

# SECTION G UTILITY PLANS



VICINITY MAP

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November 06, 2015 10:09:23 a.m. Drawing: ILLUS@EITAWY (SCHEDULE) (P:\PROJECTS & PROPOSALS\11119.00 MT. RUSHMORE RD. UTILITIES RECONSTRUCTION DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY)



Prepared By:



Prepared For:



Scale:

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FOR BIDDING PURPOSES ONLY

MOUNT RUSHMORE ROAD  
UTILITY RECONSTRUCTION

Sheet Title:

SECTION G  
ESTIMATE OF  
QUANTITIES AND  
GENERAL NOTES

Sheet No:

G2  
of  
G90

**SECTION G ESTIMATE OF QUANTITIES**

| BID ITEM NUMBER | ITEM                                      | QUANTITY | UNIT |
|-----------------|---|----------|------|
| 009E0010        | Mobilization                              | Lump Sum | LS   |
| 009E3200        | Construction Staking                      | Lump Sum | LS   |
| 110E0300        | Remove Concrete Curb and Gutter           | 156      | Ft   |
| 110E0370        | Remove Curb Stop                          | 57       | Each |
| 110E0460        | Remove Manhole                            | 16       | Each |
| 110E0520        | Remove Sewer Pipe                         | 278      | Ft   |
| 110E1010        | Remove Asphalt Concrete Pavement          | 468.2    | SqYd |
| 110E1140        | Remove Concrete Sidewalk                  | 31.1     | SqYd |
| 110E1950        | Remove Contaminated Water                 | 50       | MGal |
| 110E1970        | Remove Water Main                         | 45       | Ft   |
| 110E5740        | Salvage Fire Hydrant                      | 8        | Each |
| 110E5765        | Salvage Valve and Valve Box               | 30       | Each |
| 120E0900        | Contaminated Material Excavation          | 500      | CuYd |
| 250E0010        | Incidental Work                           | Lump Sum | LS   |
| 260E1010        | Base Course                               | 234.8    | Ton  |
| 260E6010        | Granular Material                         | 150.0    | Ton  |
| 320E1200        | Asphalt Concrete Composite                | 167.8    | Ton  |
| 451E0301        | Pipe Encasement                           | 11       | Each |
| 451E0654        | 4" PVC Restrained Joint Water Main        | 44       | Ft   |
| 451E0656        | 6" PVC Restrained Joint Water Main        | 367      | Ft   |
| 451E0658        | 8" PVC Restrained Joint Water Main        | 5030     | Ft   |
| 451E0660        | 10" PVC Restrained Joint Water Main       | 24       | Ft   |
| 451E0662        | 12" PVC Restrained Joint Water Main       | 860      | Ft   |
| 451E0802        | 1" Copper Pipe                            | 1531     | Ft   |
| 451E0806        | 1.5" Copper Pipe                          | 55       | Ft   |
| 451E1008        | 8" PVC Sewer Pipe                         | 3520     | Ft   |
| 451E1204        | 4" Sewer Service                          | 1802     | Ft   |
| 451E1504        | 4" Sanitary Sewer Service Cleanout        | 43       | Each |
| 451E2212        | 8"x4" Pipe Tee                            | 1        | Each |
| 451E2213        | 8"x6" Pipe Tee                            | 12       | Each |
| 451E2214        | 8"x8" Pipe Tee                            | 13       | Each |
| 451E2231        | 12"x6" Pipe Tee                           | 2        | Each |
| 451E2232        | 12"x8" Pipe Tee                           | 2        | Each |
| 451E2234        | 12"x12" Pipe Tee                          | 1        | Each |
| 451E2332        | 12"x8" Pipe Cross                         | 1        | Each |
| 451E2412        | 8"x4" Pipe Reducer                        | 4        | Each |
| 451E2413        | 8"x6" Pipe Reducer                        | 5        | Each |
| 451E2432        | 12"x8" Pipe Reducer                       | 1        | Each |
| 451E2433        | 12"x10" Pipe Reducer                      | 2        | Each |
| 451E2500        | Tapping Saddle                            | 51       | Each |
| 451E2806        | 1.5" Corporation Stop with Tapping Saddle | 3        | Each |
| 451E2902        | 1" Curb Stop with Box                     | 50       | Each |
| 451E2906        | 1.5" Curb Stop with Box                   | 3        | Each |
| 451E3004        | 4" Pipe Bend                              | 4        | Each |
| 451E3006        | 6" Pipe Bend                              | 10       | Each |
| 451E3008        | 8" Pipe Bend                              | 25       | Each |
| 451E3010        | 10" Pipe Bend                             | 3        | Each |
| 451E3012        | 12" Pipe Bend                             | 5        | Each |
| 451E3108        | 8" Pipe Cap                               | 8        | Each |
| 451E3204        | 4" Pipe Coupling                          | 1        | Each |

**SECTION G ESTIMATE OF QUANTITIES CONT.**

| BID ITEM NUMBER | ITEM                                    | QUANTITY | UNIT |
|-----------------|---|----------|------|
| 451E3206        | 6" Pipe Coupling                        | 2        | Each |
| 451E3208        | 8" Pipe Coupling                        | 4        | Each |
| 451E3210        | 10" Pipe Coupling                       | 2        | Each |
| 451E3212        | 12" Pipe Coupling                       | 1        | Each |
| 451E3304        | 4" Pipe Transition Coupling             | 3        | Each |
| 451E3306        | 6" Pipe Transition Coupling             | 6        | Each |
| 451E3308        | 8" Pipe Transition Coupling             | 1        | Each |
| 451E3414        | 8" Pipe Plug                            | 1        | Each |
| 451E4204        | 4" Gate Valve with Box                  | 1        | Each |
| 451E4208        | 8" Gate Valve with Box                  | 32       | Each |
| 451E4212        | 12" Gate Valve with Box                 | 7        | Each |
| 451E4380        | Tracer Wire Access Box                  | 24       | Each |
| 451E4400        | Pipe Insulation                         | 549      | SqFt |
| 451E4585        | Fire Hydrant with Auxiliary Valve & Box | 14       | Each |
| 451E4903        | Type 2 Foundation Material              | 500      | Ton  |
| 451E4904        | Type 3 Foundation Material              | 500      | Ton  |
| 451E4918        | Imported Trench Backfill                | 1500     | CuYd |
| 451E5010        | Rock Excavation, Trench                 | 100      | CuYd |
| 451E6002        | 1" Water Service, Connect Charge        | 2        | Each |
| 451E6100        | Reconnect Water Service                 | 51       | Each |
| 451E6105        | Connect To Existing Water Main          | 15       | Each |
| 451E7005        | Adjust Sewer Service                    | 1        | Each |
| 451E7010        | Reconnect Sewer Service                 | 38       | Each |
| 451E7015        | Connect Sewer Service                   | 2        | Each |
| 451E7016        | Connect to Existing Sewer Main          | 12       | Each |
| 451E7020        | Sewer Bypass Pumping                    | Lump Sum | LS   |
| 451E7402        | Test Station                            | 14       | Each |
| 462E0200        | Controlled Density Fill                 | 50       | CuYd |
| 650E0060        | Type B66 Concrete Curb and Gutter       | 158      | Ft   |
| 651E0040        | 4" Concrete Sidewalk                    | 288      | SqFt |
| 671E1048        | 48" Manhole                             | 22       | Each |
| 671E1348        | 48" Drop Manhole                        | 6        | Each |
| 671E5510        | Extra Depth for 48" Manhole             | 120      | Ft   |
| 671E6035        | Special Manhole Frame & Lid             | 43       | Each |
| 680E0040        | 4" Underdrain Pipe                      | 64       | Ft   |
| 831E0200        | Woven Geotextile Separator              | 200      | SqYd |
| 900E2090        | AASHTO T-180 Soil Test                  | 30       | Each |



**SPECIFICATION CLARIFICATION**

Please note that Section 8B indicates that payment for Cathodic Test Stations will be per each basis for "Flush Mounted Test Station" however the corresponding SDDOT bid item is 451E7402-Test Station. Tracer wire access boxes are listed in Section 8B as "Flush Mounted Tracer Wire Box" and the corresponding SDDOT bid item is 451E4380-Tracer Wire Access Box.

**PROJECT SEQUENCE**

A sequence of work is suggested in these plans as well as the proposed major project phasing. The Contractor shall develop a construction schedule and sequence to meet the general intent. Any changes from the proposed sequence shall be closely coordinated with the Engineer and the South Dakota Department of Transportation and shall be discussed at least two weeks prior to implementing any change.

**ADDITIONAL QUANTITIES**

Due to the age of the corridor and the fact that there has been multiple redevelopments on the same lots, a nominal number of additional quantities have been added to the removal tables if unknown infrastructure is uncovered during trenching excavations. Additional quantities have also been added if additional infrastructure is likely to exist but has been buried or covered by asphalt overlays. Additional quantities will only be paid for if the item to be removed was approved by the Engineer for removal. Additional quantities not used on the project will be change ordered off of the contract.

**REMOVE MANHOLE**

Existing manholes on this project scheduled for removal shall be removed and lawfully disposed of by the Contractor. Manhole frame and lids shall be salvaged to the City Utility Maintenance shop. All costs associated with removing the manholes shall be incidental to the contract unit price per each for Remove Manhole.

**TABLE OF MANHOLE REMOVAL**

| Station       | L/R | Description            | Quantity (Each) |
|---------------|-----|------------------------|-----------------|
| 5+51.95       | R   | St. James Street       | 1               |
| 63+50.61      | CL  | Mount Rushmore Road    | 1               |
| 65+40.32      | R   | Mount Rushmore Road    | 1               |
| 67+35.75      | R   | Mount Rushmore Road    | 1               |
| 5+58.32       | R   | Fairview Street (east) | 1               |
| 5+96.22       | R   | Fairview Street (east) | 1               |
| 4+48.08       | R   | Clark Street (west)    | 1               |
| 71+36.66      | L   | Mount Rushmore Road    | 1               |
| 73+31.02      | L   | Mount Rushmore Road    | 1               |
| 76+90.45      | R   | Mount Rushmore Road    | 1               |
| 78+88.72      | R   | Mount Rushmore Road    | 1               |
| 7+04.00       | R   | South Street (east)    | 1               |
| 80+70.64      | L   | Mount Rushmore Road    | 1               |
| 82+85.85      | L   | Mount Rushmore Road    | 1               |
| 86+87.89      | L   | Mount Rushmore Road    | 1               |
| 86+89.63      | R   | Mount Rushmore Road    | 1               |
| <b>Total:</b> |     |                        | <b>16</b>       |

**TEMPORARY AC PAVEMENT AND INTERIM GRADE ADJUSTMENTS FOR SEWER MANHOLE REMOVAL**

Existing manholes at the following locations are to be removed as part of Phase 2 construction, but are to be maintained in service during Phase 1, construction.

| <u>Mainline Station</u> | <u>Intersecting Street</u> |
|-------------------------|----------------------------|
| 63+50 @ ±               | Saint James Street         |
| 67+35 @ ±               | Fairview Street            |
| 76+90 @ ±               | South Street               |
| 80+71 @ ±               | Columbus Street            |

The listed manholes are to remain in place during Phase 1 construction and mainline paving. To facilitate intersection traffic during the Phase 1 and 2 construction periods, the Contractor shall perform interim manhole frame and cover grade adjustments and place temporary AC pavement at PCC pavement blockouts as part of Phase 1 construction. Frame and cover adjustments are to be made by adding or removing adjusting rings and/or brick courses. No manhole barrel removal or replacement is required.

**Table of Interim Manhole Grade Adjustments**

| Station | Description        | MH Rim Existing Elevation | Proposed Finish Grade | MH Adjustment |
|---------|--------------------|---------------------------|-----------------------|---------------|
| 63+50   | Saint James Street | 3289.38                   | 3288.81               | -0.57'        |
| 67+35   | Fairview Street    | 3285.29                   | 3285.85               | +0.56'        |
| 76+89   | South Street       | 3276.96                   | 3276.64               | -0.32'        |
| 80+71   | Columbus Street    | 3262.87                   | 3262.55               | -0.32'        |

Interim manhole grade adjustments will not be paid for directly but shall be included in contract item 250 E 0010 - Incidental Work.

The temporary pavement section placed at blockouts for existing manholes shall be 4" Aggregate Base Course and 4" Asphalt Concrete Composite (2 lifts). The temporary AC surfacing section shall be removed at the time of manhole removal in Phase 2, with quantities included in Asphalt Concrete Pavement Removal.

**Table of Temporary AC Pavement at Manholes**

| Station | Description        | Size    | Quantity         |          |           |
|---------|--------------------|---------|------------------|----------|-----------|
|         |                    |         | Base Course (4") | AC (4")  | Remove AC |
| 63+50   | Saint James Street | 28'x19' | 12.7 Ton         | 13.2 Ton | 59.1 SY   |
| 67+35   | Fairview Street    | 28'x19' | 12.7 Ton         | 13.2 Ton | 59.1 SY   |
| 76+89   | South Street       | 28'x19' | 12.7 Ton         | 13.2 Ton | 59.1 SY   |
| 80+71   | Columbus Street    | 25'x19' | 11.4 Ton         | 11.8 Ton | 52.8 SY   |
|         |                    |         | 49.5 Ton         | 51.4 Ton | 230.1 SY  |

The quantities tabulated above are included in the Table of Asphalt Concrete Pavement Removal (Sheet G3), Table of Base Course (Sheet G5) and Table of Asphalt Concrete Composite (Sheet G5)

**SAWING IN EXISTING SURFACING**

Where new Portland Cement Concrete Pavement (PCCP) or new asphalt concrete is placed adjacent to existing asphalt concrete or PCCP, the existing pavement shall be sawed full depth to a true line with a vertical face. Pavement areas to be removed are shown on the drawings. The removal lines show the final pavement sawcut and removal limits. The initial sawcut shall be at least 1 foot inside the lines shown. No separate payment shall be made for sawing.

**REMOVE ASPHALT CONCRETE PAVEMENT**

The Contractor shall remove and dispose of the asphalt pavement as noted on the plans. Refer to the note for sawing in existing surfaces for additional information. The Engineer may direct more or less pavement removal on construction due to existing cracks, joints or other conditions. The asphalt between the first and second saw cuts shall not be removed until just prior to patching. The Contractor shall dispose of asphalt removed after the final saw cut.

Payment for removing and disposing asphalt shall be incidental to the contract unit price per square yard for Remove Asphalt Concrete Pavement. The depth of the existing asphalt is estimated to vary from 3" to 6". Please refer to the geotechnical investigation.

**TABLE OF ASPHALT CONCRETE PAVEMENT REMOVAL**

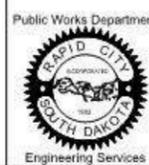
| Station  | to | Station  | Description        | Quantity (SqYd) |
|--|----|----------|--------------------|-----------------|
| 63+16.75   |    | 63+25.35 | Mt Rushmore Road   | 10.4            |
| 3+15.38  |    | 3+24.85  | Saint James St.    | 20.3            |
| 5+83.06  |    | 5+92.18  | Saint James Street | 6.2             |
| 5+84.18  |    | 6+00.78  | Saint James Street | 32.2            |
| 3+60.37  |    | 3+70.93  | Fairview Street    | 4.7             |
| 6+42.00  |    | 6+64.12  | Fairview Street    | 24.7            |
| 0+68.70  |    | 0+98.00  | Clark Street       | 66.7            |
| 7+19.00  |    | 7+25.00  | South Street       | 9.5             |
| 5+48.00  |    | 5+63.00  | MH #1 Alley        | 13.4            |
| Remove Temporary AC at Manhole Removal Blockouts |    |          |                    | 230.1           |
| Additional Quantity                              |    |          |                    | 50              |
| <b>Total:</b>                                    |    |          |                    | <b>468.2</b>    |



Prepared By:



Prepared For:



Scale:

Designed By: RM  
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|--------|-------------|
|        |             |
|        |             |
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FOR BIDDING PURPOSES ONLY

### MOUNT RUSHMORE ROAD UTILITY RECONSTRUCTION

Sheet Title:

SECTION G  
ESTIMATE OF  
QUANTITIES AND  
GENERAL NOTES

Sheet No:

G4  
of  
G90

#### TABLE OF CONCRETE CURB AND GUTTER REMOVAL

| Station  | L/R | Description         | Quantity (Ft) |
|----------|-----|---------------------|---------------|
| 62+49.92 | R   | Mount Rushmore Road | 31.0          |
| 3+15.38  | L   | Saint James Street  | 9.5           |
| 5+84.18  | R   | Saint James Street  | 6.0           |
| 3+60.37  | L   | Fairview Street     | 15.1          |
| 6+42.00  | L   | Fairview Street     | 36.3          |
| 0+68.70  | R   | Clark Street        | 29.3          |
| 3+36.35  | R   | Clark Street        | 15.2          |
| 3+51.59  | R   | Clark Street        | 6.7           |
| 7+19.63  | L   | South Street        | 6.0           |
| Total:   |     |                     | 155.1         |

#### TABLE OF SALVAGE FIRE HYDRANT

| Station  | L/R | Description      | Quantity (Each) |
|----------|-----|------------------|-----------------|
| 5+54.01  | L   | St James St      | 1               |
| 5+51.87  | L   | Fairview St      | 1               |
| 67+85.83 | R   | Mt Rushmore Road | 1               |
| 4+47.56  | L   | Clark St (west)  | 1               |
| 5+54.88  | L   | South St (east)  | 1               |
| 78+15.16 | L   | Mt Rushmore Road | 1               |
| 5+53.11  | L   | Columbus St      | 1               |
| 5+55.39  | L   | Quincy St        | 1               |
| Total:   |     |                  | 8               |

