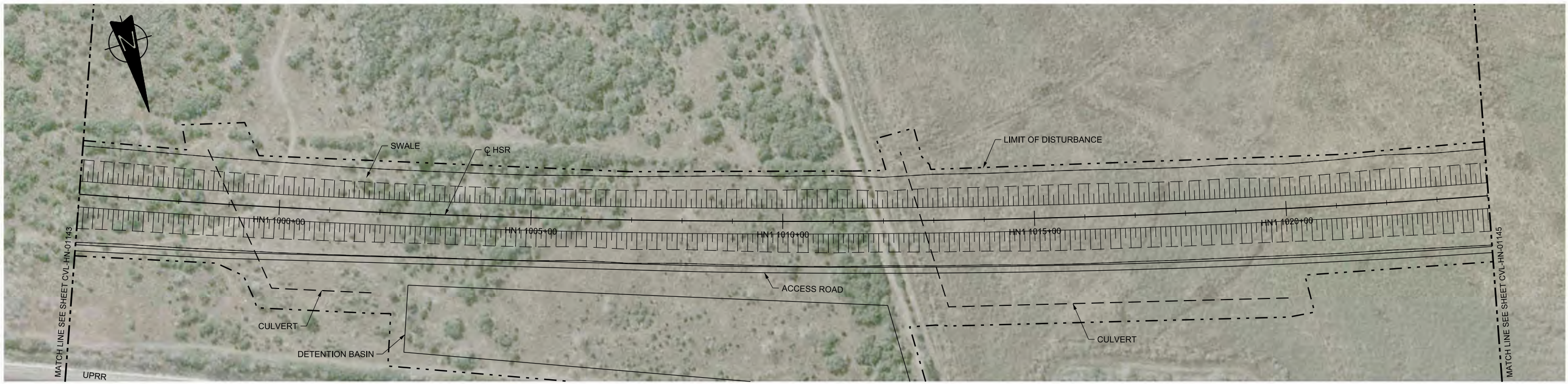


2711 North Haskell Ave., Suite 3300  
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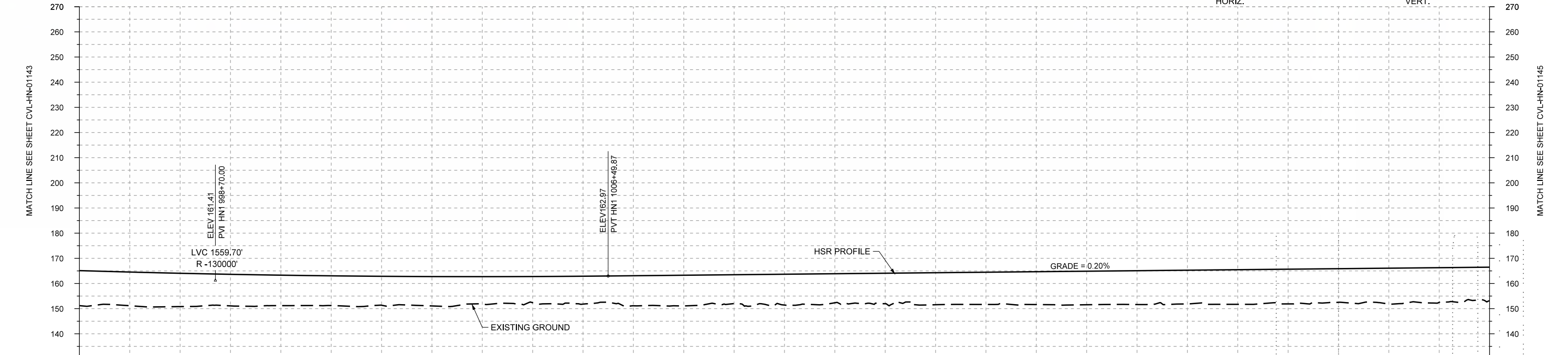
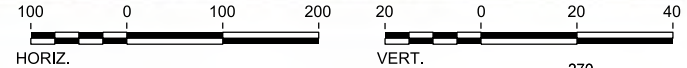


Drawing Title  
**HOUSTON SEGMENT CIVIL PLAN AND PROFILE HN1 968+00 TO HN1 996+00**

|                               |                            |           |
|-------------------------------|----------------------------|-----------|
| Scale<br>AS SHOWN             |                            |           |
| Drawing Status<br>FINAL DRAFT |                            |           |
| Job No<br>234180              | Drawing No<br>CVL-HN-01143 | Rev<br>01 |



PLAN



PROFILE

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|----------------|------------|-------------|-------------|-----------------------|-------------|-------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| STATIONING     | HN1 996+00 | HN1 1000+00 | HN1 1005+00 | HN1 1010+00           | HN1 1015+00 | HN1 1020+00 | HN1 1024+00 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| HOR. ALIGNMENT |            |             |             | R=-18700<br>L=8617    |             |             |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| VER. ALIGNMENT | R=-130000  |             |             | L=2175.13<br>G=0.200% |             |             |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| CUT AND FILL   | +13.9      | +13.3       | +13.2       | +12.5                 | +12.1       | +11.8       | +11.5       | +11.6 | +10.9 | +10.4 | +11.1 | +12.0 | +12.2 | +11.5 | +12.3 | +11.6 | +12.1 | +12.8 | +12.8 | +13.1 | +13.4 | +13.5 | +13.4 | +13.8 | +13.8 | +13.4 | +13.3 | +13.8 |
| TYP. SECTION   | ←          |             |             |                       |             |             |             |       |       |       |       |       |       |       |       |       | →     |       |       |       |       |       |       |       |       |       |       |       |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
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|     |      |    |     |     |             |

DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

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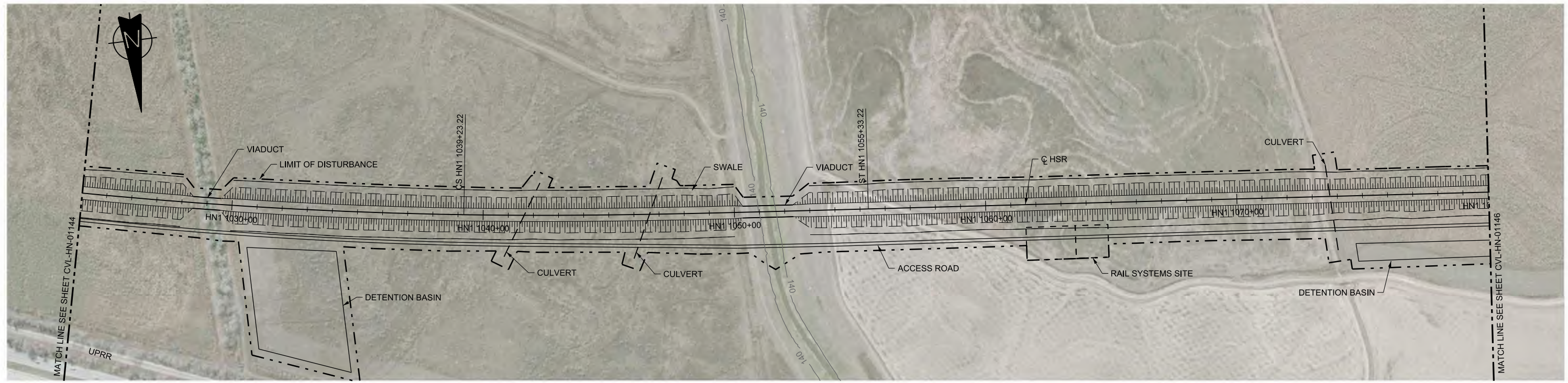
Client  
  
**TEXAS CENTRAL**  
 1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

Drawing Title  
**HOUSTON SEGMENT CIVIL PLAN AND PROFILE**  
 HN1 996+00 TO HN1 1024+00

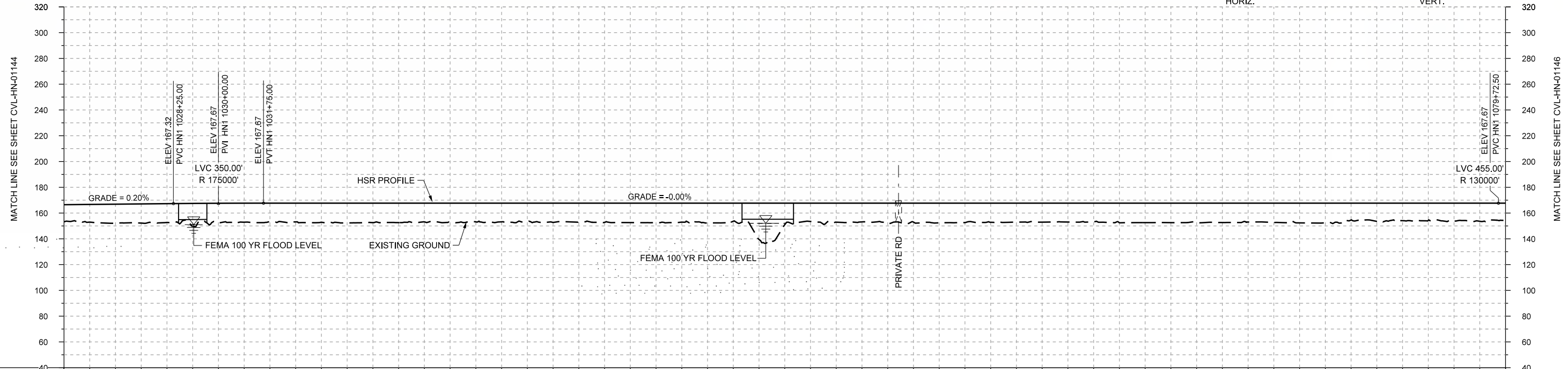
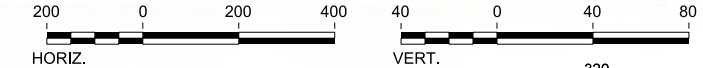
Scale  
**AS SHOWN**

Drawing Status  
**FINAL DRAFT**

|        |              |     |
|--------|--------------|-----|
| Job No | Drawing No   | Rev |
| 234180 | CVL-HN-01144 | 01  |



PLAN



PROFILE

|                |                       |             |                |             |             |                        |             |
|----------------|-----------------------|-------------|----------------|-------------|-------------|------------------------|-------------|
| STATIONING     | HN1 1024+00           | HN1 1030+00 | HN1 1040+00    | HN1 1050+00 | HN1 1060+00 | HN1 1070+00            | HN1 1080+00 |
| HOR. ALIGNMENT | R=18700<br>L=8617     |             | L=1610         |             |             | L=9698<br>R=130000     |             |
| VER. ALIGNMENT | L=2175.13<br>G=0.200% |             | R=175000       |             |             | L=4797.50<br>G=-0.000% |             |
| CUT AND FILL   | +13.4                 | +14.9       | +14.6          | +14.6       | +14.2       | +14.7                  | +15.1       |
| TYP. SECTION   | EMBANKMENT (A)        |             | EMBANKMENT (A) |             | VIADUCT (E) | EMBANKMENT (A)         |             |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
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DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

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Dallas, Texas 75204  
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www.freese.com  
Texas Registered Engineering Firm: F-2144

Client

**TEXAS CENTRAL**

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

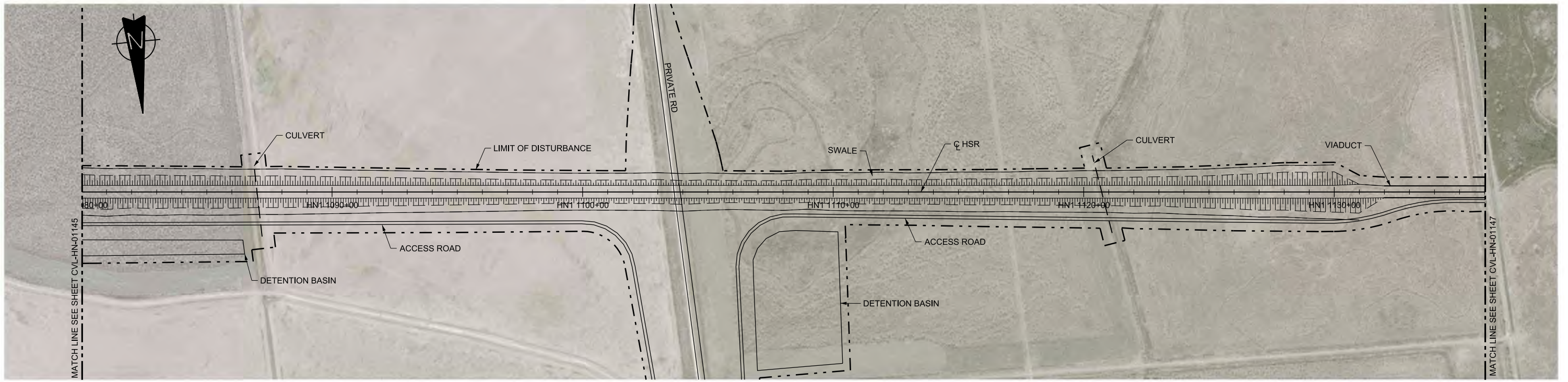
Drawing Title

**HOUSTON SEGMENT CIVIL PLAN AND PROFILE**  
HN1 1024+00 TO HN1 1080+00

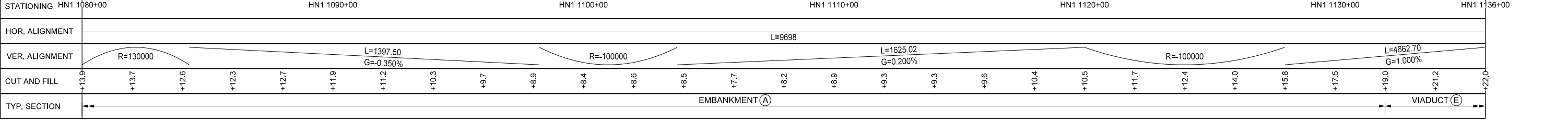
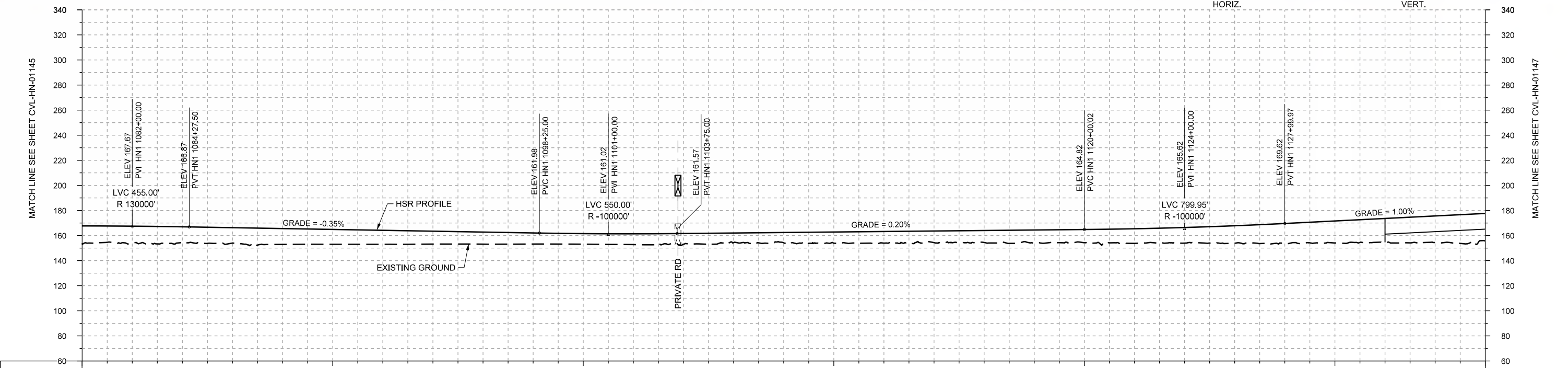
Scale  
AS SHOWN

Drawing Status  
**FINAL DRAFT**

|        |              |     |
|--------|--------------|-----|
| Job No | Drawing No   | Rev |
| 234180 | CVL-HN-01145 | 01  |



PLAN



PROFILE

| REV | DATE | BY | CHK | APP | DESCRIPTION |
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DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

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www.freese.com  
Texas Registered Engineering Firm: F-2144

Client

**TEXAS CENTRAL**

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

Drawing Title

**HOUSTON SEGMENT CIVIL**

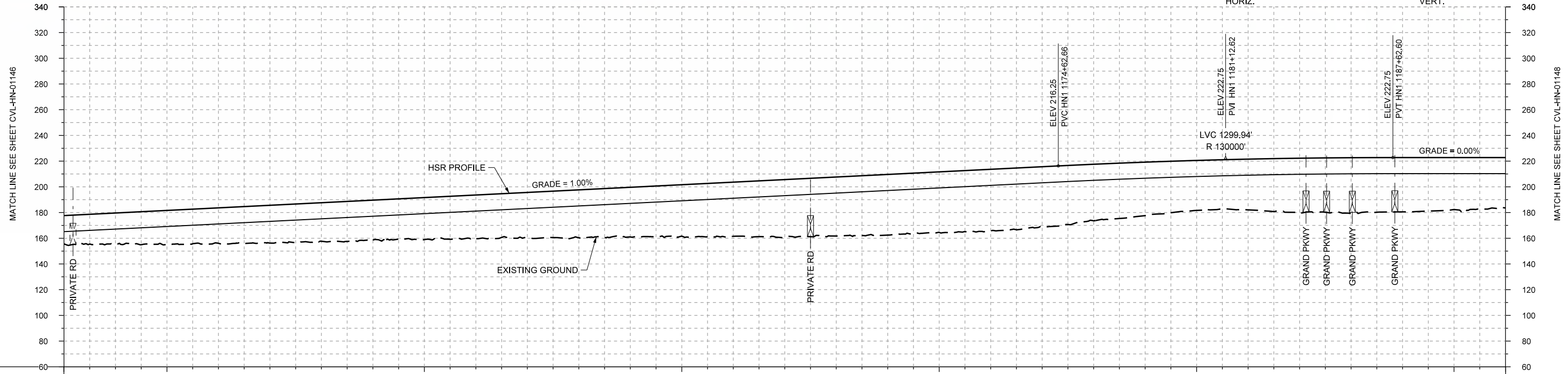
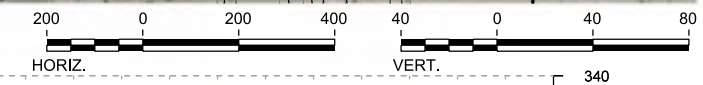
**PLAN AND PROFILE**

**HN1 1080+00 TO HN1 1136+00**

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| Scale          | AS SHOWN     |     |  |
| Drawing Status | FINAL DRAFT  |     |  |
| Job No         | Drawing No   | Rev |  |
| 234180         | CVL-HN-01146 | 01  |  |



PLAN



PROFILE

|                |                       |             |             |             |             |                                   |             |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|----------------|-----------------------|-------------|-------------|-------------|-------------|-----------------------------------|-------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| STATIONING     | HN1 1136+00           | HN1 1140+00 | HN1 1150+00 | HN1 1160+00 | HN1 1170+00 | HN1 1180+00                       | HN1 1190+00 | HN1 1192+00 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| HOR. ALIGNMENT | L=9698                |             |             | L=1310      |             | R=42000<br>L=6199                 |             |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| VER. ALIGNMENT | L=4662.70<br>G=1.000% |             |             |             |             | R=130000<br>L=7743.42<br>G=0.000% |             |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| CUT AND FILL   | +22.0                 | +24.1       | +26.4       | +27.6       | +29.4       | +29.9                             | +31.2       | +32.7       | +33.6 | +35.2 | +37.2 | +38.6 | +40.0 | +42.1 | +44.6 | +45.9 | +47.2 | +47.1 | +47.9 | +48.9 | +43.9 | +41.6 | +38.9 | +39.4 | +41.8 | +43.3 | +42.2 | +40.3 | +39.1 |
| TYP. SECTION   | VIADUCT (E)           |             |             |             |             |                                   |             |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
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DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

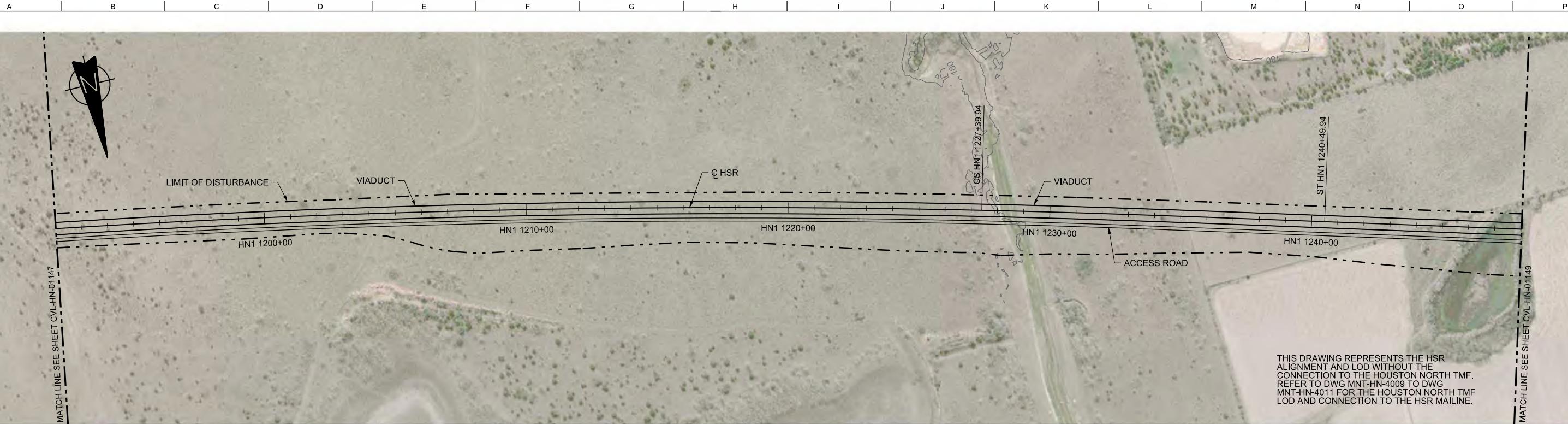
**ARUP**  
 Arup Texas, Inc.  
 10370 Richmond Ave., Suite 475  
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 www.arup.com  
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 www.freese.com  
 Texas Registered Engineering Firm: F-2144

Client  
  
**TEXAS CENTRAL**  
 1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

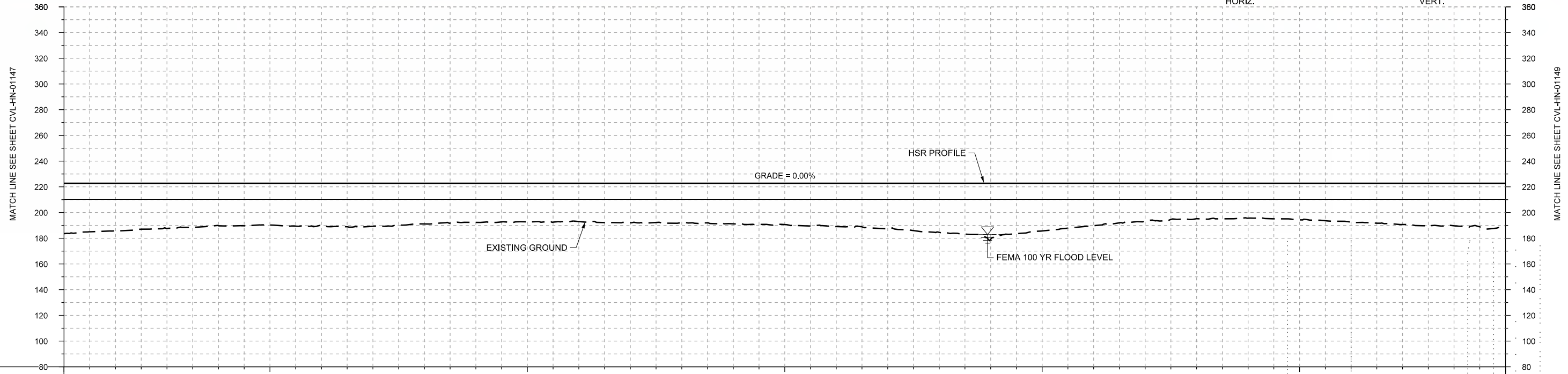
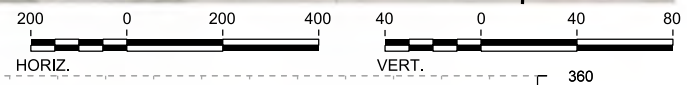
Drawing Title  
**HOUSTON SEGMENT CIVIL PLAN AND PROFILE**  
 HN1 1136+00 TO HN1 1192+00

|                |              |     |  |
|----------------|--------------|-----|--|
| Scale          | AS SHOWN     |     |  |
| Drawing Status | FINAL DRAFT  |     |  |
| Job No         | Drawing No   | Rev |  |
| 234180         | CVL-HN-01147 | 01  |  |



THIS DRAWING REPRESENTS THE HSR ALIGNMENT AND LOD WITHOUT THE CONNECTION TO THE HOUSTON NORTH TMF. REFER TO DWG MNT-HN-4009 TO DWG MNT-HN-4011 FOR THE HOUSTON NORTH TMF LOD AND CONNECTION TO THE HSR MAILINE.

PLAN



|                |             |             |                   |                       |             |             |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|----------------|-------------|-------------|-------------------|-----------------------|-------------|-------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| STATIONING     | HN1 1192+00 | HN1 1200+00 | HN1 1210+00       | HN1 1220+00           | HN1 1230+00 | HN1 1240+00 | HN1 1248+00 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| HOR. ALIGNMENT |             |             | R=42000<br>L=6199 |                       |             | L=1310      | L=18709     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| VER. ALIGNMENT |             |             |                   | L=7743.42<br>G=0.000% |             |             |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| CUT AND FILL   | +36.1       | +37.1       | +35.1             | +33.0                 | +32.4       | +33.0       | +33.4       | +31.6 | +30.4 | +30.2 | +29.7 | +30.7 | +30.6 | +31.5 | +32.1 | +33.6 | +35.4 | +38.1 | +43.5 | +37.0 | +32.9 | +29.5 | +27.5 | +27.1 | +28.4 | +30.1 | +32.0 | +33.0 | +33.2 |
| TYP. SECTION   | VIADUCT (E) |             |                   |                       |             |             |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |

PROFILE

| REV | DATE | BY | CHK | APP | DESCRIPTION |
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DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

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Texas Registered Engineering Firm: F-2144

Client

**TEXAS CENTRAL**

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

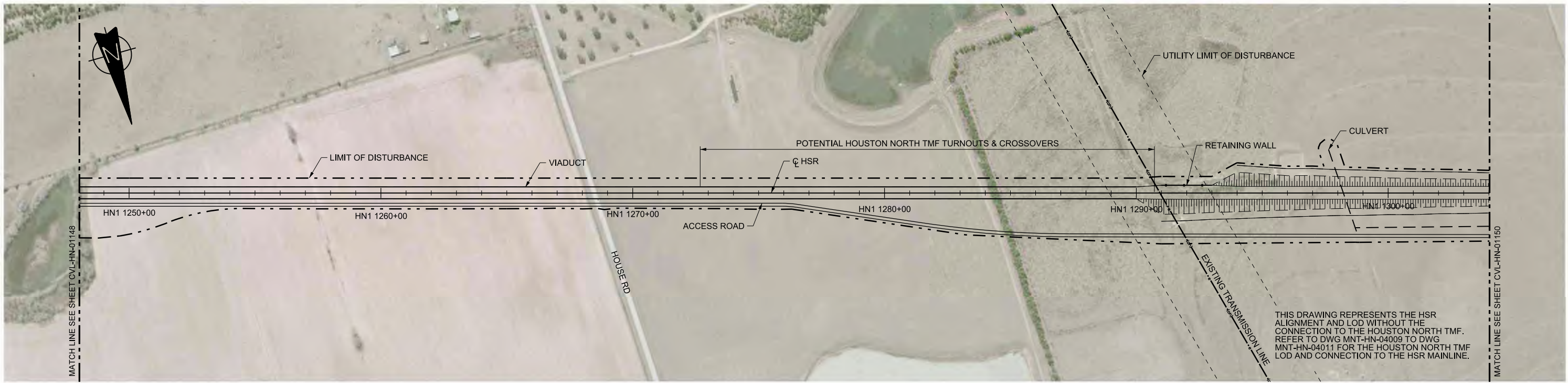
Drawing Title

**HOUSTON SEGMENT CIVIL PLAN AND PROFILE**  
HN1 1192+00 TO HN1 1248+00

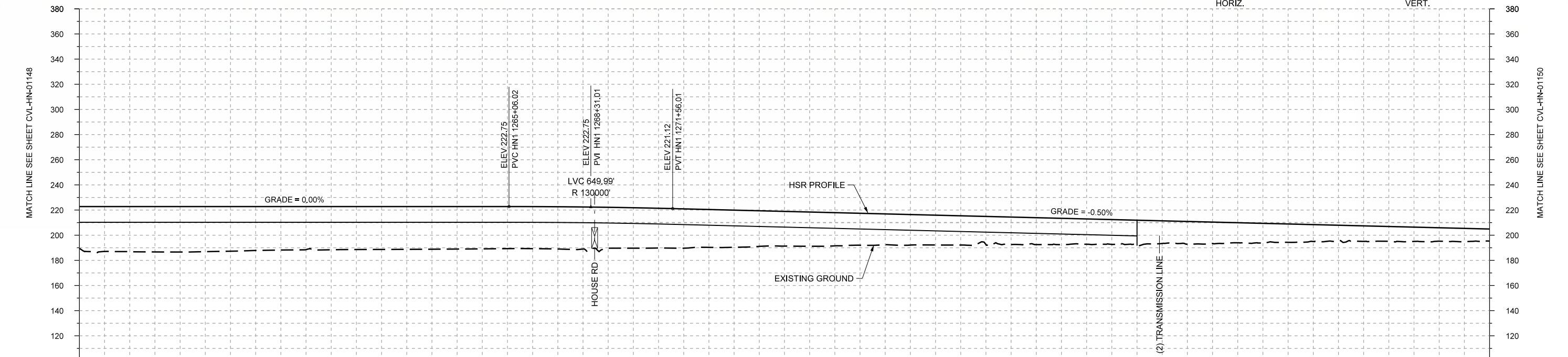
Scale  
AS SHOWN

Drawing Status  
**FINAL DRAFT**

|        |              |     |
|--------|--------------|-----|
| Job No | Drawing No   | Rev |
| 234180 | CVL-HN-01148 | 01  |



PLAN



PROFILE

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
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|                                  |
|----------------------------------|
| DESIGNED BY<br><b>T. SMELCER</b> |
| DRAWN BY<br><b>J. BORGHESI</b>   |
| CHECKED BY<br><b>K. SEYMOUR</b>  |
| IN CHARGE<br><b>C. TAYLOR</b>    |
| DATE<br><b>09/15/2017</b>        |

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Texas Registered Engineering Firm: F-1990

**FREESSE AND NICHOLS**

2711 North Haskell Ave., Suite 3300  
Dallas, Texas 75204  
Tel (214) 217 2200 Fax (214) 217 2201  
www.freese.com  
Texas Registered Engineering Firm: F-2144

Client

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

Drawing Title

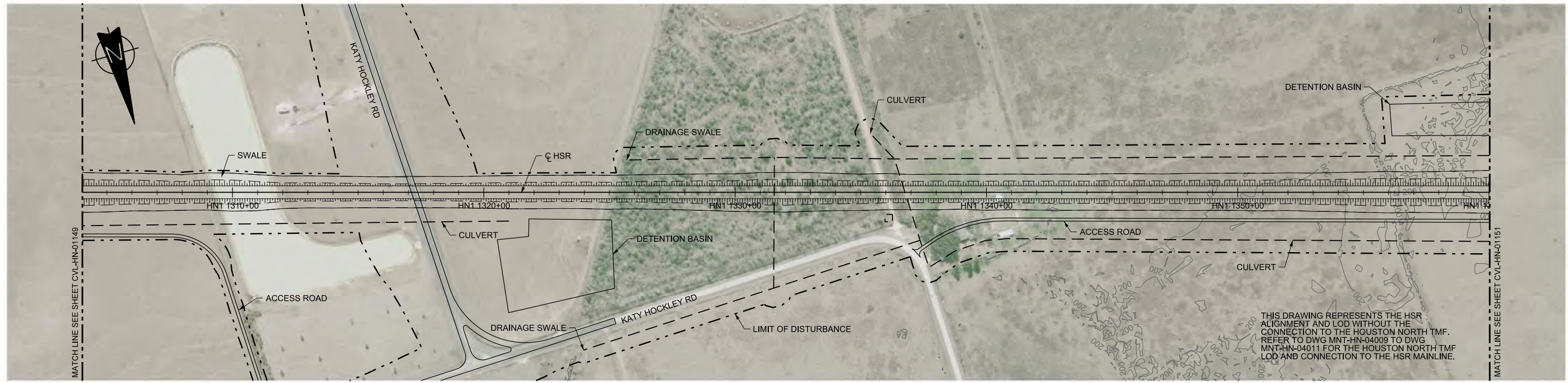
**HOUSTON SEGMENT CIVIL PLAN AND PROFILE**  
HN1 1248+00 TO HN1 1304+00

Scale  
AS SHOWN

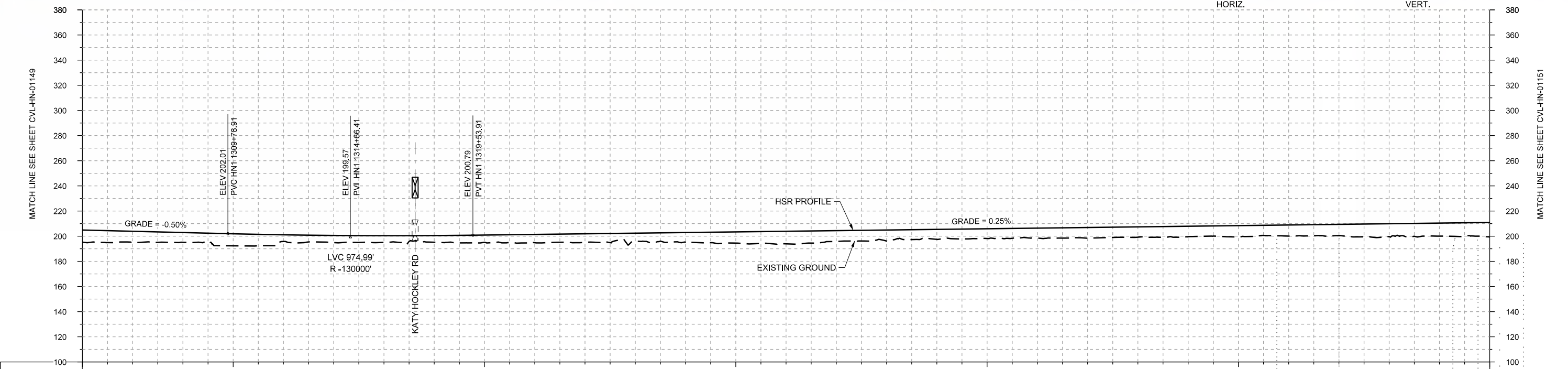
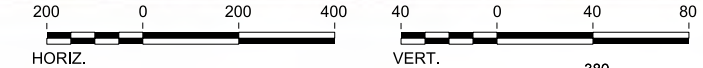
Drawing Status  
**FINAL DRAFT**

|                  |                            |           |
|------------------|----------------------------|-----------|
| Job No<br>234180 | Drawing No<br>CVL-HN-01149 | Rev<br>01 |
|------------------|----------------------------|-----------|





PLAN



|                |                        |             |             |             |             |                       |             |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |
|----------------|------------------------|-------------|-------------|-------------|-------------|-----------------------|-------------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|
| STATIONING     | HN1 1304+00            | HN1 1310+00 | HN1 1320+00 | HN1 1330+00 | HN1 1340+00 | HN1 1350+00           | HN1 1360+00 |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |
| HOR. ALIGNMENT | L=18709                |             |             |             |             |                       |             |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |
| VER. ALIGNMENT | L=3822.91<br>G=-0.500% |             | R=-130000   |             |             | L=9746.10<br>G=0.250% |             |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |
| CUT AND FILL   | +9.6                   | +8.6        | +7.8        | +9.6        | +5.3        | +5.7                  | +5.4        | +5.3 | +5.8 | +6.6 | +6.8 | +6.3 | +7.6 | +8.9 | +10.0 | +8.6 | +8.8 | +7.9 | +7.7 | +7.9 | +8.5 | +8.2 | +8.4 | +8.9 | +8.8 | +8.9 | +10.3 | +10.3 | +11.5 |
| TYP. SECTION   | ←                      |             |             |             |             |                       |             |      |      |      |      |      |      |      |       |      |      |      |      |      |      |      |      |      |      |      |       |       |       |

PROFILE

|             |             |
|-------------|-------------|
| DESIGNED BY | T. SMELCER  |
| DRAWN BY    | J. BORGHESI |
| CHECKED BY  | K. SEYMOUR  |
| IN CHARGE   | C. TAYLOR   |
| DATE        | 09/15/2017  |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
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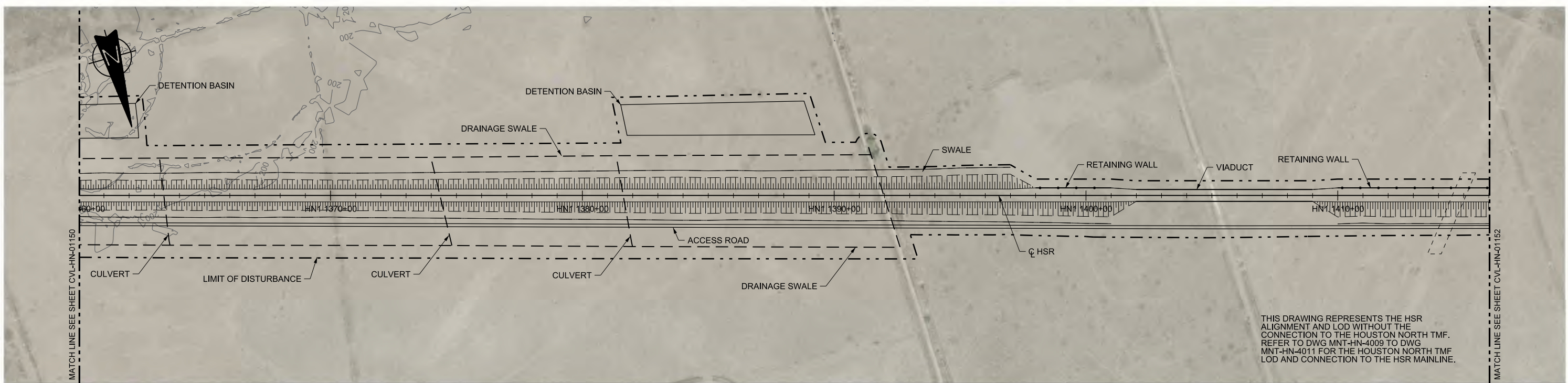
2711 North Haskell Ave., Suite 3300  
Dallas, Texas 75204  
Tel (214) 217 2200 Fax (214) 217 2201  
www.freese.com  
Texas Registered Engineering Firm: F-2144



1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

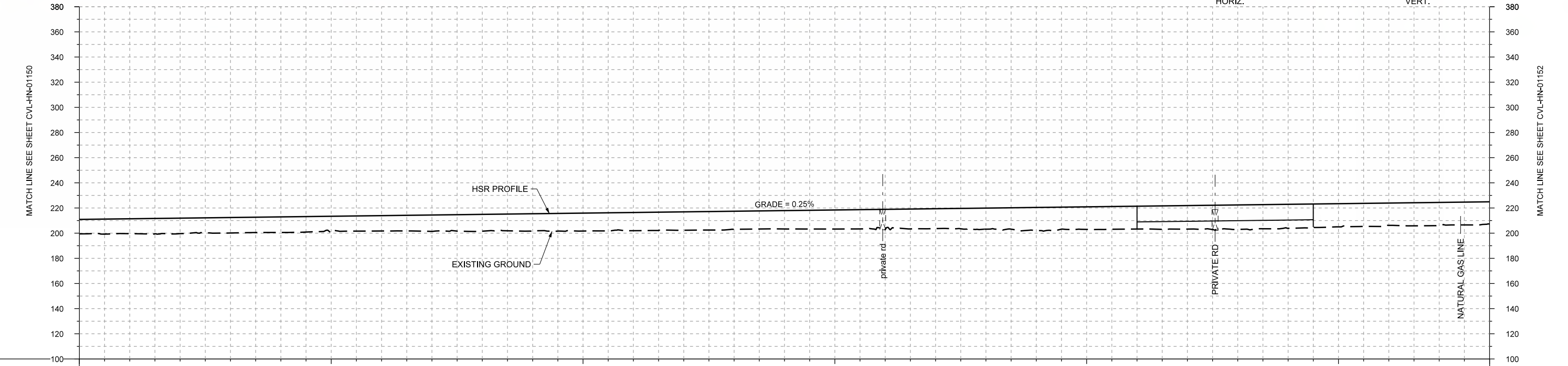
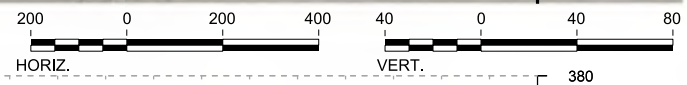
Drawing Title  
**HOUSTON SEGMENT CIVIL PLAN AND PROFILE**  
HN1 1304+00 TO HN1 1360+00

|                |              |
|----------------|--------------|
| Scale          | AS SHOWN     |
| Drawing Status | FINAL DRAFT  |
| Job No         | 234180       |
| Drawing No     | CVL-HN-01150 |
| Rev            | 01           |



THIS DRAWING REPRESENTS THE HSR ALIGNMENT AND LOD WITHOUT THE CONNECTION TO THE HOUSTON NORTH TMF. REFER TO DWG MNT-HN-4009 TO DWG MNT-HN-4011 FOR THE HOUSTON NORTH TMF LOD AND CONNECTION TO THE HSR MAINLINE.

### PLAN



### PROFILE

|                |                       |             |             |             |             |             |             |       |       |       |       |       |             |       |       |       |                |       |       |       |       |       |       |       |       |       |       |       |       |
|----------------|-----------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------|-------|-------|-------|-------|-------------|-------|-------|-------|----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| STATIONING     | HN1 1360+00           | HN1 1370+00 | HN1 1380+00 | HN1 1390+00 | HN1 1400+00 | HN1 1410+00 | HN1 1416+00 |       |       |       |       |       |             |       |       |       |                |       |       |       |       |       |       |       |       |       |       |       |       |
| HOR. ALIGNMENT | L=18709               |             |             |             |             |             |             |       |       |       |       |       |             |       |       |       |                |       |       |       |       |       |       |       |       |       |       |       |       |
| VER. ALIGNMENT | L=9746.10<br>G=0.250% |             |             |             |             |             |             |       |       |       |       |       |             |       |       |       |                |       |       |       |       |       |       |       |       |       |       |       |       |
| CUT AND FILL   | +11.5                 | +11.8       | +12.3       | +12.3       | +12.4       | +11.9       | +12.2       | +13.0 | +13.4 | +14.1 | +14.2 | +14.5 | +14.6       | +14.3 | +14.6 | +15.1 | +16.0          | +15.8 | +16.7 | +16.3 | +17.9 | +16.2 | +16.7 | +19.4 | +19.0 | +18.4 | +17.7 | +18.1 | +17.7 |
| TYP. SECTION   | EMBANKMENT (A)        |             |             |             |             |             |             |       |       |       |       |       | VIADUCT (E) |       |       |       | EMBANKMENT (A) |       |       |       |       |       |       |       |       |       |       |       |       |

|             |             |
|-------------|-------------|
| DESIGNED BY | T. SMELCER  |
| DRAWN BY    | J. BORGHESI |
| CHECKED BY  | K. SEYMOUR  |
| IN CHARGE   | C. TAYLOR   |
| DATE        | 09/15/2017  |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
|     |      |    |     |     |             |

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 www.freese.com  
 Texas Registered Engineering Firm: F-2144

Client

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

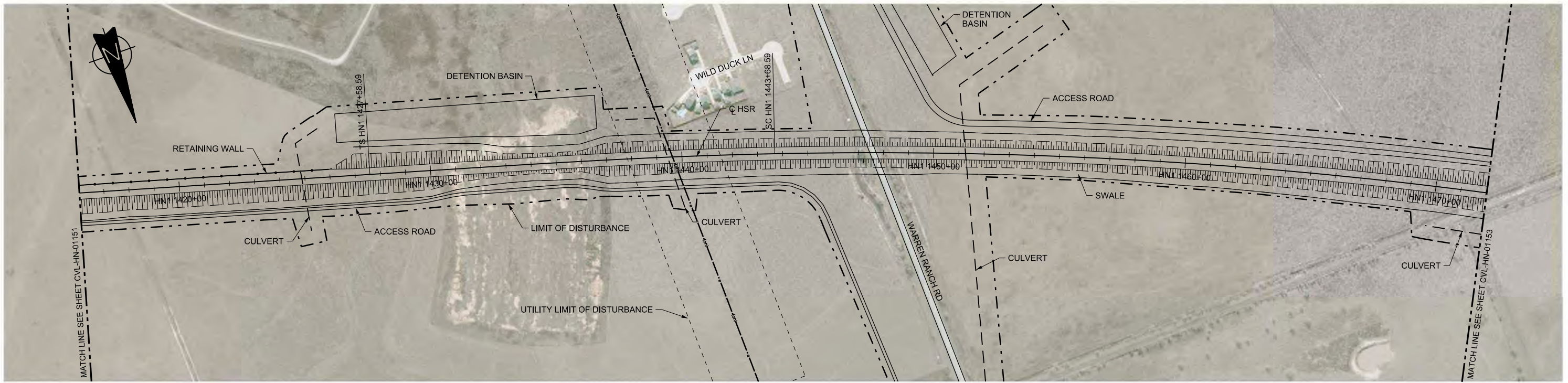
Drawing Title

**HOUSTON SEGMENT CIVIL PLAN AND PROFILE**  
 HN1 1360+00 TO HN1 1416+00

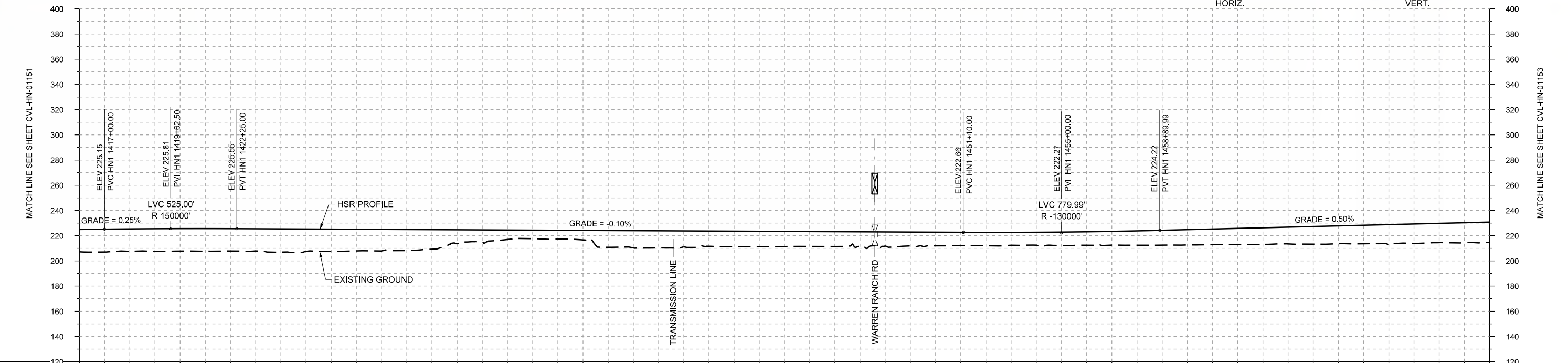
Scale  
AS SHOWN

Drawing Status  
**FINAL DRAFT**

|        |              |     |
|--------|--------------|-----|
| Job No | Drawing No   | Rev |
| 234180 | CVL-HN-01151 | 01  |



PLAN



PROFILE

|                |                        |             |             |             |                        |                    |                                   |             |
|----------------|------------------------|-------------|-------------|-------------|------------------------|--------------------|-----------------------------------|-------------|
| STATIONING     | HN1 1416+00            | HN1 1420+00 | HN1 1430+00 | HN1 1440+00 | HN1 1450+00            | HN1 1460+00        | HN1 1470+00                       | HN1 1472+00 |
| HOR. ALIGNMENT | L=18709                |             |             | L=1610      |                        | R=18700<br>L=20882 |                                   |             |
| VER. ALIGNMENT | L=19746.10<br>G=0.250% |             | R=150000    |             | L=2885.00<br>G=-0.100% |                    | R=130000<br>L=1950.01<br>G=0.500% |             |
| CUT AND FILL   | +17.7                  | +17.8       | +17.8       | +17.8       | +18.4                  | +17.7              | +17.1                             | +15.5       |
| TYP. SECTION   | EMBANKMENT (A)         |             |             |             |                        |                    |                                   |             |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
|     |      |    |     |     |             |
|     |      |    |     |     |             |

DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

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www.freese.com  
Texas Registered Engineering Firm: F-2144

Client

**TEXAS CENTRAL**

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

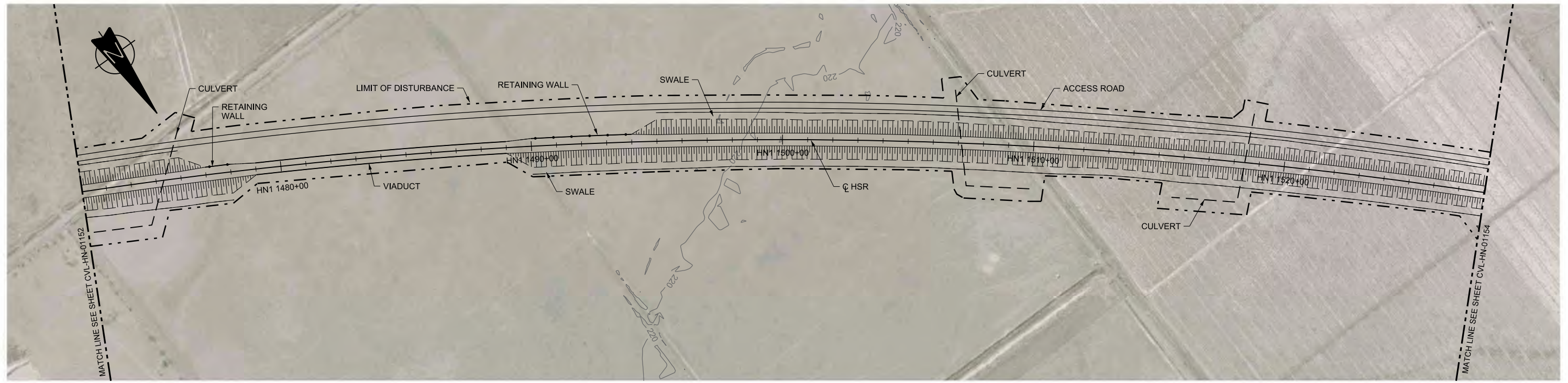
Drawing Title

**HOUSTON SEGMENT CIVIL PLAN AND PROFILE**  
HN1 1416+00 TO HN1 1472+00

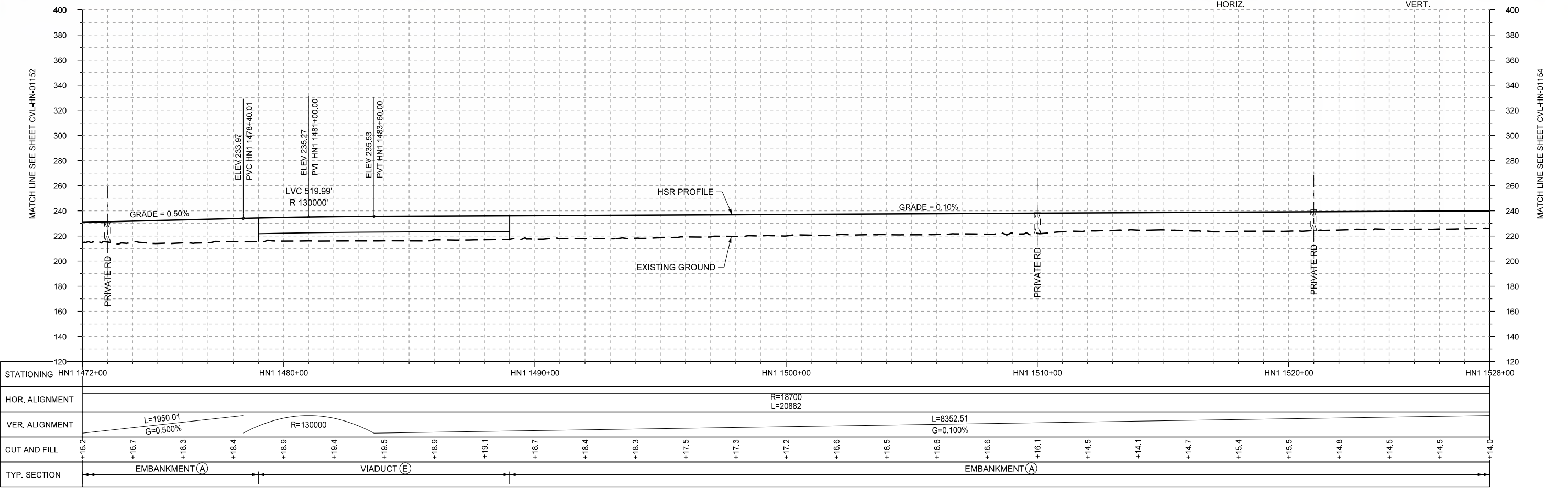
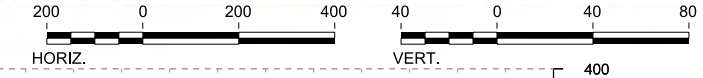
Scale  
AS SHOWN

Drawing Status  
**FINAL DRAFT**

|        |              |     |
|--------|--------------|-----|
| Job No | Drawing No   | Rev |
| 234180 | CVL-HN-01152 | 01  |



PLAN



PROFILE

| REV | DATE | BY | CHK | APP | DESCRIPTION |
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|     |      |    |     |     |             |

DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

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Texas Registered Engineering Firm: F-2144

Client

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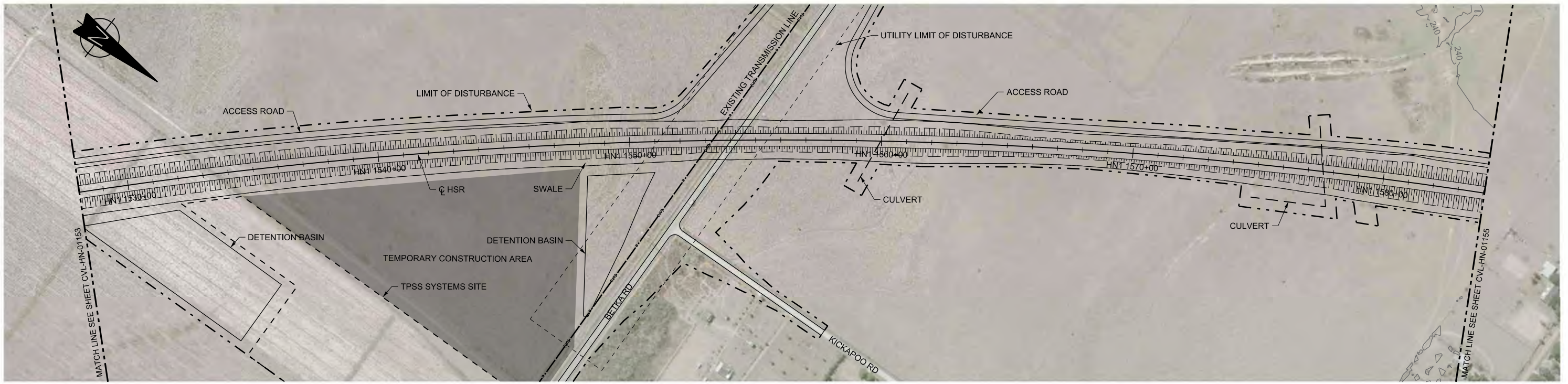
Drawing Title

**HOUSTON SEGMENT  
CIVIL  
PLAN AND PROFILE  
HN1 1472+00 TO HN1 1528+00**

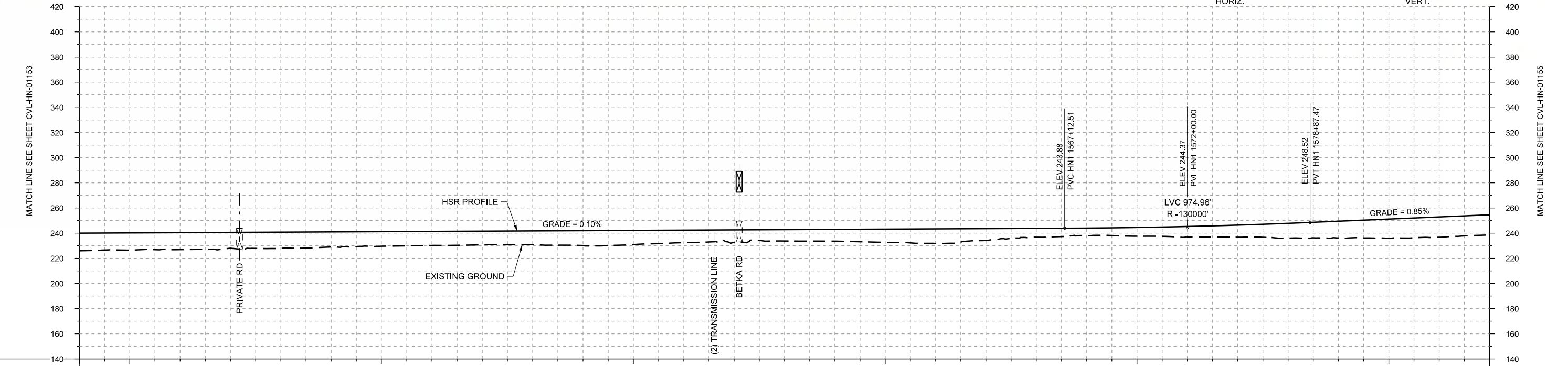
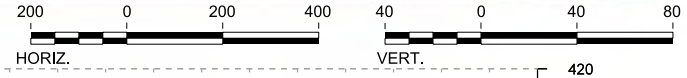
Scale  
AS SHOWN

Drawing Status  
**FINAL DRAFT**

|        |              |     |
|--------|--------------|-----|
| Job No | Drawing No   | Rev |
| 234180 | CVL-HN-01153 | 01  |



PLAN



PROFILE

|                |                       |             |             |             |             |             |             |             |       |       |       |       |       |       |      |      |       |       |      |      |      |      |      |      |       |       |       |       |       |
|----------------|-----------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------|-------|-------|-------|-------|-------|------|------|-------|-------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| STATIONING     | HN1 1528+00           | HN1 1530+00 | HN1 1540+00 | HN1 1550+00 | HN1 1560+00 | HN1 1570+00 | HN1 1580+00 | HN1 1584+00 |       |       |       |       |       |       |      |      |       |       |      |      |      |      |      |      |       |       |       |       |       |
| HOR. ALIGNMENT | R=18700<br>L=20882    |             |             |             |             |             |             |             |       |       |       |       |       |       |      |      |       |       |      |      |      |      |      |      |       |       |       |       |       |
| VER. ALIGNMENT | L=8352.51<br>G=0.100% |             |             |             |             |             |             |             |       |       |       |       |       |       |      |      |       |       |      |      |      |      |      |      |       |       |       |       |       |
| CUT AND FILL   | +14.0                 | +13.8       | +13.5       | +12.6       | +12.9       | +12.0       | +11.6       | +11.2       | +10.9 | +10.9 | +11.8 | +11.4 | +10.0 | +10.0 | +9.1 | +9.4 | +10.6 | +11.7 | +9.4 | +7.0 | +6.0 | +6.9 | +8.3 | +9.6 | +11.8 | +13.4 | +15.4 | +16.2 | +16.0 |
| TYP. SECTION   | EMBANKMENT (A)        |             |             |             |             |             |             |             |       |       |       |       |       |       |      |      |       |       |      |      |      |      |      |      |       |       |       |       |       |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
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|     |      |    |     |     |             |
|     |      |    |     |     |             |

DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

**ARUP**  
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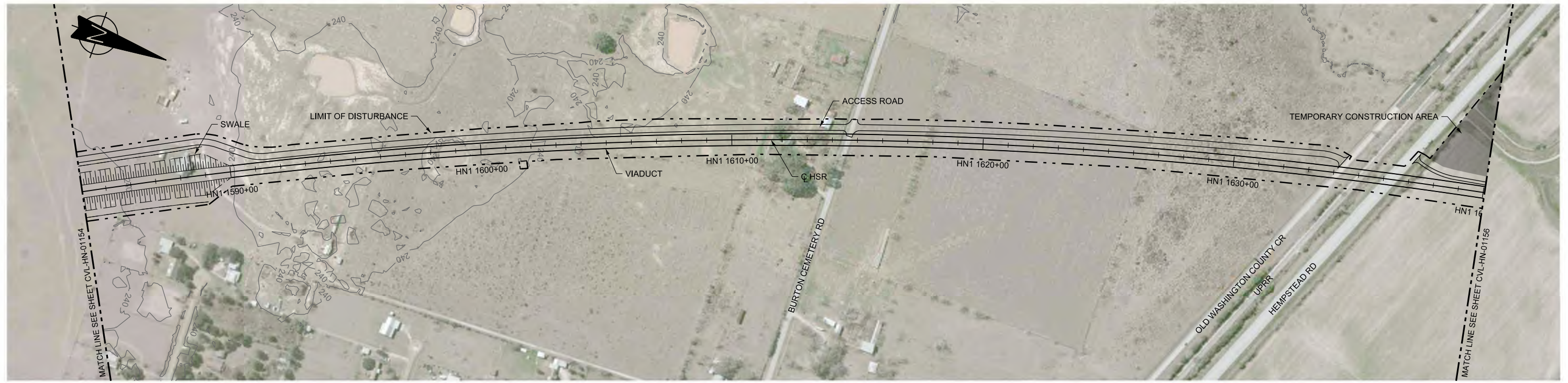
Client  
  
**TEXAS CENTRAL**  
 1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

Drawing Title  
**HOUSTON SEGMENT CIVIL**  
**PLAN AND PROFILE**  
**HN1 1528+00 TO HN1 1584+00**

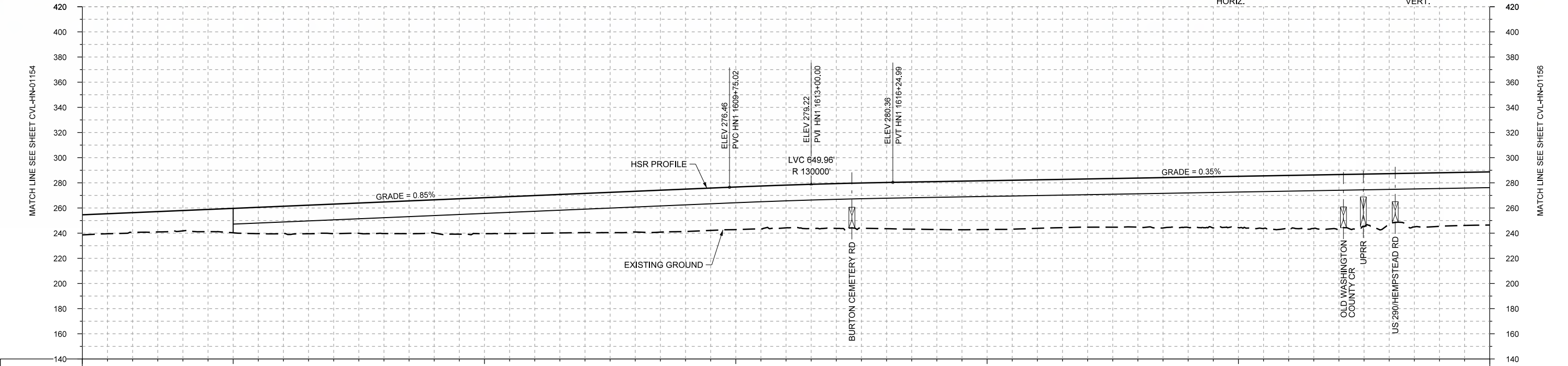
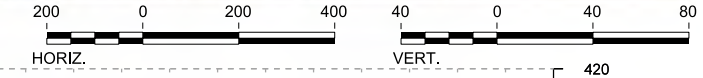
Scale  
**AS SHOWN**

Drawing Status  
**FINAL DRAFT**

|        |              |     |
|--------|--------------|-----|
| Job No | Drawing No   | Rev |
| 234180 | CVL-HN-01154 | 01  |



PLAN



PROFILE

|                |                       |             |             |             |             |             |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|----------------|-----------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| STATIONING     | HN1 1584+00           | HN1 1590+00 | HN1 1600+00 | HN1 1610+00 | HN1 1620+00 | HN1 1630+00 | HN1 1640+00 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| HOR. ALIGNMENT |                       |             |             |             |             |             |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| VER. ALIGNMENT | L=3287.55<br>G=0.850% |             |             |             |             |             |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| CUT AND FILL   | +16.0                 | +15.7       | +16.2       | +19.4       | +21.7       | +23.5       | +25.1       | +26.4 | +28.6 | +30.0 | +31.2 | +32.4 | +33.7 | +33.9 | +34.0 | +35.6 | +36.7 | +38.1 | +38.8 | +38.6 | +38.3 | +39.0 | +40.0 | +40.8 | +42.0 | +43.8 | +38.7 | +42.6 | +42.3 |
| TYP. SECTION   | EMBANKMENT (A)        |             |             | VIADUCT (E) |             |             |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |

|             |             |
|-------------|-------------|
| DESIGNED BY | T. SMELCER  |
| DRAWN BY    | J. BORGHESI |
| CHECKED BY  | K. SEYMOUR  |
| IN CHARGE   | C. TAYLOR   |
| DATE        | 09/15/2017  |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
|     |      |    |     |     |             |

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www.freese.com  
Texas Registered Engineering Firm: F-2144

Client

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

Drawing Title

**HOUSTON SEGMENT CIVIL PLAN AND PROFILE**  
HN1 1584+00 TO HN1 1640+00

Scale

AS SHOWN

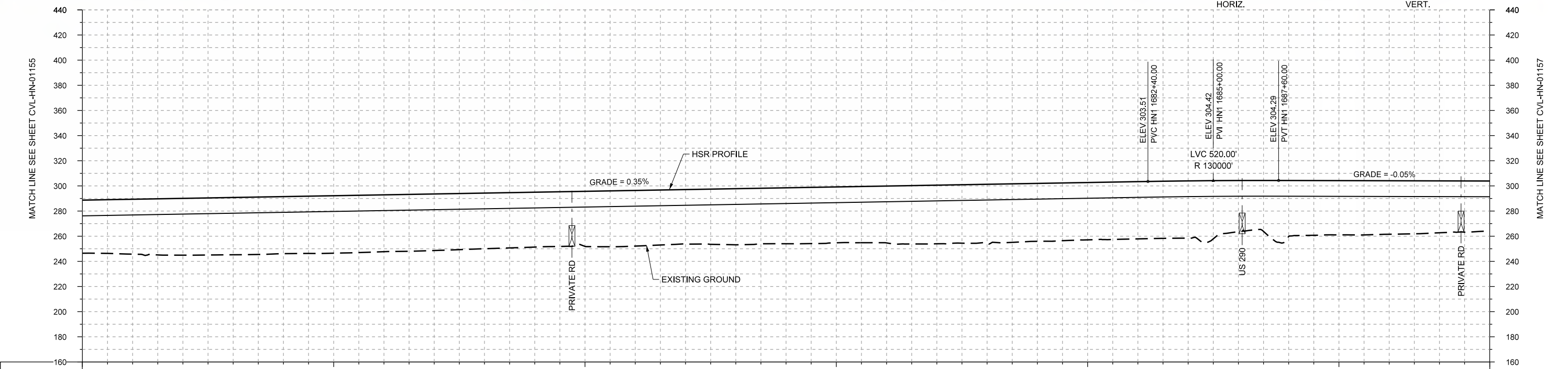
Drawing Status

**FINAL DRAFT**

|        |              |     |
|--------|--------------|-----|
| Job No | Drawing No   | Rev |
| 234180 | CVL-HN-01155 | 01  |



PLAN



|                |                    |             |                       |             |             |             |                        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|----------------|--------------------|-------------|-----------------------|-------------|-------------|-------------|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| STATIONING     | HN1 1640+00        | HN1 1650+00 | HN1 1660+00           | HN1 1670+00 | HN1 1680+00 | HN1 1690+00 | HN1 1696+00            |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| HOR. ALIGNMENT | R=18700<br>L=20882 |             | L=1610                |             | L=13945     |             |                        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| VER. ALIGNMENT |                    |             | L=6615.02<br>G=0.350% |             | R=130000    |             | L=8322.52<br>G=-0.050% |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| CUT AND FILL   | +42.3              | +43.7       | +45.2                 | +45.6       | +45.4       | +45.7       | +45.2                  | +45.0 | +44.3 | +43.7 | +43.8 | +44.3 | +43.3 | +44.7 | +44.5 | +44.5 | +45.3 | +46.6 | +46.7 | +46.1 | +45.6 | +45.5 | +45.6 | +40.7 | +44.5 | +43.1 | +42.6 | +41.3 | +40.3 |
| TYP. SECTION   | VIADUCT (E)        |             |                       |             |             |             |                        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |

PROFILE

|             |             |
|-------------|-------------|
| DESIGNED BY | T. SMELCER  |
| DRAWN BY    | J. BORGHESI |
| CHECKED BY  | K. SEYMOUR  |
| IN CHARGE   | C. TAYLOR   |
| DATE        | 09/15/2017  |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
|     |      |    |     |     |             |
|     |      |    |     |     |             |

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10370 Richmond Ave., Suite 475  
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Tel (713) 783 2787 Fax (713) 343 1467  
www.arup.com  
Texas Registered Engineering Firm: F-1990

2711 North Haskell Ave., Suite 3300  
Dallas, Texas 75204  
Tel (214) 217 2200 Fax (214) 217 2201  
www.freese.com  
Texas Registered Engineering Firm: F-2144

Client

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

Drawing Title

**HOUSTON SEGMENT  
CIVIL  
PLAN AND PROFILE  
HN1 1640+00 TO HN1 1696+00**

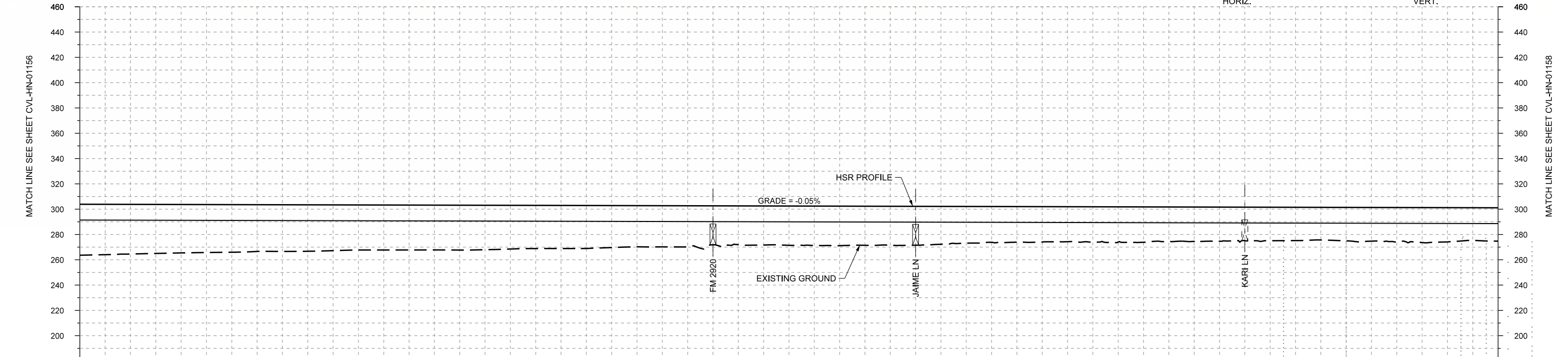
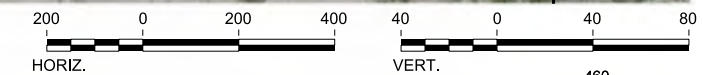
Scale  
AS SHOWN

Drawing Status  
**FINAL DRAFT**

|        |              |     |
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| Job No | Drawing No   | Rev |
| 234180 | CVL-HN-01156 | 01  |



PLAN



PROFILE

|                |                        |             |             |             |             |             |             |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|----------------|------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| STATIONING     | HN1 1696+00            | HN1 1700+00 | HN1 1710+00 | HN1 1720+00 | HN1 1730+00 | HN1 1740+00 | HN1 1750+00 | HN1 1752+00 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| HOR. ALIGNMENT | L=13945                |             |             |             |             |             |             |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| VER. ALIGNMENT | L=8322.52<br>G=-0.050% |             |             |             |             |             |             |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| CUT AND FILL   | +40.3                  | +38.3       | +38.3       | +37.6       | +36.9       | +36.2       | +35.6       | +35.4       | +35.2 | +34.1 | +34.0 | +32.5 | +32.4 | +30.7 | +31.1 | +31.3 | +31.0 | +29.9 | +28.3 | +28.0 | +28.1 | +28.0 | +27.2 | +26.6 | +26.3 | +26.5 | +27.1 | +27.1 | +26.4 |
| TYP. SECTION   | VIADUCT (E)            |             |             |             |             |             |             |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
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|     |      |    |     |     |             |

DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

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 Texas Registered Engineering Firm: F-2144

Client  
  
**TEXAS CENTRAL**  
 1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

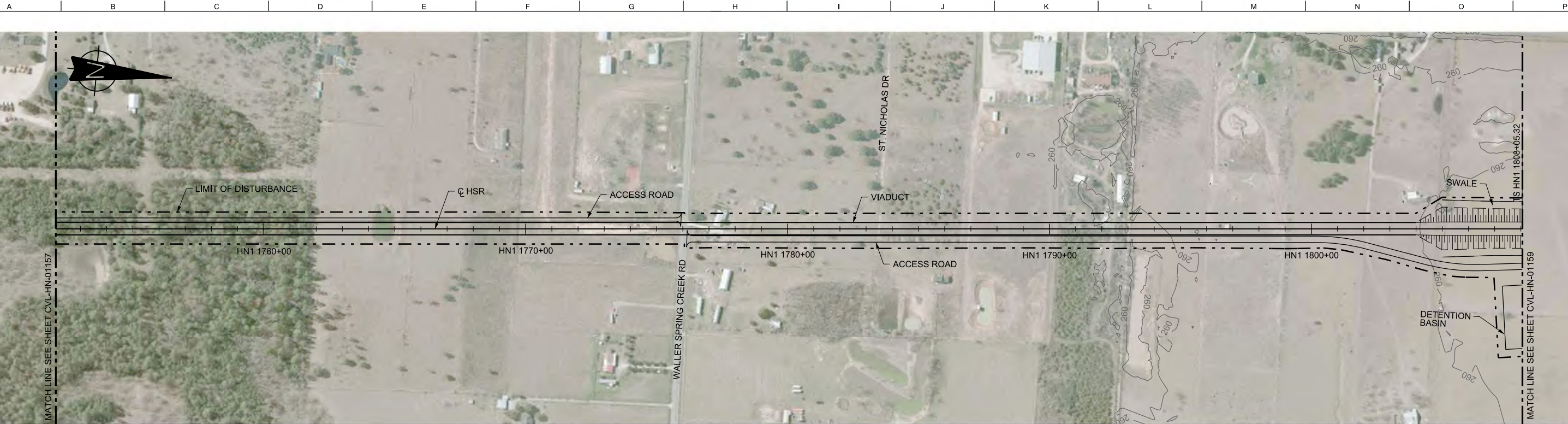
Drawing Title  
**HOUSTON SEGMENT CIVIL PLAN AND PROFILE**  
 HN1 1696+00 TO HN1 1752+00

Scale  
AS SHOWN

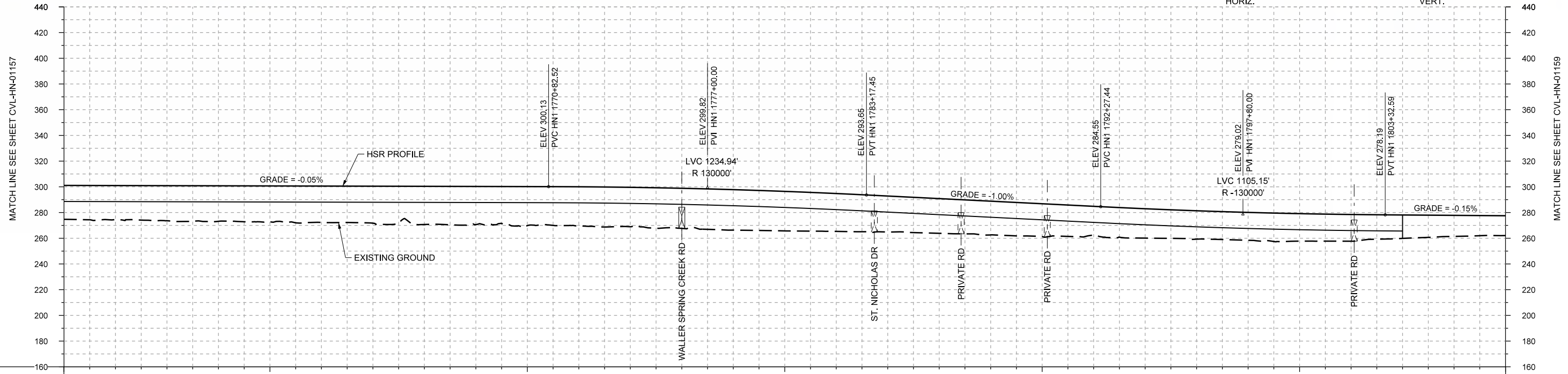
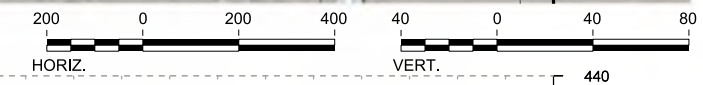
Drawing Status  
**FINAL DRAFT**

|        |              |     |
|--------|--------------|-----|
| Job No | Drawing No   | Rev |
| 234180 | CVL-HN-01157 | 01  |





PLAN



PROFILE

|                |                        |             |             |             |             |                       |                |  |
|----------------|------------------------|-------------|-------------|-------------|-------------|-----------------------|----------------|--|
| STATIONING     | HN1 1752+00            | HN1 1760+00 | HN1 1770+00 | HN1 1780+00 | HN1 1790+00 | HN1 1800+00           | HN1 1808+00    |  |
| HOR. ALIGNMENT | L=13945                |             |             |             |             |                       |                |  |
| VER. ALIGNMENT | L=8322.52<br>G=-0.050% |             | R=130000    |             |             | L=909.98<br>G=-1.000% |                |  |
| CUT AND FILL   | +26.4                  | +26.5       | +27.3       | +27.7       | +28.1       | +28.3                 | +28.8          |  |
| TYP. SECTION   | VIADUCT (E)            |             |             |             |             |                       | EMBANKMENT (A) |  |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
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DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

**ARUP**

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Dallas, Texas 75204  
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Texas Registered Engineering Firm: F-2144

Client

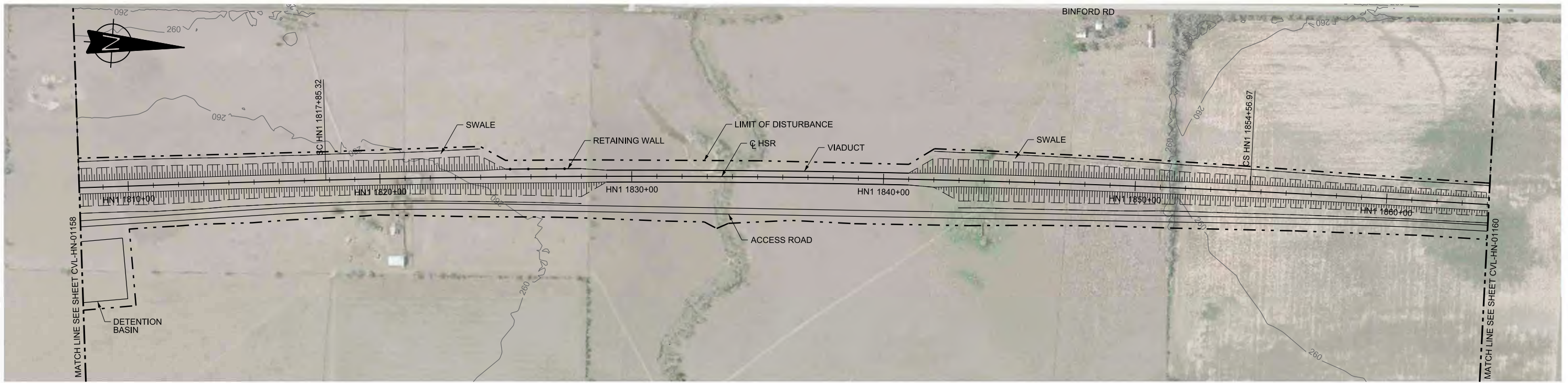
**TEXAS CENTRAL**

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

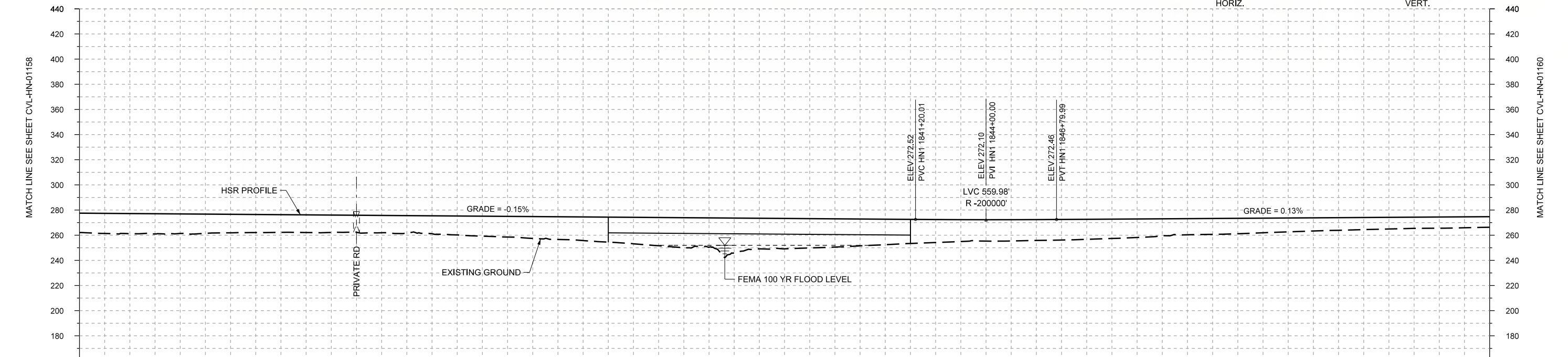
Drawing Title

**HOUSTON SEGMENT CIVIL PLAN AND PROFILE HN1 1752+00 TO HN1 1808+00**

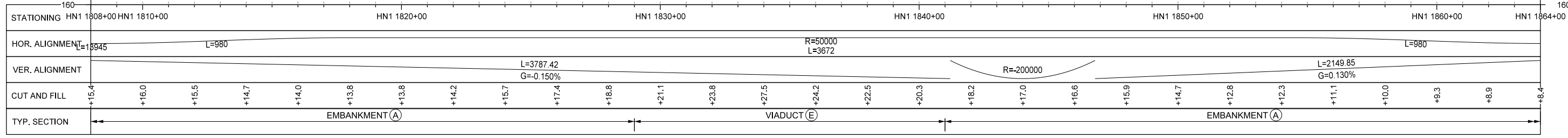
|                |              |
|----------------|--------------|
| Scale          | AS SHOWN     |
| Drawing Status | FINAL DRAFT  |
| Job No         | 234180       |
| Drawing No     | CVL-HN-01158 |
| Rev            | 01           |



PLAN



PROFILE



| REV | DATE | BY | CHK | APP | DESCRIPTION |
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|     |      |    |     |     |             |
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|     |      |    |     |     |             |

DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

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www.freese.com  
Texas Registered Engineering Firm: F-2144

Client

**TEXAS CENTRAL**

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

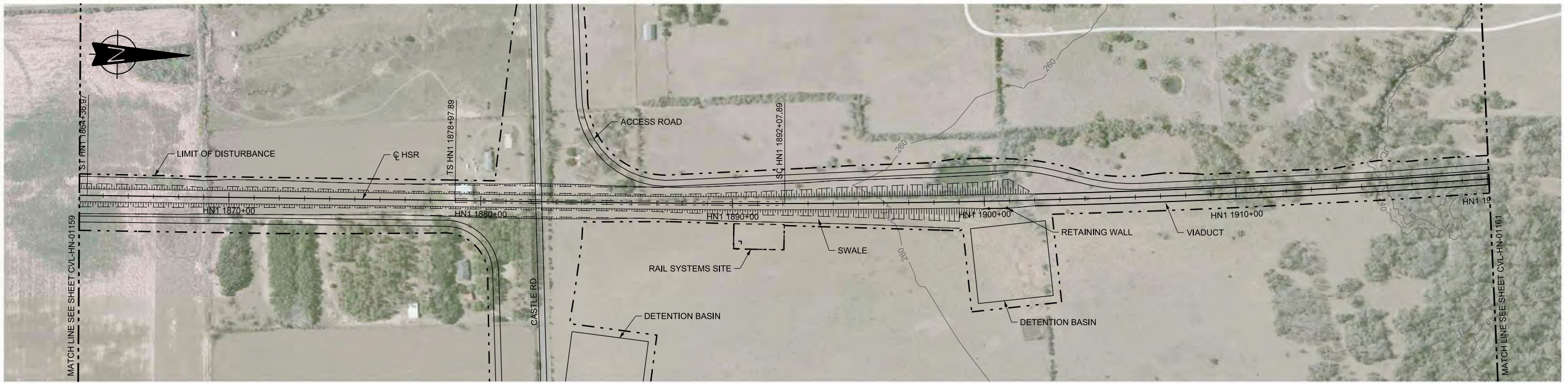
Drawing Title

**HOUSTON SEGMENT CIVIL  
PLAN AND PROFILE  
HN1 1808+00 TO HN1 1864+00**

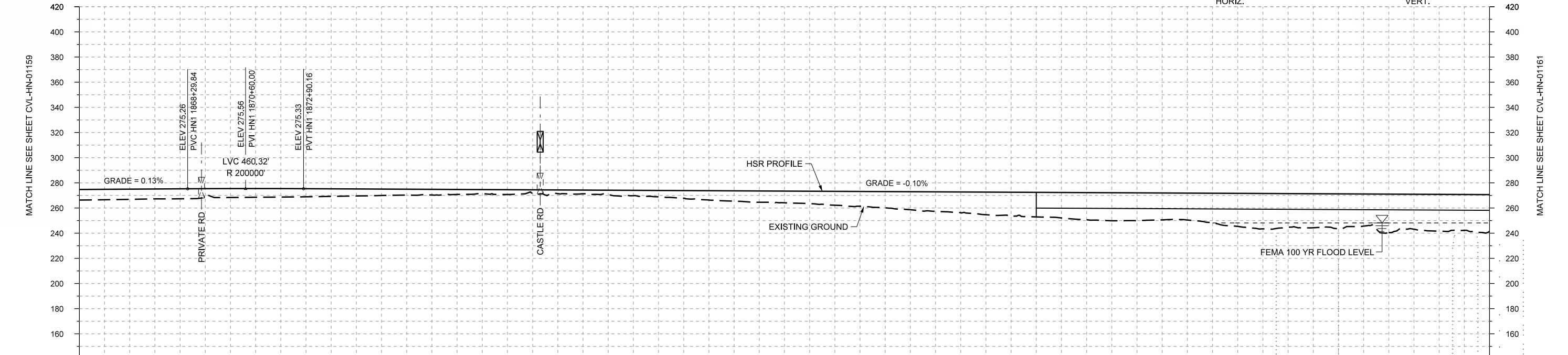
Scale  
**AS SHOWN**

Drawing Status  
**FINAL DRAFT**

|                         |                                   |                  |
|-------------------------|-----------------------------------|------------------|
| Job No<br><b>234180</b> | Drawing No<br><b>CVL-HN-01159</b> | Rev<br><b>01</b> |
|-------------------------|-----------------------------------|------------------|