#### TABLE OF CURB STOP REMOVAL

| Station  | L/R | Description      | Quantity (Each) |
|----------|-----|------------------|-----------------|
| 62+58.08 | R   | Mt Rushmore Road | 1               |
| 62+59.29 | R   | Mt Rushmore Road | 1               |
| 3+25.05  | L   | St James Street  | 1               |
| 3+59.73  | R   | St James Street  | 1               |
| 4+00.84  | L   | St James Street  | 1               |
| 62+28.99 | R   | Mt Rushmore Road | 1               |
| 64+30.42 | R   | Mt Rushmore Road | 1               |
| 64+57.44 | R   | Mt Rushmore Road | 1               |
| 64+66.29 | R   | Mt Rushmore Road | 1               |
| 64+80.74 | R   | Mt Rushmore Road | 1               |
| 64+81.41 | L   | Mt Rushmore Road | 1               |
| 65+90.37 | L   | Mt Rushmore Road | 1               |
| 65+93.03 | L   | Mt Rushmore Road | 1               |
| 66+06.43 | L   | Mt Rushmore Road | 1               |
| 66+08.03 | L   | Mt Rushmore Road | 1               |
| 66+42.69 | L   | Mt Rushmore Road | 1               |
| 4+08.17  | L   | Fairview Street  | 1               |
| 3+93     | L   | Fairview Street  | 1               |
| 69+02.19 | R   | Mt Rushmore Road | 1               |
| 69+73.99 | R   | Mt Rushmore Road | 3               |
| 71+40.24 | R   | Mt Rushmore Road | 1               |
| 72+32.70 | R   | Mt Rushmore Road | 1               |
| 72+59.29 | L   | Mt Rushmore Road | 1               |
| 72+95.72 | R   | Mt Rushmore Road | 1               |
| 72+97.22 | R   | Mt Rushmore Road | 1               |
| 72+97.54 | R   | Mt Rushmore Road | 1               |
| 72+99.10 | R   | Mt Rushmore Road | 1               |
| 73+13.48 | L   | Mt Rushmore Road | 1               |
| 73+40.68 | R   | Mt Rushmore Road | 1               |
| 3+46.45  | R   | Clark St (west)  | 1               |
| 3+51.27  | L   | Clark St (west)  | 1               |
| 0+57.68  | R   | Clark St (east)  | 1               |
| 74+10.12 | R   | Mt Rushmore Road | 1               |
| 74+27.73 | L   | Mt Rushmore Road | 1               |
| 74+76.92 | R   | Mt Rushmore Road | 1               |
| 75+31.91 | R   | Mt Rushmore Road | 1               |
| 75+88.58 | R   | Mt Rushmore Road | 1               |
| 75+91.10 | L   | Mt Rushmore Road | 1               |
| 78+06.15 | R   | Mt Rushmore Road | 1               |
| 78+41.63 | L   | Mt Rushmore Road | 1               |
| 78+55.58 | R   | Mt Rushmore Road | 1               |
| 6+30.49  | L   | South St (east)  | 1               |
| 6+60.27  | R   | South St (east)  | 1               |
| 6+94.63  | L   | South St (east)  | 1               |
| 79+28.79 | L   | Mt Rushmore Road | 1               |
| 79+77.67 | R   | Mt Rushmore Road | 1               |
| 80+45.92 | L   | Mt Rushmore Road | 1               |
| 82+99.32 | R   | Mt Rushmore Road | 1               |
| 83+44.38 | R   | Mt Rushmore Road | 1               |
| 83+71.45 | R   | Mt Rushmore Road | 1               |
| 86+74.45 | R   | Mt Rushmore Road | 1               |
| 86+78.50 | L   | Mt Rushmore Road | 1               |
| 87+61.93 | R   | Mt Rushmore Road | 1               |
| 87+62.54 | R   | Mt Rushmore Road | 1               |
| 87+56.75 | L   | Mt Rushmore Road | 1               |
| Total:   |     |                  | 57.             |

#### TABLE OF CONCRETE SIDEWALK REMOVAL

| Station to | Station  | Description     | Quantity (SqYd) |
|------------|----------|-----------------|-----------------|
| 6+10.30    | 6+48.85  | Fairview Street | 21.1            |
| Additional | Quantity |                 | 10              |
| Total:     |          |                 | 31.1            |

#### TABLE OF PIPE INSULATION

| Station | L/R | Description         | Quantity (SF) |
|---------|-----|---------------------|---------------|
| 3+21.24 | L&R | Clark Street West   | 402           |
| 4+45.13 | L   | Columbus Street     | 96            |
| 4+56.50 | L&R | MH No.1 Alley Sewer | 51            |
| Total:  |     |                     | 549           |

#### WATER AND SEWER MAIN REMOVAL

If possible existing water and sewer mains shall be abandoned in place. Existing VCP sewer pipe shall be crushed in-place and can be incorporated into the trench backfill but shall not be in the new pipe bedding. Removal quantities have been provided where it is estimated that will be necessary to remove existing PVC pipe to install new PVC pipe.

#### TABLE OF SANITARY SEWER PIPE REMOVAL

| Station to | Station    | Description      | Quantity (Ft) |
|------------|------------|------------------|---------------|
| 5+00       | 5+55       | Fairview Street  | 57.5          |
| 78+88 R    | 78+88 R    | Mt Rushmore Road | 82.8          |
| 82+85 L    | 82+85 R    | Mt Rushmore Road | 25            |
| 86+87.89 L | 86+89.63 R | Mt Rushmore Road | 62            |
| Additional | Quantity   |                  | 50            |
| Total:     |            |                  | 277.3         |

#### TABLE OF WATER MAIN REMOVAL

| Station to | Station  | Description      | Quantity (Ft) |
|------------|----------|------------------|---------------|
| 5+76       | 6+00     | St. James Street | 24.5          |
| Additional | Quantity |                  | 20            |
| Total:     |          |                  | 44.5          |

#### REMOVE EXISTING BENDS, TEES AND REDUCERS

The Contractor shall remove existing bends, tees and reducers as necessary to make the water main connections. When known, the existing fittings to be removed have been identified however the Contractor shall note that other fittings may be installed. The removal of such bends, tees and reducers shall be incidental to the associated water main bid item for which the removal is necessary.



Total: 57.

**TABLE OF SALVAGE VALVE AND VALVE BOX**

| Station             | L/R | Description      | Quantity (Each) |
|---------------------|-----|------------------|-----------------|
| 4+50.67             | L   | St James St      | 1               |
| 5+49.74             | L   | St James St      | 1               |
| 5+50.10             | L   | St James St      | 1               |
| 5+52.57             | L   | St James St      | 1               |
| 63+09.08            | R   | Mt Rushmore Road | 1               |
| 63+90.07            | R   | Mt Rushmore Road | 1               |
| 67+79.91            | R   | Mt Rushmore Road | 1               |
| 4+50.80             | L   | Fairview St      | 1               |
| 4+50.80             | L   | Fairview St      | 1               |
| 5+48.74             | L   | Fairview St      | 1               |
| 5+51.68             | L   | Fairview St      | 1               |
| 4+53.15             | L   | Clark St (west)  | 1               |
| 0+50                | R   | Clark St.(east)  | 1               |
| 76+31.16            | R   | Mt Rushmore Road | 1               |
| 4+49.75             | L   | South St         | 1               |
| 4+53.44             | L   | South St         | 1               |
| 5+54.80             | L   | South St         | 1               |
| 5+56.66             | L   | South St         | 1               |
| 78+12.68            | L   | Mt Rushmore Road | 1               |
| 80+39.16            | R   | Mt Rushmore Road | 1               |
| 4+50.08             | L   | Columbus Street  | 1               |
| 5+53.03             | L   | Columbus Street  | 1               |
| 81+37.94            | R   | Mt Rushmore Road | 1               |
| 4+52.57             | L   | Quincy St        | 1               |
| 5+55.18             | L   | Quincy St        | 1               |
| 85+39.04            | R   | Mt Rushmore Road | 1               |
| Additional Quantity |     |                  | 4               |
| Total:              |     |                  | 30.             |

**BASE COURSE**

Aggregate shall be ¾" crushed ledge rock and shall be furnished by the Contractor. The Contractor shall be responsible to take all weight delivery tickets as materials arrive at the job site and provide copies to the Engineer at the end of each work day.

**TABLE OF BASE COURSE**

| Station  | to | Station  | Description         | Quantity (Ton) |
|--|----|----------|---------------------|----------------|
| 62+43.01   |    | 62+50.01 | Mount Rushmore Road | 2.8            |
| 63+16.75   |    | 63+26.75 | Mount Rushmore Road | 5.5            |
| 3+15.38  |    | 3+24.85  | Saint James Street  | 13.2           |
| 5+83.06  |    | 5+92.18  | Saint James Street  | 8.1            |
| 5+84.18  |    | 6+00.78  | Saint James Street  | 23.0           |
| 3+60.37  |    | 3+70.93  | Fairview Street     | 2.1            |
| 6+42.00  |    | 6+78.30  | Fairview Street     | 50.7           |
| 0+68.70  |    | 0+98.00  | Clark Street        | 30.1           |
| 7+19.63  |    | 7+25.66  | South Street        | 4.3            |
| 5+70.50  |    | 5+94.50  | Manhole #2 Alley    | 9.6            |
| 5+48.21  |    | 5+62.87  | Manhole #1 Alley    | 5.9            |
| Temporary Base Course at Manhole Removal Blockouts |    |          |                     | 49.5           |
| Additional Quantity                                |    |          |                     | 30             |
| Total:   |    |          |                     | 234.8          |

**CONTAMINATED MATERIAL EXCAVATION**

The geotechnical investigation did not discover any soil and/or water contaminated with hydrocarbons or other materials however SDDENR has documented petroleum releases adjacent to the US Highway 16 Right-of-Way within the project limits of unknown volumes. Therefore trenching activities may encounter contaminated soil on the project. If contaminated soil is encountered, the Contractor shall notify the Engineer immediately. The Contractor shall excavate the material and haul it to the Rapid City Sanitary Landfill or other approved landfill for disposal. The shortage of backfill material created by the excavation and disposal of contaminated soil shall be replaced by Imported Trench Backfill material meeting the requirements of the Standard Specifications. The Contractor shall provide the results of a modified proctor analysis (AASHTO T-99) for all furnished backfill material at no additional cost.

If dewatering is required and the water is contaminated, the contaminated water shall be pumped into calibrated storage containers or tanks and disposed of at a permitted facility or an approved landfill for disposal. Discharge of contaminated water to the ground surface will not be allowed.

Soil and water sampling to determine the contaminant concentrations of hydrocarbons and other elements is a Contractor obligation. City of Rapid City Landfill fees for disposal of the contaminated soil and/or water will NOT be waived. All landfill fees, including sampling and testing charges, are the responsibilities of the Contractor.

Contaminated soil quantities will be determined by the truck haul method and the Engineer and Contractor shall agree on the haul amount in each truck prior to hauling contaminated material. All costs for the excavation, hauling and disposal of contaminated material shall be incidental to the contract unit price per cubic yard for Contaminated Material Excavation.

Contaminated water quantities will be measured by the MGal and pumped to a storage container or tank and hauled to and disposed of at a permitted facility. The Contractor and Engineer shall agree on the amount of the water pumped into the truck prior to hauling. Payment for removing, hauling, and disposing of the contaminated water shall be incidental to the contract unit price per MGal for Remove Contaminated Water.

**GRANULAR MATERIAL**

It will be necessary to dig under and expose the private utilities in order to install water and sanitary sewer services under this contract. It is anticipated that as backfill operations proceed and the level of the trench backfill nears the exposed utilities, compaction by conventional methods using material from the trench may become impractical. Granular Material shall then be used to backfill the trench to the spring line of the utility at the highest elevation. Existing trench material shall then be used to continue backfill operations.

Granular material shall conform to Section 105 of the City of Rapid City Specifications however payment shall be incidental to the contract unit price per Ton for Granular Material. The Contractor shall be responsible to take all weight delivery tickets as materials arrive at the job site and provide copies to the Engineer at the end of each work day.

**CONTROLLED DENSITY FILL**

Under some circumstances, low strength backfill material may be required for support and other structural reasons, and not for encasement. Under these situations, the low strength backfill material shall be paid for at the contract unit price per cubic yard for Controlled Density Fill. A quantity of 50 cubic yards has been assumed for this bid item. The use of low strength backfill material shall be authorized by the Engineer prior to placement and shall be comply with Section 200 of the specifications.

If Controlled Density Fill is used to backfill around existing MDU gas main infrastructure, the Contractor shall contact and coordinate with Kris James (605) 355-4021.

**ASPHALT CONCRETE COMPOSITE**

Asphalt Concrete shall be furnished by the Contractor and shall be used to patch areas listed in the plans. Plans thickness shall match the existing roadway sections and have been estimated at 5" asphalt on 8" of base course for bidding purposes.

Asphalt binder used in the mixture shall be PG 64-22 or 64-28 Asphalt Binder. The asphalt binder content may be adjusted by the Engineer. Binder shall be incidental to the Asphalt Concrete Composite.

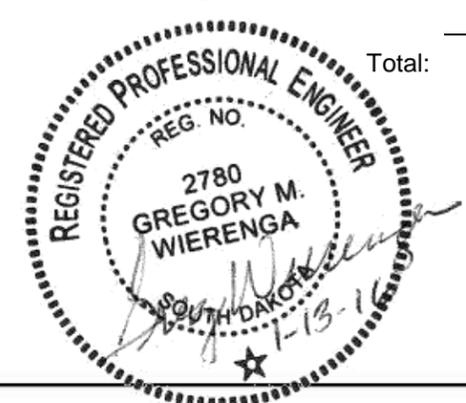
The Contractor shall provide a Job-Mix Formula to the Engineer with supporting mix design data prior to production.

Mineral Aggregate for Asphalt Concrete Composite shall be Class E or G, Type 1.

15% Recycled Asphalt Pavement will be allowed.

**TABLE OF ASPHALT CONCRETE COMPOSITE**

| Station                                   | to | Station  | Description         | Quantity (Ton) |
|---|----|----------|---------------------|----------------|
| 62+43.01                                  |    | 62+50.01 | Mount Rushmore Road | 1.8            |
| 63+16.75                                  |    | 63+26.75 | Mount Rushmore Road | 3.4            |
| 3+15.38                                   |    | 3+24.85  | Saint James Street  | 8.2            |
| 5+83.06                                   |    | 5+92.18  | Saint James Street  | 5.0            |
| 5+84.18                                   |    | 6+00.78  | Saint James Street  | 14.3           |
| 3+60.37                                   |    | 3+70.93  | Fairview Street     | 0.9            |
| 6+42.00                                   |    | 6+78.30  | Fairview Street     | 31.5           |
| 0+68.70                                   |    | 0+98.00  | Clark Street        | 19.0           |
| 7+19.63                                   |    | 7+25.66  | South Street        | 2.7            |
| 5+70.50                                   |    | 5+94.50  | Manhole #4 Alley    | 5.9            |
| 5+48.21                                   |    | 5+62.87  | Manhole #1 Alley    | 3.7            |
| Temporary AC at Manhole Removal Blockouts |    |          |                     | 51.4           |
| Additional Quantity                       |    |          |                     | 20             |
| Total:                                    |    |          |                     | 116.4          |



|   |  |  |  |  |                                       |                           |   |   |                              |
|---|--|--|--|--|---------------------------------------|---------------------------|---|---|------------------------------|
|  |  | Prepared By:<br>RM<br>Design Date:<br>03.2015<br>Internal Job No:<br>11119.06<br>Surveyed By:<br>SDDOT<br>Project Number:<br>13-2139, CIP NO.50950, PCN X03L | Prepared For:<br>Public Works Department | Scale:<br>Drawn By:<br>RM<br>Print Date:<br>12.04.2015 | Revisions:<br>Number:    Description: | FOR BIDDING PURPOSES ONLY | <b>MOUNT RUSHMORE ROAD<br/>UTILITY RECONSTRUCTION</b> | Sheet Title:<br>SECTION G<br>ESTIMATE OF<br>QUANTITIES AND<br>GENERAL NOTES | Sheet No:<br>G6<br>of<br>G90 |
|   |  |  |  |  |                                       |                           |   |   |                              |

**PROOFROLLING TRENCH**

In addition to backfill compaction testing by the Engineer, the Contractor shall perform proofrolling on the trench subgrade at the bottom of the DOT proposed undercut depth. Proofrolling shall be performed with a loaded wheel loader or other approved equipment which can travel within the trench line without damage to adjacent work. Areas of instability shall be stabilized with woven geotextile separator fabric, imported trench backfill material, or foundation material as directed by the Engineer. Proofrolling of the trench will not be paid for directly but will be considered to be incidental to the pipe installation.

**WOVEN GEOTEXTILE SEPARATOR**

A nominal amount of Geotextile Separator fabric has been included in the estimate of quantities if needed to stabilize trench backfill areas upon construction. The geotextile fabric shall only be installed at the discretion of the Engineer and prior approval is required for payment. The woven geotextile separator fabric shall be Mirifi HP 370 or Engineer approved equivalent.

Construction requirements shall be per Section 202 of the Standard Specifications and the manufacturer's installation instructions. If a conflict between the specifications and the manufacturers installation instructions occurs the more stringent or conservative requirement shall apply. All costs for furnishing and installation of the separator fabric shall be incidental to the contract unit price per square yard for Woven Geotextile Separator.

**TRENCH EXCAVATION AND BACKFILL**

Trench excavation, backfill, and granular materials shall conform to sections 11 and 112 of the City of Rapid City Standard Specifications except as modified herein. Compaction of trench backfill under the roadways shall conform to the South Dakota Department of Transportation Standard Specifications, 2015 Edition with current updates and revisions as specified in the proposal.

It is anticipated that in some areas special foundations may be required to provide adequate support for the pipe. Such foundation will consist of sub-excavation to a depth as required by the Engineer and placement of Type 2 foundation or Type 3 foundation material. The granular foundation material or trench stabilization material will be paid for at the contract unit price per ton if authorized by the Engineer.