PLAN



PROFILE

|                |                       |             |             |             |                        |                   |             |                |      |      |      |      |             |      |      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|----------------|-----------------------|-------------|-------------|-------------|------------------------|-------------------|-------------|----------------|------|------|------|------|-------------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| STATIONING     | HN1 1864+00           | HN1 1870+00 | HN1 1880+00 | HN1 1890+00 | HN1 1900+00            | HN1 1910+00       | HN1 1920+00 |                |      |      |      |      |             |      |      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| HOR. ALIGNMENT | L=580                 | L=1461      |             | L=1310      |                        | R=42000<br>L=4698 |             |                |      |      |      |      |             |      |      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| VER. ALIGNMENT | L=2149.85<br>G=0.130% | R=200000    |             |             | L=5317.46<br>G=-0.100% |                   |             |                |      |      |      |      |             |      |      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| CUT AND FILL   | +8.4                  | +8.1        | +7.9        | +7.0        | +6.7                   | +6.0              | +5.1        | +4.5           | +3.2 | +2.6 | +2.9 | +4.2 | +6.0        | +8.2 | +9.3 | +11.0 | +12.8 | +15.5 | +16.0 | +19.5 | +21.6 | +22.1 | +21.4 | +26.3 | +26.7 | +27.8 | +30.6 | +29.2 | +29.1 |
| TYP. SECTION   | EMBANKMENT (A)        |             |             |             |                        | CUT (C)           |             | EMBANKMENT (A) |      |      |      |      | VIADUCT (E) |      |      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
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|     |      |    |     |     |             |
|     |      |    |     |     |             |

DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

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www.freese.com  
Texas Registered Engineering Firm: F-2144

Client

**TEXAS CENTRAL**

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

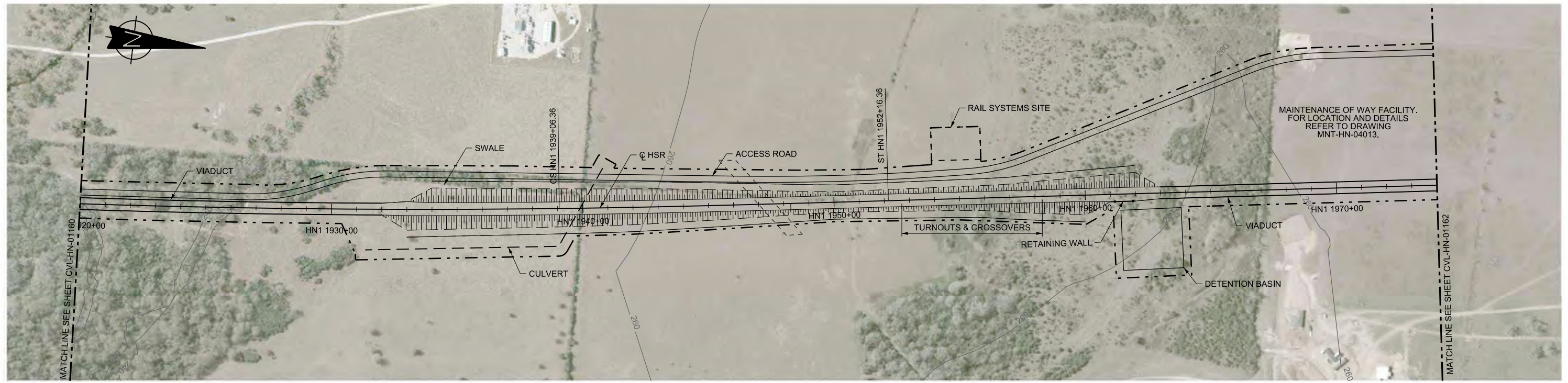
Drawing Title

**HOUSTON SEGMENT CIVIL PLAN AND PROFILE**  
HN1 1864+00 TO HN1 1920+00

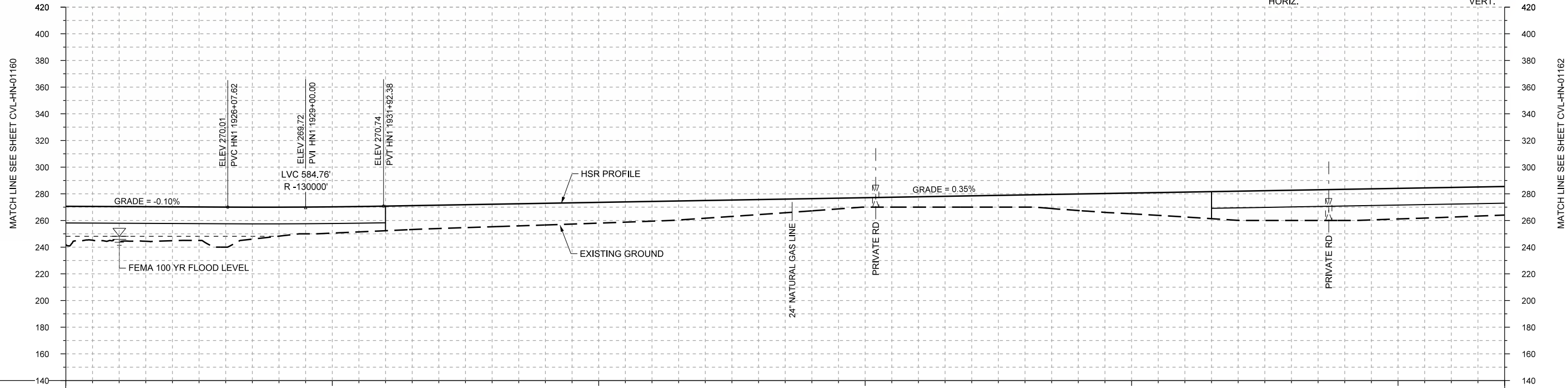
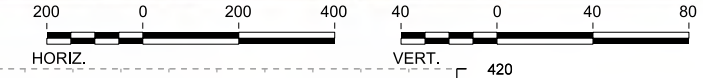
Scale  
AS SHOWN

Drawing Status  
**FINAL DRAFT**

|        |              |     |
|--------|--------------|-----|
| Job No | Drawing No   | Rev |
| 234180 | CVL-HN-01160 | 01  |



PLAN



|                |                        |             |             |             |                |                        |             |       |       |       |       |       |       |       |             |      |      |      |      |       |       |       |       |       |       |       |       |       |
|----------------|------------------------|-------------|-------------|-------------|----------------|------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| STATIONING     | HN1 1920+00            | HN1 1930+00 | HN1 1940+00 | HN1 1950+00 | HN1 1960+00    | HN1 1970+00            | HN1 1974+00 |       |       |       |       |       |       |       |             |      |      |      |      |       |       |       |       |       |       |       |       |       |
| HOR. ALIGNMENT | R=42000<br>L=4698      |             | L=1310      |             |                | L=8216                 |             |       |       |       |       |       |       |       |             |      |      |      |      |       |       |       |       |       |       |       |       |       |
| VER. ALIGNMENT | L=5317.46<br>G=-0.100% |             | R=130000    |             |                | L=12752.70<br>G=0.350% |             |       |       |       |       |       |       |       |             |      |      |      |      |       |       |       |       |       |       |       |       |       |
| CUT AND FILL   | +26.1                  | +26.2       | +25.4       | +30.0       | +21.7          | +19.7                  | +18.5       | +17.5 | +16.9 | +16.3 | +15.6 | +14.8 | +13.3 | +11.3 | +9.2        | +7.1 | +7.8 | +8.5 | +9.2 | +12.4 | +15.6 | +18.7 | +21.9 | +22.7 | +23.4 | +23.0 | +22.3 | +21.4 |
| TYP. SECTION   | VIADUCT (E)            |             |             |             | EMBANKMENT (A) |                        |             |       |       |       |       |       |       |       | VIADUCT (E) |      |      |      |      |       |       |       |       |       |       |       |       |       |

PROFILE

| REV | DATE | BY | CHK | APP | DESCRIPTION |
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|     |      |    |     |     |             |

DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

**ARUP**

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Dallas, Texas 75204  
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www.freese.com  
Texas Registered Engineering Firm: F-2144

Client

**TEXAS CENTRAL**

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

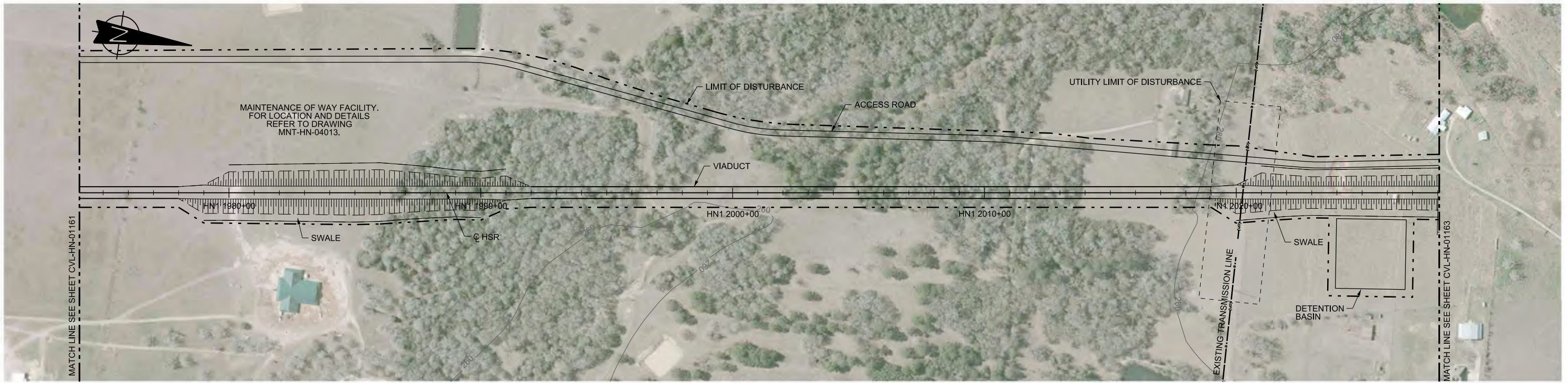
Drawing Title

**HOUSTON SEGMENT CIVIL PLAN AND PROFILE**  
HN1 1920+00 TO HN1 1974+00

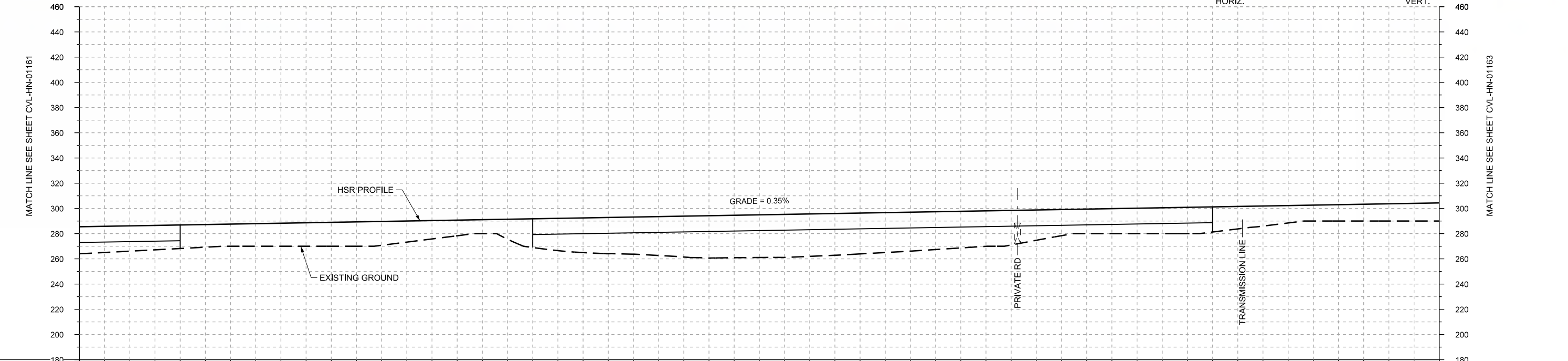
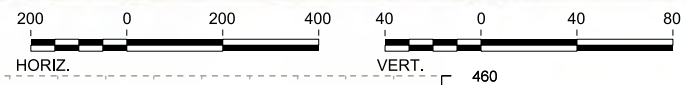
Scale  
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Drawing Status  
**FINAL DRAFT**

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| Job No | Drawing No   | Rev |
| 234180 | CVL-HN-01161 | 01  |



PLAN



PROFILE

|                |                        |             |                |             |             |             |             |       |       |       |       |       |             |       |                |       |       |       |       |       |       |       |       |       |       |       |       |       |
|----------------|------------------------|-------------|----------------|-------------|-------------|-------------|-------------|-------|-------|-------|-------|-------|-------------|-------|----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| STATIONING     | HN1 1974+00            | HN1 1980+00 | HN1 1990+00    | HN1 2000+00 | HN1 2010+00 | HN1 2020+00 | HN1 2028+00 |       |       |       |       |       |             |       |                |       |       |       |       |       |       |       |       |       |       |       |       |       |
| HOR. ALIGNMENT | L=8216                 |             |                |             |             |             |             |       |       |       |       |       |             |       |                |       |       |       |       |       |       |       |       |       |       |       |       |       |
| VER. ALIGNMENT | L=12752.70<br>G=0.350% |             |                |             |             |             |             |       |       |       |       |       |             |       |                |       |       |       |       |       |       |       |       |       |       |       |       |       |
| CUT AND FILL   | +21.4                  | +20.1       | +18.7          | +17.6       | +16.3       | +19.0       | +18.9       | +14.6 | +11.1 | +22.8 | +27.5 | +29.5 | +32.5       | +33.7 | +34.2          | +33.1 | +31.7 | +30.0 | +26.2 | +24.1 | +19.5 | +20.2 | +20.9 | +17.9 | +13.8 | +13.0 | +13.7 | +14.4 |
| TYP. SECTION   | VIADUCT (E)            |             | EMBANKMENT (A) |             |             |             |             |       |       |       |       |       | VIADUCT (E) |       | EMBANKMENT (A) |       |       |       |       |       |       |       |       |       |       |       |       |       |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
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|     |      |    |     |     |             |

DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

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Texas Registered Engineering Firm: F-2144

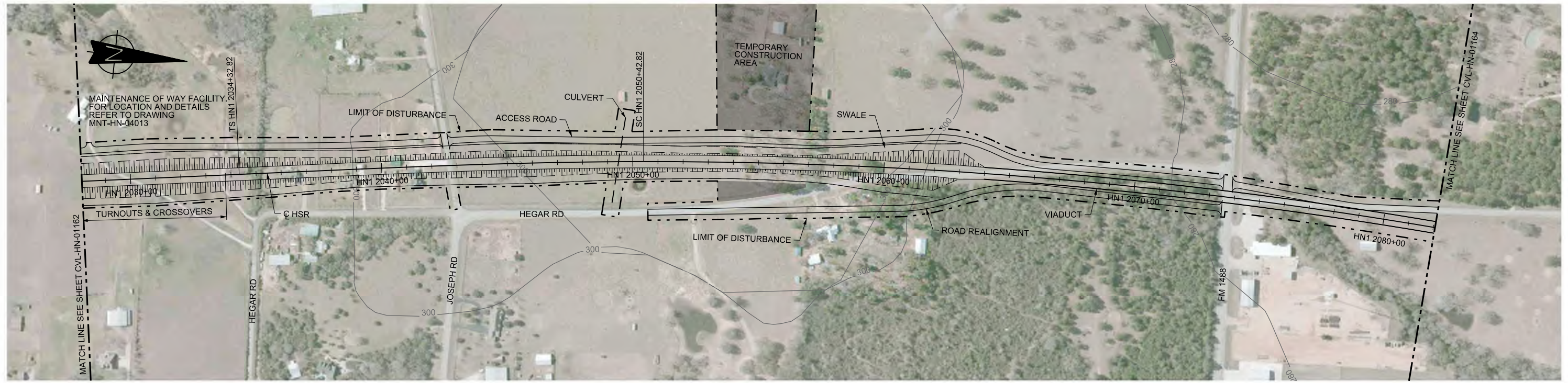
Client

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

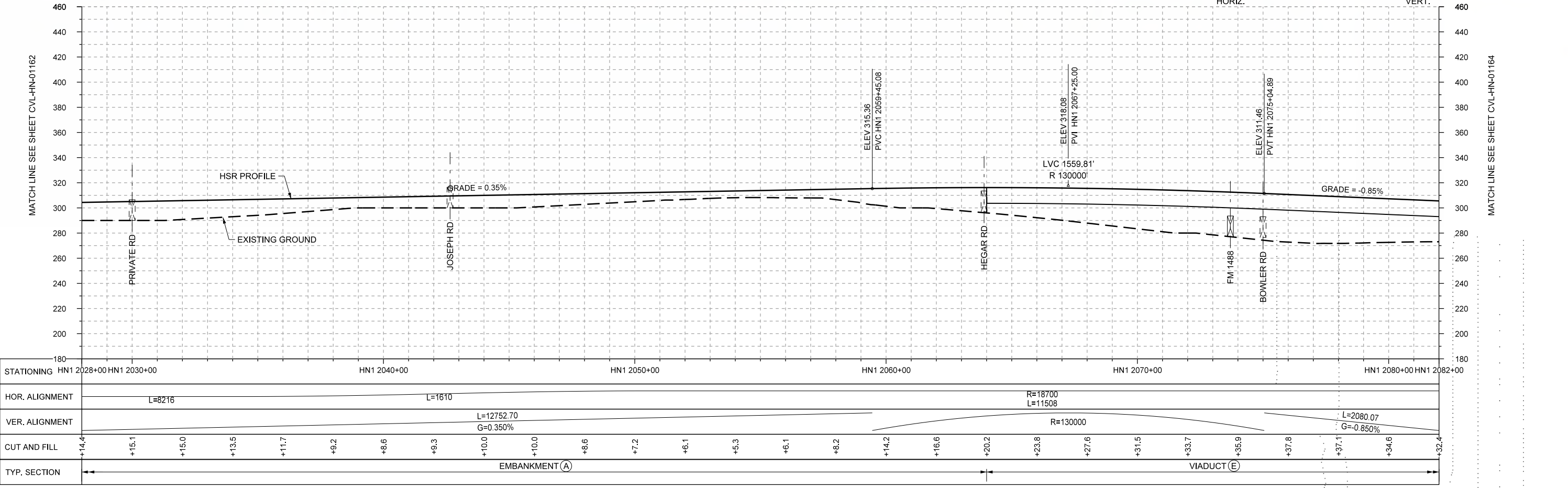
Drawing Title

**HOUSTON SEGMENT CIVIL PLAN AND PROFILE**  
HN1 1974+00 TO HN1 2028+00

|                |              |
|----------------|--------------|
| Scale          | AS SHOWN     |
| Drawing Status | FINAL DRAFT  |
| Job No         | 234180       |
| Drawing No     | CVL-HN-01162 |
| Rev            | 01           |



PLAN



PROFILE

|                |   |                        |             |             |                    |                         |
|----------------|---|------------------------|-------------|-------------|--------------------|-------------------------|
| STATIONING     | HN1 2028+00 HN1 2030+00   | HN1 2040+00            | HN1 2050+00 | HN1 2060+00 | HN1 2070+00        | HN1 2080+00 HN1 2082+00 |
| HOR. ALIGNMENT | L=8216  | L=1610                 |             |             | R=18700<br>L=11508 |                         |
| VER. ALIGNMENT |   | L=12752.70<br>G=0.350% |             |             | R=130000           | L=2080.07<br>G=-0.850%  |
| CUT AND FILL   | +14.4<br>+15.1<br>+15.0<br>+13.5<br>+11.7<br>+9.2<br>+8.6<br>+9.3<br>+10.0<br>+10.0<br>+8.6<br>+7.2<br>+6.1<br>+5.3<br>+6.1<br>+8.2<br>+14.2<br>+16.6<br>+20.2<br>+23.8<br>+27.6<br>+31.5<br>+33.7<br>+35.9<br>+37.8<br>+37.1<br>+34.6<br>+32.4 |                        |             |             |                    |                         |
| TYP. SECTION   | EMBANKMENT (A)  |                        |             | VIADUCT (E) |                    |                         |

|             |             |
|-------------|-------------|
| DESIGNED BY | T. SMELCER  |
| DRAWN BY    | J. BORGHESI |
| CHECKED BY  | K. SEYMOUR  |
| IN CHARGE   | C. TAYLOR   |
| DATE        | 09/15/2017  |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
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|     |      |    |     |     |             |

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www.freese.com  
Texas Registered Engineering Firm: F-2144

Client

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

Drawing Title

**HOUSTON SEGMENT  
CIVIL  
PLAN AND PROFILE**  
HN1 2028+00 TO HN1 2082+00

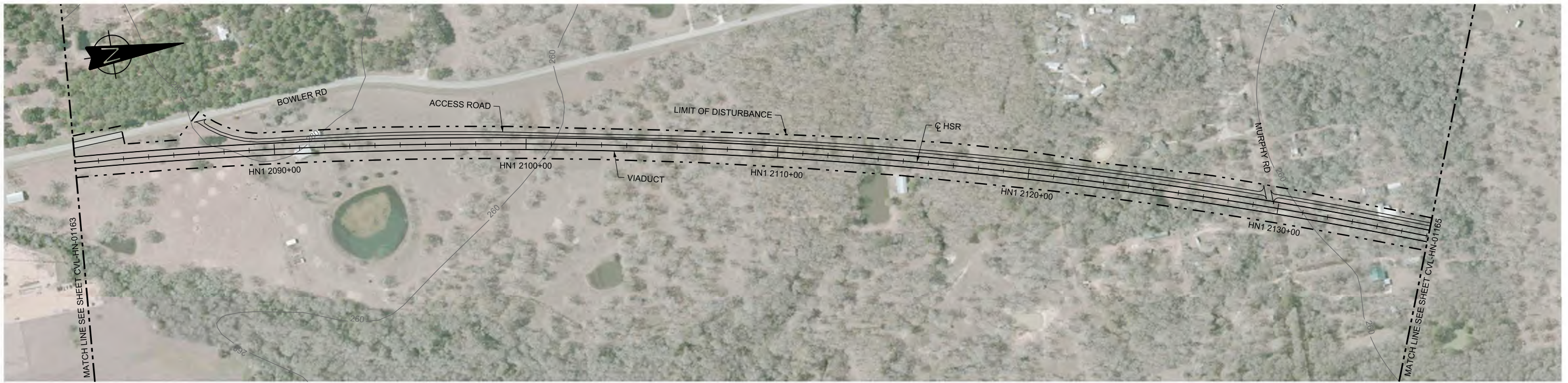
Scale

AS SHOWN

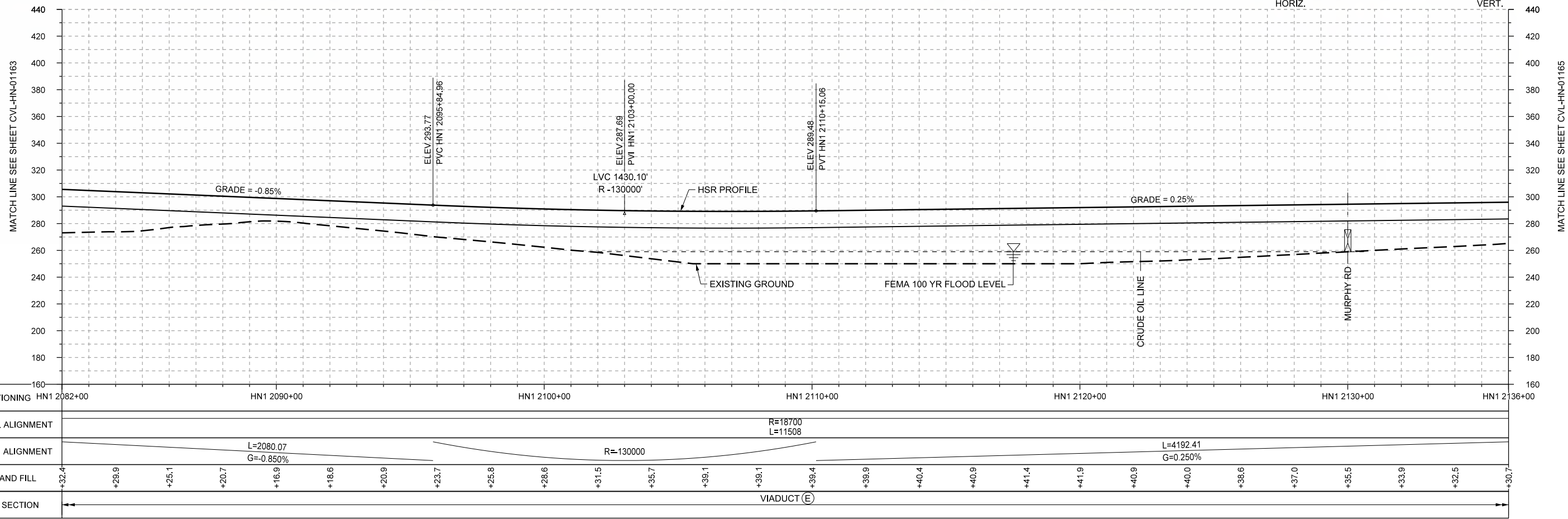
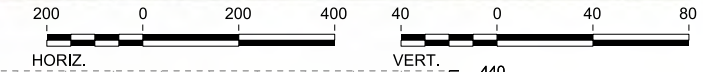
Drawing Status

**FINAL DRAFT**

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| Job No | Drawing No   | Rev |
| 234180 | CVL-HN-01163 | 01  |



PLAN



PROFILE

|                |                        |             |             |                    |                       |             |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|----------------|------------------------|-------------|-------------|--------------------|-----------------------|-------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| STATIONING     | HN1 2082+00            | HN1 2090+00 | HN1 2100+00 | HN1 2110+00        | HN1 2120+00           | HN1 2130+00 | HN1 2136+00 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| HOR. ALIGNMENT |                        |             |             | R=18700<br>L=11508 |                       |             |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| VER. ALIGNMENT | L=2080.07<br>G=-0.850% |             | R=130000    |                    | L=4192.41<br>G=0.250% |             |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| CUT AND FILL   | +32.4                  | +29.9       | +25.1       | +20.7              | +18.9                 | +18.6       | +20.9       | +23.7 | +25.8 | +26.6 | +31.5 | +35.7 | +39.1 | +39.1 | +39.4 | +39.9 | +40.4 | +40.9 | +41.4 | +41.9 | +40.9 | +40.0 | +38.6 | +37.0 | +35.5 | +33.9 | +32.5 | +30.7 |
| TYP. SECTION   | VIADUCT (E)            |             |             |                    |                       |             |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |

|             |             |
|-------------|-------------|
| DESIGNED BY | T. SMELCER  |
| DRAWN BY    | J. BORGHESI |
| CHECKED BY  | K. SEYMOUR  |
| IN CHARGE   | C. TAYLOR   |
| DATE        | 09/15/2017  |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
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2711 North Haskell Ave., Suite 3300  
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Tel (214) 217 2200 Fax (214) 217 2201  
www.freese.com  
Texas Registered Engineering Firm: F-2144

Client

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

Drawing Title

**HOUSTON SEGMENT CIVIL PLAN AND PROFILE**  
HN1 2082+00 TO HN1 2136+00

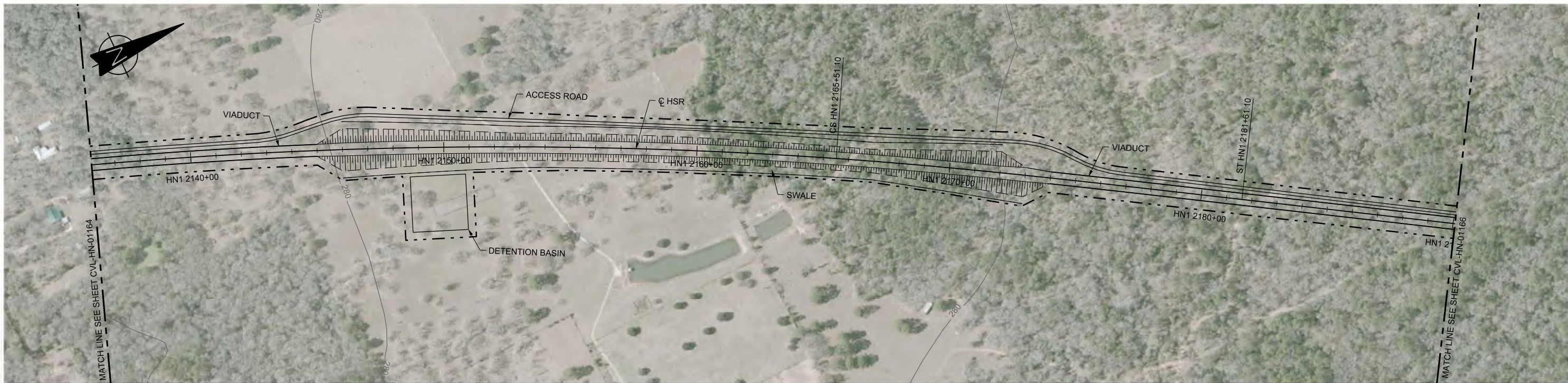
Scale

AS SHOWN

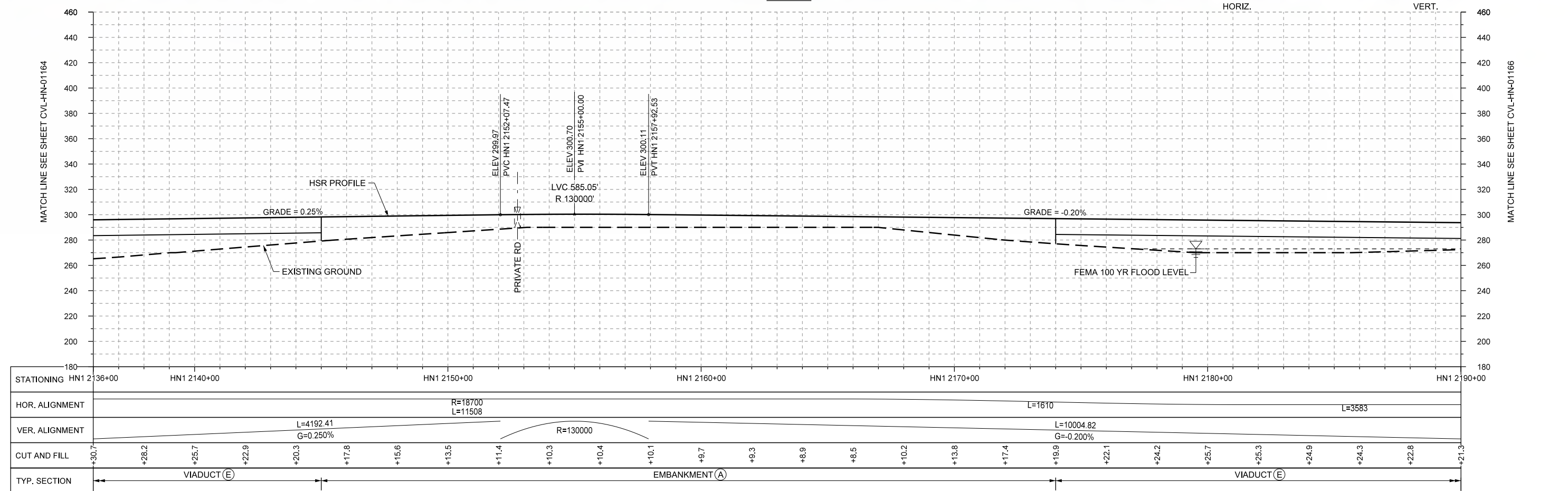
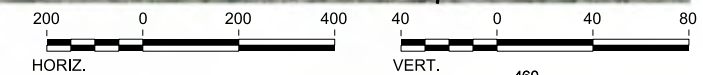
Drawing Status

**FINAL DRAFT**

|        |              |     |
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| Job No | Drawing No   | Rev |
| 234180 | CVL-HN-01164 | 01  |



PLAN



PROFILE

|                |             |                       |                    |             |                |                         |             |       |       |       |       |       |      |      |             |      |       |       |       |       |       |       |       |       |       |       |       |       |
|----------------|-------------|-----------------------|--------------------|-------------|----------------|-------------------------|-------------|-------|-------|-------|-------|-------|------|------|-------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| STATIONING     | HN1 2136+00 | HN1 2140+00           | HN1 2150+00        | HN1 2160+00 | HN1 2170+00    | HN1 2180+00             | HN1 2190+00 |       |       |       |       |       |      |      |             |      |       |       |       |       |       |       |       |       |       |       |       |       |
| HOR. ALIGNMENT |             |                       | R=18700<br>L=11508 |             | L=1610         |                         | L=3583      |       |       |       |       |       |      |      |             |      |       |       |       |       |       |       |       |       |       |       |       |       |
| VER. ALIGNMENT |             | L=4192.41<br>G=0.250% |                    | R=130000    |                | L=10004.82<br>G=-0.200% |             |       |       |       |       |       |      |      |             |      |       |       |       |       |       |       |       |       |       |       |       |       |
| CUT AND FILL   | +30.7       | +28.2                 | +25.7              | +22.9       | +20.3          | +17.8                   | +15.6       | +13.5 | +11.4 | +10.3 | +10.4 | +10.1 | +9.7 | +9.3 | +8.9        | +8.5 | +10.2 | +13.8 | +17.4 | +19.9 | +22.1 | +24.2 | +25.7 | +25.3 | +24.9 | +24.3 | +22.8 | +21.3 |
| TYP. SECTION   | VIADUCT (E) |                       |                    |             | EMBANKMENT (A) |                         |             |       |       |       |       |       |      |      | VIADUCT (E) |      |       |       |       |       |       |       |       |       |       |       |       |       |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
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|     |      |    |     |     |             |

DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

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Tel (214) 217 2200 Fax (214) 217 2201  
www.freese.com  
Texas Registered Engineering Firm: F-2144

Client

**TEXAS CENTRAL**

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

Drawing Title

**HOUSTON SEGMENT CIVIL PLAN AND PROFILE**  
HN1 2136+00 TO HN1 2190+00

Scale  
AS SHOWN

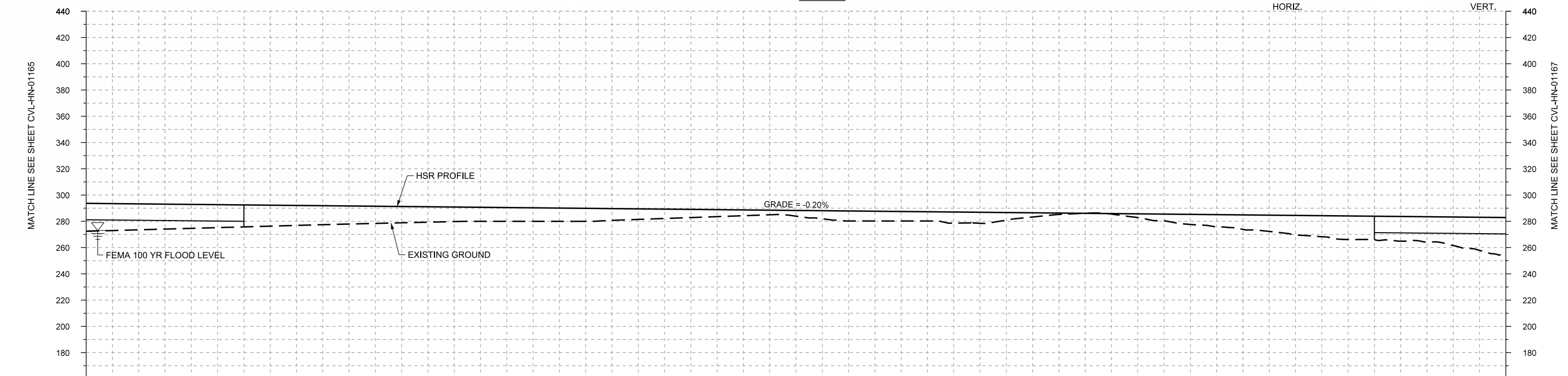
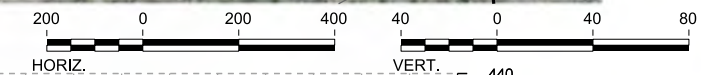
Drawing Status  
**FINAL DRAFT**

|        |              |     |
|--------|--------------|-----|
| Job No | Drawing No   | Rev |
| 234180 | CVL-HN-01165 | 01  |





PLAN



|                |                         |             |                |             |             |                    |             |       |       |       |      |      |         |      |                |      |      |      |      |      |      |      |       |       |             |       |       |       |
|----------------|-------------------------|-------------|----------------|-------------|-------------|--------------------|-------------|-------|-------|-------|------|------|---------|------|----------------|------|------|------|------|------|------|------|-------|-------|-------------|-------|-------|-------|
| STATIONING     | HN1 2190+00             | HN1 2200+00 | HN1 2210+00    | HN1 2220+00 | HN1 2230+00 | HN1 2240+00        | HN1 2244+00 |       |       |       |      |      |         |      |                |      |      |      |      |      |      |      |       |       |             |       |       |       |
| HOR. ALIGNMENT | L=3583                  |             |                | L=1610      |             | R=18700<br>L=13754 |             |       |       |       |      |      |         |      |                |      |      |      |      |      |      |      |       |       |             |       |       |       |
| VER. ALIGNMENT | L=10004.82<br>G=-0.200% |             |                |             |             |                    |             |       |       |       |      |      |         |      |                |      |      |      |      |      |      |      |       |       |             |       |       |       |
| CUT AND FILL   | +21.3                   | +19.8       | +18.2          | +16.7       | +15.2       | +13.8              | +12.4       | +11.1 | +10.5 | +10.1 | +9.0 | +7.1 | +5.3    | +3.5 | +2             | +7.4 | +7.0 | +6.4 | +3.2 | -0.1 | +2.8 | +7.7 | +11.0 | +14.7 | +18.0       | +18.8 | +21.7 | +27.9 |
| TYP. SECTION   | VIADUCT (E)             |             | EMBANKMENT (A) |             |             |                    |             |       |       |       |      |      | CUT (C) |      | EMBANKMENT (A) |      |      |      |      |      |      |      |       |       | VIADUCT (E) |       |       |       |

PROFILE

| REV | DATE | BY | CHK | APP | DESCRIPTION |
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|     |      |    |     |     |             |

DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

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www.freese.com  
Texas Registered Engineering Firm: F-2144

Client

**TEXAS CENTRAL**

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

Drawing Title

**HOUSTON SEGMENT CIVIL  
PLAN AND PROFILE  
HN1 2190+00 TO HN1 2244+00**

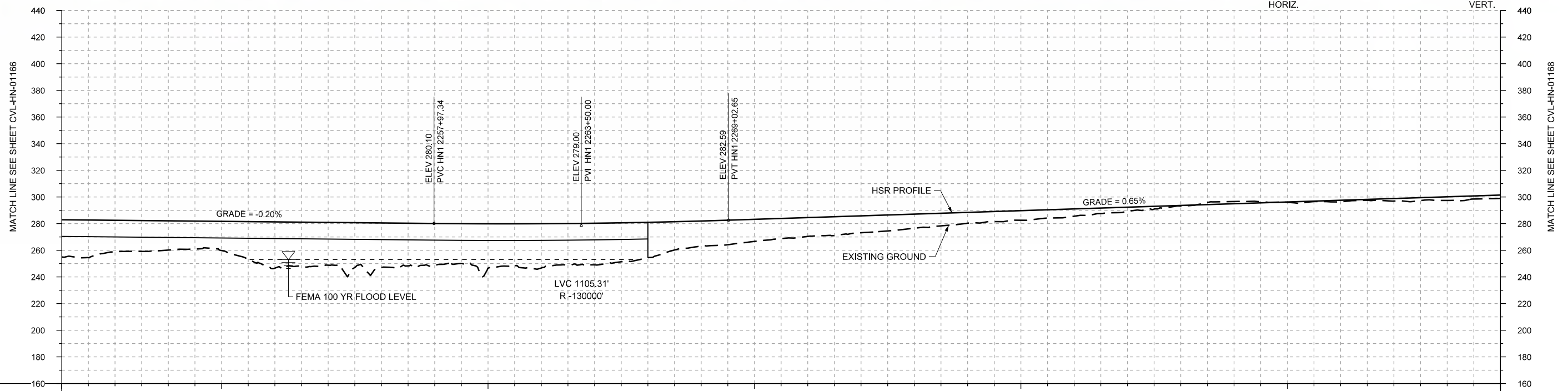
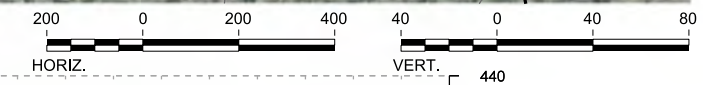
Scale  
AS SHOWN

Drawing Status  
**FINAL DRAFT**

|        |              |     |
|--------|--------------|-----|
| Job No | Drawing No   | Rev |
| 234180 | CVL-HN-01166 | 01  |



PLAN



|                |                         |             |             |             |                    |                       |             |
|----------------|-------------------------|-------------|-------------|-------------|--------------------|-----------------------|-------------|
| STATIONING     | HN1 2244+00             | HN1 2250+00 | HN1 2260+00 | HN1 2270+00 | HN1 2280+00        | HN1 2290+00           | HN1 2298+00 |
| HOR. ALIGNMENT |                         |             |             |             | R=18700<br>L=13754 |                       |             |
| VER. ALIGNMENT | L=10004.82<br>G=-0.200% |             | R=130000    |             |                    | L=3264.68<br>G=0.650% |             |
| CUT AND FILL   | +27.9                   | +23.5       | +22.0       | +21.9       | +34.7              | +32.1                 | +33.4       |
| TYP. SECTION   | VIADUCT (E)             |             |             |             | EMBANKMENT (A)     |                       | CUT (C)     |

PROFILE

|             |             |
|-------------|-------------|
| DESIGNED BY | T. SMELCER  |
| DRAWN BY    | J. BORGHESI |
| CHECKED BY  | K. SEYMOUR  |
| IN CHARGE   | C. TAYLOR   |
| DATE        | 09/15/2017  |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
|     |      |    |     |     |             |

**ARUP**

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www.arup.com  
Texas Registered Engineering Firm: F-1990

**FREESSE AND NICHOLS**

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Dallas, Texas 75204  
Tel (214) 217 2200 Fax (214) 217 2201  
www.freese.com  
Texas Registered Engineering Firm: F-2144

Client

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

Drawing Title

**HOUSTON SEGMENT CIVIL PLAN AND PROFILE**  
HN1 2244+00 TO HN1 2298+00

Scale

AS SHOWN

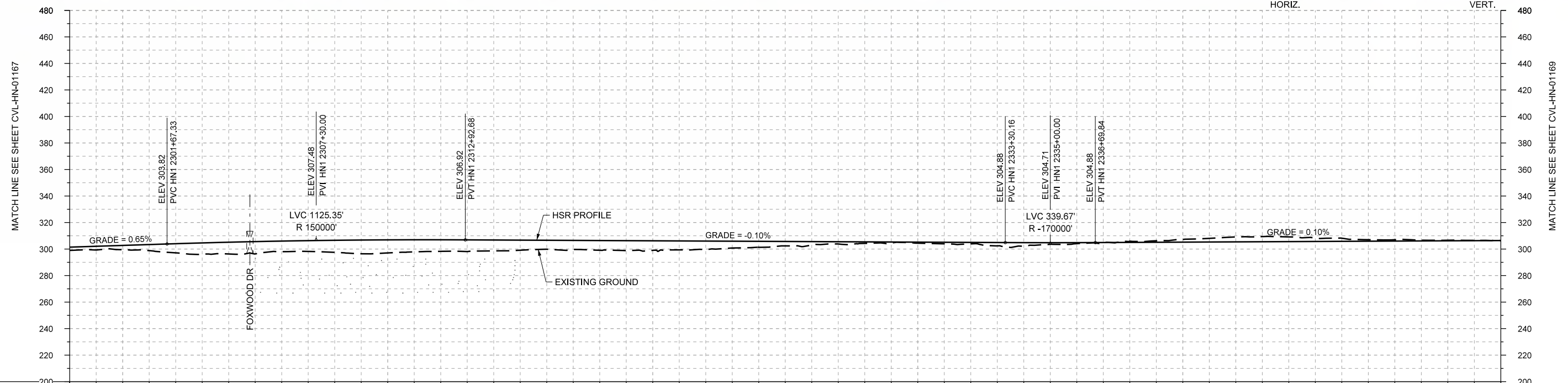
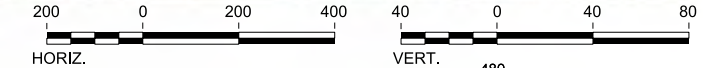
Drawing Status

**FINAL DRAFT**

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| Job No | Drawing No   | Rev |
| 234180 | CVL-HN-01167 | 01  |



PLAN



PROFILE

|                |                         |             |                |             |                        |                         |      |      |      |      |      |      |         |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|----------------|-------------------------|-------------|----------------|-------------|------------------------|-------------------------|------|------|------|------|------|------|---------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| STATIONING     | HN1 2298+00 HN1 2300+00 | HN1 2310+00 | HN1 2320+00    | HN1 2330+00 | HN1 2340+00            | HN1 2350+00 HN1 2352+00 |      |      |      |      |      |      |         |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| HOR. ALIGNMENT | R=18700<br>L=13754      |             |                |             |                        |                         |      |      |      |      |      |      |         |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| VER. ALIGNMENT | L=3264.68<br>G=0.650%   |             | R=150000       |             | L=2037.48<br>G=-0.100% |                         |      |      |      |      |      |      |         |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| CUT AND FILL   | +2.4                    | +3.2        | +6.9           | +8.9        | +8.0                   | +9.1                    | +9.8 | +8.8 | +8.2 | +6.7 | +7.3 | +7.2 | +6.4    | +4.5 | +2.6 | +1.1 | +0.8 | +1.1 | +2.7 | +0.7 | -0.9 | -2.0 | -3.7 | -3.6 | -2.4 | -1.0 | -0.4 | +0.1 |
| TYP. SECTION   | CUT (C)                 |             | EMBANKMENT (A) |             |                        |                         |      |      |      |      |      |      | CUT (C) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
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DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

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Texas Registered Engineering Firm: F-2144

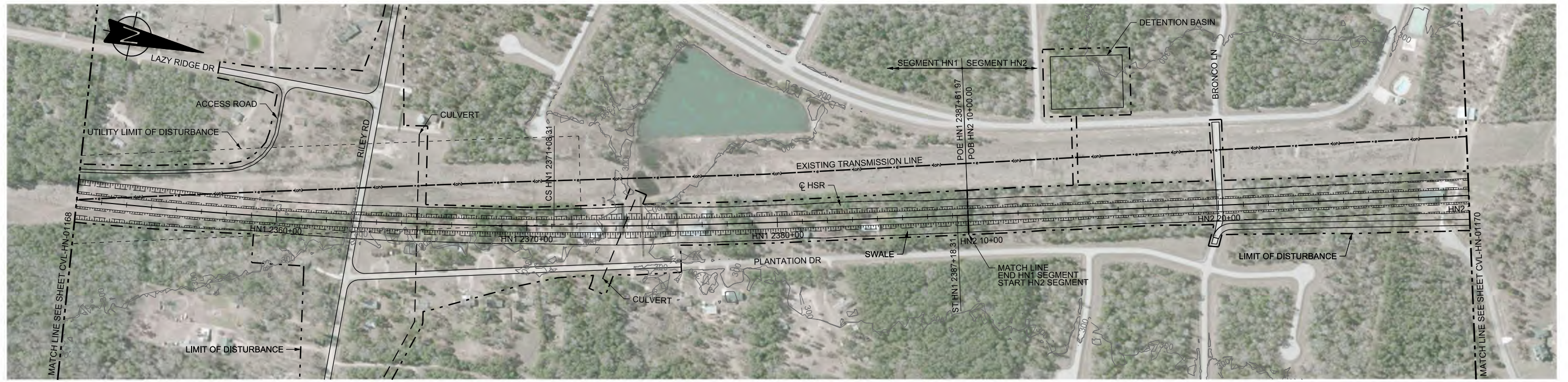
Client

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

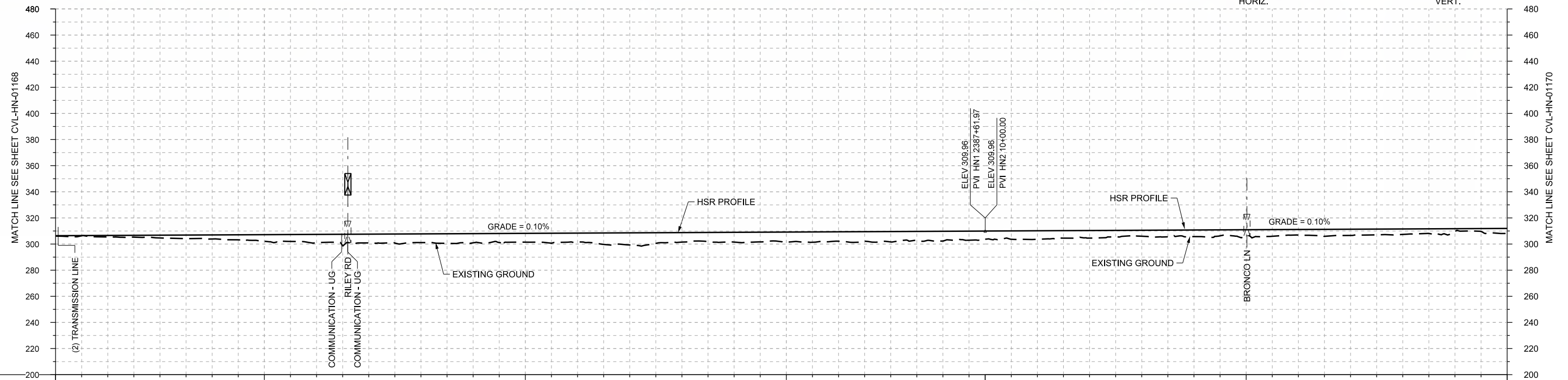
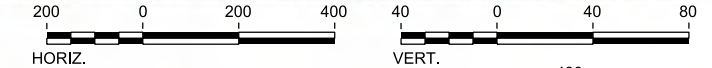
Drawing Title

**HOUSTON SEGMENT  
CIVIL  
PLAN AND PROFILE  
HN1 2298+00 TO HN1 2352+00**

|                |              |
|----------------|--------------|
| Scale          | AS SHOWN     |
| Drawing Status | FINAL DRAFT  |
| Job No         | 234180       |
| Drawing No     | CVL-HN-01168 |
| Rev            | 01           |



PLAN



PROFILE

|                |                     |             |                       |                |             |                       |           |           |      |      |      |      |      |                |      |         |      |         |      |         |      |         |      |         |      |         |      |      |      |
|----------------|---------------------|-------------|-----------------------|----------------|-------------|-----------------------|-----------|-----------|------|------|------|------|------|----------------|------|---------|------|---------|------|---------|------|---------|------|---------|------|---------|------|------|------|
| STATIONING     | HN1 2352+00         | HN1 2360+00 | HN1 2370+00           | HN1 2380+00    | HN1 2387+62 | HN2 10+00             | HN2 20+00 | HN2 30+00 |      |      |      |      |      |                |      |         |      |         |      |         |      |         |      |         |      |         |      |      |      |
| HOR. ALIGNMENT | R=-18700<br>L=13754 |             | L=1610                |                |             | L=19849               |           |           |      |      |      |      |      |                |      |         |      |         |      |         |      |         |      |         |      |         |      |      |      |
| VER. ALIGNMENT |                     |             | L=5092.14<br>G=0.100% |                |             | L=2075.87<br>G=0.100% |           |           |      |      |      |      |      |                |      |         |      |         |      |         |      |         |      |         |      |         |      |      |      |
| CUT AND FILL   | +0.1                | +1.2        | +2.1                  | +3.1           | +4.9        | +6.4                  | +6.7      | +6.7      | +7.1 | +6.7 | +6.8 | +9.3 | +7.3 | +7.5           | +7.8 | +7.2    | +7.9 | +7.5    | +6.3 | +6.6    | +5.8 | +4.6    | +5.1 | +4.6    | +4.3 | +4.8    | +4.2 | +2.2 | +3.5 |
| TYP. SECTION   | CUT (C)             |             |                       | EMBANKMENT (F) |             |                       |           |           |      |      |      |      |      | EMBANKMENT (F) |      | CUT (H) |      | CUT (H) |      | CUT (H) |      | CUT (H) |      | CUT (H) |      | CUT (H) |      |      |      |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
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|     |      |    |     |     |             |

DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

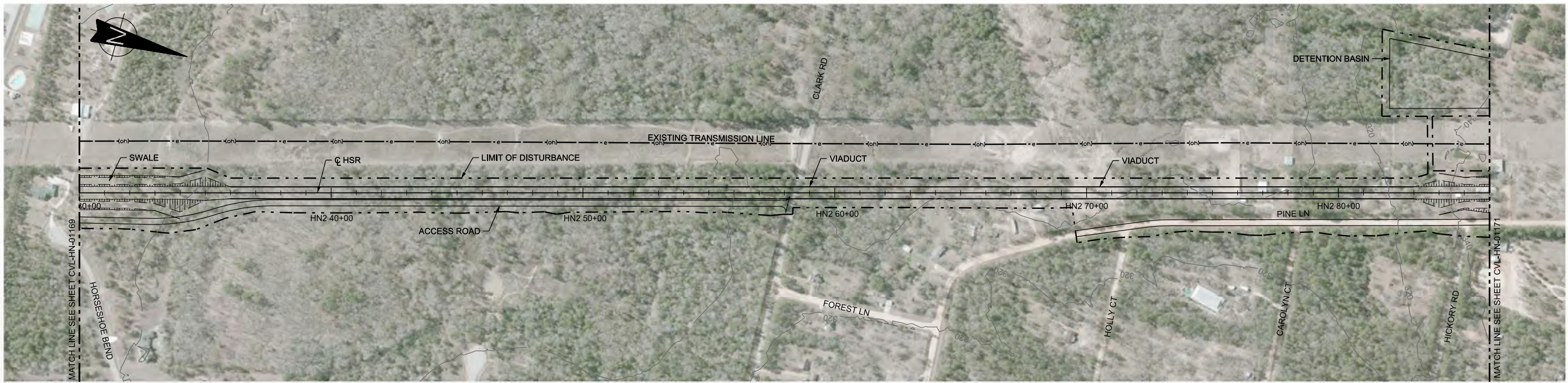
**ARUP**  
 Arup Texas, Inc.  
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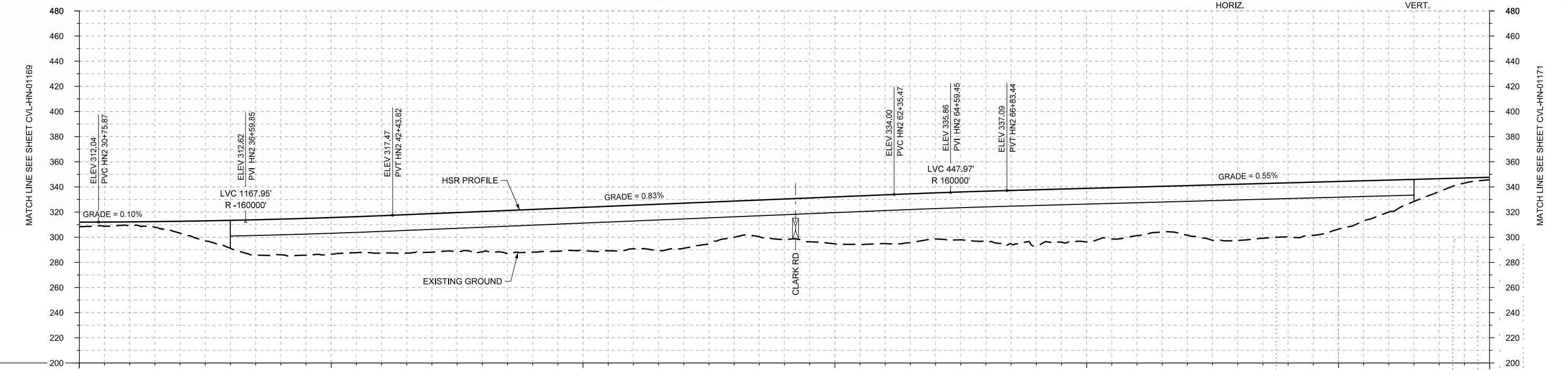
Client  
  
**TEXAS CENTRAL**  
 1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

Drawing Title  
**HOUSTON SEGMENT CIVIL PLAN AND PROFILE**  
 HN1 2352+00 TO HN2 30+00

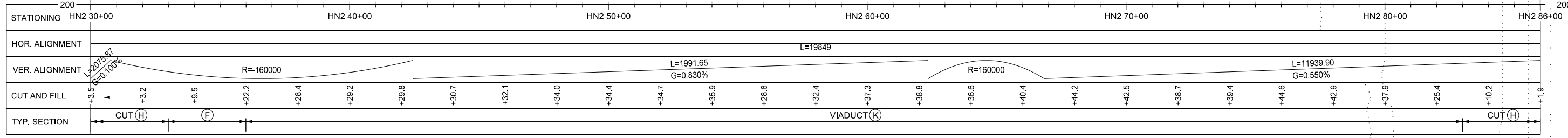
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| Scale          | AS SHOWN     |     |  |
| Drawing Status | FINAL DRAFT  |     |  |
| Job No         | Drawing No   | Rev |  |
| 234180         | CVL-HN-01169 | 01  |  |



PLAN



PROFILE



|                                  |
|----------------------------------|
| DESIGNED BY<br><b>T. SMELCER</b> |
| DRAWN BY<br><b>J. BORGHESI</b>   |
| CHECKED BY<br><b>K. SEYMOUR</b>  |
| IN CHARGE<br><b>C. TAYLOR</b>    |
| DATE<br><b>09/15/2017</b>        |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
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Texas Registered Engineering Firm: F-1990

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Tel (214) 217 2200 Fax (214) 217 2201  
www.freese.com  
Texas Registered Engineering Firm: F-2144

Client

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

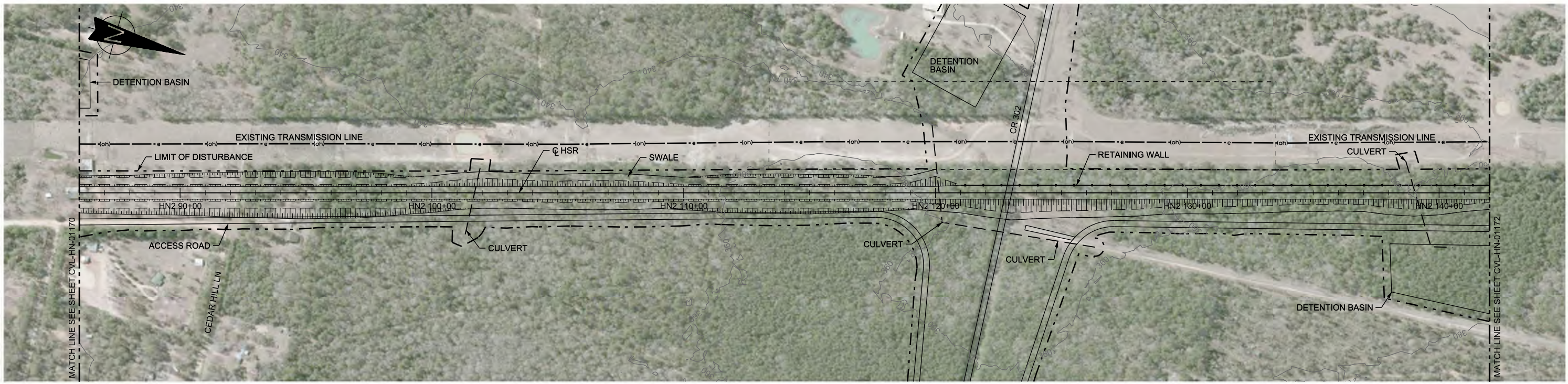
Drawing Title

**HOUSTON SEGMENT  
CIVIL  
PLAN AND PROFILE  
HN2 30+00 TO HN2 86+00**

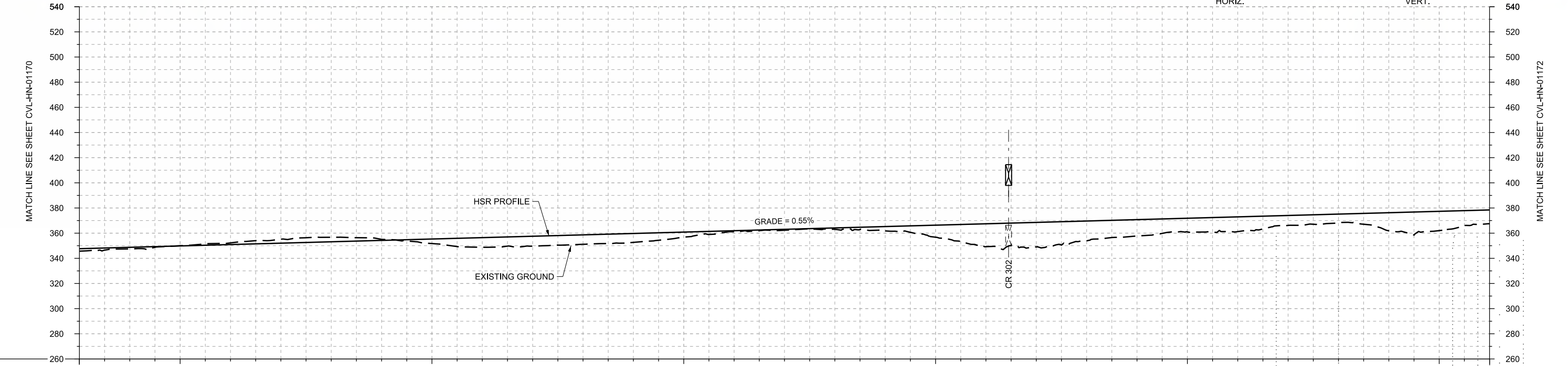
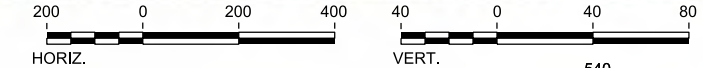
Scale  
**AS SHOWN**

Drawing Status  
**FINAL DRAFT**

|                         |                                   |                  |
|-------------------------|-----------------------------------|------------------|
| Job No<br><b>234180</b> | Drawing No<br><b>CVL-HN-01170</b> | Rev<br><b>01</b> |
|-------------------------|-----------------------------------|------------------|



PLAN



PROFILE

|                |                        |           |            |            |                  |            |            |            |           |      |      |      |                  |      |      |      |      |      |       |       |       |       |       |       |      |      |       |       |       |
|----------------|------------------------|-----------|------------|------------|------------------|------------|------------|------------|-----------|------|------|------|------------------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|------|------|-------|-------|-------|
| STATIONING     | HN2 86+00              | HN2 90+00 | HN2 100+00 | HN2 110+00 | HN2 120+00       | HN2 130+00 | HN2 140+00 | HN2 142+00 |           |      |      |      |                  |      |      |      |      |      |       |       |       |       |       |       |      |      |       |       |       |
| HOR. ALIGNMENT | L=19849                |           |            |            |                  |            |            |            |           |      |      |      |                  |      |      |      |      |      |       |       |       |       |       |       |      |      |       |       |       |
| VER. ALIGNMENT | L=11939.90<br>G=0.550% |           |            |            |                  |            |            |            |           |      |      |      |                  |      |      |      |      |      |       |       |       |       |       |       |      |      |       |       |       |
| CUT AND FILL   | +1.9                   | +1.2      | -0.2       | -1.3       | -3.2             | -3.6       | -0.8       | +3.6       | +7.6      | +7.8 | +7.5 | +7.0 | +4.0             | +0.8 | +0.7 | +1.1 | +3.4 | +9.5 | +16.2 | +19.5 | +15.7 | +13.0 | +10.8 | +11.7 | +7.9 | +6.9 | +14.3 | +15.3 | +11.0 |
| TYP. SECTION   | ← CUT (H)              |           |            |            | → EMBANKMENT (F) |            |            |            | ← CUT (H) |      |      |      | → EMBANKMENT (F) |      |      |      |      |      |       |       | ←     |       |       |       |      |      |       |       |       |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
|     |      |    |     |     |             |
|     |      |    |     |     |             |
|     |      |    |     |     |             |

DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**


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Client



1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

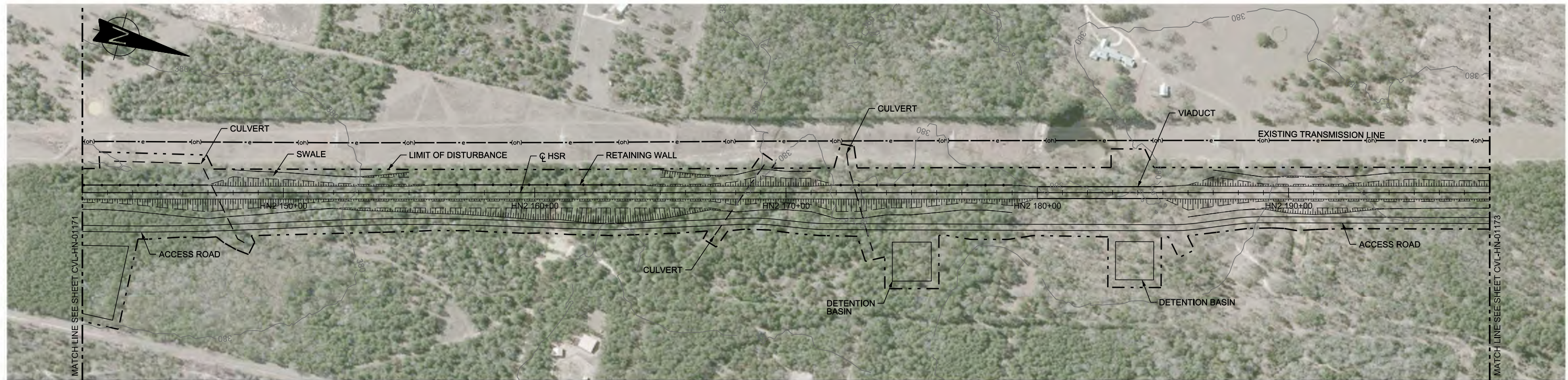
Drawing Title

**HOUSTON SEGMENT CIVIL  
PLAN AND PROFILE  
HN2 86+00 TO HN2 142+00**

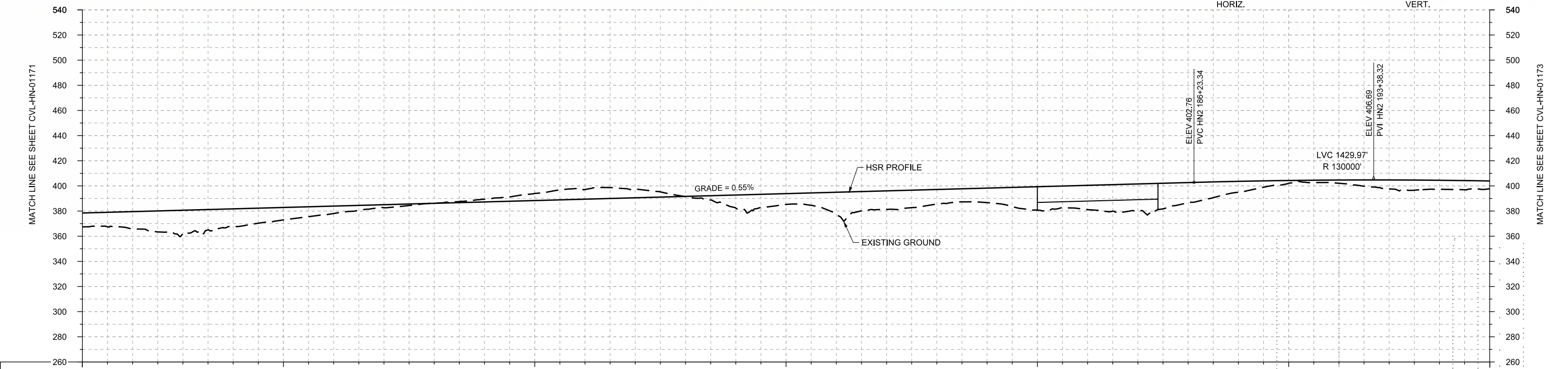
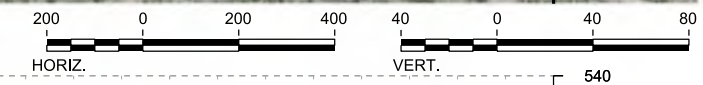
Scale  
AS SHOWN

Drawing Status  
**FINAL DRAFT**

|        |              |     |
|--------|--------------|-----|
| Job No | Drawing No   | Rev |
| 234180 | CVL-HN-01171 | 01  |



PLAN



|                |                        |            |            |            |            |            |            |      |      |      |      |      |                |       |      |       |       |       |       |       |       |       |       |      |      |      |      |      |      |
|----------------|------------------------|------------|------------|------------|------------|------------|------------|------|------|------|------|------|----------------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|------|
| STATIONING     | HN2 142+00             | HN2 150+00 | HN2 160+00 | HN2 170+00 | HN2 180+00 | HN2 190+00 | HN2 198+00 |      |      |      |      |      |                |       |      |       |       |       |       |       |       |       |       |      |      |      |      |      |      |
| HOR. ALIGNMENT | L=19849                |            |            |            |            |            |            |      |      |      |      |      |                |       |      |       |       |       |       |       |       |       |       |      |      |      |      |      |      |
| VER. ALIGNMENT | L=11939.90<br>G=0.550% |            |            |            |            |            |            |      |      |      |      |      |                |       |      |       |       |       |       |       |       |       |       |      |      |      |      |      |      |
| CUT AND FILL   | +11.0                  | +13.8      | +18.6      | +13.9      | +9.8       | +5.9       | +2.3       | -0.1 | -2.2 | -5.6 | -7.7 | -6.6 | +0.2           | +10.3 | +8.6 | +18.0 | +14.7 | +11.5 | +11.5 | +18.6 | +19.3 | +21.6 | +18.0 | +8.7 | +2.2 | +2.6 | +7.1 | +7.2 | +6.3 |
| TYP. SECTION   | EMBANKMENT (F)         |            |            |            | CUT (H)    |            |            |      |      |      |      |      | EMBANKMENT (F) |       |      |       |       |       |       |       |       |       |       |      |      |      |      |      |      |

PROFILE

|             |             |
|-------------|-------------|
| DESIGNED BY | T. SMELCER  |
| DRAWN BY    | J. BORGHESI |
| CHECKED BY  | K. SEYMOUR  |
| IN CHARGE   | C. TAYLOR   |
| DATE        | 09/15/2017  |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
|     |      |    |     |     |             |

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www.freese.com  
Texas Registered Engineering Firm: F-2144

Client

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

Drawing Title

**HOUSTON SEGMENT  
CIVIL  
PLAN AND PROFILE  
HN2 142+00 TO HN2 198+00**

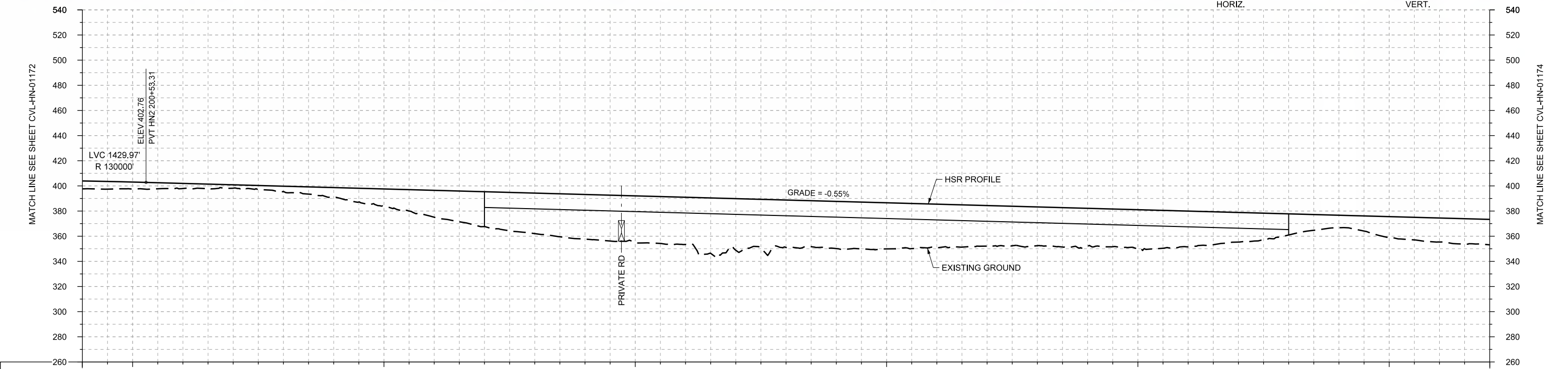
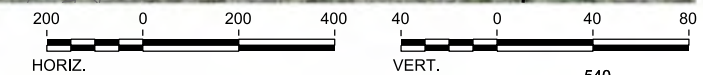
Scale  
AS SHOWN

Drawing Status  
**FINAL DRAFT**

|        |              |     |
|--------|--------------|-----|
| Job No | Drawing No   | Rev |
| 234180 | CVL-HN-01172 | 01  |



PLAN



|                |                |            |                        |            |                |                   |             |            |       |       |       |       |       |       |       |       |                |       |             |       |       |       |       |       |       |       |       |       |       |
|----------------|----------------|------------|------------------------|------------|----------------|-------------------|-------------|------------|-------|-------|-------|-------|-------|-------|-------|-------|----------------|-------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| STATIONING     | HN2 198+00     | HN2 200+00 | HN2 210+00             | HN2 220+00 | HN2 230+00     | HN2 240+00        | HN2 250+00  | HN2 254+00 |       |       |       |       |       |       |       |       |                |       |             |       |       |       |       |       |       |       |       |       |       |
| HOR. ALIGNMENT | L=19849        |            |                        | L=1800     |                | R=30000<br>L=2024 |             | L=1800     |       |       |       |       |       |       |       |       |                |       |             |       |       |       |       |       |       |       |       |       |       |
| VER. ALIGNMENT | R=130000       |            | L=7186.45<br>G=-0.550% |            |                |                   |             |            |       |       |       |       |       |       |       |       |                |       |             |       |       |       |       |       |       |       |       |       |       |
| CUT AND FILL   | +6.3           | +5.4       | +4.1                   | +2.7       | +4.3           | +7.6              | +13.8       | +21.4      | +27.8 | +32.3 | +35.5 | +37.2 | +37.5 | +41.1 | +37.8 | +37.5 | +36.7          | +34.1 | +32.3       | +30.9 | +30.3 | +31.0 | +28.6 | +23.6 | +16.9 | +10.0 | +18.9 | +19.1 | +20.3 |
| TYP. SECTION   | EMBANKMENT (F) |            | CUT (H)                |            | EMBANKMENT (F) |                   | VIADUCT (K) |            |       |       |       |       |       |       |       |       | EMBANKMENT (F) |       | VIADUCT (K) |       |       |       |       |       |       |       |       |       |       |

PROFILE

|             |             |
|-------------|-------------|
| DESIGNED BY | T. SMELCER  |
| DRAWN BY    | J. BORGHESI |
| CHECKED BY  | K. SEYMOUR  |
| IN CHARGE   | C. TAYLOR   |
| DATE        | 09/15/2017  |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
|     |      |    |     |     |             |
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Client

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Drawing Title

**HOUSTON SEGMENT CIVIL**  
**PLAN AND PROFILE**  
**HN2 198+00 TO HN2 254+00**

Scale

AS SHOWN

Drawing Status

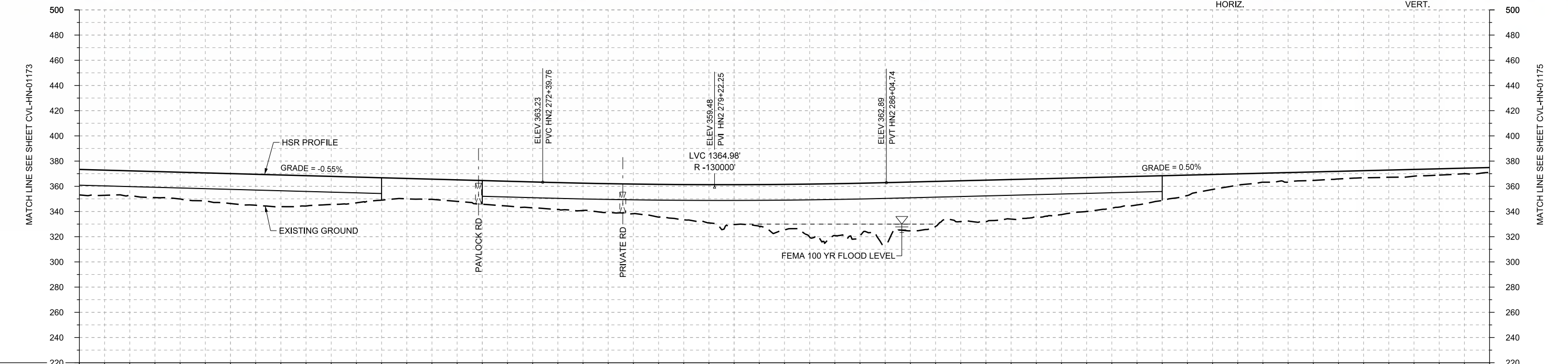
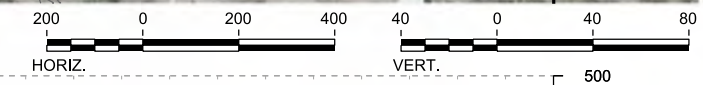
**FINAL DRAFT**

|        |              |     |
|--------|--------------|-----|
| Job No | Drawing No   | Rev |
| 234180 | CVL-HN-01173 | 01  |





PLAN



PROFILE

|                |                        |            |                |            |             |                       |                |  |
|----------------|------------------------|------------|----------------|------------|-------------|-----------------------|----------------|--|
| STATIONING     | HN2 254+00             | HN2 260+00 | HN2 270+00     | HN2 280+00 | HN2 290+00  | HN2 300+00            | HN2 310+00     |  |
| HOR. ALIGNMENT | L=1800                 |            | L=4009         |            |             | L=1800                |                |  |
| VER. ALIGNMENT | L=7186.45<br>G=-0.550% |            | R=-130000      |            |             | L=6539.37<br>G=0.500% |                |  |
| CUT AND FILL   | +20.3                  | +19.6      | +21.3          | +23.8      | +25.2       | +22.3                 | +17.8          |  |
|                |                        |            | +16.1          | +19.9      | +20.6       | +21.6                 | +23.5          |  |
|                |                        |            | +28.0          | +31.7      | +36.2       | +41.2                 | +47.8          |  |
|                |                        |            | +35.8          | +32.9      | +30.1       | +26.9                 | +22.7          |  |
|                |                        |            | +16.2          | +9.1       | +7.6        | +6.1                  | +5.7           |  |
|                |                        |            | +5.0           | +3.9       |             |                       |                |  |
| TYP. SECTION   | VIADUCT (K)            |            | EMBANKMENT (F) |            | VIADUCT (K) |                       | EMBANKMENT (F) |  |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
|     |      |    |     |     |             |
|     |      |    |     |     |             |
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|     |      |    |     |     |             |

DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

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Texas Registered Engineering Firm: F-2144

Client

**TEXAS CENTRAL**

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

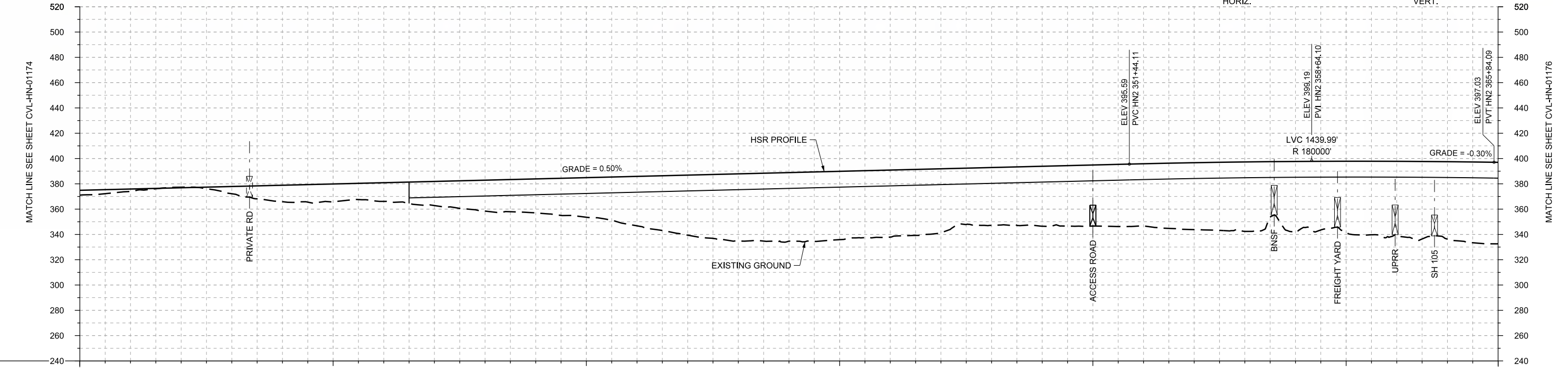
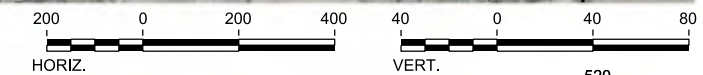
Drawing Title

**HOUSTON SEGMENT CIVIL PLAN AND PROFILE HN2 254+00 TO HN2 310+00**

|                |              |
|----------------|--------------|
| Scale          | AS SHOWN     |
| Drawing Status | FINAL DRAFT  |
| Job No         | 234180       |
| Drawing No     | CVL-HN-01174 |
| Rev            | 01           |



PLAN



PROFILE

|                |                |            |                       |            |                    |            |            |       |       |       |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|----------------|----------------|------------|-----------------------|------------|--------------------|------------|------------|-------|-------|-------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| STATIONING     | HN2 310+00     | HN2 320+00 | HN2 330+00            | HN2 340+00 | HN2 350+00         | HN2 360+00 | HN2 366+00 |       |       |       |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| HOR. ALIGNMENT |                |            |                       |            | R=-30000<br>L=6282 |            |            |       |       |       |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| VER. ALIGNMENT | L=1800         |            | L=6539.37<br>G=0.500% |            |                    | R=180000   |            |       |       |       |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| CUT AND FILL   | +3.9           | +1.9       | -0.4                  | +5.7       | +13.0              | +14.1      | +14.8      | +19.1 | +24.5 | +27.1 | +31.3       | +39.1 | +47.5 | +52.7 | +54.3 | +54.1 | +53.0 | +50.6 | +45.7 | +47.4 | +48.3 | +49.2 | +52.9 | +54.9 | +56.4 | +56.1 | +58.8 | +61.3 | +64.3 |
| TYP. SECTION   | EMBANKMENT (F) |            |                       |            |                    |            |            |       |       |       | VIADUCT (K) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
|     |      |    |     |     |             |
|     |      |    |     |     |             |
|     |      |    |     |     |             |
|     |      |    |     |     |             |

DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

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www.freese.com  
Texas Registered Engineering Firm: F-2144

Client

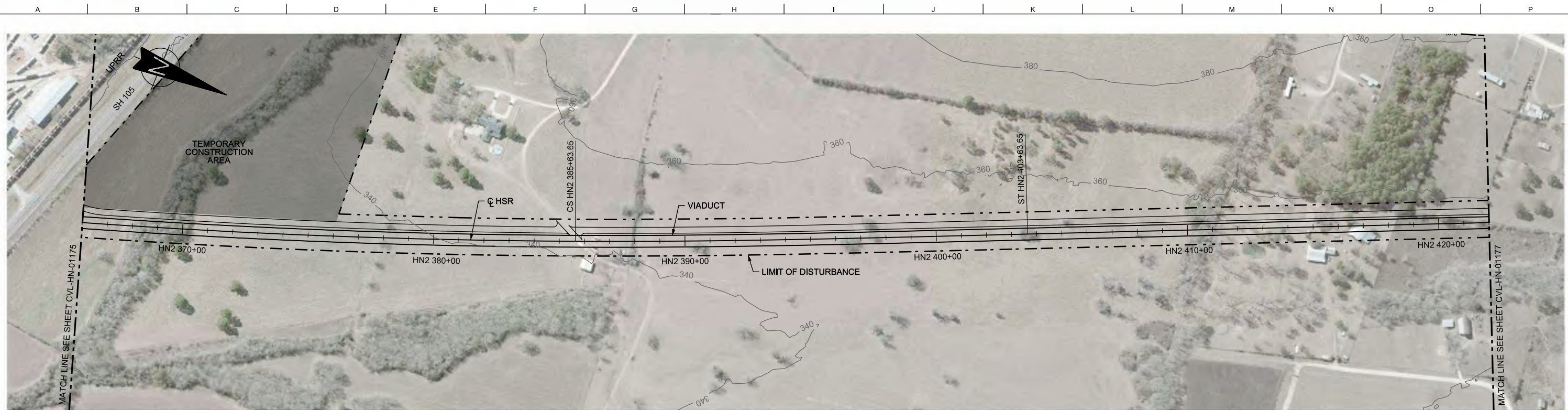
**TEXAS CENTRAL**

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

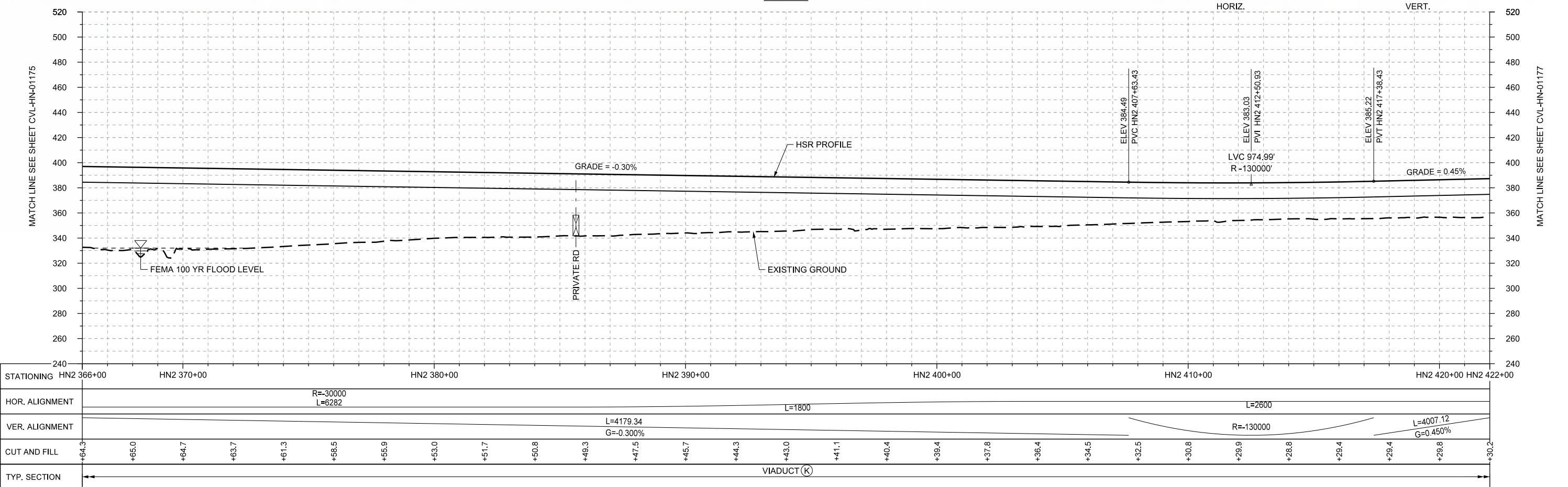
Drawing Title

**HOUSTON SEGMENT CIVIL  
PLAN AND PROFILE  
HN2 310+00 TO HN2 366+00**

|                               |                            |           |
|-------------------------------|----------------------------|-----------|
| Scale<br>AS SHOWN             |                            |           |
| Drawing Status<br>FINAL DRAFT |                            |           |
| Job No<br>234180              | Drawing No<br>CVL-HN-01175 | Rev<br>01 |