For trench backfill above the Type 1 Bedding, the Contractor shall be responsible for either drying the wet but otherwise suitable material or hauling in drier material at no additional cost to the City. Due to the compressed sequence of operations and short construction duration, it is assumed that the Contractor will be importing materials rather than drying. It is not recommended that the Contractor use imported backfill for the top section of the trench that will be removed by DOT during undercut operations. The undercut for Mount Rushmore Road is approximately 1 foot, verify with the roadway plans.

Payment for the use of imported backfill will only be authorized by the Engineer; if in the Engineer's opinion, there is insufficient quantity of suitable backfill material, including material that can be dried. Imported backfill material quantities will be determined by counting truck loads. The quantity of material each truck holds shall be agreed upon by the Engineer

and the Contractor prior to any hauling operations. The Contractor shall not be paid for trench widths greater than four feet or the maximum trench width, whichever is greater. Imported backfill will not be paid for when the Contractor fails to perform proper dewatering techniques per the Engineer's request.

Imported Trench Backfill shall be furnished by the Contractor and shall be uniform in texture and free from organic material. The liquid limit shall not exceed 45 and the plastic index shall not exceed 25. The Contractor shall be responsible to provide AASHTO T-99 test results on the material to confirm its suitability for the project.

**CHECK DAMS**

The Contractor shall place clay check dams in the trench at locations shown on the plans or as approved by the Engineer on construction. Check dams shall be of clay soil material containing at least 25% of minus No. 200 sieve material with at least 70% passing a 3/4" sieve. Excavated material from the project may be used for check dams if the character is in conformance with the gradation requirements. Imported material may be necessary if on-site material is not satisfactory. Check dams are considered to be incidental to the pipe installation, and there will be no separate or additional payment for check dams.

**CONTRACTOR PROVIDED WATER**

The Contractor shall be responsible for providing water for compaction of earthen and granular materials used for, but not limited to, grading, subgrade preparation, and trench backfill. Water needed for sod irrigation, street cleaning, and other miscellaneous items shall also be provided by the Contractor. The City will provide water for water main testing and de-chlorination. There will be no separate payment for water. The costs for purchasing, loading, transporting and applying/incorporating water shall be incidental to the various items where water is required.

The Contractor will be required to pay for meter fees and installation onto a fire hydrant if the water is purchased from the City of Rapid City. Contact the water office at (605) 394-4125 to arrange for meter hook-ups to be added to fire hydrants and to obtain the current rate that will be charged.

**PIPE SCHOOL FOR WATER MAIN INSTALLATION**

In accordance with the corrosion control requirements, the Contractor shall be aware that this project will require the completion of Attachment C (part 1 and part 2) material handling and installation certification of section 8B of the specifications. All costs associated with meeting the requirement of attachment C parts 1 and 2 shall be incidental to the contract lump sum price for Incidental Work.

**MUCK EXCAVATION**

Muck Excavation within this project shall be considered incidental to the item being installed and no additional payment will be made.

**TRENCH DEWATERING**

The Contractor has the option to treat sediment laden water trapped within the project limits with a dewatering and sediment collection system, or the Contractor may elect to transport sediment laden water off the project. The dewatering and sediment collection System shall be pre-approved by the Engineer prior to the start of trench dewatering. All costs for the dewatering

and sediment collection system including but not limited to the system, labor, materials, and disposals shall be incidental to the utility being installed.

If the Contractor elects to transport sediment laden water off the project, no additional payment for loading, transporting, and labor costs will be made. Water transported off the project limits shall not be disposed of in an area where it can enter a waterway. The disposal site must be approved by the Engineer. All costs for loading, transporting, and disposal shall be incidental to the utility being installed.

Trench dewatering shall be necessary when the ground water level is higher than the bottom of the water or sewer trench and is needed to facilitate water and sewer main installation.

It is suggested that the Contractor review the geotechnical investigation report included with the contract documents. The report is for information only and is not a guarantee of subsurface conditions. It should be noted that groundwater was not present at the time of sampling but ground water levels can and do change over time.



|   |  |  |  |                                  |   |   |                              |
|---|--|--|--|----------------------------------|---|---|------------------------------|
|  |  | Scale:   | Revisions:   | <b>FOR BIDDING PURPOSES ONLY</b> | <b>MOUNT RUSHMORE ROAD<br/>UTILITY RECONSTRUCTION</b> | Sheet Title:<br>SECTION G<br>ESTIMATE OF<br>QUANTITIES AND<br>GENERAL NOTES | Sheet No:<br>G7<br>of<br>G90 |
|   |  | Prepared By:<br>RM<br>Design Date:<br>03.2015<br>Internal Job No:<br>11119.06<br>Surveyed By:<br>SDDOT<br>Project Number:<br>13-2139, CIP NO.50950, PCN X03L | Drawn By:<br>RM<br>Print Date:<br>12.04.2015<br>Survey Date:<br>2012 |                                  |   |   |                              |

**ROCK EXCAVATION, TRENCH**

A geotechnical investigation was completed for this project. Even though the investigation did not indicate that rock excavation is needed, a nominal amount of rock excavation has been included in the estimate of quantities if rock or a rock lens is encountered during trenching operations.

Rock excavation shall include solid rock in ledges, bedded deposits, unstratified masses and conglomerate deposits so firmly cemented as to present the characteristics of solid rock, which must be removed by drilling, blasting, jack hammering, hydraulic ripper, or similar methods. Shale, regardless of the nature of deposit, or loose boulders or large fieldstone will not be considered rock excavation unless so designated on the plans. The responsibility and cost of satisfactorily demonstrating to the Engineer that the material being considered for rock excavation cannot be removed by means other than drilling, blasting, jack hammering, hydraulic ripper, or similar methods shall be the obligation of the Contractor.

At a minimum, it shall be demonstrated that a normal excavating machine being skillfully operated cannot effectively remove said material. "Effectively removed" shall be defined as, the normal production rate being reduced to 25% of normal. A normal excavating machine will be considered to be a +230 HP hydraulic excavator, crawler weighing +78,000 pounds with a - 1 CY bucket equipped with rock or ripper teeth.

The Contractor shall dispose of all unsuitable excavated material. The Contractor shall provide a disposal site for unsuitable backfill materials. The disposal site shall be approved by the Engineer.

The Contractor shall furnish Imported Trench Material for backfill and the quantity shall be measured by the truck haul method and each the quantity of each truck will be agreed upon by the Engineer and the Contractor prior to hauling operations.

The Rock Excavation, Trench quantity shall be agreed upon between the Engineer and the Contractor prior to backfill operations and shall be paid for at the contract unit price per cubic yard

**DISPOSAL OF CHLORINATED WATER**

The Contractor shall provide a plan to the Engineer on how he intends to neutralize chlorinated water from water main disinfection and flushing operations two weeks prior to flushing operations. The Contractor shall either neutralize the chlorinated water with specifically manufactured products and ascorbic acid or discharge the water into a truck and haul the water to an Engineer approved location for disposal. No separate payment will be made for neutralization of the super chlorinated water and it shall be considered incidental to the respective water main bid item.

**ADJUST SEWER SERVICE**

The sewer service from 710 Mount Rushmore Road (MRR) protrudes into the sewer main tap and will be repaired. The service is located in the alley on the east side of MRR between Quincy and Columbus Streets. Anticipated work includes removal of asphalt surfacing, excavation to the service, removal of the service pipe, minor adjustments to the service to correct the connection and connections angle and reconnection to the sewer main. This may require a new tapping saddle and miscellaneous 4" PVC bends etc.

Costs for surfacing removal and replacement shall be paid for at the contract unit prices for the applicable items. All costs for excavation, materials, repair of service and back fill shall be incidental to the contract unit price per each for Adjust Sewer Service.

**WATER SERVICE FOR 715 MT RUSHMORE ROAD**

Due to traffic and project sequencing, it is anticipated that the Contractor will have to construct the water service for 715 Mt Rushmore Road by installing the water service at the termination point and then temporarily connect to the existing service at or near the middle of the street (east construction limits of construction phase 1). Once traffic is switched to the west side of the roadway, the service shall be extended east to the new proposed 12" water main. No additional payment will be made for this sequenced water service installation.

**WATER SERVICES FOR 1217 AND 1211 MT RUSHMORE ROAD**

The Owner of the properties at 1217 and 1211 Mt Rushmore Road will be completing necessary improvements at the subject locations to connect into the proposed water service locations. The Contractor shall coordinate with Kevin Kuehn, South Dakota Real Estate Company (342-1810) at these locations on construction. The Contractor shall contact Mr. Kuehn approximately 1 month ahead of the time when he or she estimates that water installation operations will be at the reconnection point.

**TRENCH BOX**

Due to anticipated limited construction work area widths, the Contractor shall utilize moveable trench box or shoring for trenching. Benching or sloping trench sidewalls is prohibited. The maximum allowable trench width and pavement removal limits shall be as shown on the standard details and listed in the specifications. Use of trench box or shoring for trenching operations shall be incidental to the project.

**PIPE ENCASEMENT**

Concrete encasement for water mains or sewers shall be controlled low strength material confirming with Section 200 of the Standard Specifications and shall be paid for at the contract unit price per each for Pipe Encasement.

**SEWER BYPASS PUMPING**

The Contractor shall provide wastewater bypass pumping when wastewater flow interruption is required in sewer mains. The existing 8" sanitary sewer in Mt Rushmore Road receives wastewater flow from residences and businesses on each side of Mount Rushmore Road from St. Patrick Street north to the alley north of Columbus Street at which point the sewer main turns east. The sewer main that runs west to east in the alley between Quincy Street and Kansas City Street receives wastewater flow from residences in 9<sup>th</sup> Street. The Contractor shall provide a detailed plan to the Engineer 72 hours prior to work commencement on how he/she intends to bypass the sewer flow for the duration of the project. If possible, flow shall be restored to the sewer main at the end of each day's work. If flow restoration is not possible, then the Contractor shall provide 24 hour monitoring of the sewer bypass pumps. Wastewater flow is anticipated to be between 50 GPM

and 350 GPM. The Contractor shall monitor the flow and provide standby pumps equal to the expected peak flows.

All costs associated with bypass pumping for the **entire project duration** shall be incidental to the contract lump sum price for Sewer Bypass Pumping. Additional payment will not be made for additional mobilizations as a result of construction sequencing etc.

**SPECIAL MANHOLE FRAME AND LID**

This bid item refers to the cast iron sanitary sewer service cleanout cover that will cover the proposed sewer clean outs on the project. Please refer to the project details sheets for plan requirements. All costs for furnishing and installing the clean out manhole frame and lid covers including the concrete pad shall be incidental to the contract unit price per each for Special Manhole Frame and Lid.

**MANHOLE FRAME AND LID HEIGHT**

The Contractor shall review the DOT proposed pavement thicknesses where new manholes will be installed on the project prior to ordering the cast iron manhole frames and lids. Manhole frames and lids shall be as tall as pavement thickness.

**AS-BUILT PLANS**

The Contractor shall measure and record any horizontal or vertical deviations from the contract drawings. The changes shall be recorded in as accurate, neat fashion on the drawings and furnished to the Engineer upon completion of the project. Specifically, all service taps, connections, anodes and buried fittings shall be recorded for the work. The As-Built Drawings shall be on-site and available for review by the Engineer upon request.

**TEMPORARY APPURTANENCES**

The existing mains must remain in-service until the new water main is complete, disinfected, and pressure tested. Temporary plugs, valving, connections, hydrants, etc, may be needed to maintain service to existing services and shall be considered incidental work.



**WATER AND SEWER PIPE**

All water and sewer pipe mains, services, appurtenances etc. shall conform to the City of Rapid City Standard Specifications with the exception of water mains in contaminated areas. Please refer to the note below regarding PVC Pipe in contaminated areas.

PVC Water Mains 4"-12" shall be restrained joint PVC pressure pipe conforming to the requirements of AWWA Specification C900, DR18. Restrained joint pipe shall be Certa-Lok C-900/RJ, Diamond Loc 21, Cobra Lock or Engineer approved equal. Restrained joint pipe manufactured by JM Eagle will not be considered an acceptable product for this project. Fire hydrant lead pipes shall be restrained joint pipe.

Water Services 1" through 2" shall be Type K soft copper tubing per the specifications.

PVC Sewer Mains shall conform to the requirement of ASTM D-3034, SDR-35 per the specifications.

PVC Sewer services and fittings shall confirm to the requirement of ASTM D-3034, SDR-35

**PVC PIPE FOR CONTAMINATED AREAS**

60' of the 6" PVC, 500' of the 8" PVC, 20' of the 10" PVC, and 100' of 12" PVC listed in the Estimate of Quantities shall be supplied with nitrile gaskets and will be installed on the project in areas of contamination. If contamination is not encountered, the water mains with nitrile gaskets will be installed on the project last. Nitrile gaskets for fittings within the contamination areas shall be considered incidental to the fitting.

**PVC SEWER PIPE**

Section 9.5.A of the Standard Specifications indicates that payment for sewer will be at the unit price bid for the appropriate size and depth of sewer pipe. Typical pay depths are estimated on the plan profile drawings and are for information only. All costs for furnishing and installing the PVC sewer pipe regardless of depth shall be incidental to the contract unit price per foot for the applicable sewer pipe specified.

The Contractor shall note that the pay length for sewer main is based on the distances from center of manhole to center of manhole and extended to sewer stubs etc. Sewer main lengths and slopes shown in the profiles are the lengths between the inside wall of the manhole to the inside wall of the manhole and are not the same as the estimated quantity.



**4" UNDERDRAIN PIPE**

4" perforated and solid underdrain pipe shall be installed to provide a foundation underdrain for the monument at 72+20. The 4" drain shall be connected to the proposed storm sewer pipe. Refer to plan and profile detail. All costs for perforated and solid 4" PVC pipe, bends, tee, fabric sock, bedding material, and inserta-tee connection are incidental to the contract unit price per foot for 4" underdrain pipe. The Contractor shall note that due to the proximity of the underdrain to the adjacent lanes of traffic and the proposed traffic control sequence, the underdrain system will have to be installed in separate phases of work.

**WATER MAIN & FITTINGS**

1. All high deflection pipe couplings shall be mechanical joint sleeves or repair couplings allowing a maximum of 5 degree deflections.
2. Pipe deflection at fittings shall be within the tolerances recommended by the pipe and/or fitting manufacturer.
3. Pipe deflection for restrained joint PVC pipe for sizes 12" and smaller shall be less than the manufacture recommended allowable radius of curvature. Maximum allowable pipe deflection shall be clearly labeled on the pipe submittal.
4. Ductile iron fittings shall be epoxy coated per Section 8A.2.B of the Standard Specifications.
5. Fittings shall be mechanically restrained where restraint is required by the plans or the specifications. Cost of restraint shall be incidental to the associated fitting or pipe.
6. Bolts for mechanical joints shall be Series 300 Stainless Steel.
7. Testing and disinfection shall be per Standard Specifications. The Contractor is responsible for all testing, disinfection and water sampling.
8. Tracer wire is required on all water mains as per Standard Specifications.
9. Any valve box that is 8' or greater in depth shall include a nut extension in the valve box at an appropriate length such that a standard key can operate the valve. No separate payment will be made for nut extensions.

**WATER AND SEWER SERVICE RECONNECTION**

The bid item 1" Water Service, Connect Charge shall be used for the water services at 68+85 L and 69+76L to cover necessary permits and tapping fees as established by City Ordinance.

The bid item Reconnect Water Service is applicable to existing water services that are being reconnected on the project.

The bid item Connect Sewer Service shall be used for the sewer services at 68+40 L and 70+11 L to cover necessary permits and tapping fees as established by City Ordinance.

The bid item Reconnect Sewer Service is applicable to existing sewer services that are being reconnected on the project.

**CORROSION PROTECTION**

The Contractor shall provide corrosion protection of all water main fittings, restraints, appurtenances, and water services in accordance with the Specifications for Corrosion Control, Section 8B and the Standard Details. Generally, the work consists of:

1. Furnishing and installing zinc anodes and associated bonding, bonding wires etc. per specifications and details for all buried metallic components.
2. Installation of flush mounted corrosion test stations adjacent to proposed fire hydrants.

18 pound zinc galvanic anodes shall be used for this project. If the epoxy coating on the hydrants, valves and fittings do not meet the requirements called for in specification 8b (included in contract documents) a 30 pound anode or 2-18 pound anodes shall be installed on each item. All anodes are incidental to the fire hydrants, valves and fittings per the specifications.

Standard details have been included in the contract documents.

The corrosion protection system shall be tested by the Contractor and reports provided to the Engineer prior to placement of finished surfacing.

Anodes and attachment of lead wires to fittings, valves or other metallic components shall be incidental to each to each of the new metallic water system components installed. No separate measurement will be made.

All costs for furnishing and installing materials for flush mounted corrosion test stations shall be incidental to the contact unit price per each for Test Station.

Tracer wire and all accessory items necessary for the installation of an electrically-continuous tracing system shall be incidental to the pipe installed. No separate measurement will be made.

All costs for furnishing and installing materials for flush mounted tracer wire boxes shall be incidental to the contact unit price per each for Tracer Wire Access Box.

**FIRE HYDRANT COATINGS**

The City of Rapid City Public Works Director issued a waiver to the 2007 Edition Standard Specifications requiring the internal epoxy coating for fire hydrants. Any fire hydrant that doesn't have the internal epoxy coating per the specifications shall double the cathodic protection (anodes) required for the fire hydrant. The cost of the extra cathodic protection shall be absorbed into the unit price of the fire hydrant. Fire hydrants with the internal epoxy coating do not need to have double the cathodic protection.

Fire hydrants and any other buried ferrous or metallic objects that require epoxy coatings shall have coating thickness as detailed in Sections 8A & 8B of the Standard Specifications. Items that do not meet the external epoxy coating mil thickness requirement shall have double the cathodic protection (anodes) required. A 30 lb zinc anode will be considered equal to two 18 lb zinc anodes.

**FIRE HYDRANT BURY DEPTHS**

Prior to installing fire hydrants, the Contractor shall verify that the proposed finished grade matches the Bury Line Elevation proposed for the fire hydrants. The Engineer shall be notified immediately if the finished grade does not match the Bury Line Elevation so adjustments can be made prior to the fire hydrant installation.

**TESTS AND MEASUREMENTS**

Upon completion of the cathodic protection system installation work, the Contractor shall perform testing to ensure proper operation of the system.

All cathodic protection system tests shall be conducted by the Contractor's corrosion specialist, cathodic protection specialist or corrosion engineer. All testing shall be conducted in the presence of a representative of the Owner and a minimum of 5 days advance notice must be given to the Owner prior to the start of any testing.

The integrity and function of all test station and anode wires shall be verified by field testing after installation by obtaining pipe-to-soil (p/s) and anode-to-soil (a/s) potential measurements. P/s and a/s measurements shall be obtained for each wire prior to and after the connection of any wires to the test station terminal block. The Contractor shall submit a written procedure for such testing for approval by the owner's representative prior to the start of construction. The procedure must describe in detail the method and equipment to be used for the testing. Such procedure may be rejected and returned to the Contractor for revision. The procedure shall satisfactorily demonstrate the integrity and proper functioning of the test station and anode wires.

Prior to connection of each anode wire to its test station terminal block, all anode-to-soil "native" potential measurements shall be as follows:

Zinc anode: -1.05 volts dc or more negative when referenced to a copper sulfate electrode (cse)-anodes not satisfying this "native potential level" shall be replaced by the contractor at no additional cost to the owner.

All tests results shall be documented in the tabular format on 8 1/2" x 11" paper and submitted in a written test report. The report shall include a description of any test procedures, all test results, and recommendations to correct any identified problems or deficiencies. The report shall include results at each cathodic protection test station location.

Functional testing of the cathodic protection and tracer wire systems shall be incidental to the water system components installed. No separate measurement and payment will be made.

**THRUST BLOCKS**

Thrust blocks shall only be provided at locations shown in the plans. All fire hydrants shall have thrust blocks. Water main bends or other fittings that are used to tie into existing water mains shall be thrust blocked. Thrust block dimension tables have been provided in the details section of these plans. All costs for thrust blocks shall be incidental to the associated item for which the thrust block is being installed. No separate payment will be made.

**AASHTO T-180 SOIL TEST**

In order to match and correlate with the SDDOT specifications, the Contractor shall provide T-99 soil test results under the bid item AASHTO T-180 Soil Test. Payment will be made for only those Proctor tests required by the Engineer per section 11.5.F of the Standard Specifications.

**WATER SERVICE SHUT OFF AND TEMPORARY ABANDONMENT**

The water main that services most of the customers on the west side of Mount Rushmore Road is located on the east side of the roadway. Due to proposed construction phasing and associated traffic location, when the new water main and service is installed on the west side of the roadway, it will not be possible to abandon the existing water service at the main via the corporation stop. To the extent possible, the Contractor shall coordinate with the Utility Maintenance Division and temporarily abandon the water service by shutting off the existing curb stop and remove the curb stop box. If the existing curb stop will not shut off the active service then the Contractor shall install a cap or plug in the existing service. If a water main shut down is required, the shutdown shall be coordinated and notifications given in accordance with the specifications. No additional payment will be made to temporarily abandon the existing water services. This work shall be considered incidental to the associated project items.

**SANITARY MANHOLE COATINGS**

The interior of all sanitary manholes shall be coated per section 9.2.c.15 of the standard specifications. Contractor may use sauerisen sewergard (tm) no. 210, induron ceramasafe 90 ceramic epoxy, or an approved equal installed per manufacturers requirements.

**TABLE OF 1" COPPER PIPE**

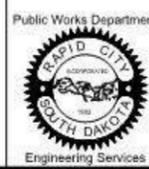
| Station       | L/R | Description         | Quantity (Ft) |
|---------------|-----|---------------------|---------------|
| 62+58.08      | R   | Mount Rushmore Road | 16.0          |
| 62+59.29      | R   | Mount Rushmore Road | 16.2          |
| 3+25.05       | L   | Saint James Street  | 14.1          |
| 4+00.86       | L   | Saint James Street  | 11.7          |
| 64+03.42      | R   | Mount Rushmore Road | 23.1          |
| 64+57.44      | R   | Mount Rushmore Road | 23.1          |
| 64+66.29      | R   | Mount Rushmore Road | 23.1          |
| 64+68.27      | L   | Mount Rushmore Road | 22.4          |
| 64+80.58      | R   | Mount Rushmore Road | 25.5          |
| 64+90.76      | L   | Mount Rushmore Road | 22.4          |
| 65+89.32      | L   | Mount Rushmore Road | 22.4          |
| 66+08.11      | L   | Mount Rushmore Road | 22.4          |
| 66+47.06      | R   | Mount Rushmore Road | 16.4          |
| 68+84.14      | L   | Mount Rushmore Road | 22.2          |
| 69+63.90      | R   | Mount Rushmore Road | 39.8          |
| 69+75.90      | R   | Mount Rushmore Road | 34.3          |
| 69+77.36      | L   | Mount Rushmore Road | 21.9          |
| 70+07.71      | R   | Mount Rushmore Road | 58.5          |
| 71+37.64      | R   | Mount Rushmore Road | 34.8          |
| 72+32.79      | R   | Mount Rushmore Road | 34.0          |
| 72+57.84      | L   | Mount Rushmore Road | 12.7          |
| 72+76.90      | R   | Mount Rushmore Road | 34.0          |
| 72+97.37      | R   | Mount Rushmore Road | 34.0          |
| 73+13.41      | L   | Mount Rushmore Road | 22.6          |
| 73+16.62      | R   | Mount Rushmore Road | 54.4          |
| 73+40.75      | R   | Mount Rushmore Road | 33.9          |
| 73+92.60      | R   | Mount Rushmore Road | 56.5          |
| 3+46.45       | R   | Clark Street West   | 54.9          |
| 3+51.27       | L   | Clark Street West   | 29.9          |
| 3+89.29       | R   | Clark Street West   | 55.2          |
| 0+57.68       | R   | Clark Street East   | 14.6          |
| 74+12.60      | R   | Mount Rushmore Road | 40.7          |
| 74+27.02      | L   | Mount Rushmore Road | 22.6          |
| 74+76.53      | R   | Mount Rushmore Road | 33.8          |
| 74+91.07      | R   | Mount Rushmore Road | 48.3          |
| 75+31.81      | R   | Mount Rushmore Road | 33.8          |
| 75+91.39      | L   | Mount Rushmore Road | 22.7          |
| 78+06.29      | R   | Mount Rushmore Road | 35.1          |
| 78+50.15      | R   | Mount Rushmore Road | 35.0          |
| 6+60.27       | R   | South Street        | 59.1          |
| 6+62.09       | L   | South Street        | 38.4          |
| 6+94.64       | L   | South Street        | 38.4          |
| 79+78.00      | R   | Mount Rushmore Road | 35.1          |
| 80+45.92      | L   | Mount Rushmore Road | 42.8          |
| 83+71.39      | R   | Mount Rushmore Road | 16.7          |
| 86+75.07      | R   | Mount Rushmore Road | 24.1          |
| 86+78.16      | L   | Mount Rushmore Road | 79.9          |
| 87+61.82      | R   | Mount Rushmore Road | 16.9          |
| <b>Total:</b> |     |                     | <b>1530.4</b> |



Prepared By:



Prepared For:



Scale:

Designed By: RM  
Drawn By: RM  
Design Date: 03.2015  
Print Date: 12.04.2015  
Internal Job No: 11119.06  
Surveyed By: SDDOT  
Survey Date: 2012  
Project Number: 13-2139, CIP NO.50950, PCN X03L

Revisions:

Number: Description:

FOR BIDDING PURPOSES ONLY

### MOUNT RUSHMORE ROAD UTILITY RECONSTRUCTION

Sheet Title:

SECTION G  
ESTIMATE OF  
QUANTITIES AND  
GENERAL NOTES

Sheet No:

G10  
of  
G90

#### TABLE OF TAPPING SADDLE (1")

The Contractor shall note that per Section 8A of the standard specifications that the City of Rapid City Utility Maintenance shall provide the corporation stop when the water main is tapped for a 1" Service.

| Station  | L/R | Description         | Quantity (Each) |
|----------|-----|---------------------|-----------------|
| 62+58.08 | R   | Mount Rushmore Road | 1               |
| 62+59.29 | R   | Mount Rushmore Road | 1               |
| 3+25.05  | L   | Saint James Street  | 1               |
| 3+59.62  | R   | Saint James Street  | 1               |
| 4+00.86  | L   | Saint James Street  | 1               |
| 64+30.42 | R   | Mount Rushmore Road | 1               |
| 64+57.44 | R   | Mount Rushmore Road | 1               |
| 64+66.29 | R   | Mount Rushmore Road | 1               |
| 64+68.27 | L   | Mount Rushmore Road | 1               |
| 64+86.23 | R   | Mount Rushmore Road | 1               |
| 64+90.76 | L   | Mount Rushmore Road | 1               |
| 65+89.32 | L   | Mount Rushmore Road | 1               |
| 66+08.11 | L   | Mount Rushmore Road | 1               |
| 66+47.06 | R   | Mount Rushmore Road | 1               |
| 4+08.09  | L   | Fairview Street     | 1               |
| 6+42.78  | L   | Fairview Street     | 1               |
| 68+84.14 | R   | Mount Rushmore Road | 1               |
| 69+68.84 | R   | Mount Rushmore Road | 1               |
| 69+75.90 | R   | Mount Rushmore Road | 1               |
| 69+77.36 | L   | Mount Rushmore Road | 1               |
| 70+07.71 | R   | Mount Rushmore Road | 1               |
| 71+37.64 | R   | Mount Rushmore Road | 1               |
| 72+32.79 | R   | Mount Rushmore Road | 1               |
| 72+57.84 | L   | Mount Rushmore Road | 1               |
| 72+76.90 | R   | Mount Rushmore Road | 1               |
| 72+97.37 | R   | Mount Rushmore Road | 1               |
| 73+13.41 | L   | Mount Rushmore Road | 1               |
| 73+16.62 | R   | Mount Rushmore Road | 1               |
| 73+40.75 | R   | Mount Rushmore Road | 1               |
| 73+92.67 | R   | Mount Rushmore Road | 1               |
| 3+51.27  | L   | Clark Street West   | 1               |
| 3+53.27  | L   | Clark Street West   | 1               |
| 3+96.92  | L   | Clark Street West   | 1               |
| 0+57.68  | R   | Clark Street East   | 1               |
| 74+12.67 | R   | Mount Rushmore Road | 1               |
| 74+27.02 | L   | Mount Rushmore Road | 1               |
| 74+76.53 | R   | Mount Rushmore Road | 1               |
| 74+91.07 | R   | Mount Rushmore Road | 1               |
| 75+31.81 | R   | Mount Rushmore Road | 1               |
| 75+91.69 | L   | Mount Rushmore Road | 1               |
| 78+06.29 | R   | Mount Rushmore Road | 1               |
| 78+50.15 | R   | Mount Rushmore Road | 1               |
| 6+60.27  | L   | South Street        | 1               |
| 6+62.10  | L   | South Street        | 1               |
| 6+94.69  | L   | South Street        | 1               |
| 79+78.00 | R   | Mount Rushmore Road | 1               |
| 80+45.90 | L   | Mount Rushmore Road | 1               |
| 83+71.40 | R   | Mount Rushmore Road | 1               |
| 86+75.07 | R   | Mount Rushmore Road | 1               |
| 86+78.16 | R   | Mount Rushmore Road | 1               |
| 87+61.82 | R   | Mount Rushmore Road | 1               |
| Total:   |     |                     | 51.             |

#### TABLE OF 1" CURB STOP WITH BOX

| Station  | L/R | Description         | Quantity (Each) |
|----------|-----|---------------------|-----------------|
| 62+58.08 | R   | Mount Rushmore Road | 1               |
| 62+59.29 | R   | Mount Rushmore Road | 1               |
| 3+25.05  | L   | Saint James Street  | 1               |
| 3+59.62  | L   | Saint James Street  | 1               |
| 4+00.86  | L   | Saint James Street  | 1               |
| 64+30.42 | R   | Mount Rushmore Road | 1               |
| 64+57.44 | R   | Mount Rushmore Road | 1               |
| 64+66.29 | R   | Mount Rushmore Road | 1               |
| 64+68.27 | L   | Mount Rushmore Road | 1               |
| 64+80.58 | R   | Mount Rushmore Road | 1               |
| 64+90.76 | L   | Mount Rushmore Road | 1               |
| 65+89.32 | L   | Mount Rushmore Road | 1               |
| 66+08.11 | L   | Mount Rushmore Road | 1               |
| 66+47.06 | R   | Mount Rushmore Road | 1               |
| 4+08.09  | L   | Fairview Street     | 1               |
| 68+84.14 | L   | Mount Rushmore Road | 1               |
| 69+63.90 | R   | Mount Rushmore Road | 1               |
| 69+75.90 | R   | Mount Rushmore Road | 1               |
| 69+77.36 | L   | Mount Rushmore Road | 1               |
| 70+07.71 | R   | Mount Rushmore Road | 1               |
| 71+37.64 | R   | Mount Rushmore Road | 1               |
| 72+32.79 | R   | Mount Rushmore Road | 1               |
| 72+57.84 | L   | Mount Rushmore Road | 1               |
| 72+76.90 | R   | Mount Rushmore Road | 1               |
| 72+97.37 | R   | Mount Rushmore Road | 1               |
| 73+13.41 | L   | Mount Rushmore Road | 1               |
| 73+16.62 | R   | Mount Rushmore Road | 1               |
| 73+40.75 | R   | Mount Rushmore Road | 1               |
| 73+92.60 | R   | Mount Rushmore Road | 1               |
| 3+46.45  | R   | Clark Street West   | 1               |
| 3+51.27  | L   | Clark Street West   | 1               |
| 3+89.29  | R   | Clark Street West   | 1               |
| 0+57.68  | R   | Clark Street East   | 1               |
| 74+12.60 | R   | Mount Rushmore Road | 1               |
| 74+27.02 | L   | Mount Rushmore Road | 1               |
| 74+76.53 | R   | Mount Rushmore Road | 1               |
| 74+91.07 | R   | Mount Rushmore Road | 1               |
| 75+31.81 | R   | Mount Rushmore Road | 1               |
| 75+91.39 | L   | Mount Rushmore Road | 1               |
| 78+06.29 | R   | Mount Rushmore Road | 1               |
| 78+50.15 | R   | Mount Rushmore Road | 1               |
| 6+60.27  | R   | South Street        | 1               |
| 6+62.09  | L   | South Street        | 1               |
| 6+94.64  | L   | South Street        | 1               |
| 79+78.00 | R   | Mount Rushmore Road | 1               |
| 80+45.90 | L   | Mount Rushmore Road | 1               |
| 83+71.39 | R   | Mount Rushmore Road | 1               |
| 86+75.07 | R   | Mount Rushmore Road | 1               |
| 86+78.16 | L   | Mount Rushmore Road | 1               |
| 87+61.82 | R   | Mount Rushmore Road | 1               |
| Total:   |     |                     | 50.             |

#### TABLE OF 1.5" COPPER PIPE

| Station  | L/R | Description         | Quantity (Ft) |
|----------|-----|---------------------|---------------|
| 72+03.98 | R   | Mount Rushmore Road | 10.7          |
| 78+41.63 | L   | Mount Rushmore Road | 23.9          |
| 6+28.28  | L   | Fairview Street     | 19.8          |
| Total:   |     |                     | 54.4          |

#### TABLE OF 1.5" CORPORATION STOP AND TAPPING SADDLE

| Station  | L/R | Description         | Quantity (Each) |
|----------|-----|---------------------|-----------------|
| 72+03.98 | R   | Mount Rushmore Road | 1               |
| 78+41.63 | L   | Mount Rushmore Road | 1               |
| 6+28.28  | L   | Fairview Street     | 1               |
| Total:   |     |                     | 3.              |

#### TABLE OF 1.5" CURB STOP WITH BOX

| Station  | L/R | Description         | Quantity (Each) |
|----------|-----|---------------------|-----------------|
| 72+03.98 | R   | Mount Rushmore Road | 1               |
| 78+41.63 | L   | Mount Rushmore Road | 1               |
| 6+28.28  | L   | Fairview Street     | 1               |
| Total:   |     |                     | 3.              |

#### TABLE OF 8" X 8" X 4" TEE

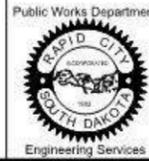
| Station | L/R | Description     | Quantity (Each) |
|---------|-----|-----------------|-----------------|
| 6+34.84 | L   | Fairview Street | 1               |
| Total:  |     |                 | 1.              |



Prepared By:



Prepared For:



Scale:

Designed By: RM  
Design Date: 03.2015  
Internal Job No: 11119.06  
Surveyed By: SDDOT  
Project Number: 13-2139, CIP NO.50950, PCN X03L

Drawn By:

RM  
Print Date: 12.04.2015

Revisions:

Number: Description:

FOR BIDDING PURPOSES ONLY

# MOUNT RUSHMORE ROAD UTILITY RECONSTRUCTION

Sheet Title:

SECTION G  
ESTIMATE OF  
QUANTITIES AND  
GENERAL NOTES

Sheet No:

G11  
of  
G90

**TABLE OF 8" X 8" X 6" TEE**

| Station  | L/R | Description         | Quantity (Each) |
|----------|-----|---------------------|-----------------|
| 4+43.15  | L   | Saint James Street  | 1               |
| 63+21.33 | R   | Mount Rushmore Road | 1               |
| 4+44.13  | L   | Fairview Street     | 1               |
| 67+72.78 | R   | Mount Rushmore Road | 1               |
| 0+60.85  | R   | Clark Street East   | 1               |
| 4+47.58  | L   | Clark Street West   | 1               |
| 4+45.70  | R   | Fulton Street       | 1               |
| 4+47.33  | L   | South Street        | 1               |
| 74+26.06 | R   | Mount Rushmore Road | 1               |
| 77+17.70 | R   | Mount Rushmore Road | 1               |
| 4+41.04  | L   | Quincy Street       | 1               |
| 5+55.36  | L   | Quincy Street       | 1               |
| Total:   |     |                     | 12.             |