PLAN



PROFILE

|                |                        |            |            |            |            |            |                       |            |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|----------------|------------------------|------------|------------|------------|------------|------------|-----------------------|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| STATIONING     | HN2 366+00             | HN2 370+00 | HN2 380+00 | HN2 390+00 | HN2 400+00 | HN2 410+00 | HN2 420+00            | HN2 422+00 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| HOR. ALIGNMENT | R=30000<br>L=6282      |            | L=1800     |            |            | L=2600     |                       |            |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| VER. ALIGNMENT | L=4179.34<br>G=-0.300% |            |            |            | R=-130000  |            | L=4007.12<br>G=0.450% |            |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| CUT AND FILL   | +64.3                  | +65.0      | +64.7      | +63.7      | +61.3      | +58.5      | +55.9                 | +53.0      | +51.7 | +50.8 | +49.3 | +47.5 | +45.7 | +44.3 | +43.0 | +41.1 | +40.4 | +39.4 | +37.8 | +36.4 | +34.5 | +32.5 | +30.8 | +29.9 | +28.8 | +29.4 | +29.4 | +29.8 | +30.2 |
| TYP. SECTION   | ←                      |            |            |            |            |            |                       |            |       |       |       |       |       |       |       |       | →     |       |       |       |       |       |       |       |       |       |       |       |       |

|             |             |
|-------------|-------------|
| DESIGNED BY | T. SMELCER  |
| DRAWN BY    | J. BORGHESI |
| CHECKED BY  | K. SEYMOUR  |
| IN CHARGE   | C. TAYLOR   |
| DATE        | 09/15/2017  |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
|     |      |    |     |     |             |
|     |      |    |     |     |             |

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Texas Registered Engineering Firm: F-2144

Client

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

Drawing Title

**HOUSTON SEGMENT CIVIL PLAN AND PROFILE**  
HN2 366+00 TO HN2 422+00

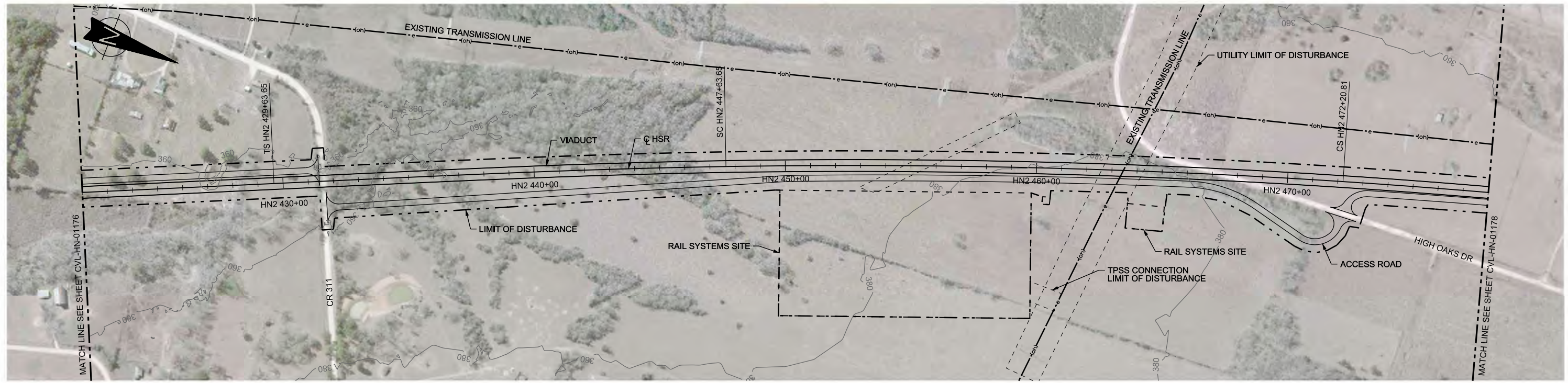
Scale

AS SHOWN

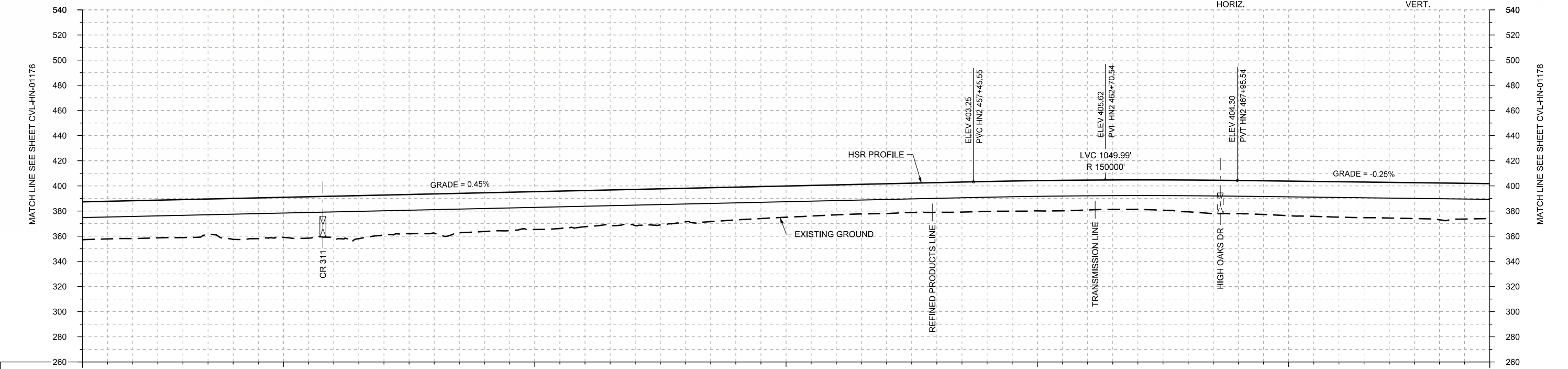
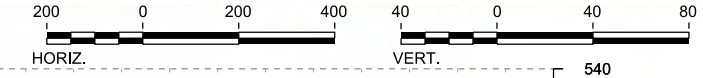
Drawing Status

**FINAL DRAFT**

|        |              |     |
|--------|--------------|-----|
| Job No | Drawing No   | Rev |
| 234180 | CVL-HN-01176 | 01  |



PLAN



|                |             |            |                       |            |                   |            |                        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|----------------|-------------|------------|-----------------------|------------|-------------------|------------|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| STATIONING     | HN2 422+00  | HN2 430+00 | HN2 440+00            | HN2 450+00 | HN2 460+00        | HN2 470+00 | HN2 478+00             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| HOR. ALIGNMENT | L=2600      |            | L=1800                |            | R=30000<br>L=2457 |            | L=1800                 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| VER. ALIGNMENT |             |            | L=4007.12<br>G=0.450% |            | R=150000          |            | L=5752.68<br>G=-0.250% |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| CUT AND FILL   | +30.2       | +30.1      | +30.2                 | +32.5      | +31.8             | +33.1      | +31.8                  | +31.2 | +30.8 | +30.1 | +28.8 | +26.7 | +26.7 | +26.1 | +24.8 | +23.8 | +23.7 | +23.8 | +24.1 | +23.8 | +23.5 | +25.3 | +26.3 | +27.5 | +28.2 | +28.4 | +29.2 | +27.8 |
| TYP. SECTION   | VIADUCT (K) |            |                       |            |                   |            |                        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |

PROFILE

|             |             |
|-------------|-------------|
| DESIGNED BY | T. SMELCER  |
| DRAWN BY    | J. BORGHESI |
| CHECKED BY  | K. SEYMOUR  |
| IN CHARGE   | C. TAYLOR   |
| DATE        | 09/15/2017  |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
|     |      |    |     |     |             |



Arup Texas, Inc.  
10370 Richmond Ave., Suite 475  
Houston, Texas 77042 USA  
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www.arup.com  
Texas Registered Engineering Firm: F-1990



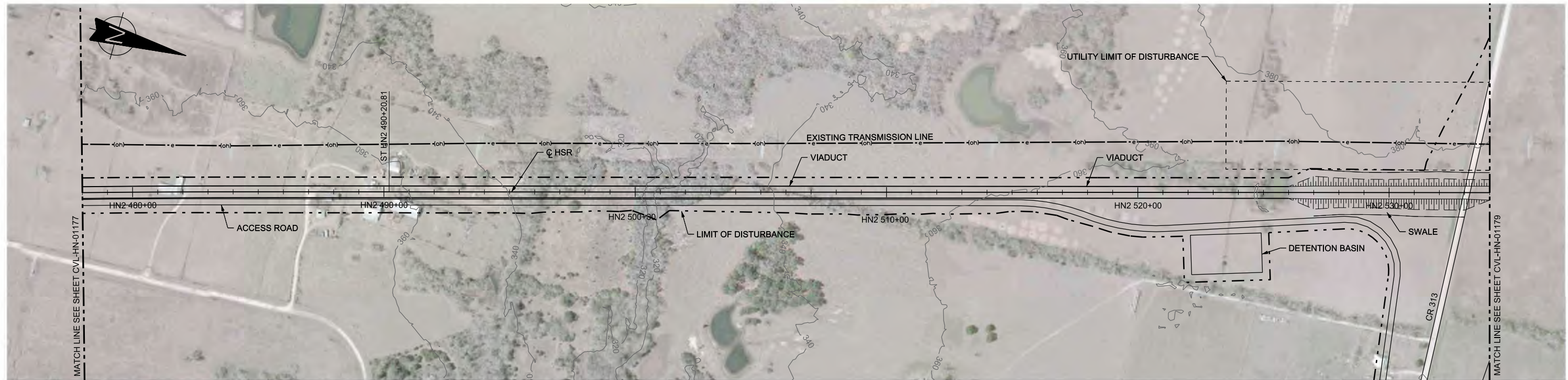
2711 North Haskell Ave., Suite 3300  
Dallas, Texas 75204  
Tel (214) 217 2200 Fax (214) 217 2201  
www.freese.com  
Texas Registered Engineering Firm: F-2144



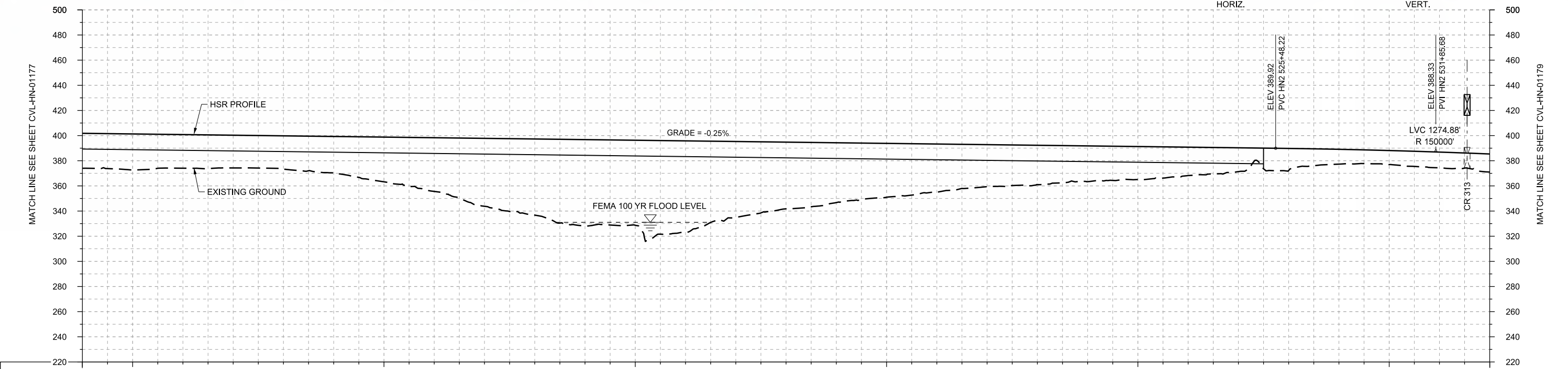
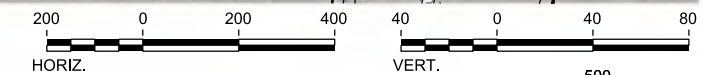
Client  
1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

Drawing Title  
**HOUSTON SEGMENT CIVIL PLAN AND PROFILE**  
HN2 422+00 TO HN2 478+00

|                |              |
|----------------|--------------|
| Scale          | AS SHOWN     |
| Drawing Status | FINAL DRAFT  |
| Job No         | 234180       |
| Drawing No     | CVL-HN-01177 |
| Rev            | 01           |



PLAN



|                |             |            |            |            |                        |            |            |            |       |       |       |       |                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|----------------|-------------|------------|------------|------------|------------------------|------------|------------|------------|-------|-------|-------|-------|----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| STATIONING     | HN2 478+00  | HN2 480+00 | HN2 490+00 | HN2 500+00 | HN2 510+00             | HN2 520+00 | HN2 530+00 | HN2 534+00 |       |       |       |       |                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| HOR. ALIGNMENT | L=1800      |            |            | L=12640    |                        |            |            |            |       |       |       |       |                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| VER. ALIGNMENT |             |            |            |            | L=5752.68<br>G=-0.250% |            | R=150000   |            |       |       |       |       |                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| CUT AND FILL   | +27.8       | +28.7      | +28.7      | +26.0      | +26.5                  | +29.0      | +35.6      | +42.7      | +54.0 | +60.6 | +66.5 | +67.6 | +72.9          | +60.4 | +53.0 | +47.6 | +42.8 | +38.4 | +33.4 | +31.3 | +28.5 | +26.3 | +22.6 | +18.9 | +17.6 | +11.8 | +11.2 | +12.5 | +14.4 |
| TYP. SECTION   | VIADUCT (K) |            |            |            |                        |            |            |            |       |       |       |       | EMBANKMENT (F) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |

PROFILE

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
|     |      |    |     |     |             |
|     |      |    |     |     |             |
|     |      |    |     |     |             |
|     |      |    |     |     |             |

DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

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www.freese.com  
Texas Registered Engineering Firm: F-2144

Client

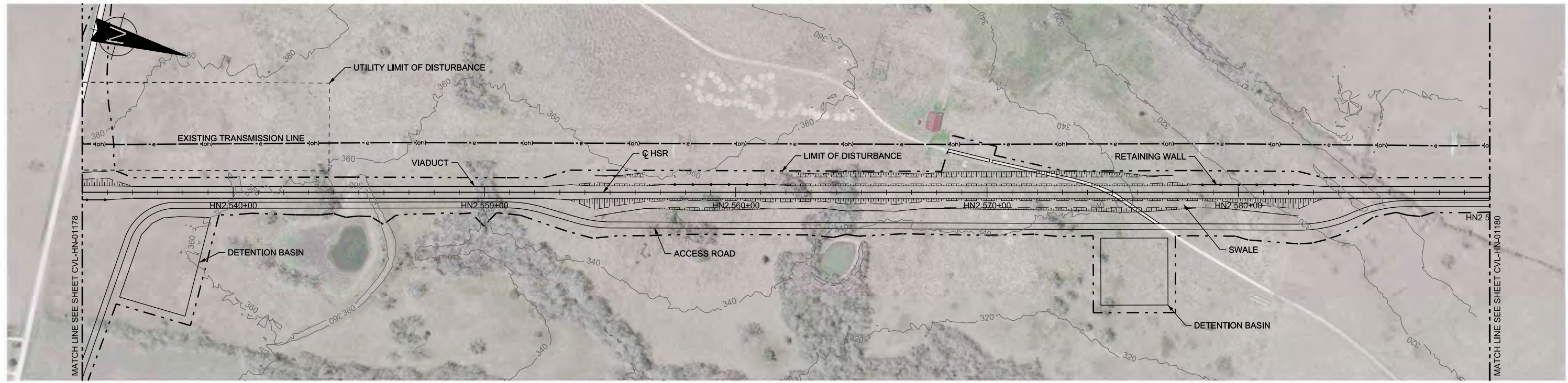
**TEXAS CENTRAL**

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

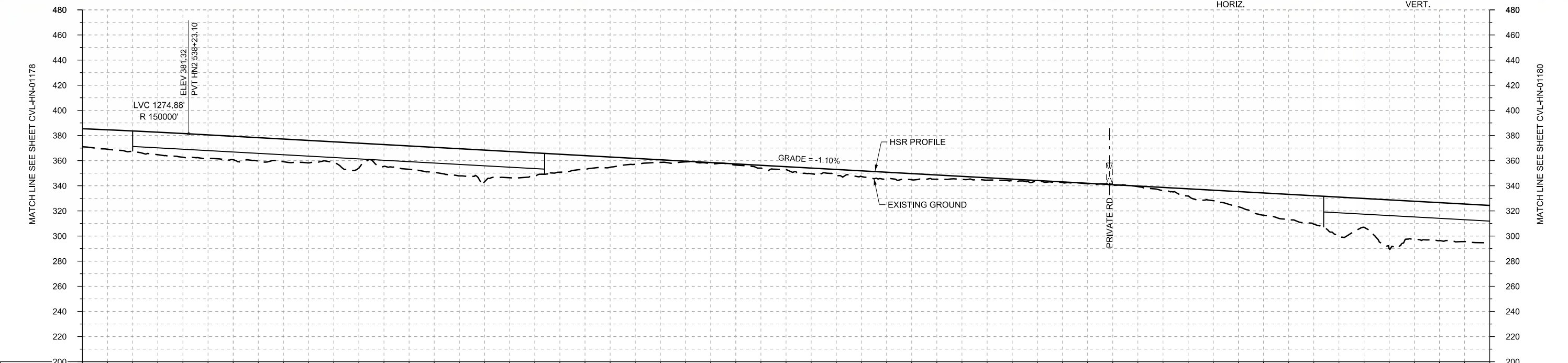
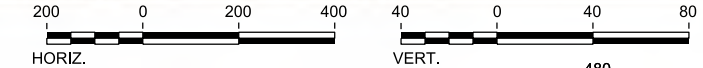
Drawing Title

**HOUSTON SEGMENT CIVIL PLAN AND PROFILE**  
HN2 478+00 TO HN2 534+00

|                |              |
|----------------|--------------|
| Scale          | AS SHOWN     |
| Drawing Status | FINAL DRAFT  |
| Job No         | 234180       |
| Drawing No     | CVL-HN-01178 |
| Rev            | 01           |



PLAN



|                |                        |            |            |            |            |            |            |       |       |       |       |      |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |
|----------------|------------------------|------------|------------|------------|------------|------------|------------|-------|-------|-------|-------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|
| STATIONING     | HN2 534+00             | HN2 540+00 | HN2 550+00 | HN2 560+00 | HN2 570+00 | HN2 580+00 | HN2 590+00 |       |       |       |       |      |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |
| HOR. ALIGNMENT | L=12640                |            |            |            |            |            |            |       |       |       |       |      |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |
| VER. ALIGNMENT | L=5466.43<br>G=-1.100% |            |            |            |            |            |            |       |       |       |       |      |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |
| CUT AND FILL   | +14.4                  | +16.3      | +18.9      | +18.7      | +18.1      | +16.5      | +17.4      | +20.0 | +25.3 | +18.7 | +11.1 | +4.7 | +0.6 | +1.0 | +2.5 | +4.5 | +5.2 | +3.4 | +2.0 | +0.7 | +0.4 | +0.5 | +5.8 | +12.1 | +20.3 | +31.3 | +38.9 | +30.3 | +28.8 |
| TYP. SECTION   | Ⓣ                      |            | Ⓚ          |            |            |            |            |       |       |       |       |      | Ⓣ    |      |      |      |      | Ⓚ    |      |      |      |      |      |       |       |       |       |       |       |

PROFILE

|             |             |
|-------------|-------------|
| DESIGNED BY | T. SMELCER  |
| DRAWN BY    | J. BORGHESI |
| CHECKED BY  | K. SEYMOUR  |
| IN CHARGE   | C. TAYLOR   |
| DATE        | 09/15/2017  |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
|     |      |    |     |     |             |

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www.freese.com  
Texas Registered Engineering Firm: F-2144

Client

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

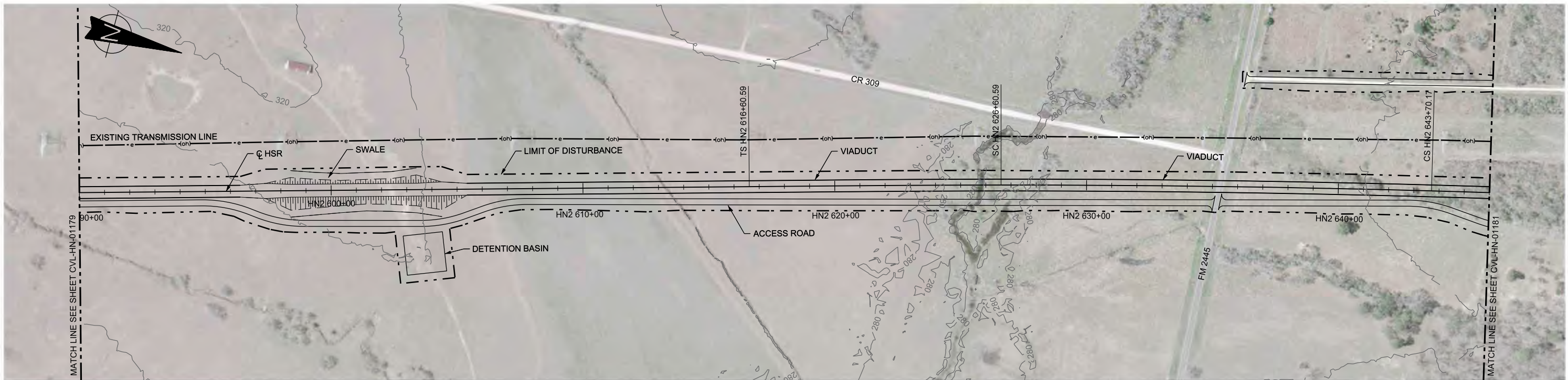
Drawing Title

**HOUSTON SEGMENT  
CIVIL  
PLAN AND PROFILE  
HN2 534+00 TO HN2 590+00**

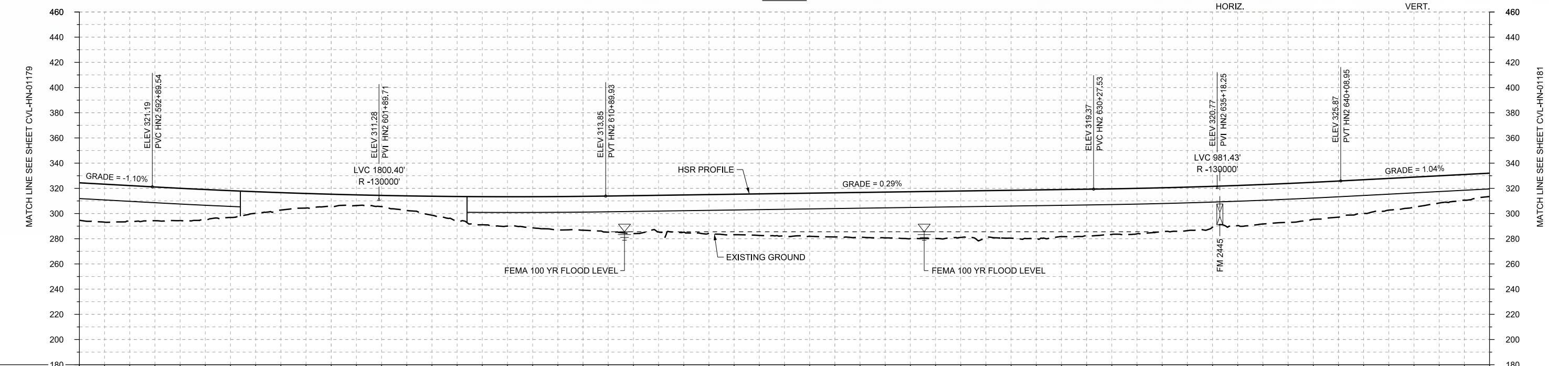
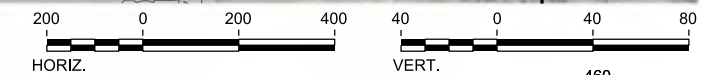
Scale  
AS SHOWN

Drawing Status  
**FINAL DRAFT**

|        |              |     |
|--------|--------------|-----|
| Job No | Drawing No   | Rev |
| 234180 | CVL-HN-01179 | 01  |



PLAN



PROFILE

|                |                        |            |                |            |                       |             |                       |  |
|----------------|------------------------|------------|----------------|------------|-----------------------|-------------|-----------------------|--|
| STATIONING     | HN2 590+00             | HN2 600+00 | HN2 610+00     | HN2 620+00 | HN2 630+00            | HN2 640+00  | HN2 646+00            |  |
| HOR. ALIGNMENT | L=12640                |            |                | L=1000     | R=60000<br>L=1710     | L=1000      |                       |  |
| VER. ALIGNMENT | L=5466.43<br>G=-1.100% | R=-130000  |                |            | L=1937.59<br>G=0.285% | R=-130000   | L=3830.81<br>G=1.040% |  |
| CUT AND FILL   | +29.8                  | +26.6      | +25.6          | +21.2      | +13.8                 | +10.1       | +8.9                  |  |
|                |                        |            | +15.0          | +22.3      | +24.6                 | +26.9       | +30.2                 |  |
|                |                        |            |                | +29.6      | +32.1                 | +33.8       | +35.0                 |  |
|                |                        |            |                |            | +36.3                 | +37.5       | +37.0                 |  |
|                |                        |            |                |            | +38.8                 | +37.0       | +36.1                 |  |
|                |                        |            |                |            |                       | +34.6       | +32.0                 |  |
|                |                        |            |                |            |                       | +30.9       | +28.7                 |  |
|                |                        |            |                |            |                       | +25.2       | +21.6                 |  |
|                |                        |            |                |            |                       |             | +18.5                 |  |
| TYP. SECTION   | VIADUCT (K)            |            | EMBANKMENT (F) |            |                       | VIADUCT (K) |                       |  |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
|     |      |    |     |     |             |
|     |      |    |     |     |             |
|     |      |    |     |     |             |
|     |      |    |     |     |             |

DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

**ARUP**

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www.freese.com  
Texas Registered Engineering Firm: F-2144

Client

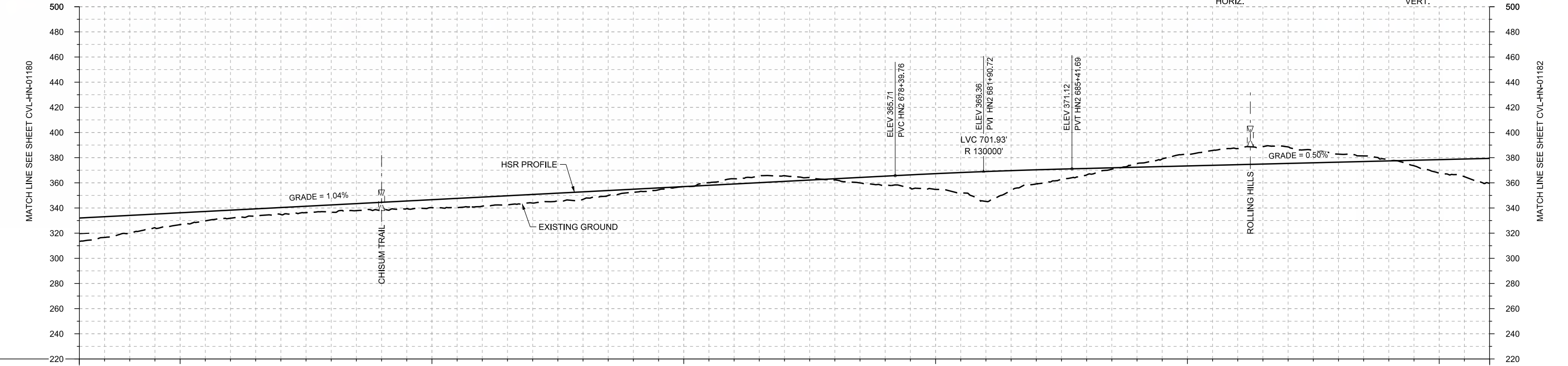
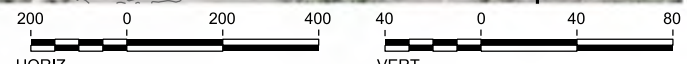
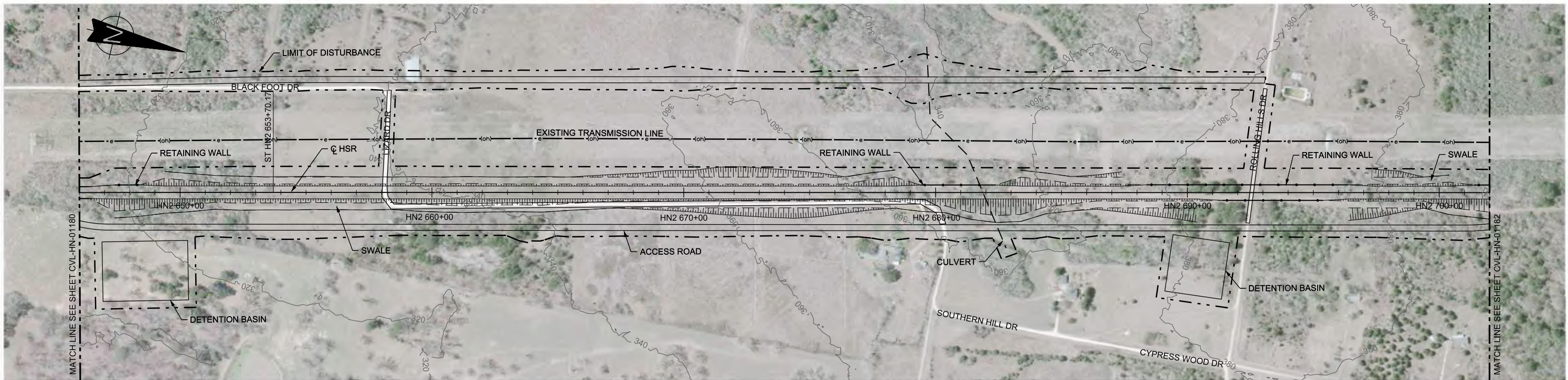
**TEXAS CENTRAL**

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

Drawing Title

**HOUSTON SEGMENT CIVIL PLAN AND PROFILE**  
HN2 590+00 TO HN2 646+00

|                |              |
|----------------|--------------|
| Scale          | AS SHOWN     |
| Drawing Status | FINAL DRAFT  |
| Job No         | 234180       |
| Drawing No     | CVL-HN-01180 |
| Rev            | 01           |



|                |            |            |                       |            |            |            |                       |            |                |      |         |      |                  |      |         |      |                |       |       |      |      |      |       |       |      |      |       |       |
|----------------|------------|------------|-----------------------|------------|------------|------------|-----------------------|------------|----------------|------|---------|------|------------------|------|---------|------|----------------|-------|-------|------|------|------|-------|-------|------|------|-------|-------|
| STATIONING     | HN2 646+00 | HN2 650+00 | HN2 660+00            | HN2 670+00 | HN2 680+00 | HN2 690+00 | HN2 700+00            | HN2 702+00 |                |      |         |      |                  |      |         |      |                |       |       |      |      |      |       |       |      |      |       |       |
| HOR. ALIGNMENT | L=1000     |            | L=44690               |            |            |            |                       |            |                |      |         |      |                  |      |         |      |                |       |       |      |      |      |       |       |      |      |       |       |
| VER. ALIGNMENT |            |            | L=3830.81<br>G=1.040% |            | R=130000   |            | L=4532.78<br>G=0.500% |            |                |      |         |      |                  |      |         |      |                |       |       |      |      |      |       |       |      |      |       |       |
| CUT AND FILL   | +18.5      | +14.2      | +9.4                  | +6.5       | +5.5       | +5.4       | +6.6                  | +6.4       | +7.3           | +6.8 | +5.9    | +2.5 | -4.1             | -4.5 | +0.9    | +7.6 | +12.6          | +23.8 | +11.2 | +5.1 | -2.9 | -8.8 | -12.8 | -13.1 | -6.4 | -0.9 | +10.7 | +19.8 |
| TYP. SECTION   | K          |            | EMBANKMENT (F)        |            |            |            | CUT (H)               |            | EMBANKMENT (F) |      | CUT (H) |      | RETAINED CUT (J) |      | CUT (H) |      | EMBANKMENT (F) |       |       |      |      |      |       |       |      |      |       |       |

|             |             |
|-------------|-------------|
| DESIGNED BY | T. SMELCER  |
| DRAWN BY    | J. BORGHESI |
| CHECKED BY  | K. SEYMOUR  |
| IN CHARGE   | C. TAYLOR   |
| DATE        | 09/15/2017  |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
|     |      |    |     |     |             |
|     |      |    |     |     |             |

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Tel (214) 217 2200 Fax (214) 217 2201  
www.freese.com  
Texas Registered Engineering Firm: F-2144

Client  
1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

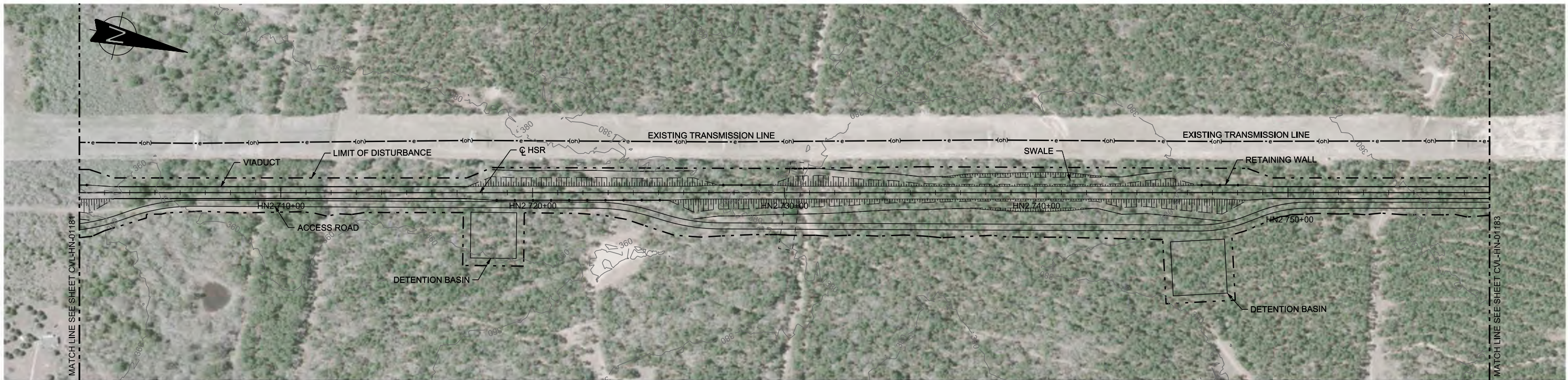
Drawing Title  
**HOUSTON SEGMENT CIVIL PLAN AND PROFILE**  
HN2 646+00 TO HN2 702+00

Scale  
AS SHOWN

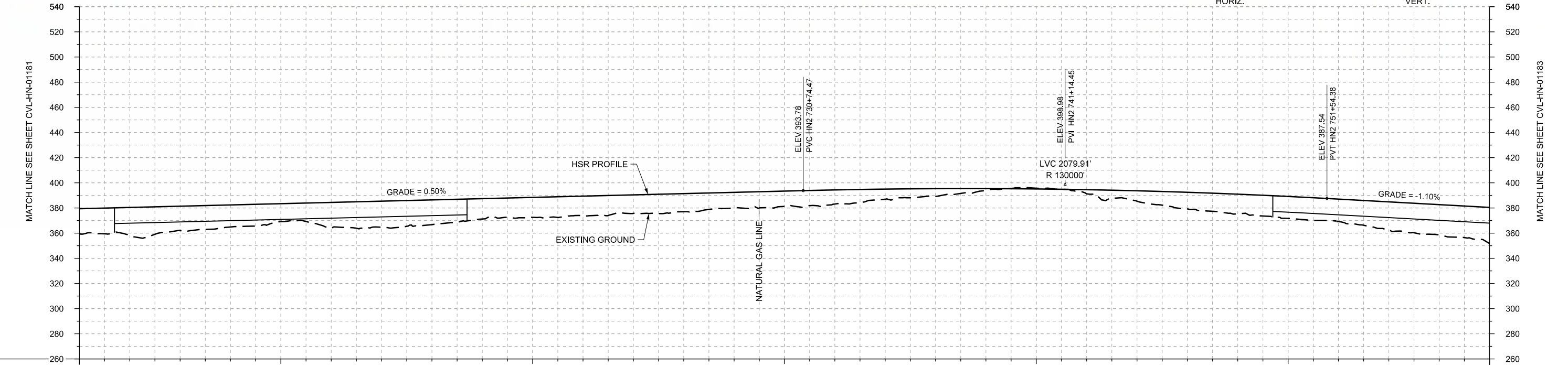
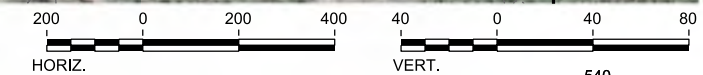
Drawing Status  
**FINAL DRAFT**

|        |              |     |
|--------|--------------|-----|
| Job No | Drawing No   | Rev |
| 234180 | CVL-HN-01181 | 01  |





PLAN



PROFILE

|                |                       |            |                |            |            |            |                        |
|----------------|-----------------------|------------|----------------|------------|------------|------------|------------------------|
| STATIONING     | HN2 702+00            | HN2 710+00 | HN2 720+00     | HN2 730+00 | HN2 740+00 | HN2 750+00 | HN2 758+00             |
| HOR. ALIGNMENT | L=44690               |            |                |            |            |            |                        |
| VER. ALIGNMENT | L=4532.78<br>G=0.500% |            |                | R=130000   |            |            | L=1531.41<br>G=-1.100% |
| CUT AND FILL   | +19.8                 | +21.9      | +19.3          | +17.5      | +14.3      | +20.5      | +20.5                  |
| TYP. SECTION   | VIADUCT (K)           |            | EMBANKMENT (F) |            |            | CUT (H)    |                        |

|             |             |
|-------------|-------------|
| DESIGNED BY | T. SMELCER  |
| DRAWN BY    | J. BORGHESI |
| CHECKED BY  | K. SEYMOUR  |
| IN CHARGE   | C. TAYLOR   |
| DATE        | 09/15/2017  |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
|     |      |    |     |     |             |

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Texas Registered Engineering Firm: F-2144

Client

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

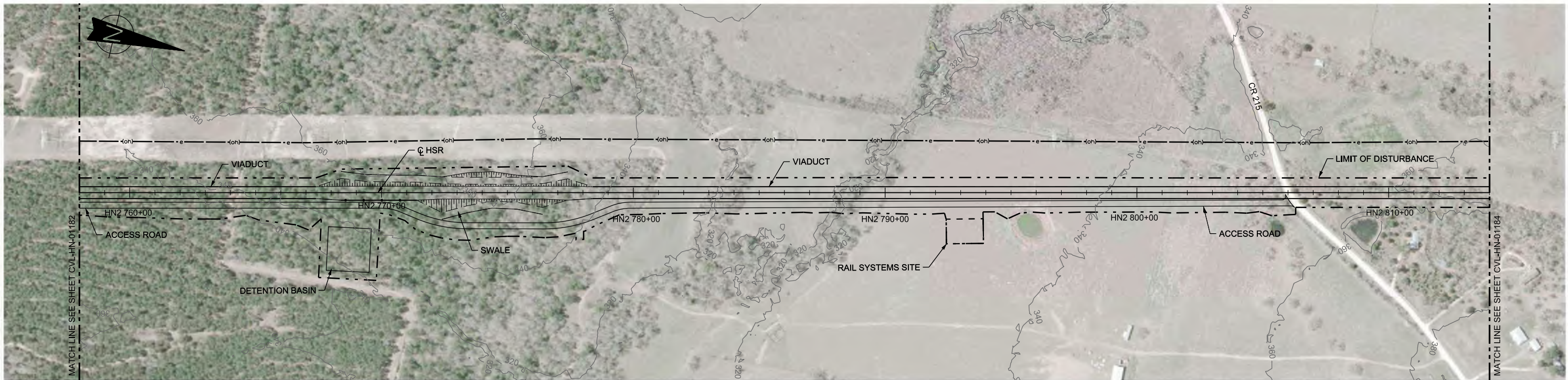
Drawing Title

**HOUSTON SEGMENT  
CIVIL  
PLAN AND PROFILE  
HN2 702+00 TO HN2 758+00**

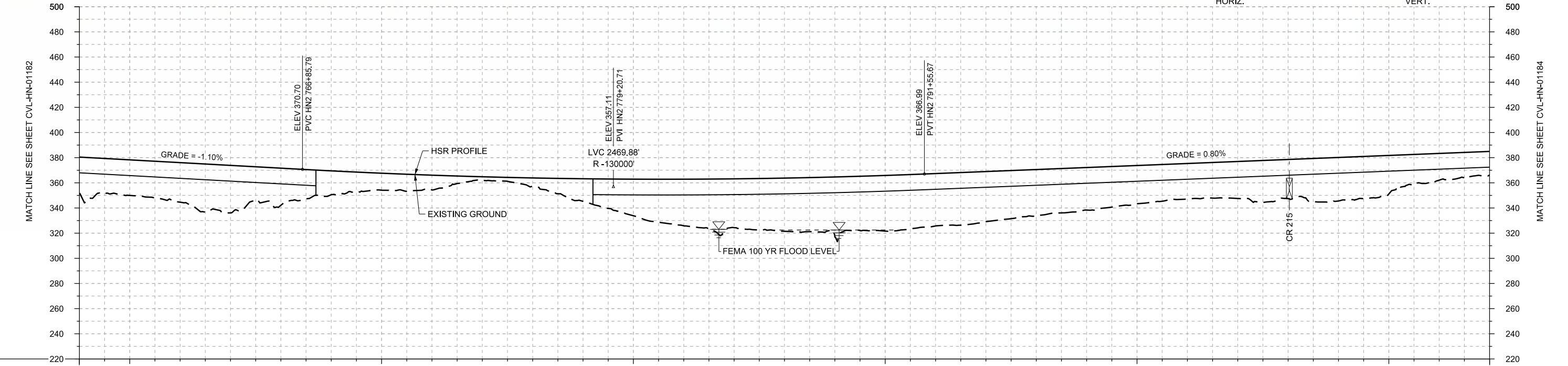
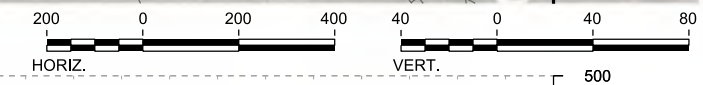
Scale  
AS SHOWN

Drawing Status  
**FINAL DRAFT**

|        |              |     |
|--------|--------------|-----|
| Job No | Drawing No   | Rev |
| 234180 | CVL-HN-01182 | 01  |



PLAN



PROFILE

|                |                        |            |            |                |            |            |                       |            |      |      |       |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|----------------|------------------------|------------|------------|----------------|------------|------------|-----------------------|------------|------|------|-------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| STATIONING     | HN2 758+00             | HN2 760+00 | HN2 770+00 | HN2 780+00     | HN2 790+00 | HN2 800+00 | HN2 810+00            | HN2 814+00 |      |      |       |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| HOR. ALIGNMENT | L=44690                |            |            |                |            |            |                       |            |      |      |       |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| VER. ALIGNMENT | L=1531.41<br>G=-1.100% |            | R=130000   |                |            |            | L=3122.62<br>G=0.800% |            |      |      |       |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| CUT AND FILL   | +26.7                  | +26.2      | +31.4      | +37.7          | +29.5      | +19.0      | +13.5                 | +11.8      | +2.7 | +6.6 | +17.9 | +29.1       | +37.1 | +38.7 | +42.2 | +47.3 | +44.2 | +41.6 | +39.8 | +38.7 | +33.8 | +30.3 | +28.2 | +29.3 | +31.0 | +34.5 | +30.6 | +21.2 | +18.8 |
| TYP. SECTION   | VIADUCT (K)            |            |            | EMBANKMENT (F) |            |            |                       | CUT (H)    |      | (F)  |       | VIADUCT (K) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
|     |      |    |     |     |             |
|     |      |    |     |     |             |
|     |      |    |     |     |             |
|     |      |    |     |     |             |

DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

**ARUP**

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**FRESE AND NICHOLS**

2711 North Haskell Ave., Suite 3300  
Dallas, Texas 75204  
Tel (214) 217 2200 Fax (214) 217 2201  
www.freese.com  
Texas Registered Engineering Firm: F-2144

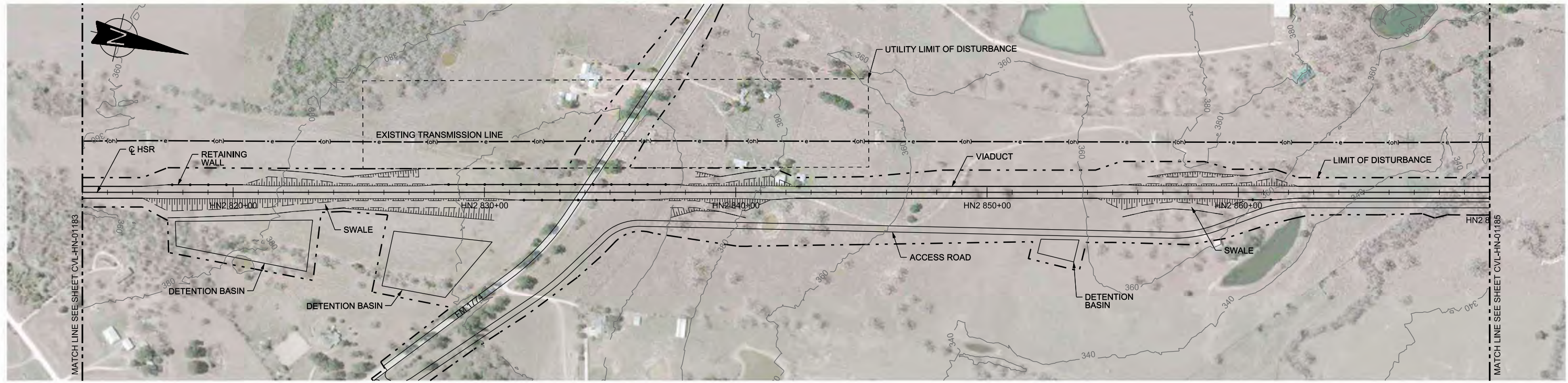
Client

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

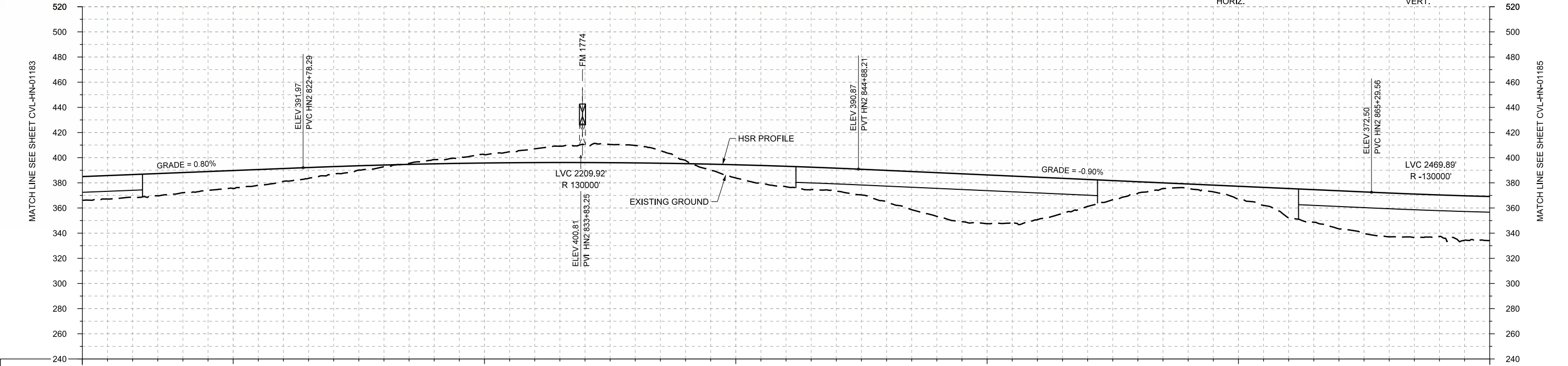
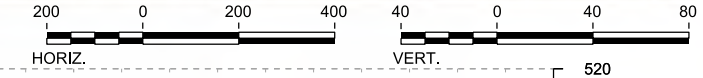
Drawing Title

**HOUSTON SEGMENT  
CIVIL  
PLAN AND PROFILE  
HN2 758+00 TO HN2 814+00**

|                |              |     |  |
|----------------|--------------|-----|--|
| Scale          | AS SHOWN     |     |  |
| Drawing Status | FINAL DRAFT  |     |  |
| Job No         | Drawing No   | Rev |  |
| 234180         | CVL-HN-01183 | 01  |  |



PLAN



|                |                       |                |            |                  |                |                        |                |             |
|----------------|-----------------------|----------------|------------|------------------|----------------|------------------------|----------------|-------------|
| STATIONING     | HN2 814+00            | HN2 820+00     | HN2 830+00 | HN2 840+00       | HN2 850+00     | HN2 860+00             | HN2 870+00     |             |
| HOR. ALIGNMENT | L=44690               |                |            |                  |                |                        |                |             |
| VER. ALIGNMENT | L=3122.62<br>G=0.800% |                | R=130000   |                  |                | L=2041.36<br>G=-0.900% |                |             |
| CUT AND FILL   | +18.8                 | +18.1          | +15.9      | +14.2            | +10.1          | +6.0                   | +1.5           |             |
|                | -3.3                  | -6.7           | -10.9      | -14.3            | -13.9          | -2.5                   | +10.5          |             |
|                | +16.2                 | +18.0          | +25.2      | +34.8            | +38.8          | +33.8                  | +21.5          |             |
|                | +9.2                  | +3.5           | +10.1      | +23.2            | +30.3          | +34.8                  | +33.0          |             |
| TYP. SECTION   | VIADUCT (K)           | EMBANKMENT (F) | CUT (H)    | RETAINED CUT (J) | EMBANKMENT (F) | VIADUCT (K)            | EMBANKMENT (F) | VIADUCT (K) |

PROFILE

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
|     |      |    |     |     |             |
|     |      |    |     |     |             |
|     |      |    |     |     |             |

DESIGNED BY  
**T. SMELCER**  
DRAWN BY  
**J. BORGHESI**  
CHECKED BY  
**K. SEYMOUR**  
IN CHARGE  
**C. TAYLOR**  
DATE  
**09/15/2017**

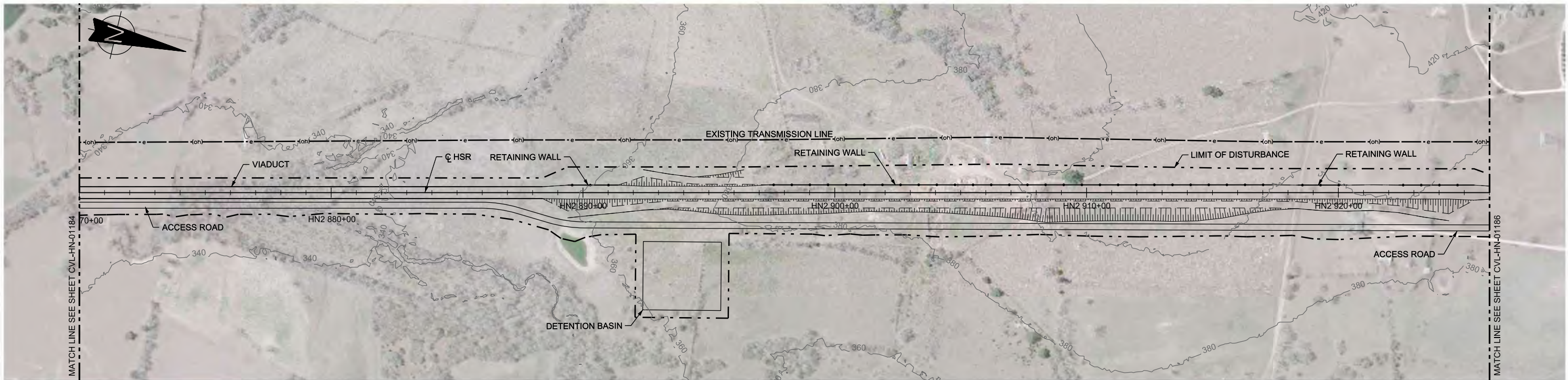
**ARUP**  
Arup Texas, Inc.  
10370 Richmond Ave., Suite 475  
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Tel (713) 783 2787 Fax (713) 343 1467  
www.arup.com  
Texas Registered Engineering Firm: F-1990

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Dallas, Texas 75204  
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Texas Registered Engineering Firm: F-2144

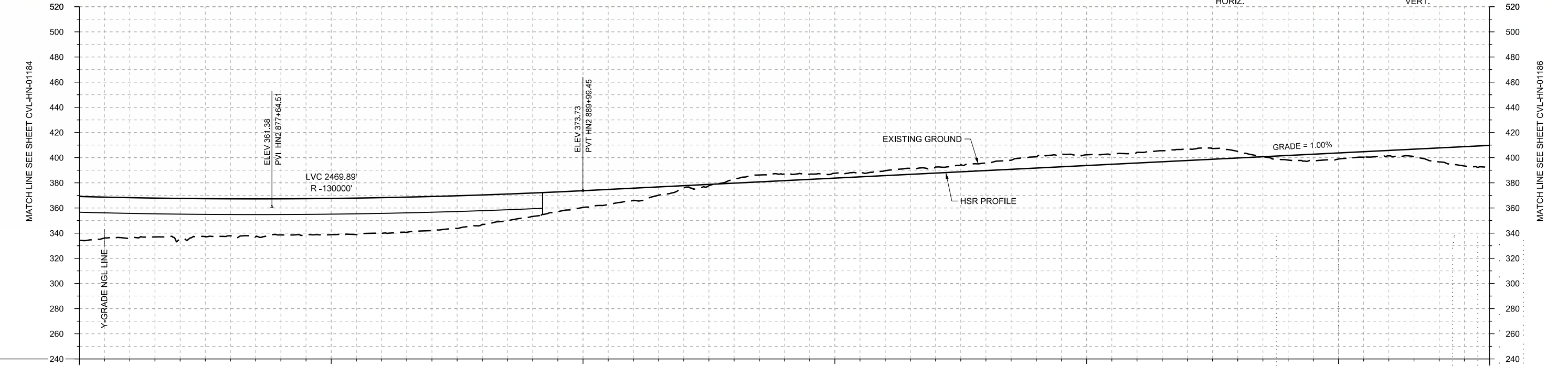
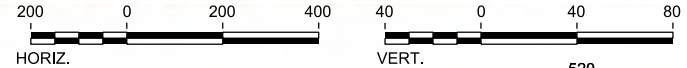
Client  
**TEXAS CENTRAL**  
1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

Drawing Title  
**HOUSTON SEGMENT CIVIL  
PLAN AND PROFILE  
HN2 814+00 TO HN2 870+00**

Scale  
AS SHOWN  
Drawing Status  
**FINAL DRAFT**  
Job No. 234180 Drawing No. CVL-HN-01184 Rev. 01



PLAN



PROFILE

|                |             |            |            |                       |            |            |            |       |       |       |       |      |                |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |       |
|----------------|-------------|------------|------------|-----------------------|------------|------------|------------|-------|-------|-------|-------|------|----------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|
| STATIONING     | HN2 870+00  | HN2 880+00 | HN2 890+00 | HN2 900+00            | HN2 910+00 | HN2 920+00 | HN2 926+00 |       |       |       |       |      |                |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |       |
| HOR. ALIGNMENT | L=44690     |            |            |                       |            |            |            |       |       |       |       |      |                |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |       |
| VER. ALIGNMENT | R=130000    |            |            | L=4015.12<br>G=1.000% |            |            |            |       |       |       |       |      |                |      |      |      |      |      |      |      |      |      |      |      |      |      |      |       |       |
| CUT AND FILL   | +35.0       | +31.9      | +33.0      | +29.4                 | +26.7      | +28.8      | +28.3      | +27.1 | +23.5 | +18.6 | +13.3 | +9.7 | +1.8           | -2.8 | -5.3 | -3.9 | -3.9 | -4.9 | -6.0 | -9.1 | -8.6 | -8.5 | -8.5 | -5.3 | +3.6 | +4.8 | +4.3 | +11.1 | +16.0 |
| TYP. SECTION   | VIADUCT (K) |            |            | EMBANKMENT (F)        |            |            | CUT (H)    |       |       |       |       |      | EMBANKMENT (F) |      |      | (G)  |      |      |      |      |      |      |      |      |      |      |      |       |       |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
|     |      |    |     |     |             |
|     |      |    |     |     |             |
|     |      |    |     |     |             |

DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

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www.freese.com  
Texas Registered Engineering Firm: F-2144

Client

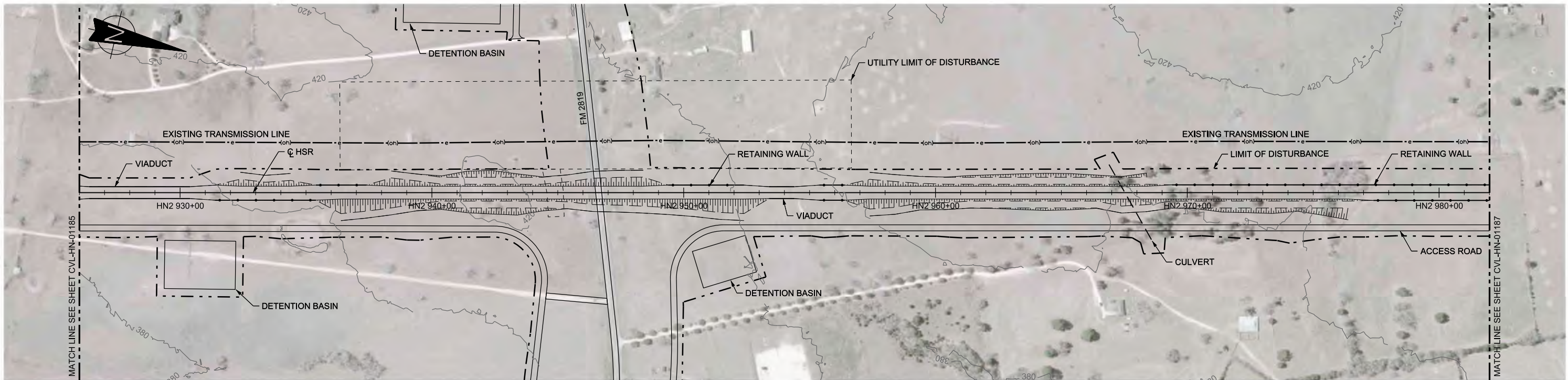
**TEXAS CENTRAL**

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

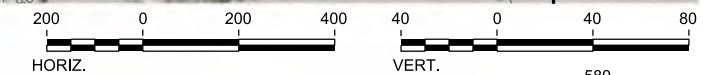
Drawing Title

**HOUSTON SEGMENT CIVIL  
PLAN AND PROFILE  
HN2 870+00 TO HN2 926+00**

|                |              |
|----------------|--------------|
| Scale          | AS SHOWN     |
| Drawing Status | FINAL DRAFT  |
| Job No         | 234180       |
| Drawing No     | CVL-HN-01185 |
| Rev            | 01           |



PLAN



PROFILE

|                |                       |             |            |            |            |            |                        |            |                |      |      |       |                |         |         |       |       |         |                  |      |      |      |      |      |      |      |       |       |       |
|----------------|-----------------------|-------------|------------|------------|------------|------------|------------------------|------------|----------------|------|------|-------|----------------|---------|---------|-------|-------|---------|------------------|------|------|------|------|------|------|------|-------|-------|-------|
| STATIONING     | HN2 926+00            | HN2 930+00  | HN2 940+00 | HN2 950+00 | HN2 960+00 | HN2 970+00 | HN2 980+00             | HN2 982+00 |                |      |      |       |                |         |         |       |       |         |                  |      |      |      |      |      |      |      |       |       |       |
| HOR. ALIGNMENT | L=44690               |             |            |            |            |            |                        |            |                |      |      |       |                |         |         |       |       |         |                  |      |      |      |      |      |      |      |       |       |       |
| VER. ALIGNMENT | L=4015.12<br>G=1.000% |             | R=130000   |            |            |            | L=3895.31<br>G=-0.700% |            |                |      |      |       |                |         |         |       |       |         |                  |      |      |      |      |      |      |      |       |       |       |
| CUT AND FILL   | +18.0                 | +19.6       | +17.8      | +14.5      | +12.9      | +16.3      | +13.4                  | +5.9       | -4.1           | +1.6 | +8.0 | +11.0 | +13.6          | +17.6   | +18.5   | +15.1 | +10.2 | +6.2    | +3.9             | +2.6 | +3.3 | +5.7 | +0.6 | -2.8 | -2.4 | -7.8 | -13.6 | -16.9 | -16.2 |
| TYP. SECTION   | G                     | VIADUCT (K) |            | G          | F          | G          | F                      | CUT (H)    | EMBANKMENT (F) |      | K    | G     | EMBANKMENT (F) | CUT (H) | CUT (H) | F     | J     | CUT (H) | RETAINED CUT (J) |      |      |      |      |      |      |      |       |       |       |

|             |             |
|-------------|-------------|
| DESIGNED BY | T. SMELCER  |
| DRAWN BY    | J. BORGHESI |
| CHECKED BY  | K. SEYMOUR  |
| IN CHARGE   | C. TAYLOR   |
| DATE        | 09/15/2017  |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
|     |      |    |     |     |             |

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www.freese.com  
Texas Registered Engineering Firm: F-2144

Client

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

Drawing Title

**HOUSTON SEGMENT CIVIL**  
PLAN AND PROFILE  
HN2 926+00 TO HN2 982+00

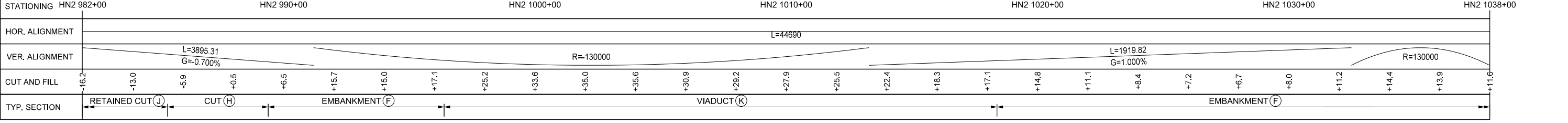
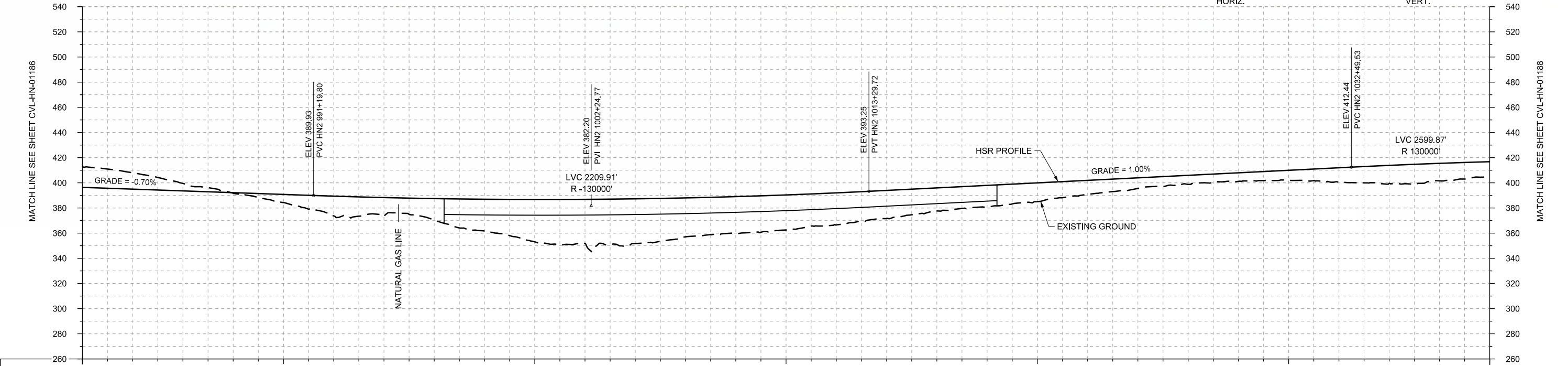
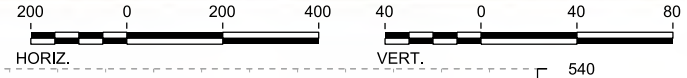
Scale

AS SHOWN

Drawing Status

**FINAL DRAFT**

|        |              |     |
|--------|--------------|-----|
| Job No | Drawing No   | Rev |
| 234180 | CVL-HN-01186 | 01  |



| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
|     |      |    |     |     |             |

DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

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Dallas, Texas 75204  
Tel (214) 217 2200 Fax (214) 217 2201  
www.freese.com  
Texas Registered Engineering Firm: F-2144

Client

**TEXAS CENTRAL**

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

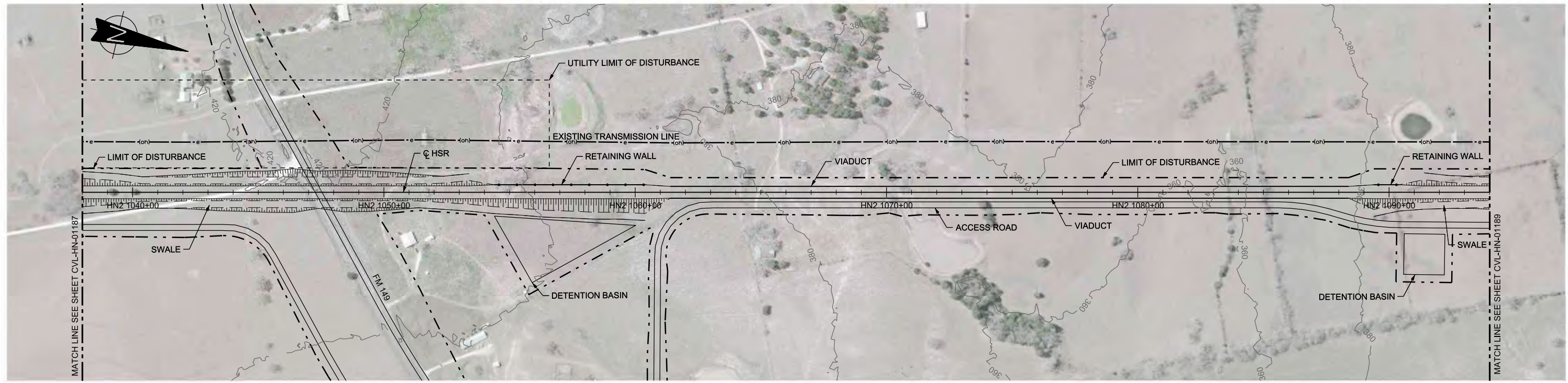
Drawing Title

**HOUSTON SEGMENT CIVIL PLAN AND PROFILE HN2 982+00 TO HN2 1038+00**

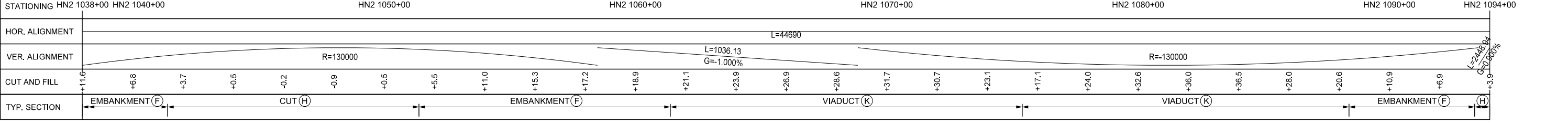
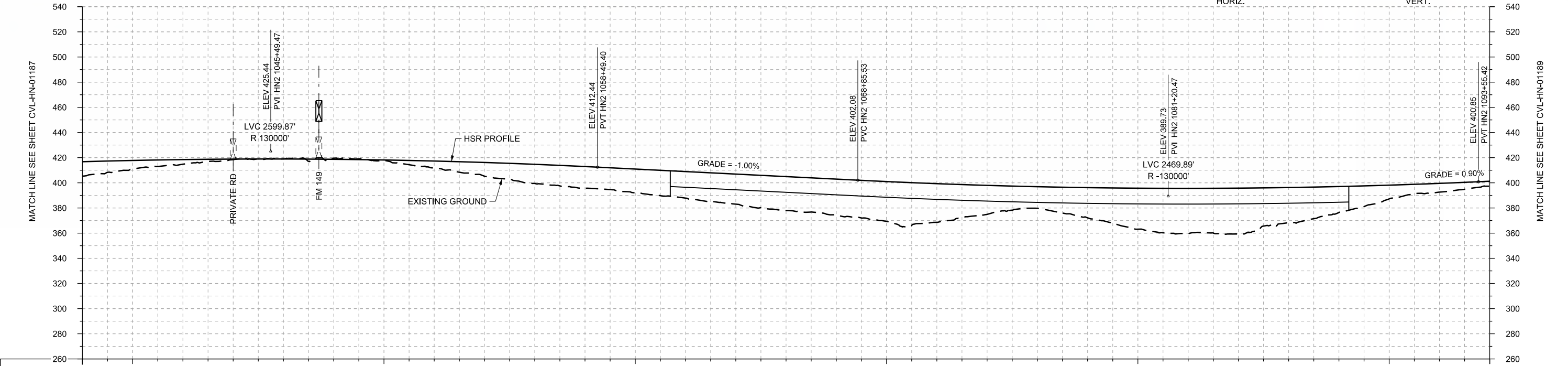
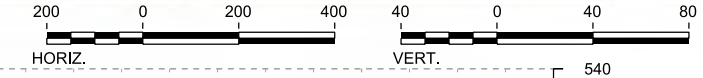
Scale  
**AS SHOWN**

Drawing Status  
**FINAL DRAFT**

|        |              |     |
|--------|--------------|-----|
| Job No | Drawing No   | Rev |
| 234180 | CVL-HN-01187 | 01  |



PLAN



PROFILE

|             |             |
|-------------|-------------|
| DESIGNED BY | T. SMELCER  |
| DRAWN BY    | J. BORGHESI |
| CHECKED BY  | K. SEYMOUR  |
| IN CHARGE   | C. TAYLOR   |
| DATE        | 09/15/2017  |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
|     |      |    |     |     |             |

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Texas Registered Engineering Firm: F-1990

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Dallas, Texas 75204  
Tel (214) 217 2200 Fax (214) 217 2201  
www.freese.com  
Texas Registered Engineering Firm: F-2144

Client

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

Drawing Title

**HOUSTON SEGMENT CIVIL**  
PLAN AND PROFILE  
HN2 1038+00 TO HN2 1094+00

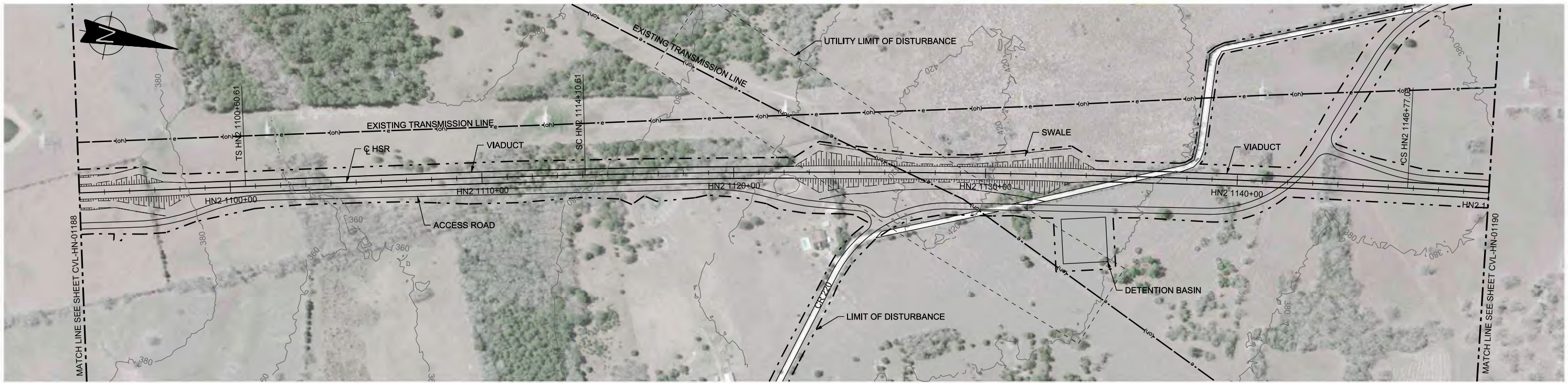
Scale

AS SHOWN

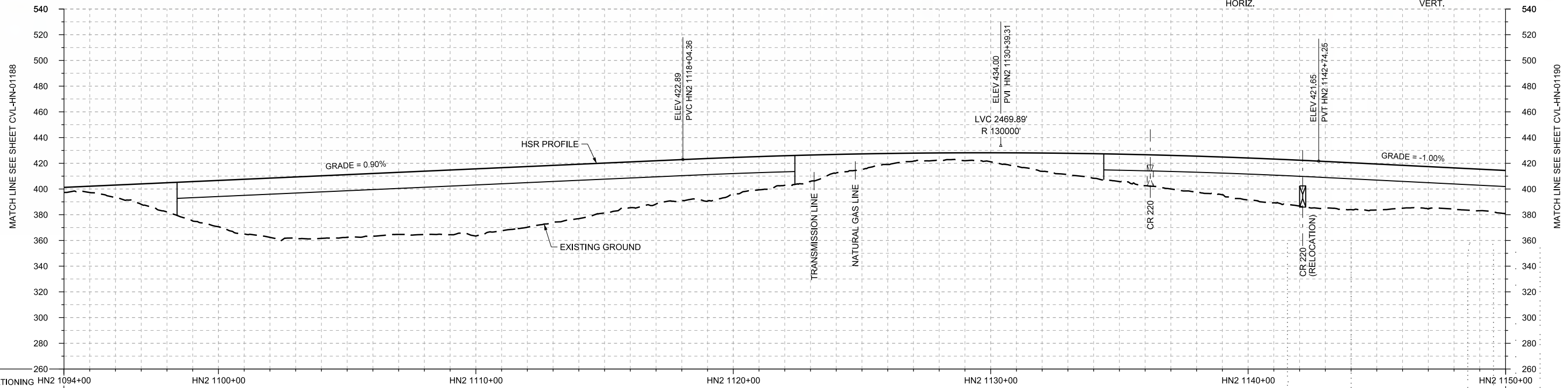
Drawing Status

**FINAL DRAFT**

|        |              |     |
|--------|--------------|-----|
| Job No | Drawing No   | Rev |
| 234180 | CVL-HN-01188 | 01  |



PLAN



PROFILE

|                |                       |             |             |             |                        |             |             |       |       |       |       |       |                |       |       |       |             |      |      |       |       |       |       |       |       |       |       |       |       |
|----------------|-----------------------|-------------|-------------|-------------|------------------------|-------------|-------------|-------|-------|-------|-------|-------|----------------|-------|-------|-------|-------------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| STATIONING     | HN2 1094+00           | HN2 1100+00 | HN2 1110+00 | HN2 1120+00 | HN2 1130+00            | HN2 1140+00 | HN2 1150+00 |       |       |       |       |       |                |       |       |       |             |      |      |       |       |       |       |       |       |       |       |       |       |
| HOR. ALIGNMENT | L=44690               |             | L=1350      |             | R=42000<br>L=3266      |             | L=1350      |       |       |       |       |       |                |       |       |       |             |      |      |       |       |       |       |       |       |       |       |       |       |
| VER. ALIGNMENT | L=2448.94<br>G=0.900% |             | R=130000    |             | L=2131.13<br>G=-1.000% |             |             |       |       |       |       |       |                |       |       |       |             |      |      |       |       |       |       |       |       |       |       |       |       |
| CUT AND FILL   | +3.9                  | +9.3        | +22.6       | +36.0       | +46.0                  | +48.6       | +48.4       | +49.2 | +52.2 | +47.2 | +42.3 | +36.6 | +31.8          | +28.6 | +22.9 | +14.4 | +8.6        | +5.8 | +7.0 | +14.3 | +19.2 | +24.0 | +27.8 | +32.7 | +35.7 | +36.4 | +33.4 | +32.4 | +33.5 |
| TYP. SECTION   | EMBANKMENT (F)        |             | VIADUCT (K) |             |                        |             |             |       |       |       |       |       | EMBANKMENT (F) |       |       |       | VIADUCT (K) |      |      |       |       |       |       |       |       |       |       |       |       |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
|     |      |    |     |     |             |
|     |      |    |     |     |             |
|     |      |    |     |     |             |

DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

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Tel (214) 217 2200 Fax (214) 217 2201  
www.freese.com  
Texas Registered Engineering Firm: F-2144

Client

**TEXAS CENTRAL**

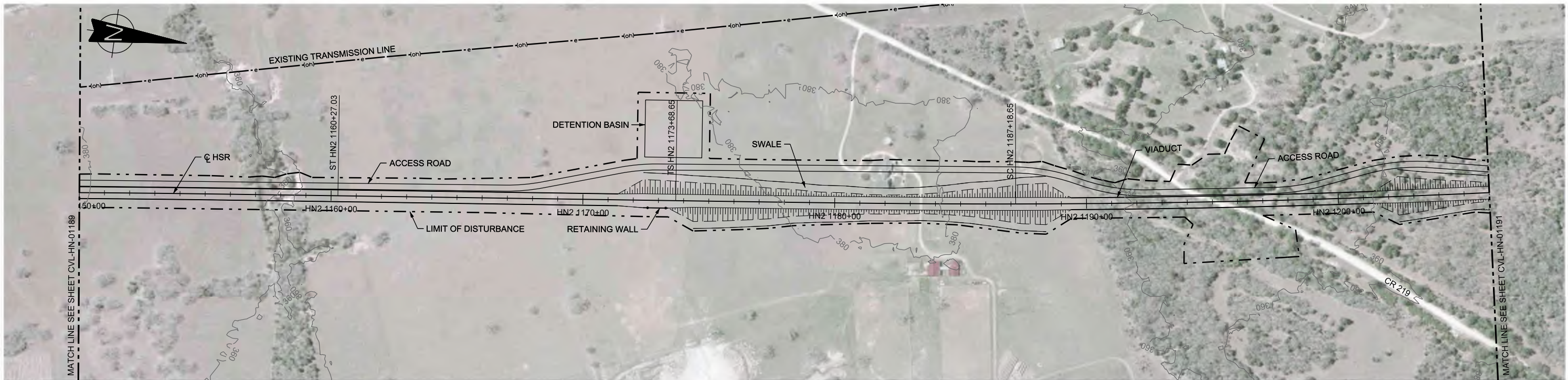
1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

Drawing Title

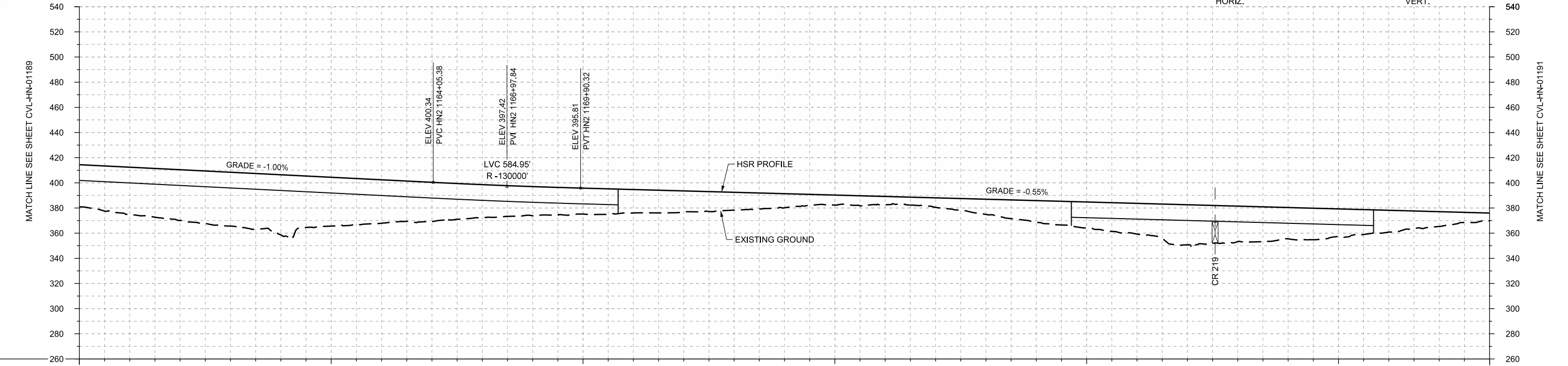
**HOUSTON SEGMENT CIVIL PLAN AND PROFILE**  
HN2 1094+00 TO HN2 1150+00

|                |              |
|----------------|--------------|
| Scale          | AS SHOWN     |
| Drawing Status | FINAL DRAFT  |
| Job No         | 234180       |
| Drawing No     | CVL-HN-01189 |
| Rev            | 01           |





PLAN



PROFILE

|                |                        |             |             |                |                        |             |                   |
|----------------|------------------------|-------------|-------------|----------------|------------------------|-------------|-------------------|
| STATIONING     | HN2 1150+00            | HN2 1160+00 | HN2 1170+00 | HN2 1180+00    | HN2 1190+00            | HN2 1200+00 | HN2 1206+00       |
| HOR. ALIGNMENT | L=1350                 |             | L=1342      |                | L=1350                 |             | R=42000<br>L=2676 |
| VER. ALIGNMENT | L=2131.13<br>G=-1.000% |             | R=-130000   |                | L=6773.09<br>G=-0.550% |             |                   |
| CUT AND FILL   | +33.5                  | +37.6       | +40.3       | +42.8          | +47.9                  | +38.8       | +34.5             |
| TYP. SECTION   | VIADUCT (K)            |             |             | EMBANKMENT (A) |                        |             | VIADUCT (K)       |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
|     |      |    |     |     |             |
|     |      |    |     |     |             |
|     |      |    |     |     |             |

DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

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www.freese.com  
Texas Registered Engineering Firm: F-2144

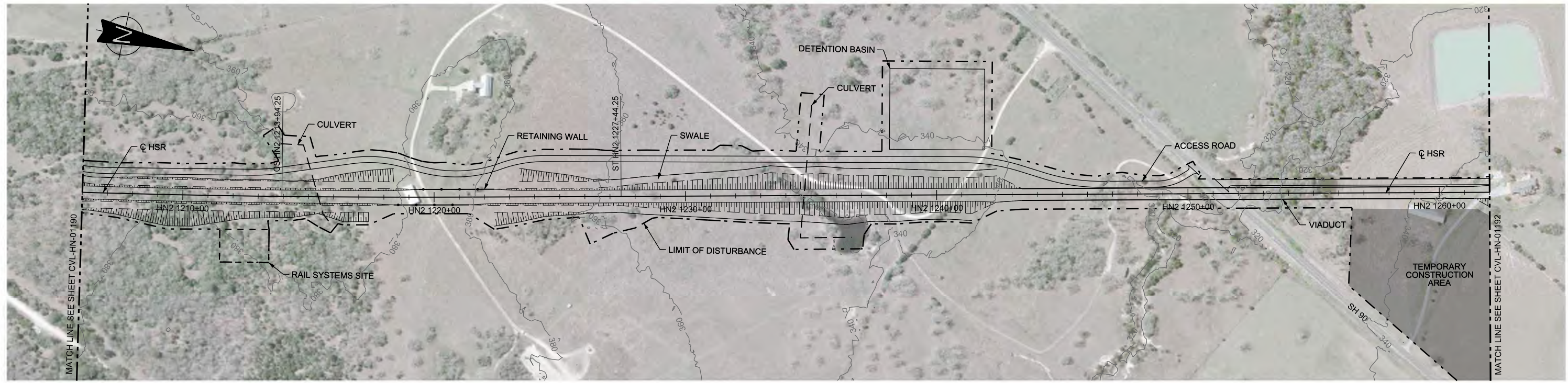
Client

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

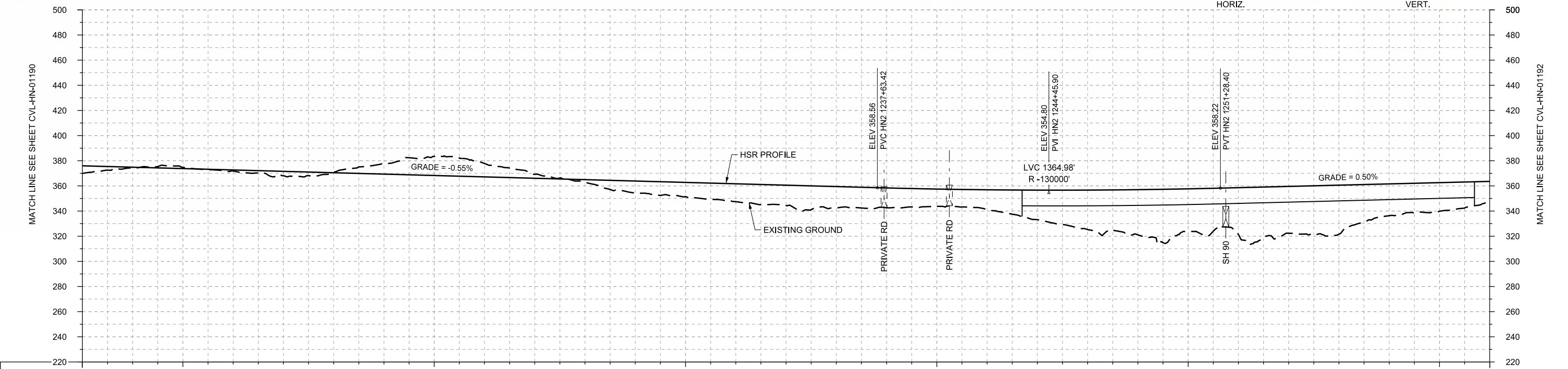
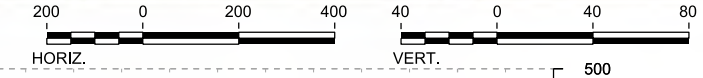
Drawing Title

**HOUSTON SEGMENT  
CIVIL  
PLAN AND PROFILE  
HN2 1150+00 TO HN2 1206+00**

|                               |                            |           |
|-------------------------------|----------------------------|-----------|
| Scale<br>AS SHOWN             |                            |           |
| Drawing Status<br>FINAL DRAFT |                            |           |
| Job No<br>234180              | Drawing No<br>CVL-HN-01190 | Rev<br>01 |



PLAN



|                |                   |             |                        |             |                  |                                   |             |             |       |      |                |      |       |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|----------------|-------------------|-------------|------------------------|-------------|------------------|-----------------------------------|-------------|-------------|-------|------|----------------|------|-------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| STATIONING     | HN2 1206+00       | HN2 1210+00 | HN2 1220+00            | HN2 1230+00 | HN2 1240+00      | HN2 1250+00                       | HN2 1260+00 | HN2 1262+00 |       |      |                |      |       |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| HOR. ALIGNMENT | R=42000<br>L=2676 |             | L=1350                 |             |                  | L=32150                           |             |             |       |      |                |      |       |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| VER. ALIGNMENT |                   |             | L=6773.09<br>G=-0.550% |             |                  | R=130000<br>L=3010.92<br>G=0.500% |             |             |       |      |                |      |       |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| CUT AND FILL   | +6.1              | +0.9        | -0.8                   | +0.9        | +3.5             | -0.5                              | -8.6        | -15.2       | -10.6 | -3.1 | +2.2           | +9.6 | +11.3 | +14.3       | +16.2 | +17.0 | +15.8 | +13.8 | +15.7 | +23.5 | +31.3 | +35.9 | +33.9 | +37.2 | +37.3 | +39.1 | +23.3 | +22.8 | +15.9 |
| TYP. SECTION   | A                 |             | CUT (C)                |             | RETAINED CUT (D) |                                   |             | CUT (C)     |       |      | EMBANKMENT (A) |      |       | VIADUCT (E) |       |       | A     |       |       |       |       |       |       |       |       |       |       |       |       |

PROFILE

|             |             |
|-------------|-------------|
| DESIGNED BY | T. SMELCER  |
| DRAWN BY    | J. BORGHESI |
| CHECKED BY  | K. SEYMOUR  |
| IN CHARGE   | C. TAYLOR   |
| DATE        | 09/15/2017  |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
|     |      |    |     |     |             |

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www.freese.com  
Texas Registered Engineering Firm: F-2144

Client

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

Drawing Title

**HOUSTON SEGMENT  
CIVIL  
PLAN AND PROFILE  
HN2 1206+00 TO HN2 1262+00**

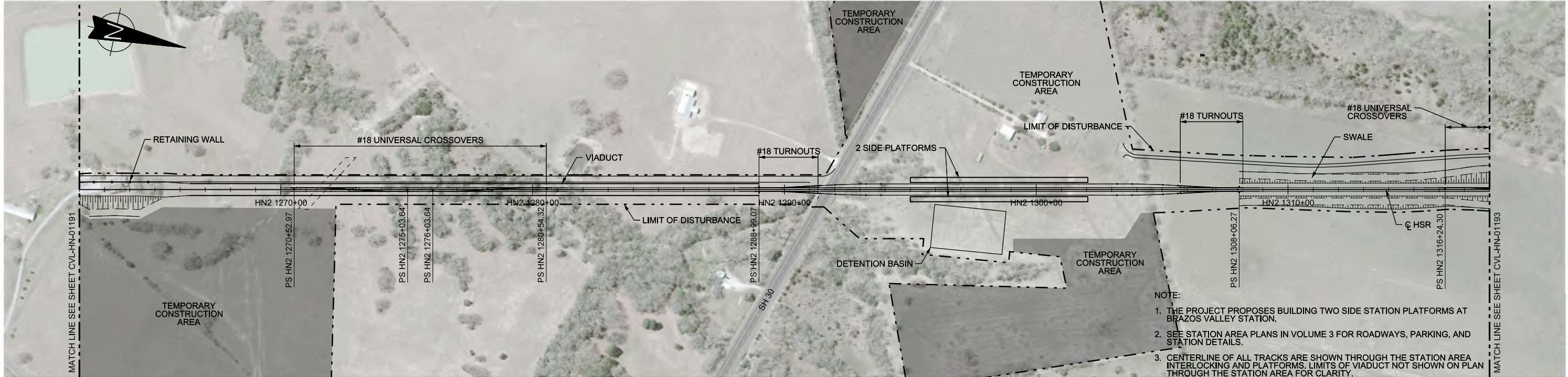
Scale

AS SHOWN

Drawing Status

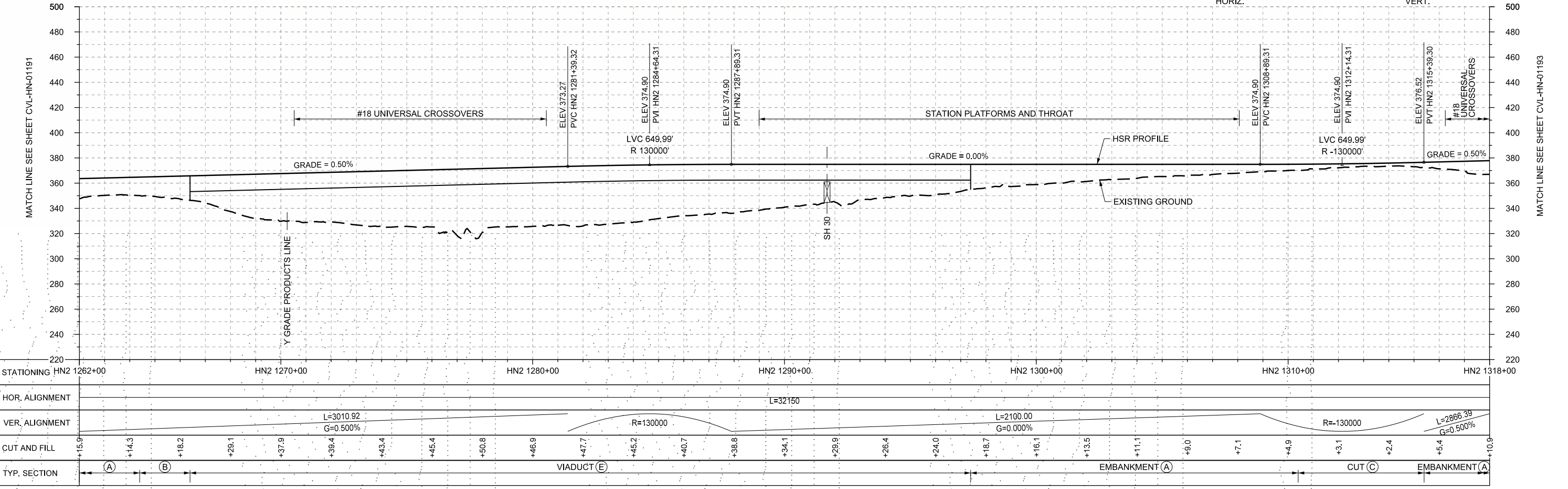
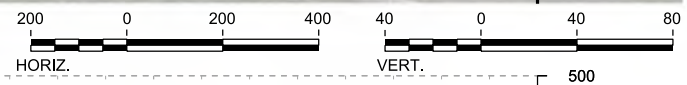
**FINAL DRAFT**

|        |              |     |
|--------|--------------|-----|
| Job No | Drawing No   | Rev |
| 234180 | CVL-HN-01191 | 01  |



- NOTE:
1. THE PROJECT PROPOSES BUILDING TWO SIDE STATION PLATFORMS AT BRAZOS VALLEY STATION.
  2. SEE STATION AREA PLANS IN VOLUME 3 FOR ROADWAYS, PARKING, AND STATION DETAILS.
  3. CENTERLINE OF ALL TRACKS ARE SHOWN THROUGH THE STATION AREA INTERLOCKING AND PLATFORMS. LIMITS OF VIADUCT NOT SHOWN ON PLAN THROUGH THE STATION AREA FOR CLARITY.