**TABLE OF 8" X 8" X 8" TEE**

| Station  | L/R | Description         | Quantity (Each) |
|----------|-----|---------------------|-----------------|
| 4+73.94  | L   | Saint James Street  | 1               |
| 5+25.94  | L   | Saint James Street  | 1               |
| 4+73.91  | L   | Fairview Street     | 1               |
| 5+14.91  | L   | Fairview Street     | 1               |
| 5+25.94  | L   | Fairview Street     | 1               |
| 67+13.25 | R   | Mount Rushmore Road | 1               |
| 0+15.00  | R   | Clark Street East   | 1               |
| 4+74.01  | L   | Clark Street West   | 1               |
| 4+74.00  | L   | South Street        | 1               |
| 5+15.00  | L   | South Street        | 1               |
| 5+15.00  | L   | South Street        | 1               |
| 74+98.68 | L   | Mount Rushmore Road | 1               |
| 77+26.05 | L   | Mount Rushmore Road | 1               |
| Total:   |     |                     | 13.             |

**TABLE OF 12" X 12" X 6" TEE**

| Station | L/R | Description     | Quantity (Each) |
|---------|-----|-----------------|-----------------|
| 4+45.13 | L   | Columbus Street | 1               |
| 5+52.56 | L   | Columbus Street | 1               |
| Total:  |     |                 | 2.              |

**TABLE OF 12" X 12" X 8" TEE**

| Station | L/R | Description     | Quantity (Each) |
|---------|-----|-----------------|-----------------|
| 4+73.97 | L   | Columbus Street | 1               |
| 5+14.97 | L   | Columbus Street | 1               |
| Total:  |     |                 | 2.              |

**TABLE OF 12" X 12" X 12" TEE**

| Station | L/R | Description     | Quantity (Each) |
|---------|-----|-----------------|-----------------|
| 5+25.92 | L   | Columbus Street | 1               |
| Total:  |     |                 | 1.              |

**TABLE OF 12" X 8" CROSS**

| Station | L/R | Description   | Quantity (Each) |
|---------|-----|---------------|-----------------|
| 5+25.99 | L   | Quincy Street | 1               |
| Total:  |     |               | 1.              |

**TABLE OF 8" X 4" REDUCER**

| Station | L/R | Description        | Quantity (Each) |
|---------|-----|--------------------|-----------------|
| 3+23.74 | L   | Saint James Street | 1               |
| 6+66.36 | L   | Fairview Street    | 1               |
| 3+32.25 | L   | Clark Street West  | 1               |
| 7+25.41 | L   | South Street       | 1               |
| Total:  |     |                    | 4.              |

**TABLE OF 8" X 6" REDUCER**

| Station | L/R | Description        | Quantity (Each) |
|---------|-----|--------------------|-----------------|
| 5+94.18 | L   | Saint James Street | 1               |
| 3+65.62 | L   | Fairview Street    | 1               |
| 0+83.91 | R   | Clark Street East  | 1               |
| 4+10.13 | L   | Quincy Street      | 1               |
| 5+68.40 | L   | Quincy Street      | 1               |
| Total:  |     |                    | 5.              |

**TABLE OF 12" X 10" REDUCER**

| Station | L/R | Description     | Quantity (Each) |
|---------|-----|-----------------|-----------------|
| 4+10.75 | L   | Columbus Street | 1               |
| 5+90.87 | L   | Columbus Street | 1               |
| Total:  |     |                 | 2.              |

**TABLE OF 12" X 8" REDUCER**

| Station  | L/R | Description         | Quantity (Each) |
|----------|-----|---------------------|-----------------|
| 87+70.45 | R   | Mount Rushmore Road | 1               |
| Total:   |     |                     | 1.              |

**TABLE OF 4" BEND**

| Station | L/R | Description              | Quantity (Each) |
|---------|-----|--------------------------|-----------------|
| 3+20.00 | L   | Saint James Street (90°) | 1               |
| 3+20.00 | L   | Saint James Street (90°) | 1               |
| 6+70.11 | L   | Fairview Street (90°)    | 1               |
| 6+70.17 | L   | Fairview Street (90°)    | 1               |
| Total:  |     |                          | 4.              |

**TABLE OF 6" BEND**

| Station | L/R | Description                         | Quantity (Each) |
|---------|-----|-------------------------------------|-----------------|
| 0+60.85 | R   | Clark Street East (11.25° Vertical) | 1               |
| 0+87.66 | R   | Clark Street East (90°)             | 1               |
| 0+87.66 | R   | Clark Street East (90°)             | 1               |
| 4+45.70 | R   | Fulton Street (45° Vertical)        | 1               |
| 4+47.34 | L   | South Street 11.25° Vertical)       | 1               |
| 3+99.54 | L   | Quincy Street (45°)                 | 1               |
| 4+06.38 | L   | Quincy Street (45°)                 | 1               |
| 5+55.36 | L   | Quincy Street (45°)                 | 1               |
| 5+72.15 | L   | Quincy Street (45°)                 | 1               |
| 5+78.97 | L   | Quincy Street (45°)                 | 1               |
| Total:  |     |                                     | 10.             |

**TABLE OF 8" BEND**

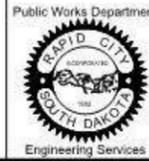
| Station  | L/R | Description                      | Quantity (Each) |
|----------|-----|----------------------------------|-----------------|
| 4+36.52  | L   | Saint James Street (45°)         | 1               |
| 4+50.81  | L   | Saint James Street (45°)         | 1               |
| 62+55.78 | R   | Mount Rushmore Road (90°)        | 1               |
| 62+55.78 | R   | Mount Rushmore Road (90°)        | 1               |
| 3+69.38  | L   | Fairview Street (90°)            | 1               |
| 3+69.38  | L   | Fairview Street (90°)            | 1               |
| 4+74.07  | R   | Fairview Street (90°)            | 1               |
| 67+66.26 | R   | Mount Rushmore Road (90°)        | 1               |
| 3+69.38  | L   | Fairview Street (90°)            | 1               |
| 3+69.38  | L   | Fairview Street (90°)            | 1               |
| 4+54.07  | L   | Clark Street West (45° Vertical) | 1               |
| 4+58.43  | L   | Clark Street West (45° Vertical) | 1               |
| 4+70.98  | L   | Clark Street West (45° Vertical) | 1               |
| 4+70.79  | R   | Fulton Street (45° Vertical)     | 1               |
| 4+50.97  | R   | Fulton Street (11.25° Vertical)  | 1               |
| 4+59.29  | R   | Fulton Street (11.25° Vertical)  | 1               |
| 4+67.87  | L   | South Street (11.25° Vertical)   | 1               |
| 7+21.66  | L   | South Street (90°)               | 1               |
| 7+21.66  | L   | South Street (90°)               | 1               |
| 76+23.26 | L   | Mount Rushmore Road (11¼°)       | 1               |
| 76+35.18 | R   | Mount Rushmore Road (11¼°)       | 1               |
| 87+74.35 | R   | Mount Rushmore Road (45°)        | 1               |
| 87+91.34 | R   | Mount Rushmore Road (45°)        | 1               |
| 4+61.72  | L   | Quincy Street (45° Vertical)     | 1               |
| 4+56.05  | L   | Quincy Street (45° Vertical)     | 1               |
| Total:   |     |                                  | 25.             |



Prepared By:



Prepared For:



Scale:

Designed By: RM  
Drawn By: RM  
Design Date: 03.2015  
Print Date: 12.04.2015  
Internal Job No: 11119.06  
Surveyed By: SDDOT  
Survey Date: 2012  
Project Number: 13-2139, CIP NO.50950, PCN X03L

Revisions:

| Number | Description |
|--------|-------------|
|        |             |
|        |             |
|        |             |

FOR BIDDING PURPOSES ONLY

# MOUNT RUSHMORE ROAD UTILITY RECONSTRUCTION

SECTION G  
ESTIMATE OF  
QUANTITIES AND  
GENERAL NOTES

Sheet No: G12  
of  
G90

### TABLE OF 10" BEND

| Station | L/R | Description           | Quantity (Each) |
|---------|-----|-----------------------|-----------------|
| 3+99.81 | L   | Columbus Street (45°) | 1               |
| 4+07.00 | L   | Columbus Street (45°) | 1               |
| 5+93.53 | L   | Columbus Street (45°) | 1               |
| Total:  |     |                       | 3.              |

### TABLE OF 12" BEND

| Station | L/R | Description                    | Quantity (Each) |
|---------|-----|--------------------------------|-----------------|
| 5+78.08 | L   | Columbus Street (45°)          | 1               |
| 4+54.76 | L   | Columbus Street (45° Vertical) | 1               |
| 4+60.58 | L   | Columbus Street (45° Vertical) | 1               |
| 4+71.74 | L   | Columbus Street (45° Vertical) | 1               |
| 4+75.47 | L   | Columbus Street (45° Vertical) | 1               |
| Total:  |     |                                | 5.              |

### TABLE OF 4" PIPE COUPLING

Quantity provided if connection to existing pipe is different material. If this fitting is not used it will be removed from the contract via change order.

| Station    | L/R | Description | Quantity (Each) |
|------------|-----|-------------|-----------------|
| Additional |     |             | 1               |
| Total:     |     |             | 1.              |

### TABLE OF 4" PIPE TRANSITION COUPLING

| Station | L/R | Description        | Quantity (Each) |
|---------|-----|--------------------|-----------------|
| 3+18.17 | L   | Saint James Street | 1               |
| 6+73.64 | L   | Fairview Street    | 1               |
| 3+21.24 | L   | Clark Street West  | 1               |
| Total:  |     |                    | 3.              |

### TABLE OF 6" PIPE COUPLING

Quantity provided if connection to existing pipe is different material. If this fitting is not used it will be removed from the contract via change order.

| Station    | L/R | Description                        | Quantity (Each) |
|------------|-----|------------------------------------|-----------------|
| 74+26.07   | R   | Mount Rushmore Road (HDC Vertical) | 1               |
| Additional |     |                                    | 1               |
| Total:     |     |                                    | 2.              |

### TABLE OF 6" PIPE TRANSITION COUPLING

| Station | L/R | Description        | Quantity (Each) |
|---------|-----|--------------------|-----------------|
| 5+96.08 | L   | Saint James Street | 1               |
| 0+91.20 | R   | Clark Street East  | 1               |
| 3+96.08 | L   | Quincy Street      | 1               |
| 5+82.42 | L   | Quincy Street      | 1               |
| 7+27.70 | L   | South Street       | 1               |
| 3+62.80 | L   | Fairview Street    | 1               |
| Total:  |     |                    | 6.              |

### TABLE OF 8" PIPE COUPLING

| Station  | L/R | Description         | Quantity (Each) |
|----------|-----|---------------------|-----------------|
| 4+62.91  | L   | South Street        | 1               |
| 5+78.84  | L   | South Street        | 1               |
| 62+51.66 | R   | Mount Rushmore Road | 1               |
| 87+94.15 | R   | Mount Rushmore Road | 1               |
| Total:   |     |                     | 4.              |

### TABLE OF 8" TRANSITION COUPLING

Quantity provided if connection to existing pipe is different material. If this fitting is not used it will be removed from the contract via change order.

| Station    | L/R | Description | Quantity (Each) |
|------------|-----|-------------|-----------------|
| Additional |     |             | 1               |
| Total:     |     |             | 1.              |

### TABLE OF 10" PIPE COUPLING

| Station | L/R | Description     | Quantity (Each) |
|---------|-----|-----------------|-----------------|
| 3+96.61 | L   | Columbus Street | 1               |
| 5+96.85 | L   | Columbus Street | 1               |
| Total:  |     |                 | 2.              |

### TABLE OF 12" PIPE COUPLING

| Station  | L/R | Description | Quantity (Each) |
|----------|-----|-------------|-----------------|
| 81+20.03 | R   | Mainline    | 1               |
| Total:   |     |             | 1.              |

### TABLE OF INSTALL 4" GATE VALVE

| Station | L/R | Description     | Quantity (Each) |
|---------|-----|-----------------|-----------------|
| 6+34.78 | L   | Fairview Street | 1               |
| Total:  |     |                 | 1.              |

### TABLE OF INSTALL 12" GATE VALVE AND BOX

| Station  | L/R | Description         | Quantity (Each) |
|----------|-----|---------------------|-----------------|
| 81+40.00 | R   | Mount Rushmore Road | 1               |
| 84+41.49 | R   | Mount Rushmore Road | 1               |
| 85+40.01 | R   | Mount Rushmore Road | 1               |
| 87+66.68 | R   | Mount Rushmore Road | 1               |
| 4+37.76  | L   | Columbus Street     | 1               |
| 4+96.77  | L   | Columbus Street     | 1               |
| 5+59.53  | L   | Columbus Street     | 1               |
| Total:   |     |                     | 7.              |

### TABLE OF INSTALL 8" GATE VALVE AND BOX

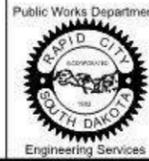
| Station  | L/R | Description         | Quantity (Each) |
|----------|-----|---------------------|-----------------|
| 4+55.13  | L   | Saint James Street  | 1               |
| 5+49.30  | L   | Saint James Street  | 1               |
| 63+10.41 | L   | Mount Rushmore Road | 1               |
| 63+11.06 | R   | Mount Rushmore Road | 1               |
| 63+90.07 | R   | Mount Rushmore Road | 1               |
| 63+90.11 | L   | Mount Rushmore Road | 1               |
| 4+34.91  | L   | Fairview Street     | 1               |
| 4+95.91  | L   | Fairview Street     | 1               |
| 5+20.41  | L   | Fairview Street     | 1               |
| 5+60.12  | L   | Fairview Street     | 1               |
| 66+89.75 | L   | Mount Rushmore Road | 1               |
| 66+89.75 | R   | Mount Rushmore Road | 1               |
| 67+80.41 | R   | Mount Rushmore Road | 1               |
| 67+80.41 | L   | Mount Rushmore Road | 1               |
| 0+73.16  | R   | Clark Street East   | 1               |
| 4+42.28  | L   | Clark Street West   | 1               |
| 70+80.60 | R   | Mount Rushmore Road | 1               |
| 70+80.60 | L   | Mount Rushmore Road | 1               |
| 71+30.57 | R   | Mount Rushmore Road | 1               |
| 71+80.76 | L   | Mount Rushmore Road | 1               |
| 4+96.00  | L   | South Street        | 1               |
| 5+50.20  | L   | South Street        | 1               |
| 74+79.28 | L   | Mount Rushmore Road | 1               |
| 75+79.73 | L   | Mount Rushmore Road | 1               |
| 76+44.04 | R   | Mount Rushmore Road | 1               |
| 77+06.99 | R   | Mount Rushmore Road | 1               |
| 77+39.13 | L   | Mount Rushmore Road | 1               |
| 80+41.00 | R   | Mount Rushmore Road | 1               |
| 80+62.16 | L   | Mount Rushmore Road | 1               |
| 4+49.81  | L   | Quincy Street       | 1               |
| 4+99.99  | L   | Quincy Street       | 1               |
| 5+55.36  | L   | Quincy Street       | 1               |
| Total:   |     |                     | 32.             |



Prepared By:



Prepared For:



Scale:

 Designed By: RM  
 Design Date: 03.2015  
 Internal Job No: 11119.06  
 Surveyed By: SDDOT  
 Project Number: 13-2139, CIP NO.50950, PCN X03L

Drawn By:

 RM  
 Print Date: 12.04.2015

Revisions:

Number: Description:

FOR BIDDING PURPOSES ONLY

 MOUNT RUSHMORE ROAD  
 UTILITY RECONSTRUCTION

Sheet Title:

 SECTION G  
 ESTIMATE OF  
 QUANTITIES AND  
 GENERAL NOTES

Sheet No:

 G13  
 of  
 G90

TABLE OF FIRE HYDRANT W/AUX VALVE &amp; BOX

| Station  | L/R | Description         | Quantity (Each) |
|----------|-----|---------------------|-----------------|
| 4+49.95  | L   | Saint James Street  | 1               |
| 63+21.33 | R   | Mount Rushmore Road | 1               |
| 4+44.15  | L   | Fairview Street     | 1               |
| 67+72.78 | R   | Mount Rushmore Road | 1               |
| 0+60.85  | R   | Clark Street East   | 1               |
| 4+47.58  | L   | Clark Street West   | 1               |
| 4+45.70  | R   | Fulton Street       | 1               |
| 4+47.35  | L   | South Street        | 1               |
| 74+26.06 | R   | Mount Rushmore Road | 1               |
| 77+17.70 | R   | Mount Rushmore Road | 1               |
| 4+45.13  | L   | Columbus Street     | 1               |
| 5+52.56  | L   | Columbus Street     | 1               |
| 4+41.04  | L   | Quincy Street       | 1               |
| 5+55.35  | R   | Quincy Street       | 1               |
| Total:   |     |                     | 14.             |

TABLE OF 8" MJ PIPE PLUG(Water)

| Station  | L/R | Description         | Quantity (Each) |
|----------|-----|---------------------|-----------------|
| 62+55.78 | L   | Mount Rushmore Road | 1               |
| Total:   |     |                     | 1.              |

TABLE OF CONNECT TO EXISTING WATER MAIN

| Station  | L/R | Description         | Quantity (Each) |
|----------|-----|---------------------|-----------------|
| 3+18.17  | L   | Saint James Street  | 1               |
| 5+96.08  | L   | Saint James Street  | 1               |
| 62+51.66 | R   | Mount Rushmore Road | 1               |
| 87+93.00 | R   | Mount Rushmore Road | 1               |
| 3+62.80  | L   | Fairview Street     | 1               |
| 6+73.64  | L   | Fairview Street     | 1               |
| 0+91.20  | R   | Clark Street East   | 1               |
| 3+21.24  | L   | Clark Street West   | 1               |
| 4+40.00  | R   | Fulton Street       | 1               |
| 4+40.00  | L   | South Street        | 1               |
| 7+29.22  | L   | South Street        | 1               |
| 4+12.38  | L   | Columbus Street     | 1               |
| 5+76.08  | L   | Columbus Street     | 1               |
| 3+96.08  | L   | Quincy Street       | 1               |
| 5+82.42  | L   | Quincy Street       | 1               |
| Total:   |     |                     | 15.             |

TABLE OF 8" PIPE CAP(Sewer)

| Station  | L/R | Description         | Quantity (Each) |
|----------|-----|---------------------|-----------------|
| 62+56.00 | L   | Mount Rushmore Road | 1               |
| 3+16.52  | CL  | Saint James Street  | 1               |
| 5+83.81  | CL  | Saint James Street  | 1               |
| 6+50.00  | CL  | Fairview Street     | 1               |
| 6+52.08  | L   | Fairview Street     | 1               |
| 0+78.39  | CL  | Clark Street East   | 1               |
| 4+82.68  | CL  | MH#2 Alley          | 1               |
| 5+03.555 | CL  | MH#2 Alley          | 1               |
| Total:   |     |                     | 8.              |

TABLE OF 48" MANHOLES

| Station  | L/R | Description                    | Quantity (Each) |
|----------|-----|--------------------------------|-----------------|
| 63+50.65 | L   | Mount Rushmore Road            | 1               |
| 3+20.00  | CL  | Saint James Street             | 1               |
| 5+87.06  | R   | Saint James Street             | 1               |
| 62+59.93 | L   | Mount Rushmore Road            | 1               |
| 67+35.66 | L   | Mount Rushmore Road            | 1               |
| 6+62.83  | CL  | Fairview Street                | 1               |
| 65+40.37 | L   | Mount Rushmore Road            | 1               |
| 3+99.78  | R   | Clark Street West(Termination) | 1               |
| 0+74.00  | CL  | Clark Street East              | 1               |
| 3+28.87  | R   | Clark Street West              | 1               |
| 71+05.42 | L   | Mount Rushmore Road            | 1               |
| 78+88.72 | L   | Mount Rushmore Road            | 1               |
| 1+20.00  | CL  | MH#4 Alley                     | 1               |
| 76+89.79 | L   | Mount Rushmore Road            | 1               |
| 75+55.82 | L   | Mount Rushmore Road            | 1               |
| 7+03.28  | CL  | South Street                   | 1               |
| 82+85.86 | L   | Mount Rushmore Road            | 1               |
| 80+71.67 | L   | Mount Rushmore Road            | 1               |
| 4+04.18  | R   | Columbus Street                | 1               |
| 5+92.63  | R   | Columbus Street                | 1               |
| 4+42.04  | CL  | MH#1 Alley                     | 1               |
| 5+57.68  | CL  | MH#1 Alley                     | 1               |
| Total:   |     |                                | 22.             |

TABLE OF 48" DROP MANHOLES

| Station  | L/R | Description                | Quantity (Each) |
|----------|-----|----------------------------|-----------------|
| 5+80.35  | CL  | Saint James Street (Drop)  | 1               |
| 62+53.74 | R   | Mount Rushmore Road (Drop) | 1               |
| 6+62.83  | L   | Fairview Street (Drop)     | 1               |
| 3+27.11  | CL  | MH#10 Alley (Drop)         | 1               |
| 4+52.09  | CL  | MH#10 Alley (Drop)         | 1               |
| 7+03.28  | R   | South Street (Drop)        | 1               |
| Total:   |     |                            | 6.              |

TABLE OF CONNECT TO EXISTING SANITARY SEWER MAIN

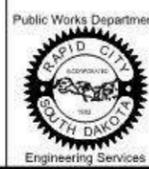
| Station  | L/R | Description         | Quantity (Each) |
|----------|-----|---------------------|-----------------|
| 62+48.59 | R   | Mount Rushmore Road | 1               |
| 5+93.06  | R   | Saint James Street  | 1               |
| 3+18.22  | CL  | MH#10 Alley         | 1               |
| 4+64.19  | CL  | MH#10 Alley         | 1               |
| 6+66.45  | L   | Fairview Street     | 1               |
| 3+24.53  | R   | Clark Street West   | 1               |
| 1+29.80  | CL  | MH#4 Alley          | 1               |
| 7+03.89  | R   | South Street        | 1               |
| 4+82.02  | CL  | MH#2 Alley          | 1               |
| 5+04.19  | CL  | MH#2 Alley          | 1               |
| 4+38.42  | L   | MH#1 Alley          | 1               |
| 5+61.33  | CL  | MH#1 Alley          | 1               |
| Total:   |     |                     | 12.             |



Prepared By:



Prepared For:



Scale:

Designed By: RM  
Design Date: 03.2015  
Internal Job No: 11119.06  
Surveyed By: SDDOT  
Project Number: 13-2139, CIP NO.50950, PCN X03L

Drawn By: RM

Print Date: 12.04.2015

Revisions:

| Number | Description |
|--------|-------------|
|        |             |
|        |             |
|        |             |

FOR BIDDING PURPOSES ONLY

### MOUNT RUSHMORE ROAD UTILITY RECONSTRUCTION

Sheet Title:

SECTION G  
ESTIMATE OF  
QUANTITIES AND  
GENERAL NOTES

Sheet No:

G14  
of  
G90

**TABLE OF 4" SANITARY SEWER CLEANOUT**

| Station  | L/R | Description         | Quantity (Each) |
|----------|-----|---------------------|-----------------|
| 3+35.28  | L   | Saint James Street  | 1               |
| 3+36.28  | R   | Saint James Street  | 1               |
| 3+49.67  | R   | Saint James Street  | 1               |
| 5+90.34  | R   | Saint James Street  | 1               |
| 64+20.76 | L   | Mount Rushmore Road | 1               |
| 64+71.93 | L   | Mount Rushmore Road | 1               |
| 65+40.52 | L   | Mount Rushmore Road | 1               |
| 66+03.93 | L   | Mount Rushmore Road | 1               |
| 68+38.37 | L   | Mount Rushmore Road | 1               |
| 6+17.97  | L   | Fairview Street     | 1               |
| 69+61.43 | R   | Mount Rushmore Road | 1               |
| 69+72.36 | R   | Mount Rushmore Road | 1               |
| 69+92.34 | R   | Mount Rushmore Road | 1               |
| 70+10.67 | L   | Mount Rushmore Road | 1               |
| 70+36.16 | R   | Mount Rushmore Road | 1               |
| 71+77.57 | R   | Mount Rushmore Road | 1               |
| 72+34.28 | R   | Mount Rushmore Road | 1               |
| 72+55.47 | L   | Mount Rushmore Road | 1               |
| 72+73.88 | R   | Mount Rushmore Road | 1               |
| 72+95.70 | R   | Mount Rushmore Road | 1               |
| 73+19.65 | L   | Mount Rushmore Road | 1               |
| 73+21.36 | R   | Mount Rushmore Road | 1               |
| 73+42.77 | R   | Mount Rushmore Road | 1               |
| 3+40.40  | L   | Clark Street West   | 1               |
| 3+42.41  | R   | Clark Street West   | 1               |
| 3+88.44  | R   | Clark Street West   | 1               |
| 0+67.79  | L   | Clark Street East   | 1               |
| 0+70.04  | R   | Clark Street East   | 1               |
| 74+02.55 | R   | Mount Rushmore Road | 1               |
| 74+22.61 | R   | Mount Rushmore Road | 1               |
| 74+75.12 | R   | Mount Rushmore Road | 1               |
| 74+67.73 | L   | Mount Rushmore Road | 1               |
| 75+05.18 | R   | Mount Rushmore Road | 1               |
| 75+51.70 | R   | Mount Rushmore Road | 1               |
| 78+12.36 | L   | Mount Rushmore Road | 1               |
| 78+33.00 | L   | Mount Rushmore Road | 1               |
| 81+87.82 | L   | Mount Rushmore Road | 1               |
| 4+23.04  | R   | Columbus Street     | 1               |
| 4+34.49  | R   | Columbus Street     | 1               |
| 5+84.39  | R   | Columbus Street     | 1               |
| Total:   |     |                     | 40.             |

**TABLE OF 4" SEWER SERVICE**

| Station  | L/R | Description         | Quantity (Ft) |
|----------|-----|---------------------|---------------|
| 3+35.28  | L   | Saint James Street  | 41.8          |
| 3+36.28  | R   | Saint James Street  | 28.3          |
| 3+49.67  | R   | Saint James Street  | 40.0          |
| 5+90.34  | R   | Saint James Street  | 7.6           |
| 64+20.76 | L   | Mount Rushmore Road | 34.0          |
| 64+71.93 | L   | Mount Rushmore Road | 37.0          |
| 65+40.52 | L   | Mount Rushmore Road | 5.2           |
| 66+03.93 | L   | Mount Rushmore Road | 23.1          |
| 68+38.37 | L   | Mount Rushmore Road | 35.0          |
| 6+17.97  | L   | Fairview Street     | 32.7          |
| 69+61.43 | R   | Mount Rushmore Road | 72.9          |
| 69+72.36 | R   | Mount Rushmore Road | 73.5          |
| 69+92.34 | R   | Mount Rushmore Road | 70.4          |
| 70+10.67 | L   | Mount Rushmore Road | 35.9          |
| 70+36.16 | R   | Mount Rushmore Road | 69.5          |
| 71+77.57 | R   | Mount Rushmore Road | 81.8          |
| 72+34.28 | R   | Mount Rushmore Road | 71.2          |
| 72+55.47 | L   | Mount Rushmore Road | 46.2          |
| 72+73.88 | R   | Mount Rushmore Road | 70.9          |
| 72+95.70 | R   | Mount Rushmore Road | 70.1          |
| 73+19.65 | R   | Mount Rushmore Road | 36.8          |
| 73+21.36 | R   | Mount Rushmore Road | 70.8          |
| 73+42.77 | R   | Mount Rushmore Road | 70.0          |
| 3+40.40  | R   | Clark Street West   | 32.2          |
| 3+42.41  | R   | Clark Street West   | 41.8          |
| 3+86.92  | R   | Clark Street West   | 33.2          |
| 0+67.79  | L   | Clark Street East   | 6.9           |
| 0+70.04  | R   | Clark Street East   | 13.4          |
| 74+02.55 | R   | Mount Rushmore Road | 76.1          |
| 74+22.61 | R   | Mount Rushmore Road | 70.9          |
| 74+75.12 | R   | Mount Rushmore Road | 76.4          |
| 74+67.73 | L   | Mount Rushmore Road | 33.1          |
| 75+05.18 | R   | Mount Rushmore Road | 70.9          |
| 75+51.70 | R   | Mount Rushmore Road | 59.4          |
| 78+12.36 | L   | Mount Rushmore Road | 46.0          |
| 78+33.00 | L   | Mount Rushmore Road | 36.6          |
| 81+87.82 | L   | Mount Rushmore Road | 25.5          |
| 3+98.22  | R   | Columbus Street     | 1.2           |
| 4+34.49  | R   | Columbus Street     | 34.1          |
| 5+84.39  | R   | Columbus Street     | 19.6          |
| Total:   |     |                     | 1802.         |

**TABLE OF B66 CONCRETE CURB AND GUTTER**

| Station  | L/R | Description         | Quantity (Ft) |
|----------|-----|---------------------|---------------|
| 62+49.92 | R   | Mount Rushmore Road | 31.0          |
| 3+15.38  | L   | Saint James Street  | 9.5           |
| 5+84.18  | R   | Saint James Street  | 8.0           |
| 3+60.37  | L   | Fairview Street     | 15.1          |
| 6+42.00  | L   | Fairview Street     | 36.3          |
| 0+68.70  | R   | Clark Street        | 29.3          |
| 3+36.35  | R   | Clark Street        | 15.2          |
| 3+51.59  | R   | Clark Street        | 6.7           |
| 7+19.63  | L   | South Street        | 6.0           |
| Total:   |     |                     | 157.1         |

**TABLE OF 4" CONCRETE SIDEWALK**

| Station | to | Station | Description     | Quantity (SqFt) |
|---------|----|---------|-----------------|-----------------|
| 6+10.30 |    | 6+68.66 | Fairview Street | 287.9           |
| Total:  |    |         |                 | 287.9           |

**TABLE OF 8"x6" ECCENTRIC REDUCER (Sewer)**

This reducer shall be incidental to the contract unit price per each for Connect to Existing Sewer Main.

| Station | L/R | Description     | Quantity (Each) |
|---------|-----|-----------------|-----------------|
| 3+98.22 | R   | Columbus Street | 1               |
| Total:  |     |                 | 1.              |



|   |  |  |  |                                  |                                    |   |                               |
|---|--|--|--|----------------------------------|------------------------------------|---|-------------------------------|
|  |  | Prepared By:   | Scale:   | <b>FOR BIDDING PURPOSES ONLY</b> | Revisions:<br>Number: Description: | Sheet Title:<br><b>SECTION G<br/>ESTIMATE OF<br/>QUANTITIES AND<br/>GENERAL NOTES</b> | Sheet No:<br>G15<br>of<br>G90 |
|   |  | Designed By:<br>RM<br>Design Date:<br>03.2015<br>Internal Job No:<br>11119.06<br>Surveyed By:<br>SDDOT<br>Project Number:<br>13-2139, CIP NO.50950, PCN X03L | Drawn By:<br>RM<br>Print Date:<br>12.04.2015<br>Survey Date:<br>2012 |                                  |                                    |   |                               |

**PROJECT SEQUENCING**

All temporary items necessary for the proposed work, including joint restraints that otherwise would not be needed shall be considered incidental to the respective items and no additional payment will be made to the Contractor. Temporary caps, plugs, valves, flushing hydrants, etc. needed to perform the anticipated work shall remain property of the Contractor upon completion of the work.

Mount Rushmore Road will be abbreviated as (MRR).

The sequencing below is based upon the proposed traffic control sequencing for the roadway project NH 0016(79)67 PCN 027C. Refer to the Project Phasing Plan for proposed project phasing locations.

In general the sequence below proposes, due to the gravity systems, the road reconstruction will progress from the northern extents of the project southward and reconstructs the sanitary sewer followed by the water main followed by the storm sewer due to bury depths.

**Phase 1 (West Side MRR from Saint James to Kansas City Street)**

**Sewer Crossing at Sta 86+90:**

1. Refer to roadway plans for head to head traffic in northbound lanes from Kansas City Street to St. James Street, installation of applicable erosion control devices and pavement(s) removals.
2. Complete removals as work progresses and items are taken out of service.
3. Set up bypass and bypass sewer to manhole in middle of MRR.
4. Remove existing manhole, install new manhole and construct sewer main to east extents of phase 1 work limits.
  - a. Test each sewer main pipe joint.
5. Connect temporarily into existing sewer.

**Sewer at Sta 82+85 and MRR:**

1. Refer to roadway plans for head to head traffic in northbound lanes from Kansas City Street to St. James Street, installation of applicable erosion control devices and pavement(s) removals.
2. Complete removals as work progresses and items are taken out of service.
3. Set up bypass and bypass sewer to manhole in middle of MRR.
4. Install manhole and construct sewer main to east and temporarily connect to existing manhole. The existing sewer must remain active until phase 2 so the existing manhole at this location must remain in-place.
5. Connect temporarily into existing sewer or manhole.
6. Construct sewer from 82+85 south on MRR to 65+40.
7. Bypass to middle of MRR and construct and tie-in west alley sewer between St. James and Fairview Streets.
8. Construct sewer from 65+40 south to 63+50.
9. Construct and tie-in St. James Street sewer.
10. Construct sewer from 63+50 to 62+45.
11. Construct sanitary sewer services once sewer main has passed testing. Note that once the sanitary sewer is installed past Columbus Street, installation can progress without connecting into an active sewer until the alley sewer north of Saint James Street.
12. Services on the east side of the roadway will be stubbed out and connected in phase 2.
13. Note that the existing sanitary sewer in the middle of MRR must remain in service until the east side services are connected in Phase 2.
14. Set up traffic control and fix sanitary service at 710 MRR. Record sewer elevation for confirmation of slope and invert for manhole #2 at 82+85.86.

**Water Phase 1:**

1. Complete removals as work progresses and items are taken out of service.
2. Install water service at 86+52 and install to the eastern extents of phase
3. Temporarily connect back to existing service until Phase 2 construction.
4. Install 12" PVC RJ water main in Quincy Street to gate valve in middle of MRR.
  - a. Note that the existing storm sewer will need to be removed for this water main so coordination of the new storm sewer, water main, and conveyance of storm flows at this location is critical.
5. Install 8" PVC RJ water main from 81+00 south to 67+66 to the pressure zone boundary between the Palo Verde Pressure Zone and the Low Level Pressure Zone.
6. Install water main and connect to side streets (Columbus, South, Fulton, Clark, and Fairview) following the limitations of the SDDOT sequencing and extend water in intersecting streets to gate valve in middle of MRR for connection in phase 2.
  - a. Note zone separation at Fairview Street for Palo Verde and Low Zone and the gate valve that will remain closed.
7. Install water main from 67+15 south to 62+50. Note that the gate valve at 66+90 L will need to remain closed until phase 2 and that water for this main will come from the existing main in St. James Street.
8. Install water main in St. James Street and extend water to the eastern extents of the construction.
9. Construct water services once water main has been tested and disinfected and flushed as water main installation operations proceed south.

**Landscaping Phase 1:**

1. Refer to Section H plans for irrigation and plan details.
2. Install conduits, wires, and longitudinal irrigation mains necessary to connect the 3 irrigated islands in this project and future irrigated island that will not be installed at 65+50+/- (south of St. James Street).
3. Excavate and install a portion of the engineered fill for the monument footing to be installed in Phase 2.