PLAN



PROFILE

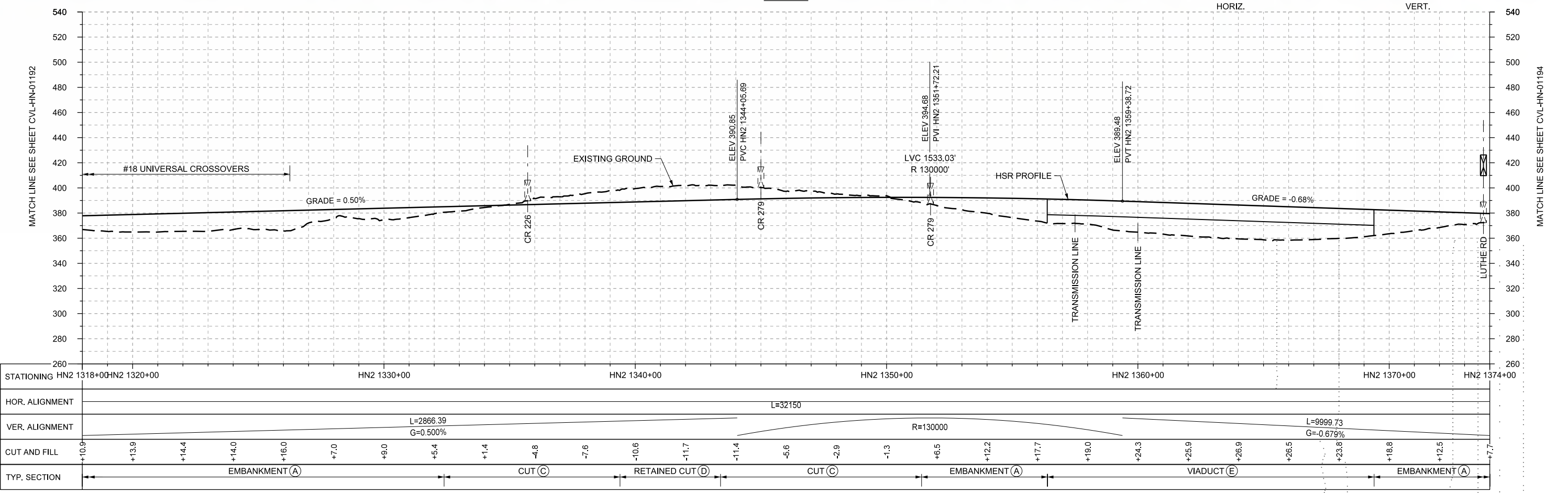
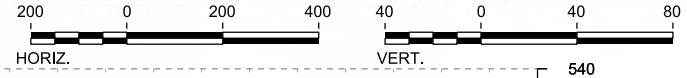
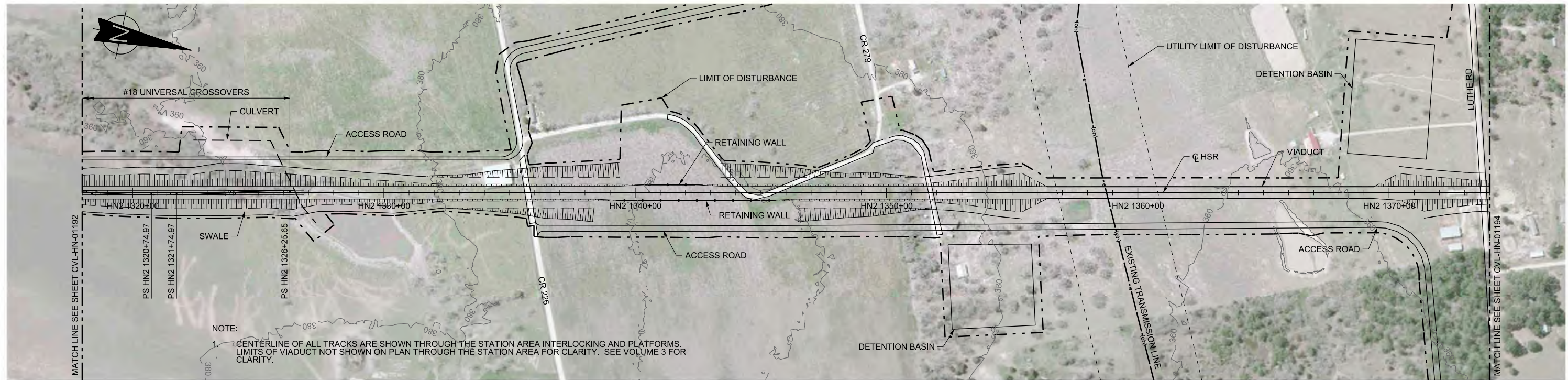
|                |                       |             |             |             |             |                       |                |  |
|----------------|-----------------------|-------------|-------------|-------------|-------------|-----------------------|----------------|--|
| STATIONING     | HN2 1262+00           | HN2 1270+00 | HN2 1280+00 | HN2 1290+00 | HN2 1300+00 | HN2 1310+00           | HN2 1318+00    |  |
| HOR. ALIGNMENT | L=32150               |             |             |             |             |                       |                |  |
| VER. ALIGNMENT | L=3010.92<br>G=0.500% |             | R=130000    |             |             | L=2100.00<br>G=0.000% |                |  |
| CUT AND FILL   | +15.9                 | +14.3       | +18.2       | +29.1       | +37.9       | +39.4                 | +43.4          |  |
| TYP. SECTION   | A                     |             | B           |             | VIADUCT (E) |                       | EMBANKMENT (A) |  |

|             |             |
|-------------|-------------|
| DESIGNED BY | T. SMELCER  |
| DRAWN BY    | J. BORGHESI |
| CHECKED BY  | K. SEYMOUR  |
| IN CHARGE   | C. TAYLOR   |
| DATE        | 09/15/2017  |



Drawing Title  
**HOUSTON SEGMENT CIVIL**  
**PLAN AND PROFILE**  
**HN2 1262+00 TO HN2 1318+00**

|                |              |
|----------------|--------------|
| Scale          | AS SHOWN     |
| Drawing Status | FINAL DRAFT  |
| Job No         | 234180       |
| Drawing No     | CVL-HN-01192 |
| Rev            | 01           |



|             |             |
|-------------|-------------|
| DESIGNED BY | T. SMELCER  |
| DRAWN BY    | J. BORGHESI |
| CHECKED BY  | K. SEYMOUR  |
| IN CHARGE   | C. TAYLOR   |
| DATE        | 09/15/2017  |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
|     |      |    |     |     |             |
|     |      |    |     |     |             |
|     |      |    |     |     |             |

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www.freese.com  
Texas Registered Engineering Firm: F-2144

Client

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

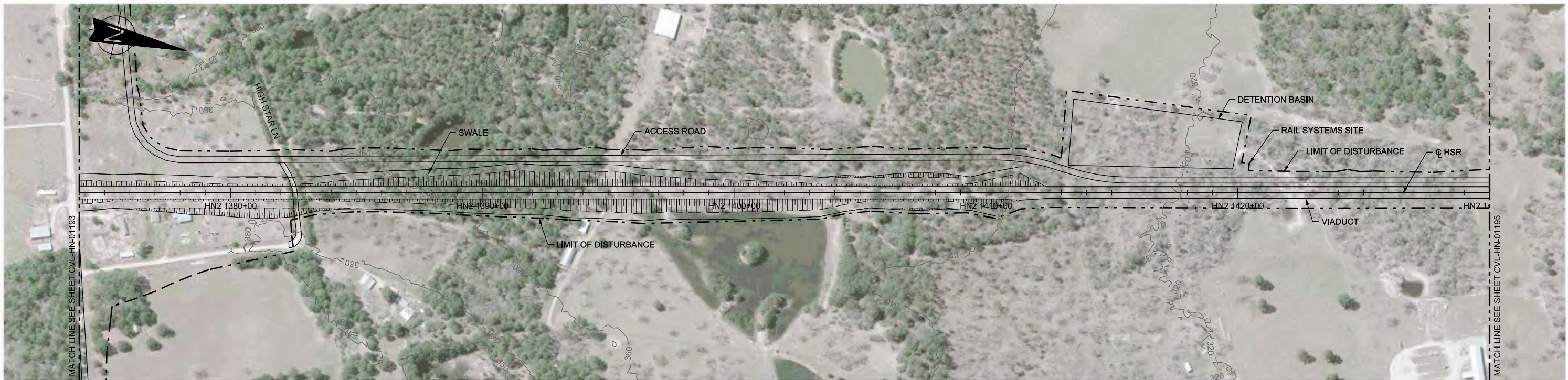
Drawing Title

HOUSTON SEGMENT  
CIVIL  
PLAN AND PROFILE  
HN2 1318+00 TO HN2 1374+00

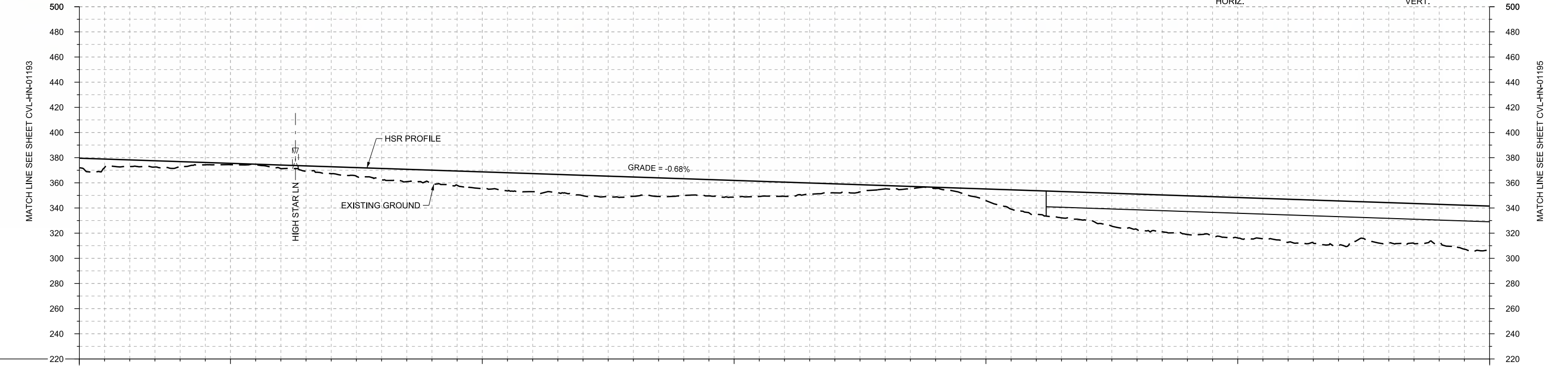
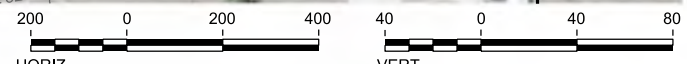
Scale  
AS SHOWN

Drawing Status  
FINAL DRAFT

|        |              |     |
|--------|--------------|-----|
| Job No | Drawing No   | Rev |
| 234180 | CVL-HN-01193 | 01  |



PLAN



PROFILE

|                |                        |             |             |                |             |             |             |       |         |       |                |       |             |       |       |      |      |      |      |       |       |       |       |       |       |       |       |       |       |
|----------------|------------------------|-------------|-------------|----------------|-------------|-------------|-------------|-------|---------|-------|----------------|-------|-------------|-------|-------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| STATIONING     | HN2 1374+00            | HN2 1380+00 | HN2 1390+00 | HN2 1400+00    | HN2 1410+00 | HN2 1420+00 | HN2 1430+00 |       |         |       |                |       |             |       |       |      |      |      |      |       |       |       |       |       |       |       |       |       |       |
| HOR. ALIGNMENT | L=32150                |             |             |                |             |             |             |       |         |       |                |       |             |       |       |      |      |      |      |       |       |       |       |       |       |       |       |       |       |
| VER. ALIGNMENT | L=9999.73<br>G=-0.679% |             |             |                |             |             |             |       |         |       |                |       |             |       |       |      |      |      |      |       |       |       |       |       |       |       |       |       |       |
| CUT AND FILL   | +7.7                   | +5.3        | +4.5        | +1.1           | +2.8        | +5.5        | +9.1        | +11.0 | +13.4   | +14.4 | +16.3          | +15.4 | +13.3       | +13.0 | +11.2 | +7.2 | +2.6 | +1.0 | +9.3 | +18.7 | +22.1 | +28.1 | +30.8 | +32.2 | +34.2 | +35.0 | +31.7 | +30.9 | +34.7 |
| TYP. SECTION   | CUT (C)                |             |             | EMBANKMENT (A) |             |             |             |       | CUT (C) |       | EMBANKMENT (A) |       | VIADUCT (E) |       |       |      |      |      |      |       |       |       |       |       |       |       |       |       |       |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
|     |      |    |     |     |             |
|     |      |    |     |     |             |
|     |      |    |     |     |             |

DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

**ARUP**

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Dallas, Texas 75204  
Tel (214) 217 2200 Fax (214) 217 2201  
www.freese.com  
Texas Registered Engineering Firm: F-2144

Client

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

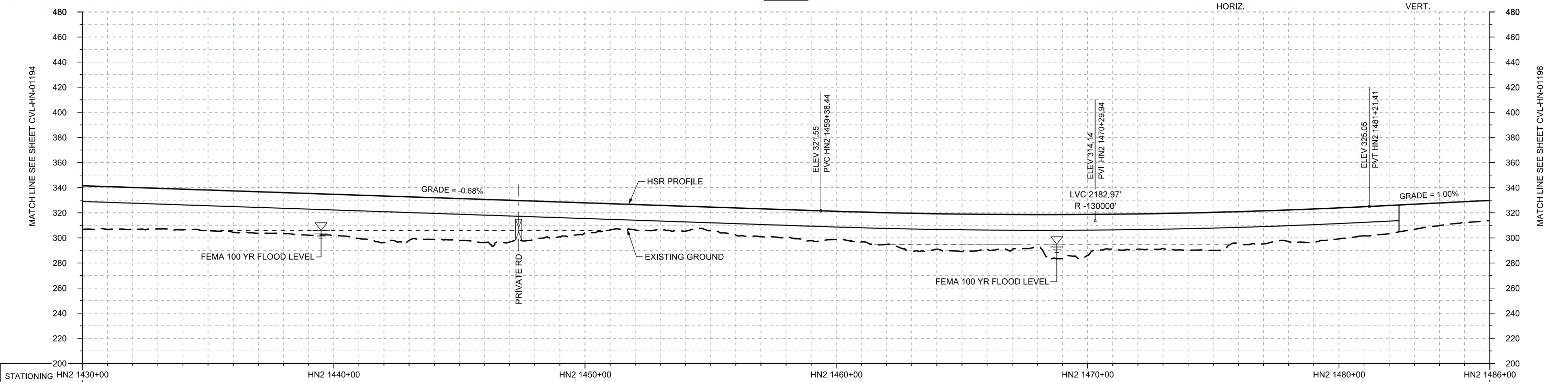
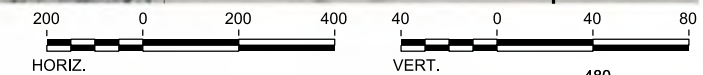
Drawing Title

**HOUSTON SEGMENT  
CIVIL  
PLAN AND PROFILE  
HN2 1374+00 TO HN2 1430+00**

|                |              |     |  |
|----------------|--------------|-----|--|
| Scale          | AS SHOWN     |     |  |
| Drawing Status | FINAL DRAFT  |     |  |
| Job No         | Drawing No   | Rev |  |
| 234180         | CVL-HN-01194 | 01  |  |



PLAN



|                |                        |             |             |             |             |                       |                |
|----------------|------------------------|-------------|-------------|-------------|-------------|-----------------------|----------------|
| STATIONING     | HN2 1430+00            | HN2 1440+00 | HN2 1450+00 | HN2 1460+00 | HN2 1470+00 | HN2 1480+00           | HN2 1486+00    |
| HOR. ALIGNMENT | L=32150                |             |             |             |             |                       |                |
| VER. ALIGNMENT | L=9999.73<br>G=-0.679% |             |             | R=-130000   |             | L=4381.75<br>G=1.000% |                |
| CUT AND FILL   | +34.7                  | +33.5       | +32.4       | +33.0       | +32.4       | +32.8                 | +37.2          |
| TYP. SECTION   | VIADUCT (E)            |             |             |             |             |                       | EMBANKMENT (A) |

PROFILE

|             |             |
|-------------|-------------|
| DESIGNED BY | T. SMELCER  |
| DRAWN BY    | J. BORGHESI |
| CHECKED BY  | K. SEYMOUR  |
| IN CHARGE   | C. TAYLOR   |
| DATE        | 09/15/2017  |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
|     |      |    |     |     |             |

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www.freese.com  
Texas Registered Engineering Firm: F-2144

Client

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

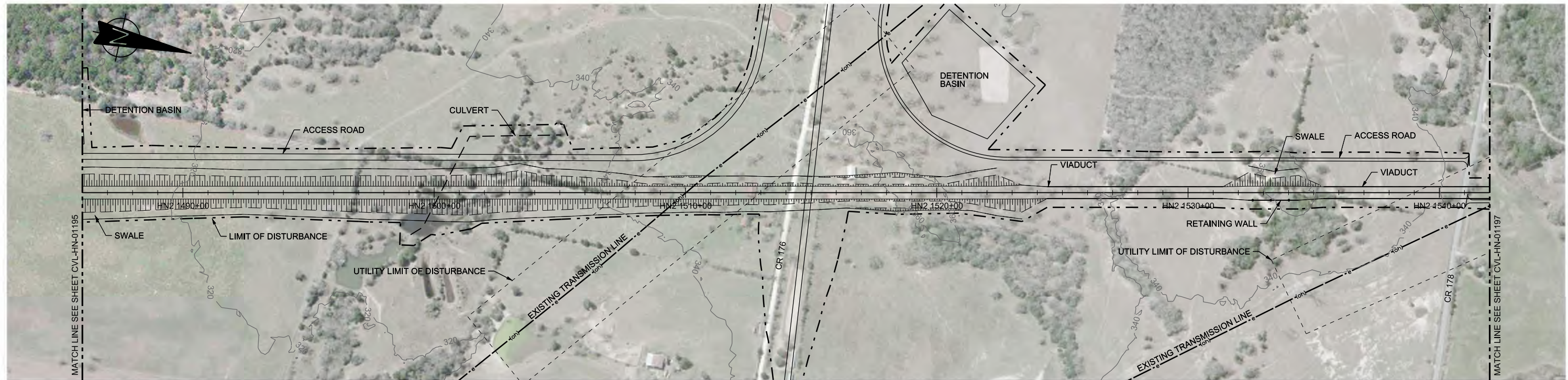
Drawing Title

**HOUSTON SEGMENT  
CIVIL  
PLAN AND PROFILE  
HN2 1430+00 TO HN2 1486+00**

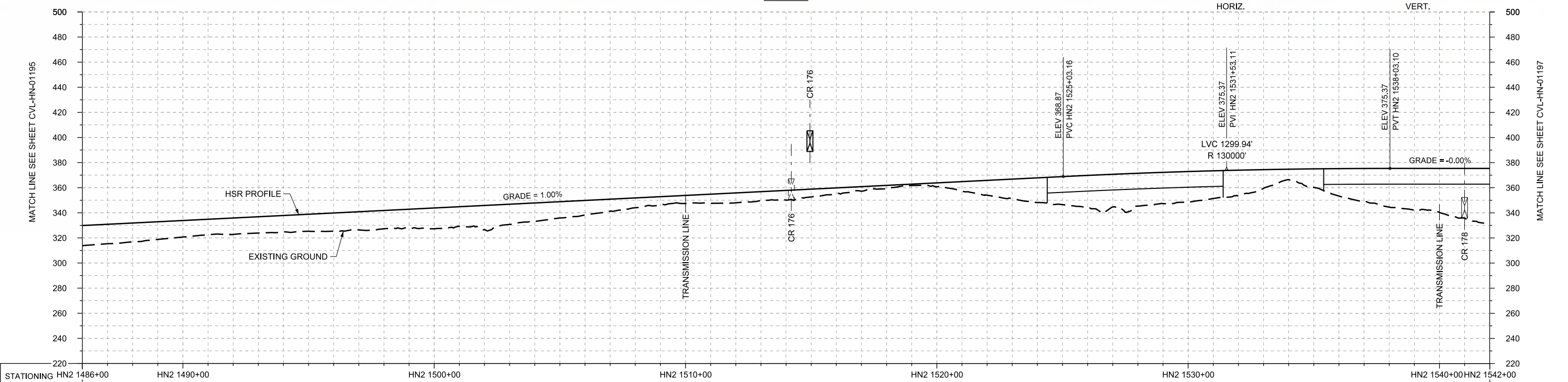
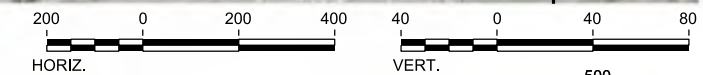
Scale  
AS SHOWN

Drawing Status  
**FINAL DRAFT**

|        |              |     |
|--------|--------------|-----|
| Job No | Drawing No   | Rev |
| 234180 | CVL-HN-01195 | 01  |



PLAN



PROFILE

|                |                       |             |             |             |             |             |                        |             |       |       |         |      |                |      |             |      |                |      |             |       |       |       |       |       |      |       |       |       |       |
|----------------|-----------------------|-------------|-------------|-------------|-------------|-------------|------------------------|-------------|-------|-------|---------|------|----------------|------|-------------|------|----------------|------|-------------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|
| STATIONING     | HN2 1486+00           | HN2 1490+00 | HN2 1500+00 | HN2 1510+00 | HN2 1520+00 | HN2 1530+00 | HN2 1540+00            | HN2 1542+00 |       |       |         |      |                |      |             |      |                |      |             |       |       |       |       |       |      |       |       |       |       |
| HOR. ALIGNMENT | L=32150               |             |             |             |             |             |                        |             |       |       |         |      |                |      |             |      |                |      |             |       |       |       |       |       |      |       |       |       |       |
| VER. ALIGNMENT | L=4381.75<br>G=1.000% |             |             |             | R=130000    |             | L=2821.24<br>G=-0.000% |             |       |       |         |      |                |      |             |      |                |      |             |       |       |       |       |       |      |       |       |       |       |
| CUT AND FILL   | +16.0                 | +15.0       | +13.1       | +13.0       | +13.1       | +14.5       | +14.5                  | +16.5       | +19.3 | +14.7 | +11.6   | +7.8 | +6.4           | +7.8 | +7.7        | +4.8 | +2.7           | +3.1 | +11.8       | +19.6 | +25.1 | +26.2 | +24.5 | +20.5 | +8.3 | +21.8 | +30.8 | +35.1 | +44.2 |
| TYP. SECTION   | EMBANKMENT (A)        |             |             |             |             |             |                        |             |       |       | CUT (C) |      | EMBANKMENT (A) |      | VIADUCT (E) |      | EMBANKMENT (A) |      | VIADUCT (E) |       |       |       |       |       |      |       |       |       |       |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
|     |      |    |     |     |             |
|     |      |    |     |     |             |
|     |      |    |     |     |             |
|     |      |    |     |     |             |

DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

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Texas Registered Engineering Firm: F-2144

Client

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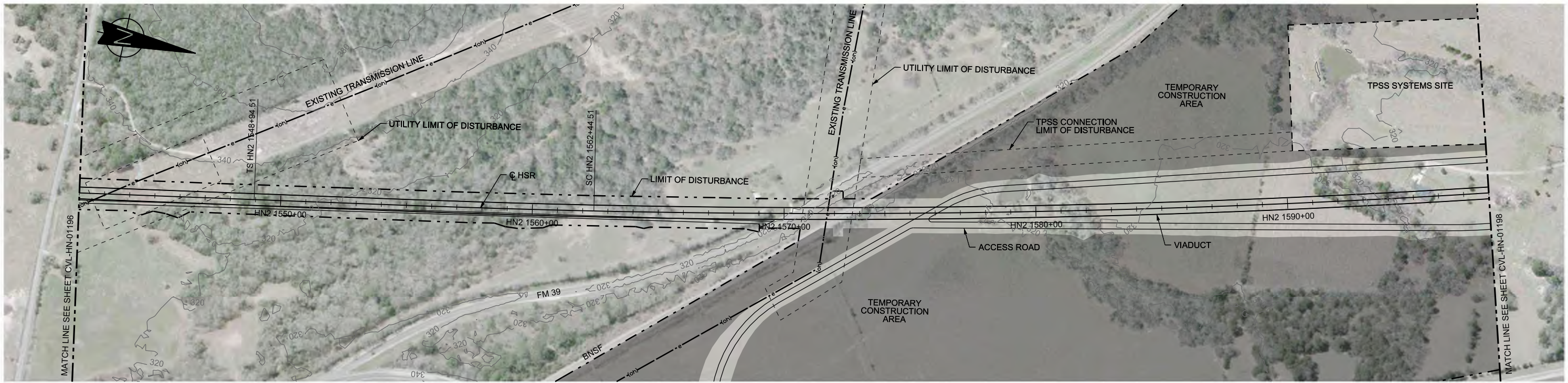
Drawing Title

**HOUSTON SEGMENT  
CIVIL  
PLAN AND PROFILE  
HN2 1486+00 TO HN2 1542+00**

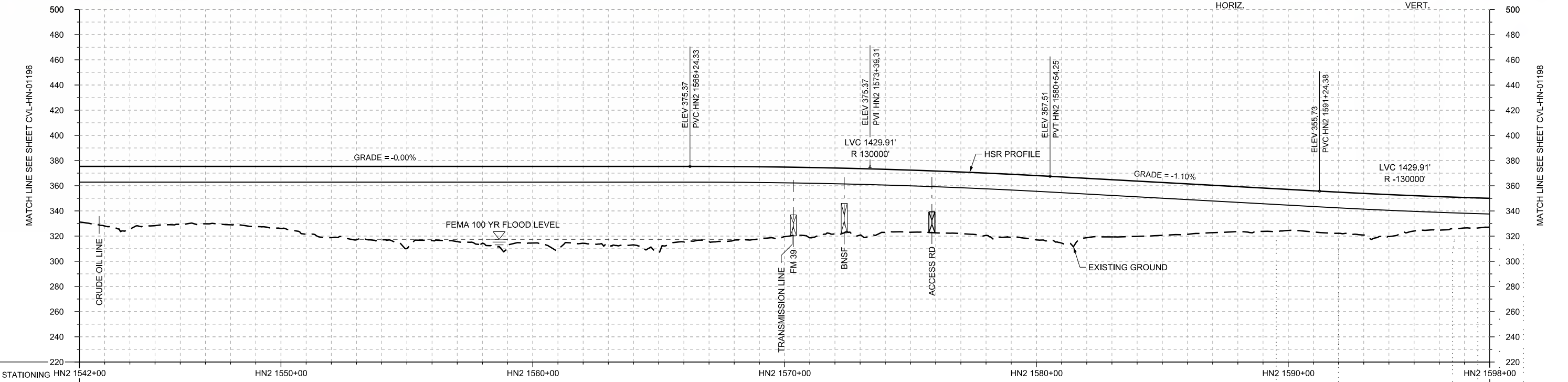
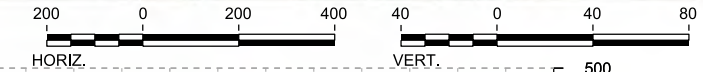
Scale  
AS SHOWN

Drawing Status  
**FINAL DRAFT**

|        |              |     |
|--------|--------------|-----|
| Job No | Drawing No   | Rev |
| 234180 | CVL-HN-01196 | 01  |



PLAN



PROFILE

|                |                        |             |             |             |                   |                       |             |
|----------------|------------------------|-------------|-------------|-------------|-------------------|-----------------------|-------------|
| STATIONING     | HN2 1542+00            | HN2 1550+00 | HN2 1560+00 | HN2 1570+00 | HN2 1580+00       | HN2 1590+00           | HN2 1598+00 |
| HOR. ALIGNMENT | L=32150                |             | L=1350      |             | R=42000<br>L=4700 |                       |             |
| VER. ALIGNMENT | L=2821.24<br>G=-0.000% |             | R=130000    |             |                   | L=1070.13<br>G=1.100% |             |
| CUT AND FILL   | +44.2                  | +49.6       | +46.1       | +46.4       | +49.4             | +56.6                 | +59.0       |
|                |                        |             |             |             | +61.1             | +60.9                 | +61.1       |
|                |                        |             |             |             | +62.4             | +60.0                 | +58.6       |
|                |                        |             |             |             | +55.3             | +52.4                 | +50.2       |
|                |                        |             |             |             | +49.1             | +49.6                 | +51.1       |
|                |                        |             |             |             | +47.2             | +43.9                 | +40.1       |
|                |                        |             |             |             | +35.7             | +32.6                 | +32.7       |
|                |                        |             |             |             | +33.3             | +26.7                 | +22.9       |
| TYP. SECTION   | VIADUCT (E)            |             |             |             |                   |                       |             |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
|     |      |    |     |     |             |
|     |      |    |     |     |             |
|     |      |    |     |     |             |
|     |      |    |     |     |             |

DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

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Tel (214) 217 2200 Fax (214) 217 2201  
www.freese.com  
Texas Registered Engineering Firm: F-2144

Client

**TEXAS CENTRAL**

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

Drawing Title

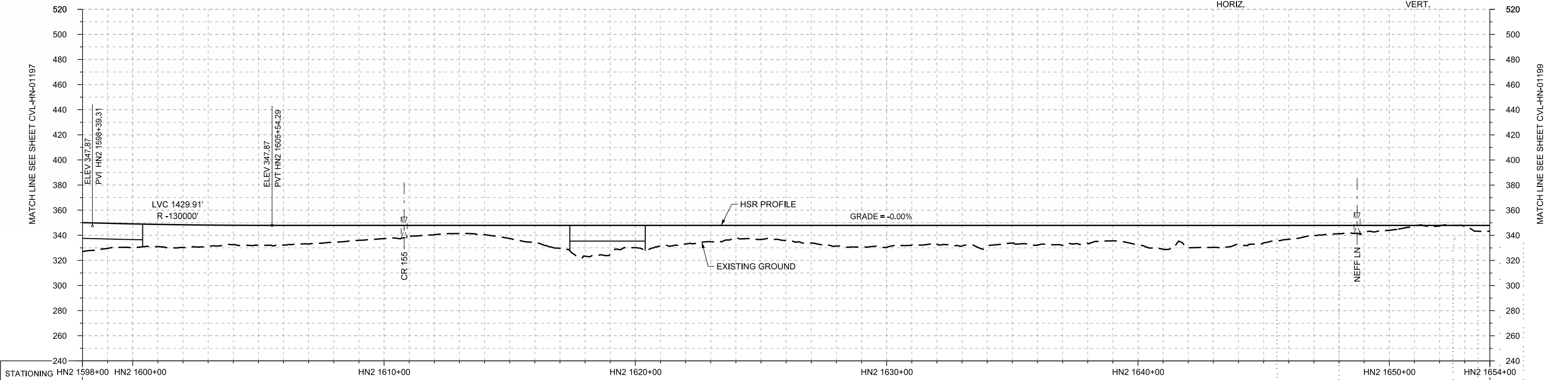
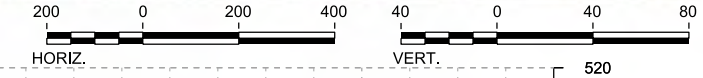
**HOUSTON SEGMENT CIVIL  
PLAN AND PROFILE  
HN2 1542+00 TO HN2 1598+00**

|                |              |
|----------------|--------------|
| Scale          | AS SHOWN     |
| Drawing Status | FINAL DRAFT  |
| Job No         | 234180       |
| Drawing No     | CVL-HN-01197 |
| Rev            | 01           |





PLAN



|                |                                     |             |                |             |             |             |             |             |      |       |       |       |                |      |       |       |       |         |       |       |       |       |       |       |       |      |      |      |      |
|----------------|-------------------------------------|-------------|----------------|-------------|-------------|-------------|-------------|-------------|------|-------|-------|-------|----------------|------|-------|-------|-------|---------|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|
| STATIONING     | HN2 1598+00                         | HN2 1600+00 | HN2 1610+00    | HN2 1620+00 | HN2 1630+00 | HN2 1640+00 | HN2 1650+00 | HN2 1654+00 |      |       |       |       |                |      |       |       |       |         |       |       |       |       |       |       |       |      |      |      |      |
| HOR. ALIGNMENT | R=42000<br>L=4700                   |             | L=1350         |             |             | L=2526      |             | L=1350      |      |       |       |       |                |      |       |       |       |         |       |       |       |       |       |       |       |      |      |      |      |
| VER. ALIGNMENT | R=-130000<br>L=6063.65<br>G=-0.000% |             |                |             |             |             |             |             |      |       |       |       |                |      |       |       |       |         |       |       |       |       |       |       |       |      |      |      |      |
| CUT AND FILL   | +22.9                               | +18.9       | +18.2          | +15.4       | +15.7       | +13.4       | +10.5       | +7.5        | +7.4 | +14.0 | +24.5 | +17.8 | +14.8          | +9.8 | +12.0 | +16.5 | +17.6 | +14.9   | +16.8 | +15.7 | +14.2 | +15.7 | +18.1 | +14.8 | +11.0 | +6.5 | +3.9 | +0.3 | +4.6 |
| TYP. SECTION   | VIADUCT (E)                         |             | EMBANKMENT (A) |             |             |             |             | VIADUCT (E) |      |       |       |       | EMBANKMENT (A) |      |       |       |       | CUT (C) |       |       |       |       |       |       |       |      |      |      |      |

PROFILE

|             |             |
|-------------|-------------|
| DESIGNED BY | T. SMELCER  |
| DRAWN BY    | J. BORGHESI |
| CHECKED BY  | K. SEYMOUR  |
| IN CHARGE   | C. TAYLOR   |
| DATE        | 09/15/2017  |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
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|     |      |    |     |     |             |
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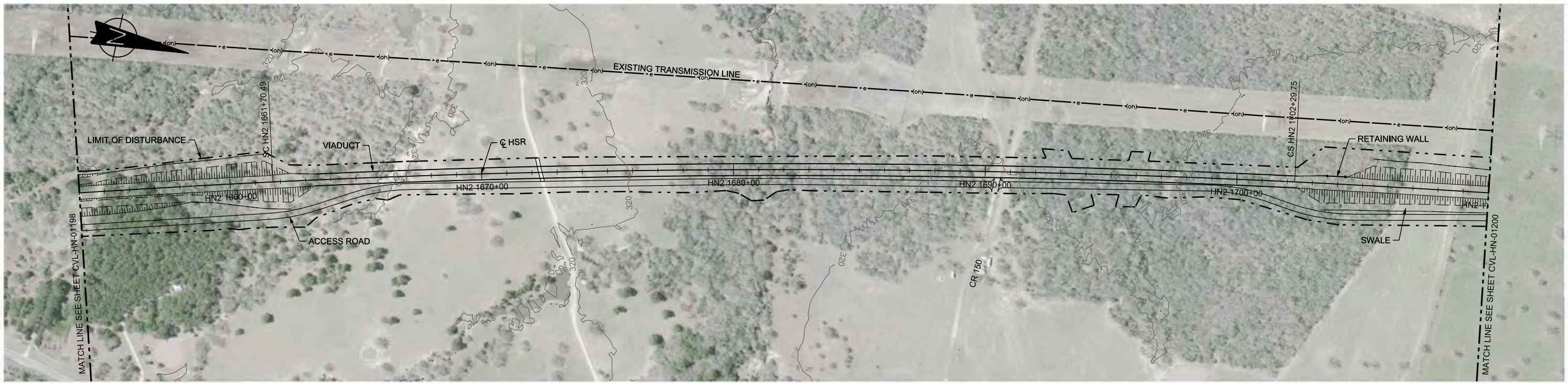
**ARUP**  
 Arup Texas, Inc.  
 10370 Richmond Ave., Suite 475  
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 Tel (713) 783 2787 Fax (713) 343 1467  
 www.arup.com  
 Texas Registered Engineering Firm: F-1990

**FREESSE AND NICHOLS**  
 2711 North Haskell Ave., Suite 3300  
 Dallas, Texas 75204  
 Tel (214) 217 2200 Fax (214) 217 2201  
 www.freese.com  
 Texas Registered Engineering Firm: F-2144

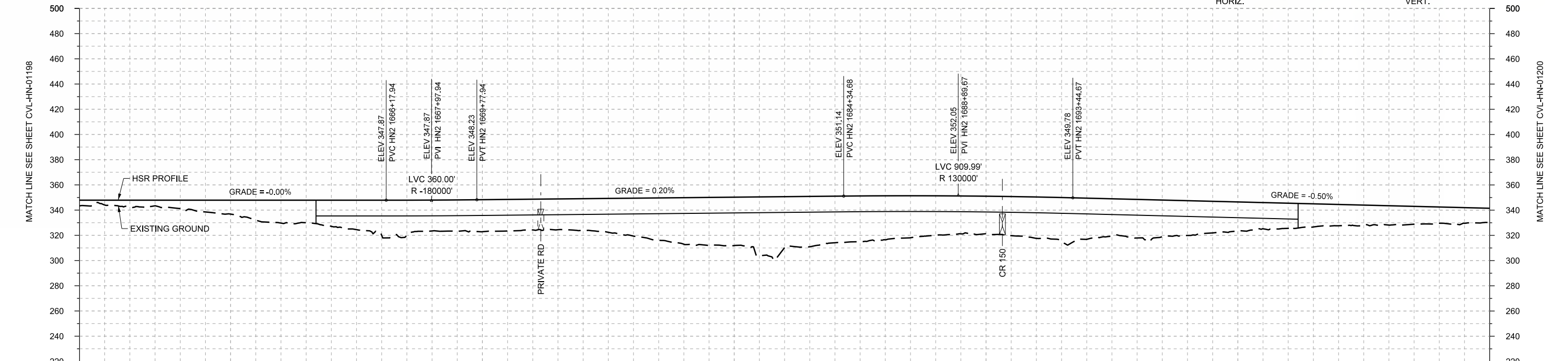
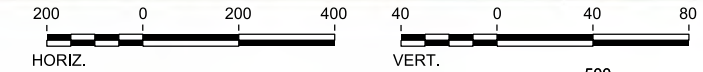
Client  
  
 1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

Drawing Title  
**HOUSTON SEGMENT CIVIL**  
**PLAN AND PROFILE**  
 HN2 1598+00 TO HN2 1654+00

Scale  
 AS SHOWN  
 Drawing Status  
**FINAL DRAFT**  
 Job No. 234180 Drawing No. CVL-HN-01198 Rev 01