**Phase 2 (East Side from Saint James to Kansas City Street)**

**Sewer Phase 2:**

1. Refer to roadway plans for head to head traffic in southbound lanes from Kansas City Street to St. James Street, installation of applicable erosion control devices and pavement(s) removals.
2. Complete removals as work progresses and items are taken out of service.
3. Set up by pass and continue installation of sewer at 86+90 east to project limits.
  - a. Test each sewer main pipe joint.
4. Complete sanitary sewer services on the east side of MRR that were stubbed out in phase 1. This will allow for the abandonment of the existing sewer main in MRR and the removal of the manholes as the new sewer mains are tied in from the east side streets of MRR.
5. Complete intersecting street and alley sewers on the east side of MRR. (Columbus Street, South/Columbus Alley, South Street, Clark Street, Fairview Street, St. James/Fairview Alley, and St. James Street.
6. Complete sanitary sewer services on the east side streets once sewer has been tested.
7. Complete connection from new sewer to existing sewer at 82+85 once existing manhole and sewer main in MRR are not needed to convey sanitary flow.
8. Remove existing manholes and abandon sanitary sewer.
9. Abandon manhole at 73+30 L in place if necessary due to location adjacent to new curb and gutter.

**Water Phase 2:**

1. Complete removals as work progresses and items are taken out of service.
2. Install 12" PVC water main from 88+00 back to 81+00. Complete intersecting street connections at Quincy and Columbus Street.
3. Complete water services once water main is tested and disinfected.
4. Continue water main installation from 81+00 south to 67+66 to the pressure zone boundary between the Palo Verde Pressure Zone and the Low Level Pressure Zone.
5. Install water main and connect to side streets (South, Clark, and Fairview) from gate valves in middle of MRR.
  - a. Note zone separation at Fairview Street for Palo Verde and Low Zone and the gate valve that will remain closed.
6. Install water main from 67+66 south to 62+50 and connect into existing water main.
7. Install water main in St. James Street and connect to the gate valve in the middle of MRR.
8. Construct water services once water main has been tested and disinfected and flushed.

**Landscaping Phase 2:**

1. Complete tap and service for irrigation connection in large median from Fairview to South Street.
2. Excavate and install the remaining engineered fill for the monument footing

**Phase 3 (Center Medians from Saint James to Kansas City Street)**

**Sewer Phase 3:**

1. Continue removal of manholes and abandonment of sanitary sewer main.

**Water Phase 3:**

1. Minor work anticipated to adjust valve boxes etc. for paving operations.

**Landscaping Phase 3:**

1. Excavate and install engineered fill, footing, and monument in median between Fairview and South Street.
2. Set monument in Cathedral/Highland Park Drive median.
3. Coordinate and complete installation of landscaping splash guards, planting, lighting and irrigation within the roadway medians. Refer to Section H in this plan set and Section L of the roadway plans for lighting and power coordination for the monuments and the irrigation controllers.
4. Coordinate final landscape planting and median restoration based on seasonal limits and construction sequence.



Prepared By:



Prepared For:  
Public Works Department  
Engineering Services



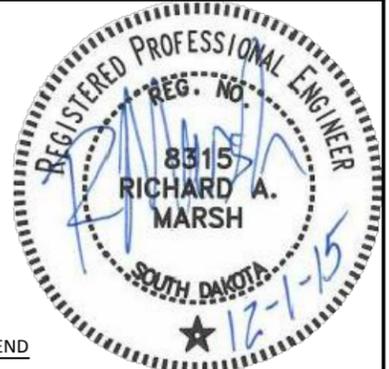
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Design Date: 07.2015  
Internal Job No: 11119.06  
Surveyed By: SDDOT  
Project Number: 13-2139, CIP NO.50950, PCN X03L

Drawn By: MS  
Print Date: 12.01.2015  
Survey Date: 2012

FOR BIDDING PURPOSES ONLY

# MOUNT RUSHMORE ROAD UTILITY RECONSTRUCTION

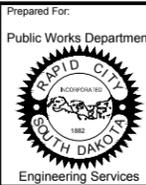
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PROJECT: G16  
PHASING: of  
PLAN: G90



### LEGEND

- PHASE 1-MOUNT RUSHMORE ROAD, SOUTHBOUND
- PHASE 2-MOUNT RUSHMORE ROAD, NORTHBOUND
- PHASE 3-MOUNT RUSHMORE ROAD, MEDIANS/LANDSCAPING

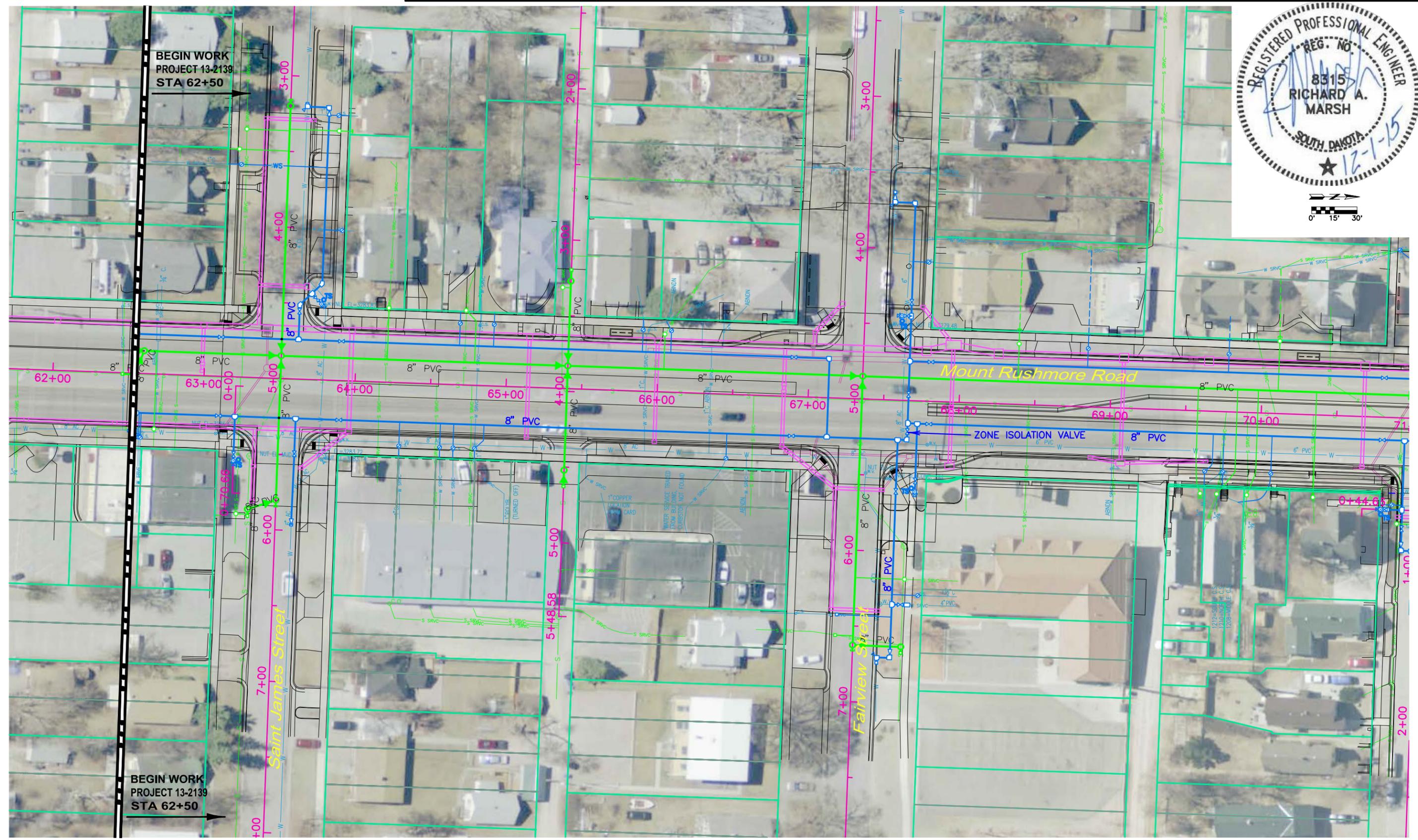
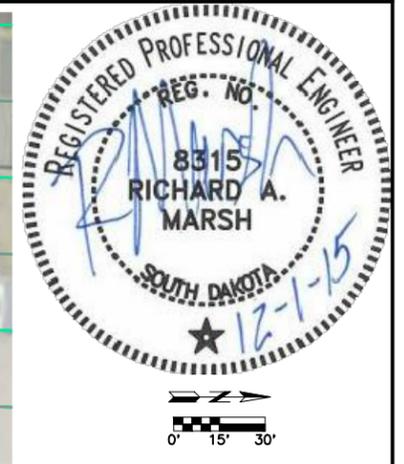




Prepared For: Public Works Department  
 Scale: AS NOTED  
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 Print Date: 12.01.2015  
 Internal Job No: 11119.06  
 Surveyed By: SDDOT  
 Survey Date: 2012  
 Project Number: 13-2139, CIP NO.50950, PCN X03L

**FOR BIDDING PURPOSES ONLY**  
**MOUNT RUSHMORE ROAD**  
**UTILITY RECONSTRUCTION**

Sheet Title: WATER & SEWER  
 LAYOUT  
 SHEET  
 Sheet No: G17  
 of  
 G90



November 19, 2015 9:48:22 a.m.  
 Drawing: PROJECT LAYOUT.DWG (SCHILLE) (PA) PROJECTS & PROPOSALS\11119.00 MT. RUSHMORE RD. UTILITIES RECONSTRUCTION DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS (OTV)

Prepared By:



Prepared For:  
Public Works Department  
RAPID CITY  
SOUTH DAKOTA  
Engineering Services

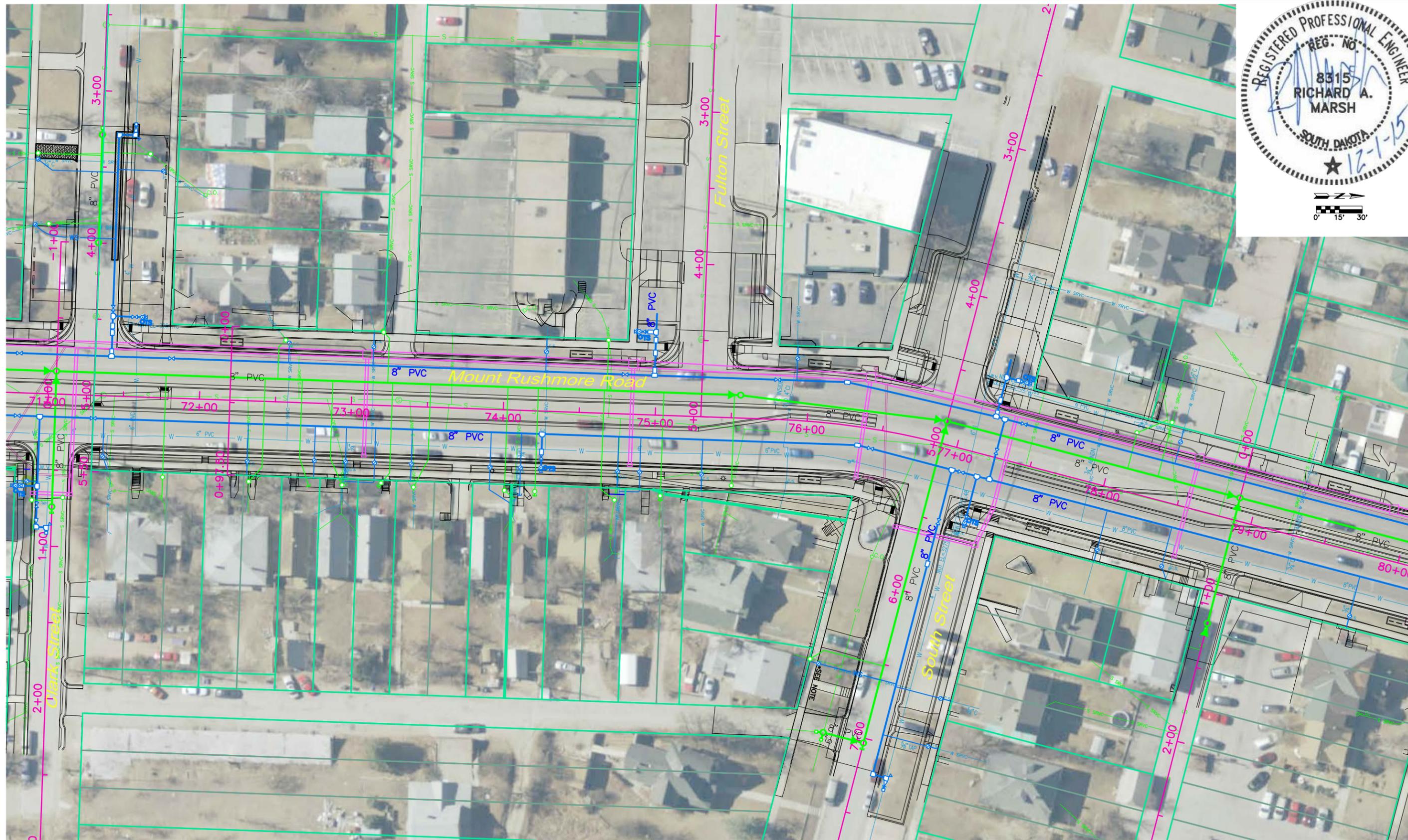
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Design Date: 07.2015  
Internal Job No: 11119.06  
Surveyed By: SDDOT  
Project Number: 13-2139, CIP NO.50950, PCN X03L

Drawn By: MS  
Print Date: 12.01.2015  
Survey Date: 2012

FOR BIDDING PURPOSES ONLY

# MOUNT RUSHMORE ROAD UTILITY RECONSTRUCTION

Sheet Title: WATER & SEWER  
LAYOUT  
SHEET  
Sheet No: G18  
of  
G90



Prepared By:



Prepared For:  
Public Works Department  
Engineering Services



Scale: AS NOTED  
Designed By: RM  
Design Date: 07.2015  
Internal Job No: 11119.06  
Surveyed By: SDDOT  
Project Number: 13-2139, CIP NO.50950, PCN X03L

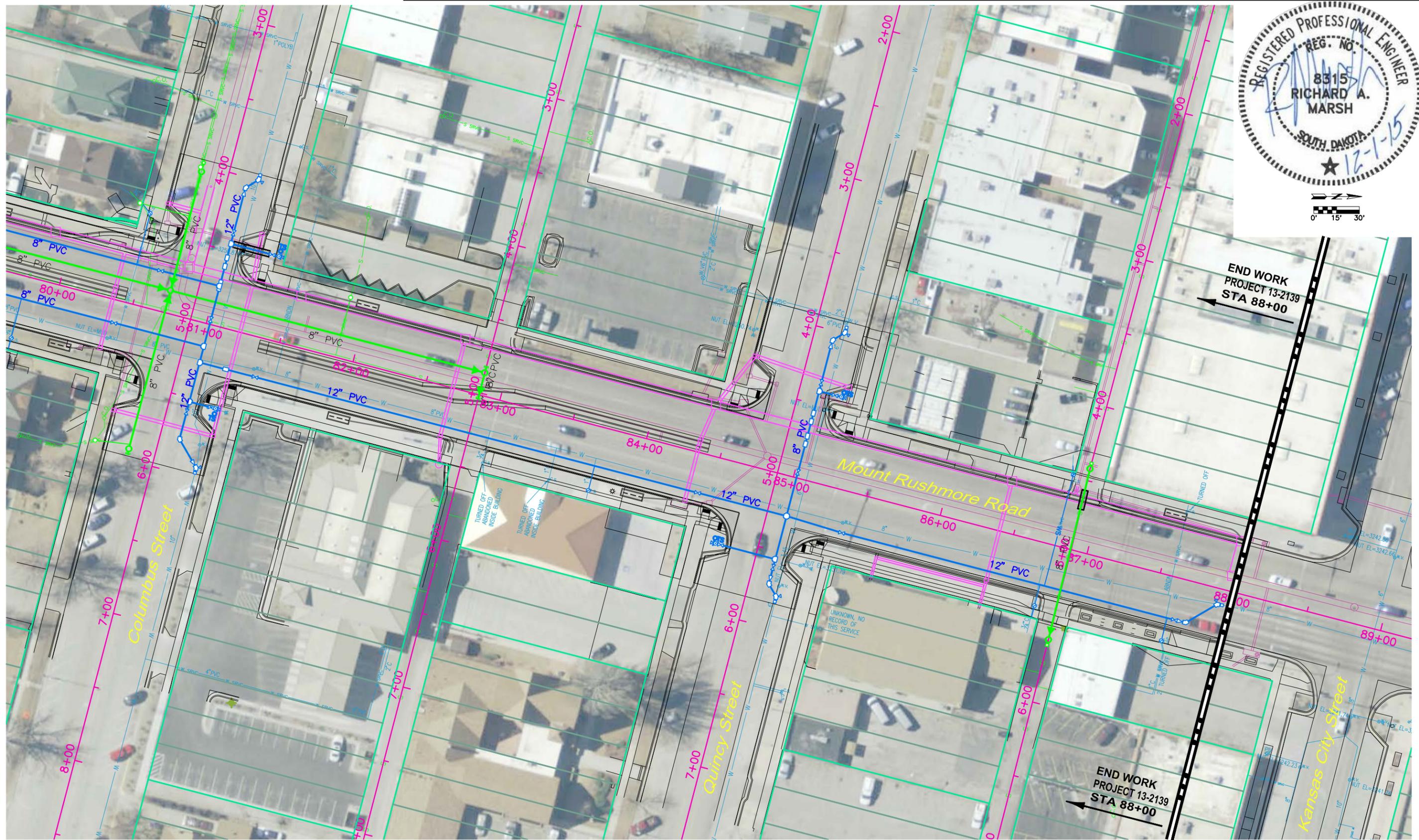
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Print Date: 12.01.2015  
Survey Date: 2012