PLAN



PROFILE

|                |                        |             |                       |             |                                    |             |             |             |       |       |       |       |                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|----------------|------------------------|-------------|-----------------------|-------------|------------------------------------|-------------|-------------|-------------|-------|-------|-------|-------|----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| STATIONING     | HN2 1654+00            | HN2 1660+00 | HN2 1670+00           | HN2 1680+00 | HN2 1690+00                        | HN2 1700+00 | HN2 1710+00 |             |       |       |       |       |                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| HOR. ALIGNMENT | L=1350                 |             | R=42000<br>L=4059     |             |                                    | L=1350      |             |             |       |       |       |       |                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| VER. ALIGNMENT | L=6063.65<br>G=-0.000% |             | L=1456.74<br>G=0.200% |             | R=130000<br>L=3472.71<br>G=-0.500% |             |             |             |       |       |       |       |                |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| CUT AND FILL   | +4.6                   | +5.5        | +6.9                  | +11.1       | +18.2                              | +20.8       | +28.0       | +24.5       | +25.4 | +24.4 | +25.2 | +30.1 | +36.9          | +36.5 | +40.5 | +37.0 | +34.9 | +31.3 | +28.7 | +32.8 | +32.7 | +30.6 | +27.6 | +23.0 | +19.9 | +16.9 | +15.3 | +12.9 | +11.3 |
| TYP. SECTION   | EMBANKMENT (A)         |             | VIADUCT (E)           |             |                                    |             |             | VIADUCT (K) |       |       |       |       | EMBANKMENT (F) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |

|             |             |
|-------------|-------------|
| DESIGNED BY | T. SMELCER  |
| DRAWN BY    | J. BORGHESI |
| CHECKED BY  | K. SEYMOUR  |
| IN CHARGE   | C. TAYLOR   |
| DATE        | 09/15/2017  |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
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www.freese.com  
Texas Registered Engineering Firm: F-2144

Client

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

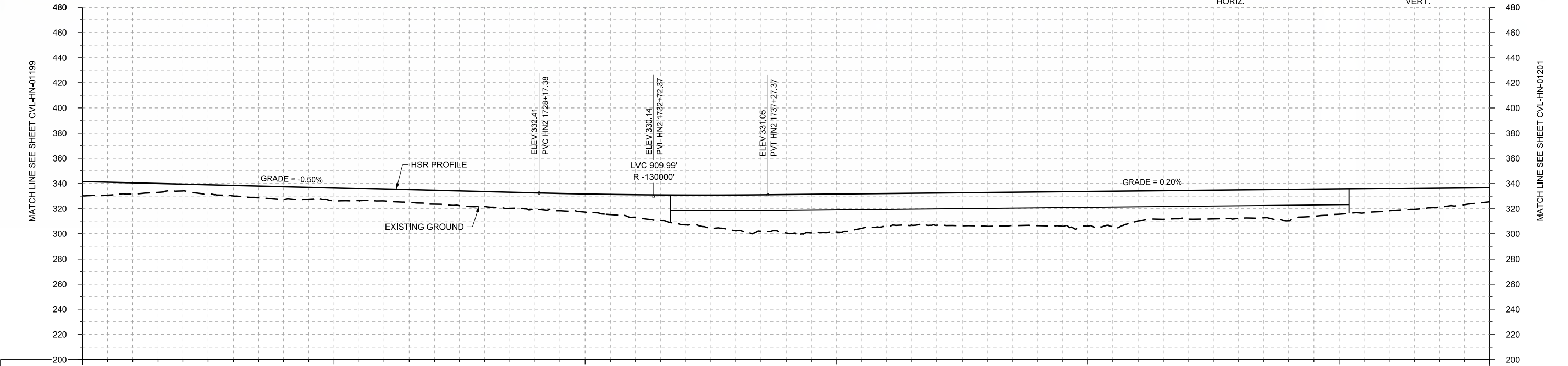
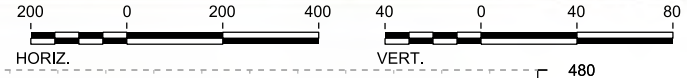
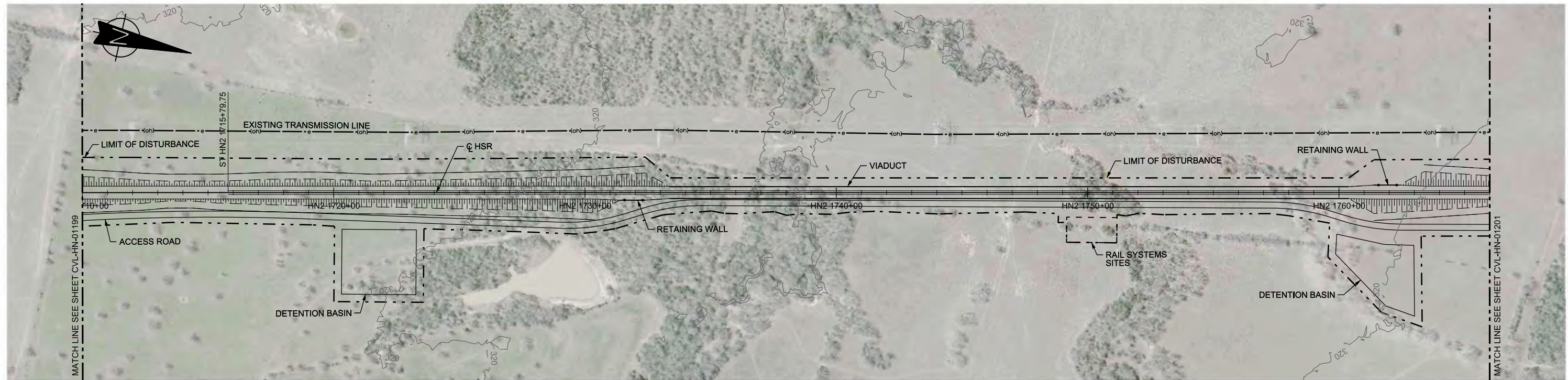
Drawing Title

**HOUSTON SEGMENT  
CIVIL  
PLAN AND PROFILE  
HN2 1654+00 TO HN2 1710+00**

Scale  
AS SHOWN

Drawing Status  
**FINAL DRAFT**

|        |              |     |
|--------|--------------|-----|
| Job No | Drawing No   | Rev |
| 234180 | CVL-HN-01199 | 01  |



|                |                        |             |             |             |             |                       |             |       |       |       |             |       |       |       |       |       |                |       |       |       |       |       |       |       |       |       |       |       |       |
|----------------|------------------------|-------------|-------------|-------------|-------------|-----------------------|-------------|-------|-------|-------|-------------|-------|-------|-------|-------|-------|----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| STATIONING     | HN2 1710+00            | HN2 1720+00 | HN2 1730+00 | HN2 1740+00 | HN2 1750+00 | HN2 1760+00           | HN2 1766+00 |       |       |       |             |       |       |       |       |       |                |       |       |       |       |       |       |       |       |       |       |       |       |
| HOR. ALIGNMENT | L=1350                 |             | L=35800     |             |             |                       |             |       |       |       |             |       |       |       |       |       |                |       |       |       |       |       |       |       |       |       |       |       |       |
| VER. ALIGNMENT | L=3472.71<br>G=-0.500% |             | R=-130000   |             |             | L=8421.85<br>G=0.200% |             |       |       |       |             |       |       |       |       |       |                |       |       |       |       |       |       |       |       |       |       |       |       |
| CUT AND FILL   | +11.3                  | +9.0        | +5.5        | +8.4        | +10.1       | +10.5                 | +9.5        | +11.0 | +11.7 | +13.4 | +14.4       | +17.9 | +23.8 | +28.5 | +30.6 | +30.2 | +25.9          | +25.6 | +26.8 | +26.7 | +27.5 | +23.9 | +22.6 | +22.4 | +24.9 | +20.1 | +17.8 | +15.2 | +11.4 |
| TYP. SECTION   | EMBANKMENT (F)         |             |             |             |             |                       |             |       |       |       | VIADUCT (K) |       |       |       |       |       | EMBANKMENT (F) |       |       |       |       |       |       |       |       |       |       |       |       |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
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|     |      |    |     |     |             |

DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

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www.freese.com  
Texas Registered Engineering Firm: F-2144

Client

**TEXAS CENTRAL**

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

Drawing Title

**HOUSTON SEGMENT CIVIL PLAN AND PROFILE**  
HN2 1710+00 TO HN2 1766+00

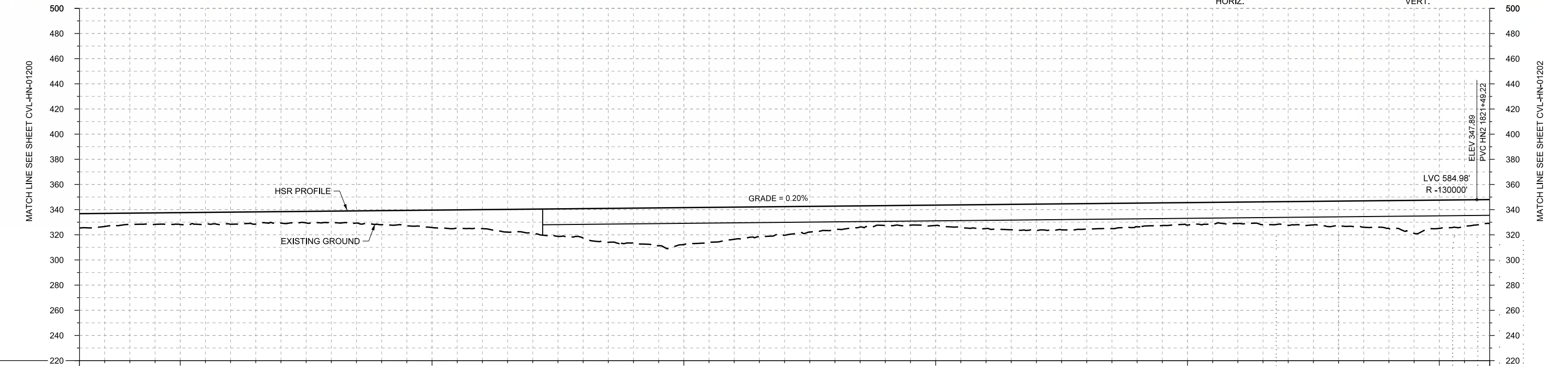
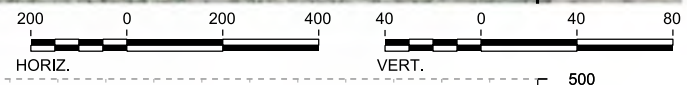
Scale  
AS SHOWN

Drawing Status  
**FINAL DRAFT**

|        |              |     |
|--------|--------------|-----|
| Job No | Drawing No   | Rev |
| 234180 | CVL-HN-01200 | 01  |



PLAN



PROFILE

|                |                                   |             |             |             |             |             |             |             |       |       |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|----------------|-----------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------|-------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| STATIONING     | HN2 1766+00                       | HN2 1770+00 | HN2 1780+00 | HN2 1790+00 | HN2 1800+00 | HN2 1810+00 | HN2 1820+00 | HN2 1822+00 |       |       |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| HOR. ALIGNMENT | L=35800                           |             |             |             |             |             |             |             |       |       |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| VER. ALIGNMENT | L=8421.85<br>G=0.200%<br>R=130000 |             |             |             |             |             |             |             |       |       |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| CUT AND FILL   | +11.4                             | +9.0        | +9.4        | +9.6        | +9.1        | +9.1        | +11.2       | +13.8       | +15.1 | +19.2 | +23.4       | +27.6 | +29.4 | +25.6 | +22.7 | +18.5 | +15.8 | +16.2 | +19.0 | +20.8 | +20.2 | +18.8 | +17.9 | +17.0 | +18.8 | +19.4 | +22.2 | +22.5 | +19.0 |
| TYP. SECTION   | EMBANKMENT (E)                    |             |             |             |             |             |             |             |       |       | VIADUCT (K) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
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|     |      |    |     |     |             |
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|     |      |    |     |     |             |

DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

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www.freese.com  
Texas Registered Engineering Firm: F-2144

Client

**TEXAS CENTRAL**

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

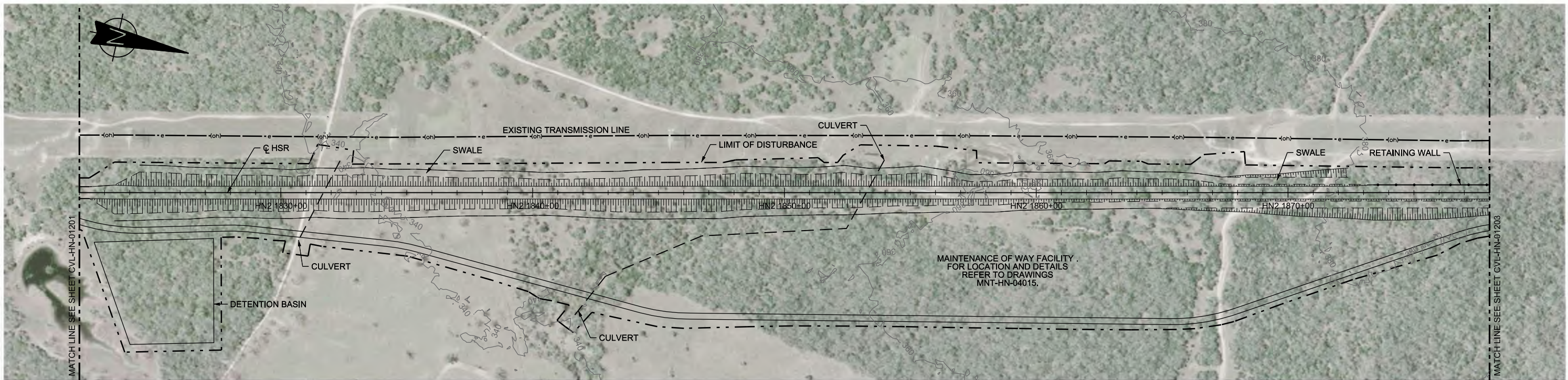
Drawing Title

**HOUSTON SEGMENT CIVIL PLAN AND PROFILE**  
HN2 1766+00 TO HN2 1822+00

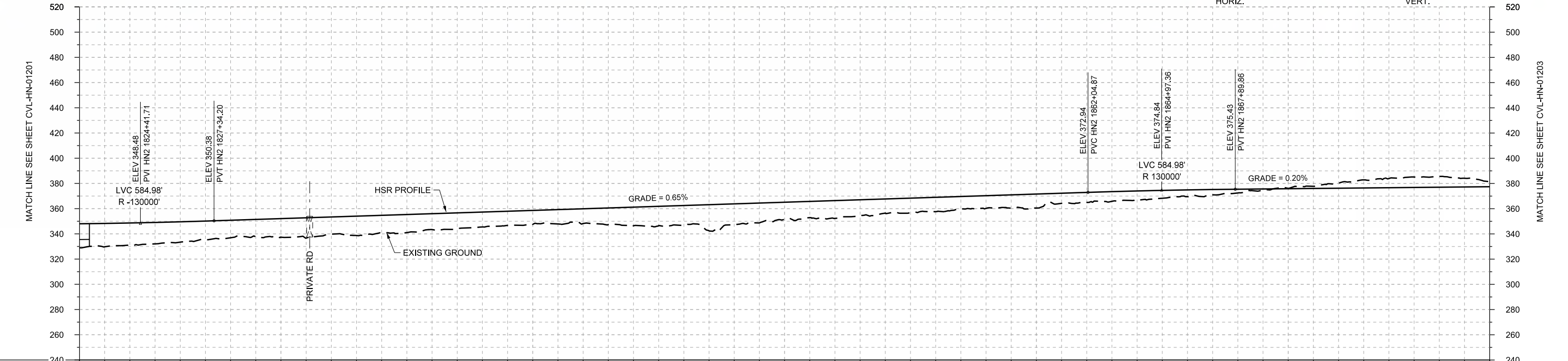
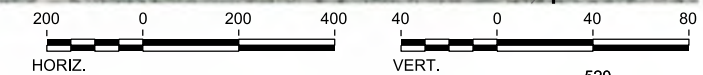
Scale  
AS SHOWN

Drawing Status  
**FINAL DRAFT**

|        |              |     |
|--------|--------------|-----|
| Job No | Drawing No   | Rev |
| 234180 | CVL-HN-01201 | 01  |



PLAN



PROFILE

|                |                |             |                       |             |             |             |             |  |
|----------------|----------------|-------------|-----------------------|-------------|-------------|-------------|-------------|--|
| STATIONING     | HN2 1822+00    | HN2 1830+00 | HN2 1840+00           | HN2 1850+00 | HN2 1860+00 | HN2 1870+00 | HN2 1878+00 |  |
| HOR. ALIGNMENT | L=35800        |             |                       |             |             |             |             |  |
| VER. ALIGNMENT | R=130000       |             | L=3470.67<br>G=0.650% |             |             | R=130000    |             |  |
| CUT AND FILL   | +19.0          | +17.6       | +16.1                 | +13.9       | +14.8       | +13.6       | +11.0       |  |
| TYP. SECTION   | EMBANKMENT (F) |             |                       |             | CUT (H)     |             |             |  |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
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|     |      |    |     |     |             |
|     |      |    |     |     |             |
|     |      |    |     |     |             |

DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

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Texas Registered Engineering Firm: F-2144

Client

**TEXAS CENTRAL**

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

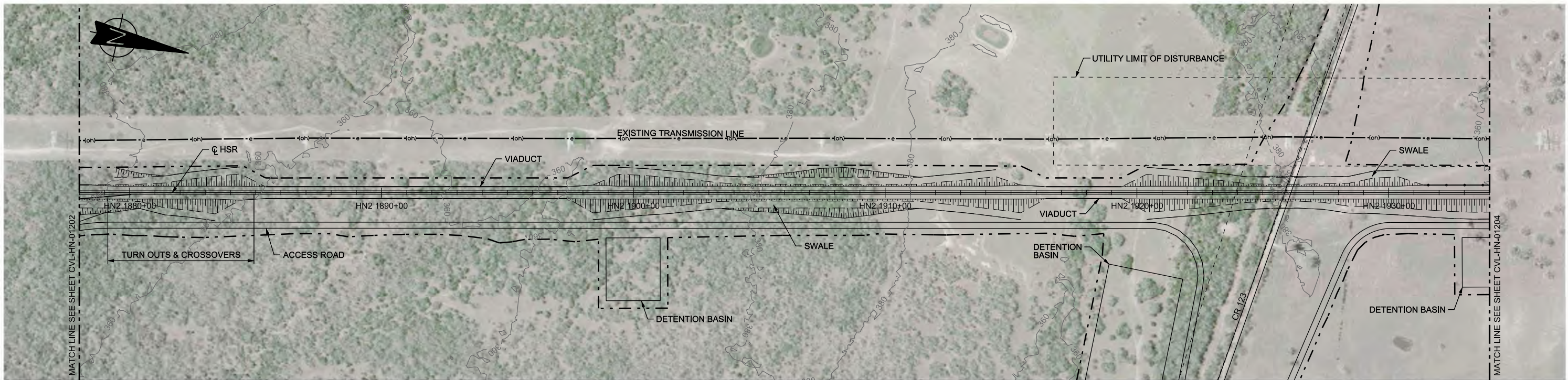
Drawing Title

**HOUSTON SEGMENT CIVIL PLAN AND PROFILE**  
HN2 1822+00 TO HN2 1878+00

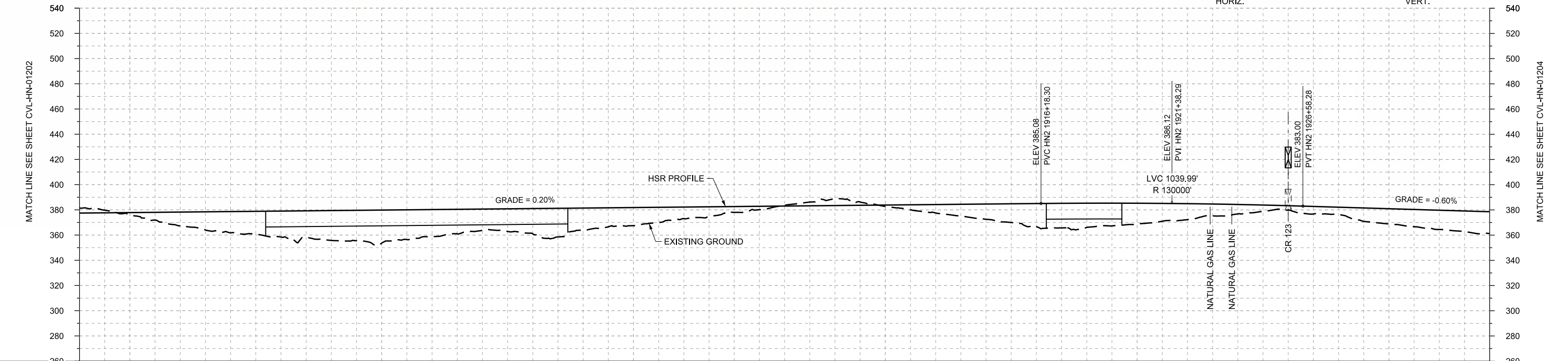
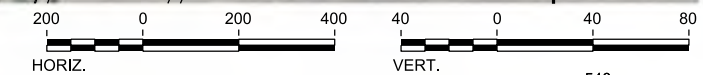
Scale  
AS SHOWN

Drawing Status  
**FINAL DRAFT**

|        |              |     |
|--------|--------------|-----|
| Job No | Drawing No   | Rev |
| 234180 | CVL-HN-01202 | 01  |



PLAN



PROFILE

|                |                       |             |                |             |             |             |             |                        |       |         |       |                |      |             |      |                |      |         |       |                |       |                |       |                |      |                |       |                |       |
|----------------|-----------------------|-------------|----------------|-------------|-------------|-------------|-------------|------------------------|-------|---------|-------|----------------|------|-------------|------|----------------|------|---------|-------|----------------|-------|----------------|-------|----------------|------|----------------|-------|----------------|-------|
| STATIONING     | HN2 1878+00           | HN2 1880+00 | HN2 1890+00    | HN2 1900+00 | HN2 1910+00 | HN2 1920+00 | HN2 1930+00 | HN2 1934+00            |       |         |       |                |      |             |      |                |      |         |       |                |       |                |       |                |      |                |       |                |       |
| HOR. ALIGNMENT | L=35800               |             |                |             |             |             |             |                        |       |         |       |                |      |             |      |                |      |         |       |                |       |                |       |                |      |                |       |                |       |
| VER. ALIGNMENT | L=4828.44<br>G=0.200% |             |                |             | R=130000    |             |             | L=3031.95<br>G=-0.600% |       |         |       |                |      |             |      |                |      |         |       |                |       |                |       |                |      |                |       |                |       |
| CUT AND FILL   | -1.0                  | +1.7        | +10.8          | +16.8       | +20.5       | +23.6       | +26.2       | +21.3                  | +16.8 | +20.0   | +17.3 | +14.3          | +9.1 | +4.5        | -0.6 | -5.6           | +1.0 | +6.6    | +12.0 | +18.1          | +19.2 | +16.3          | +12.6 | +7.5           | +3.4 | +5.8           | +12.1 | +15.3          | +17.3 |
| TYP. SECTION   | CUT (H)               |             | EMBANKMENT (F) |             | VIADUCT (K) |             |             | EMBANKMENT (F)         |       | CUT (H) |       | EMBANKMENT (F) |      | VIADUCT (K) |      | EMBANKMENT (F) |      | CUT (H) |       | EMBANKMENT (F) |       | EMBANKMENT (F) |       | EMBANKMENT (F) |      | EMBANKMENT (F) |       | EMBANKMENT (F) |       |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
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|     |      |    |     |     |             |
|     |      |    |     |     |             |

DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

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Texas Registered Engineering Firm: F-2144

Client

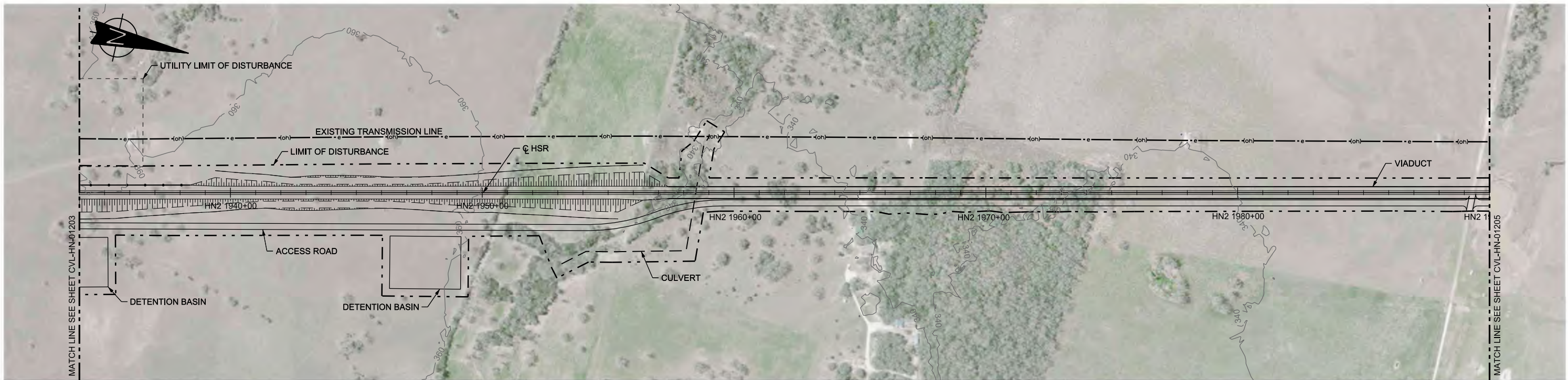
**TEXAS CENTRAL**

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

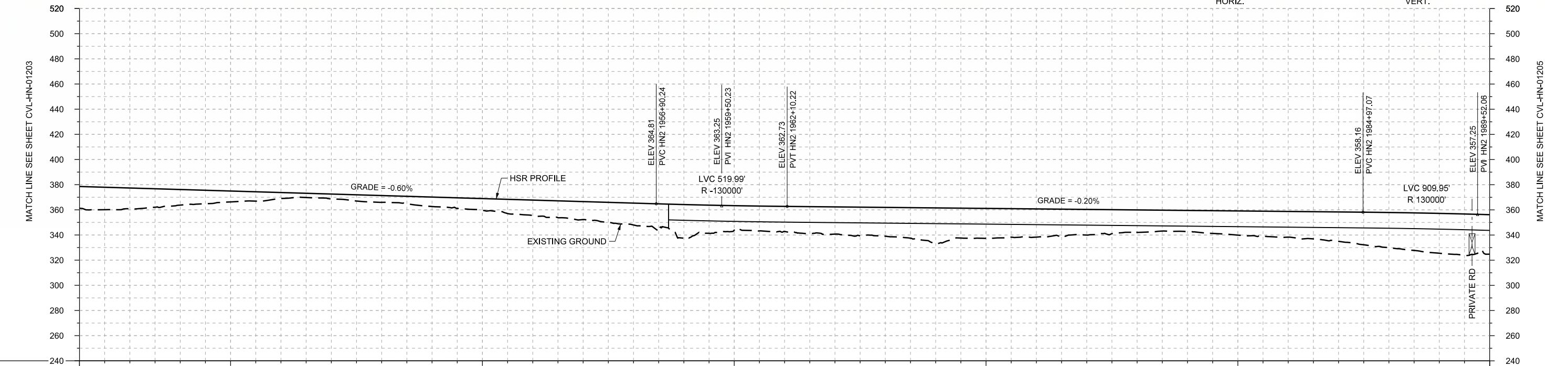
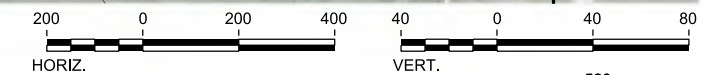
Drawing Title

**HOUSTON SEGMENT CIVIL PLAN AND PROFILE**  
HN2 1878+00 TO HN2 1934+00

|                |              |
|----------------|--------------|
| Scale          | AS SHOWN     |
| Drawing Status | FINAL DRAFT  |
| Job No         | 234180       |
| Drawing No     | CVL-HN-01203 |
| Rev            | 01           |



PLAN



PROFILE

|                |                        |             |             |             |             |                        |                |      |      |       |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|----------------|------------------------|-------------|-------------|-------------|-------------|------------------------|----------------|------|------|-------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| STATIONING     | HN2 1934+00            | HN2 1940+00 | HN2 1950+00 | HN2 1960+00 | HN2 1970+00 | HN2 1980+00            | HN2 1990+00    |      |      |       |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| HOR. ALIGNMENT | L=35800                |             |             |             |             |                        |                |      |      |       |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| VER. ALIGNMENT | L=3031.95<br>G=-0.600% |             |             | R=-130000   |             | L=2286.85<br>G=-0.200% |                |      |      |       |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| CUT AND FILL   | +17.3                  | +16.6       | +12.4       | +8.7        | +4.8        | +4.0                   | +5.4           | +7.6 | +9.3 | +12.4 | +14.3       | +17.4 | +26.7 | +19.5 | +19.9 | +21.7 | +23.0 | +28.8 | +23.7 | +22.4 | +20.4 | +17.9 | +16.8 | +19.3 | +20.5 | +23.4 | +28.0 | +31.7 | +31.4 |
| TYP. SECTION   | EMBANKMENT (F)         |             |             |             | CUT (H)     |                        | EMBANKMENT (F) |      |      |       | VIADUCT (K) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
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|     |      |    |     |     |             |

DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

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Dallas, Texas 75204  
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www.freese.com  
Texas Registered Engineering Firm: F-2144

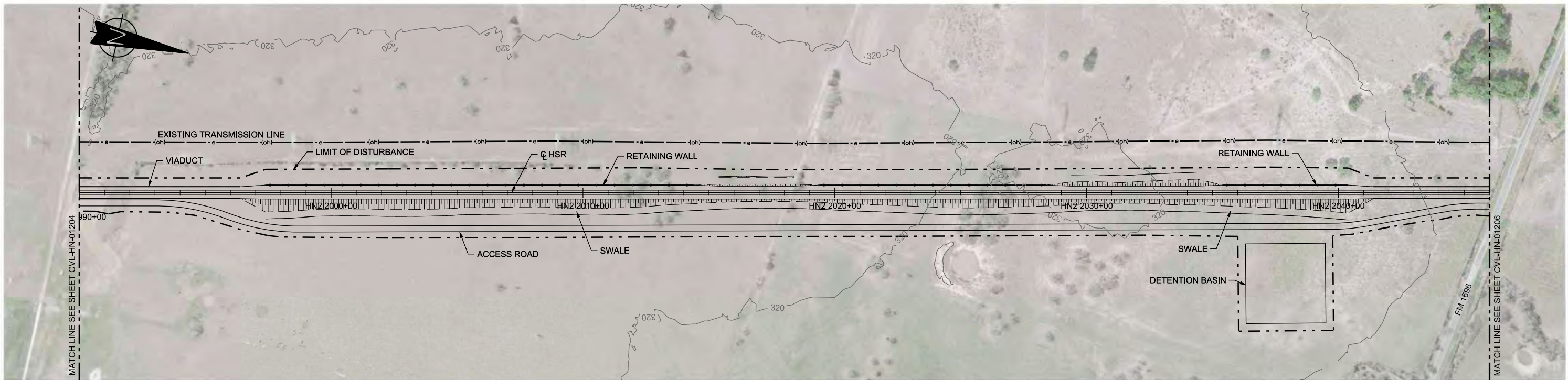
Client

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

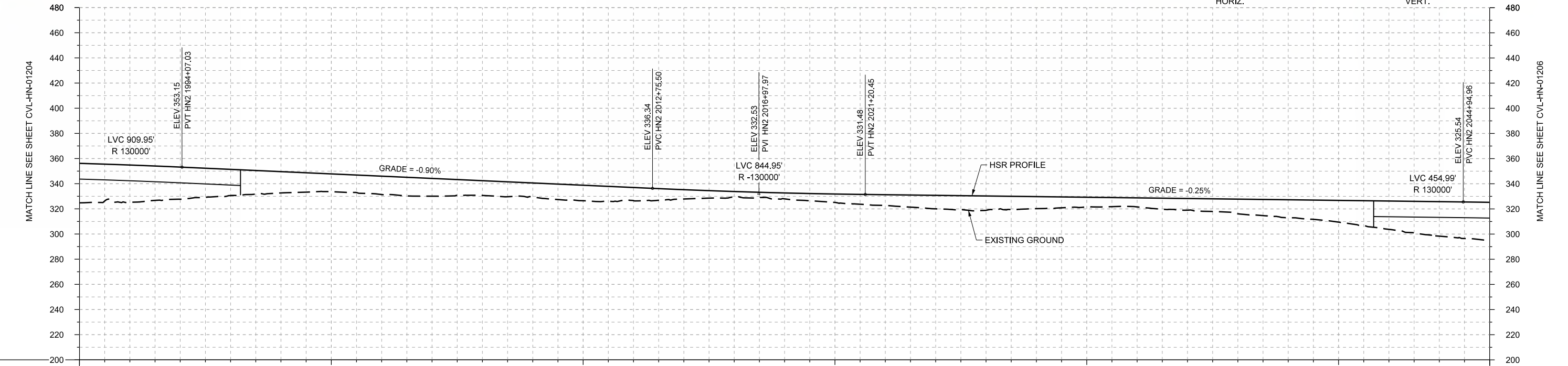
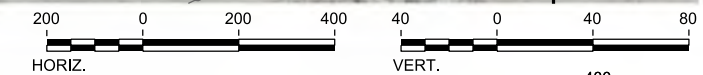
Drawing Title

**HOUSTON SEGMENT CIVIL  
PLAN AND PROFILE  
HN2 1934+00 TO HN2 1990+00**

|                |              |
|----------------|--------------|
| Scale          | AS SHOWN     |
| Drawing Status | FINAL DRAFT  |
| Job No         | 234180       |
| Drawing No     | CVL-HN-01204 |
| Rev            | 01           |



PLAN



PROFILE

|                |             |             |                        |             |             |                        |             |
|----------------|-------------|-------------|------------------------|-------------|-------------|------------------------|-------------|
| STATIONING     | HN2 1990+00 | HN2 2000+00 | HN2 2010+00            | HN2 2020+00 | HN2 2030+00 | HN2 2040+00            | HN2 2046+00 |
| HOR. ALIGNMENT | L=35800     |             |                        |             |             |                        |             |
| VER. ALIGNMENT | R=130000    |             | L=1868.47<br>G=-0.900% |             |             | L=2374.51<br>G=-0.250% |             |
| CUT AND FILL   | +31.4       | +28.6       | +25.5                  | +20.9       | +16.9       | +14.1                  | +14.6       |
| TYP. SECTION   | VIADUCT (K) |             | EMBANKMENT (F)         |             |             |                        | VIADUCT (K) |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
|     |      |    |     |     |             |
|     |      |    |     |     |             |
|     |      |    |     |     |             |

DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

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Texas Registered Engineering Firm: F-2144

Client

**TEXAS CENTRAL**

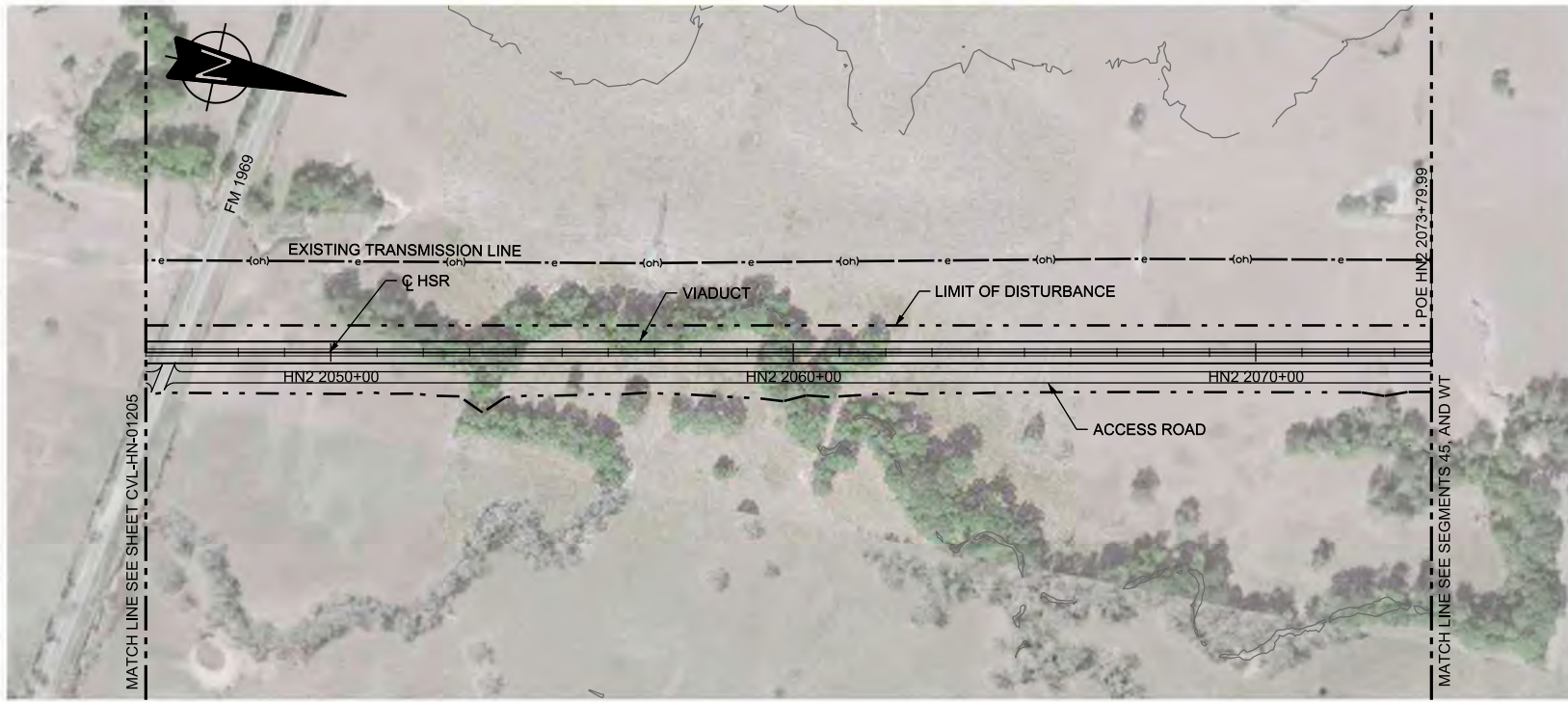
1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

Drawing Title

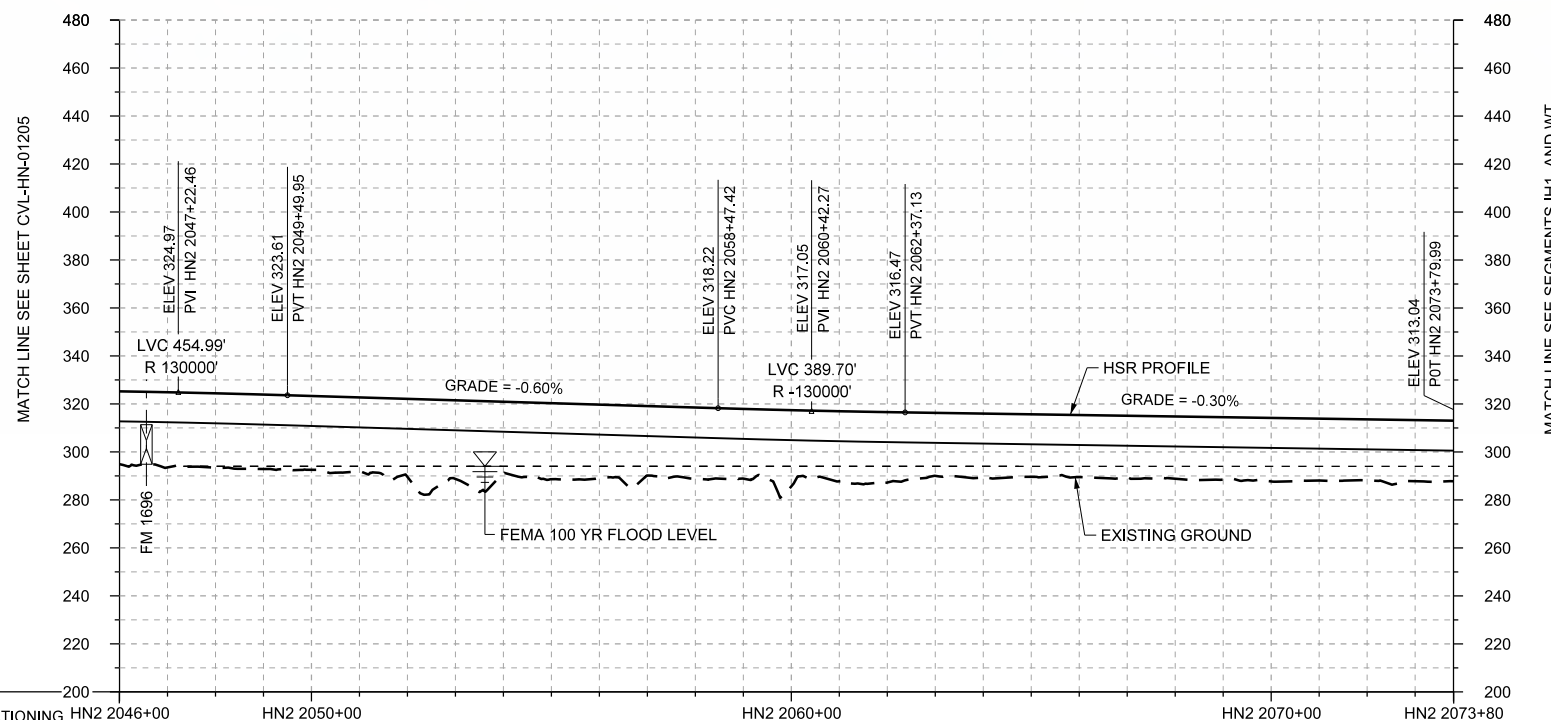
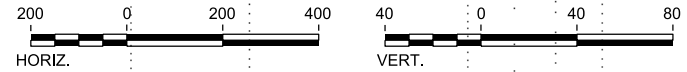
**HOUSTON SEGMENT CIVIL PLAN AND PROFILE**  
HN2 1990+00 TO HN2 2046+00

|                |              |
|----------------|--------------|
| Scale          | AS SHOWN     |
| Drawing Status | FINAL DRAFT  |
| Job No         | 234180       |
| Drawing No     | CVL-HN-01205 |
| Rev            | 01           |





PLAN



PROFILE

|                |             |                       |             |                        |             |
|----------------|-------------|-----------------------|-------------|------------------------|-------------|
| STATIONING     | HN2 2046+00 | HN2 2050+00           | HN2 2060+00 | HN2 2070+00            | HN2 2073+80 |
| HOR. ALIGNMENT | L=35800     |                       |             |                        |             |
| VER. ALIGNMENT | R=130000    | L=897.47<br>G=-0.600% | R=130000    | L=1142.86<br>G=-0.300% |             |
| CUT AND FILL   | +30.4       | +31.0                 | +30.8       | +32.5                  | +29.9       |
| TYP. SECTION   | VIADUCT (K) |                       |             |                        |             |

| REV | DATE | BY | CHK | APP | DESCRIPTION |
|-----|------|----|-----|-----|-------------|
|     |      |    |     |     |             |
|     |      |    |     |     |             |
|     |      |    |     |     |             |
|     |      |    |     |     |             |

DESIGNED BY  
**T. SMELCER**

DRAWN BY  
**J. BORGHESI**

CHECKED BY  
**K. SEYMOUR**

IN CHARGE  
**C. TAYLOR**

DATE  
**09/15/2017**

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Texas Registered Engineering Firm: F-2144

Client

**TEXAS CENTRAL**

1409 South Lamar Street, Suite 1022, Dallas, Texas 75215

Drawing Title

**HOUSTON SEGMENT CIVIL PLAN AND PROFILE**  
HN2 2046+00 TO HN2 2073+80

Scale  
AS SHOWN

Drawing Status  
**FINAL DRAFT**

|        |              |     |
|--------|--------------|-----|
| Job No | Drawing No   | Rev |
| 234180 | CVL-HN-01206 | 01  |