FOR BIDDING PURPOSES ONLY

# MOUNT RUSHMORE ROAD UTILITY RECONSTRUCTION

Sheet Title:  
WATER & SEWER  
LAYOUT  
SHEET

Sheet No:  
G19  
of  
G90



November 19, 2015 9:48:22 a.m.  
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# MOUNT RUSHMORE ROAD UTILITY RECONSTRUCTION

Prepared By: **AES<sub>2</sub>**

Public Works Department  
 Engineering Services

Scale: AS NOTED  
 Designed By: RM  
 Drawn By: MS  
 Design Date: 07.2015  
 Print Date: 12.01.2015  
 Internal Job No: 11119.06  
 Surveyed By: SDDOT  
 Survey Date: 2012  
 Project Number: 13-2139, CIP NO.50950, PCN X03L

Revisions: Number: Description:

**LEGEND**

- PROPOSED UTILITY REMOVAL AND/OR SALVAGE
- PROPOSED UTILITY REMOVAL AND DISPOSAL
- PROPOSED UTILITY ABANDONMENT IN-PLACE
- PROPOSED CURB AND GUTTER REMOVAL
- PROPOSED SDDOT WORK LIMITS
- PROPOSED ASPHALT CONCRETE REMOVAL
- PROPOSED SIDEWALK REMOVAL

**NOTE:**  
 REFER TO PROJECT NH 0016(79)67 PCN 027C FOR EXISTING STORM SEWER REMOVAL

**MOUNT RUSHMORE ROAD SURFACING REMOVALS:**

3+15.38-16.41'L to 3+24.85-16.44'L  
 REMOVE CONCRETE CURB & GUTTER, 9.5 LF

5+83.06-16.67'R & 33.89'R to 5+92.18-16.36'R & 33.98'R  
 REMOVE ASPHALT CONCRETE PAVEMENT, 17.7 SY

5+84.18-16.36'R to 5+92.18-16.36'R  
 REMOVE CONCRETE CURB & GUTTER, 8 LF

5+84.18-L&R to 6+00.78-L&R  
 REMOVE ASPHALT CONCRETE PAVEMENT, 50.9 SY

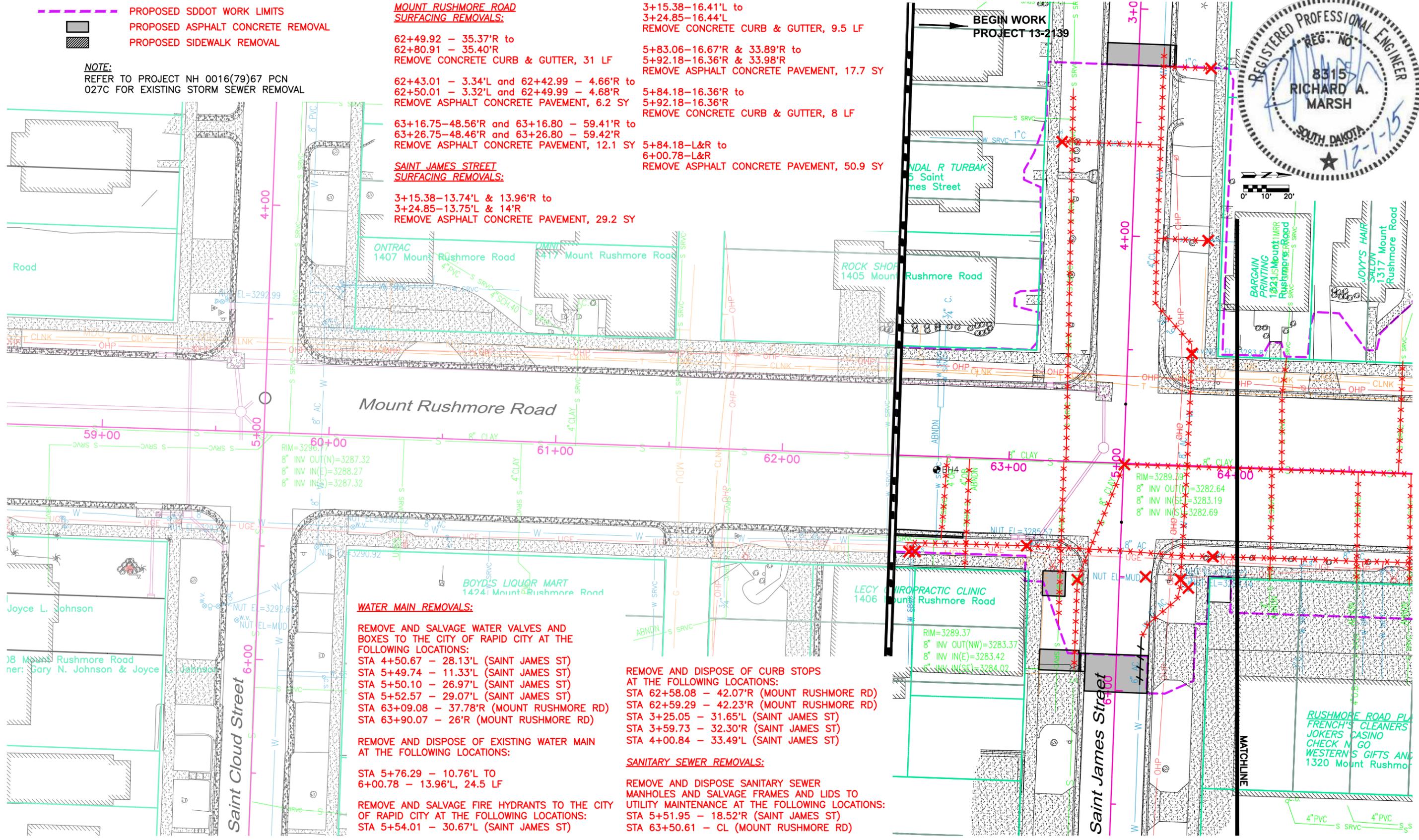
62+49.92 - 35.37'R to 62+80.91 - 35.40'R  
 REMOVE CONCRETE CURB & GUTTER, 31 LF

62+43.01 - 3.34'L and 62+42.99 - 4.66'R to 62+50.01 - 3.32'L and 62+49.99 - 4.68'R  
 REMOVE ASPHALT CONCRETE PAVEMENT, 6.2 SY

63+16.75-48.56'R and 63+16.80 - 59.41'R to 63+26.75-48.46'R and 63+26.80 - 59.42'R  
 REMOVE ASPHALT CONCRETE PAVEMENT, 12.1 SY

**SAINT JAMES STREET SURFACING REMOVALS:**

3+15.38-13.74'L & 13.96'R to 3+24.85-13.75'L & 14'R  
 REMOVE ASPHALT CONCRETE PAVEMENT, 29.2 SY



**REGISTERED PROFESSIONAL ENGINEER**  
 REG. NO. 8315  
 RICHARD A. MARSH  
 SOUTH DAKOTA  
 12-1-15

0' 10' 20'

**WATER MAIN REMOVALS:**

REMOVE AND SALVAGE WATER VALVES AND BOXES TO THE CITY OF RAPID CITY AT THE FOLLOWING LOCATIONS:

- STA 4+50.67 - 28.13'L (SAINT JAMES ST)
- STA 5+49.74 - 11.33'L (SAINT JAMES ST)
- STA 5+50.10 - 26.97'L (SAINT JAMES ST)
- STA 5+52.57 - 29.07'L (SAINT JAMES ST)
- STA 63+09.08 - 37.78'R (MOUNT RUSHMORE RD)
- STA 63+90.07 - 26'R (MOUNT RUSHMORE RD)

REMOVE AND DISPOSE OF EXISTING WATER MAIN AT THE FOLLOWING LOCATIONS:

- STA 5+76.29 - 10.76'L TO 6+00.78 - 13.96'L, 24.5 LF

REMOVE AND SALVAGE FIRE HYDRANTS TO THE CITY OF RAPID CITY AT THE FOLLOWING LOCATIONS:

- STA 5+54.01 - 30.67'L (SAINT JAMES ST)

REMOVE AND DISPOSE OF CURB STOPS AT THE FOLLOWING LOCATIONS:

- STA 62+58.08 - 42.07'R (MOUNT RUSHMORE RD)
- STA 62+59.29 - 42.23'R (MOUNT RUSHMORE RD)
- STA 3+25.05 - 31.65'L (SAINT JAMES ST)
- STA 3+59.73 - 32.30'R (SAINT JAMES ST)
- STA 4+00.84 - 33.49'L (SAINT JAMES ST)

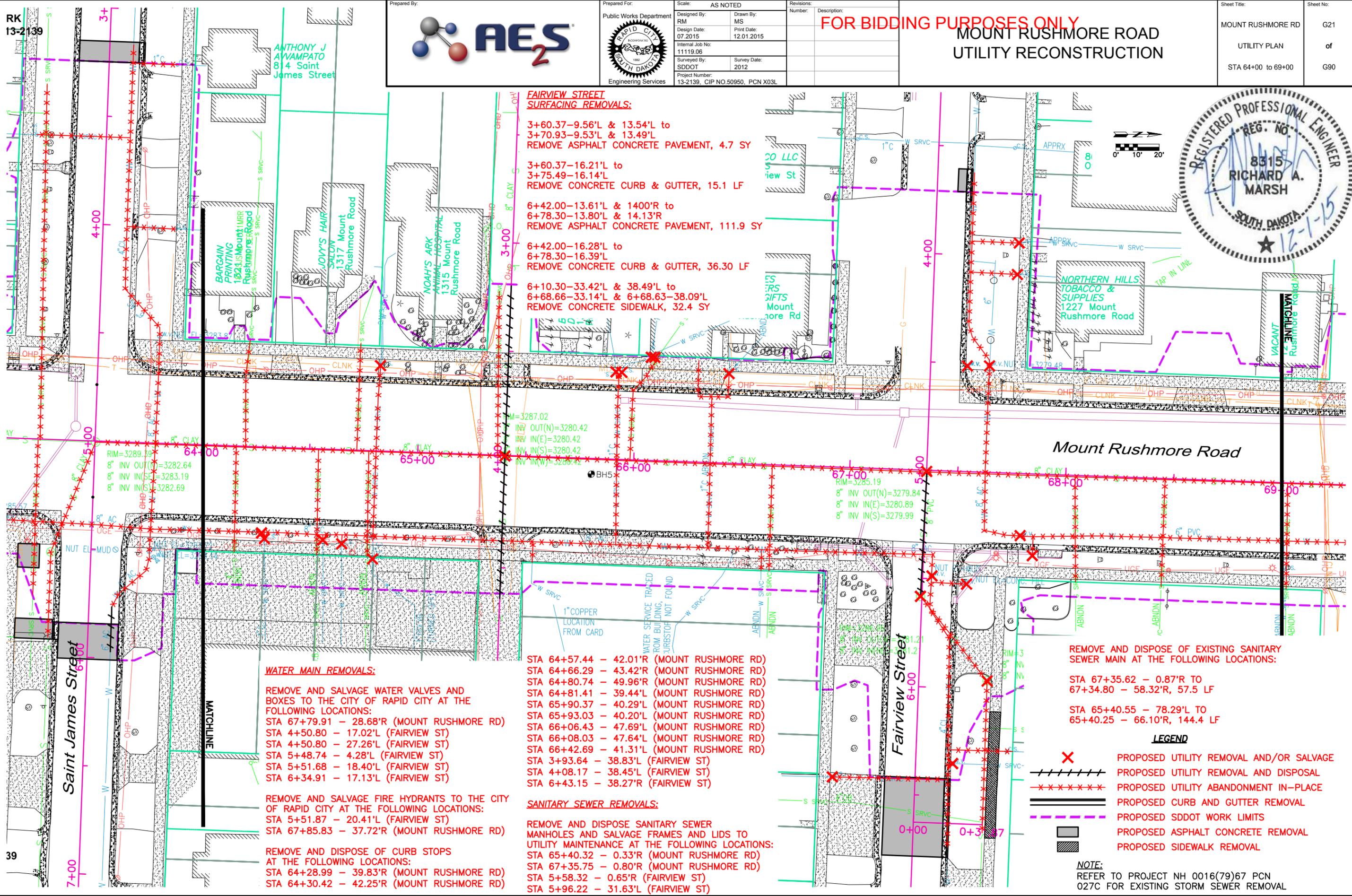
**SANITARY SEWER REMOVALS:**

REMOVE AND DISPOSE SANITARY SEWER MANHOLES AND SALVAGE FRAMES AND LIDS TO UTILITY MAINTENANCE AT THE FOLLOWING LOCATIONS:

- STA 5+51.95 - 18.52'R (SAINT JAMES ST)
- STA 63+50.61 - CL (MOUNT RUSHMORE RD)

November 19, 2015 9:44:19 a.m. MT. RUSHMORE RD. UTILITIES RECONSTRUCTION DRAWINGS SHEETS PHASE 3 - SAINT JAMES TO KANSAS CITY  
 Drawing: DEMOLITION AND REMOVALS.DWG (SCHLLE) (P:\PROJECTS & PROPOSALS\11118.00 - UTILITIES RECONSTRUCTION DRAWINGS SHEETS PHASE 3 - SAINT JAMES TO KANSAS CITY)

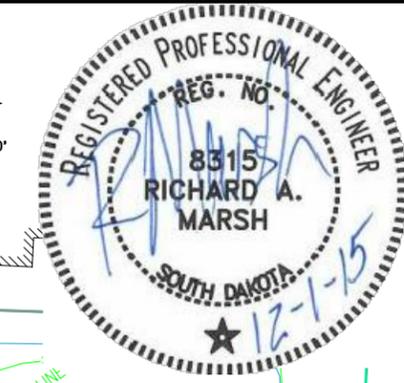
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Prepared By: **AES**  
 Prepared For: Public Works Department  
 Scale: AS NOTED  
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 Designed By: RM  
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 Survey Date: 2012  
 Project Number: 13-2139, CIP NO.50950, PCN X03L

**FOR BIDDING PURPOSES ONLY**  
**MOUNT RUSHMORE ROAD**  
**UTILITY RECONSTRUCTION**

|              |                    |           |     |
|--------------|--------------------|-----------|-----|
| Sheet Title: | MOUNT RUSHMORE RD  | Sheet No: | G21 |
|              | UTILITY PLAN       | of        |     |
|              | STA 64+00 to 69+00 | G90       |     |



- FAIRVIEW STREET SURFACING REMOVALS:**
- 3+60.37-9.56'L & 13.54'L to 3+70.93-9.53'L & 13.49'L  
REMOVE ASPHALT CONCRETE PAVEMENT, 4.7 SY
  - 3+60.37-16.21'L to 3+75.49-16.14'L  
REMOVE CONCRETE CURB & GUTTER, 15.1 LF
  - 6+42.00-13.61'L & 1400'R to 6+78.30-13.80'L & 14.13'R  
REMOVE ASPHALT CONCRETE PAVEMENT, 111.9 SY
  - 6+42.00-16.28'L to 6+78.30-16.39'L  
REMOVE CONCRETE CURB & GUTTER, 36.30 LF
  - 6+10.30-33.42'L & 38.49'L to 6+68.66-33.14'L & 6+68.63-38.09'L  
REMOVE CONCRETE SIDEWALK, 32.4 SY

- WATER MAIN REMOVALS:**
- REMOVE AND SALVAGE WATER VALVES AND BOXES TO THE CITY OF RAPID CITY AT THE FOLLOWING LOCATIONS:
- STA 67+79.91 - 28.68'R (MOUNT RUSHMORE RD)
  - STA 4+50.80 - 17.02'L (FAIRVIEW ST)
  - STA 4+50.80 - 27.26'L (FAIRVIEW ST)
  - STA 5+48.74 - 4.28'L (FAIRVIEW ST)
  - STA 5+51.68 - 18.40'L (FAIRVIEW ST)
  - STA 6+34.91 - 17.13'L (FAIRVIEW ST)
- REMOVE AND SALVAGE FIRE HYDRANTS TO THE CITY OF RAPID CITY AT THE FOLLOWING LOCATIONS:
- STA 5+51.87 - 20.41'L (FAIRVIEW ST)
  - STA 67+85.83 - 37.72'R (MOUNT RUSHMORE RD)
- REMOVE AND DISPOSE OF CURB STOPS AT THE FOLLOWING LOCATIONS:
- STA 64+28.99 - 39.83'R (MOUNT RUSHMORE RD)
  - STA 64+30.42 - 42.25'R (MOUNT RUSHMORE RD)

- STA 64+57.44 - 42.01'R (MOUNT RUSHMORE RD)
- STA 64+66.29 - 43.42'R (MOUNT RUSHMORE RD)
- STA 64+80.74 - 49.96'R (MOUNT RUSHMORE RD)
- STA 64+81.41 - 39.44'L (MOUNT RUSHMORE RD)
- STA 65+90.37 - 40.29'L (MOUNT RUSHMORE RD)
- STA 65+93.03 - 40.20'L (MOUNT RUSHMORE RD)
- STA 66+06.43 - 47.69'L (MOUNT RUSHMORE RD)
- STA 66+08.03 - 47.64'L (MOUNT RUSHMORE RD)
- STA 66+42.69 - 41.31'L (MOUNT RUSHMORE RD)
- STA 3+93.64 - 38.83'L (FAIRVIEW ST)
- STA 4+08.17 - 38.45'L (FAIRVIEW ST)
- STA 6+43.15 - 38.27'R (FAIRVIEW ST)
- SANITARY SEWER REMOVALS:**
- REMOVE AND DISPOSE SANITARY SEWER MANHOLES AND SALVAGE FRAMES AND LIDS TO UTILITY MAINTENANCE AT THE FOLLOWING LOCATIONS:
- STA 65+40.32 - 0.33'R (MOUNT RUSHMORE RD)
  - STA 67+35.75 - 0.80'R (MOUNT RUSHMORE RD)
  - STA 5+58.32 - 0.65'R (FAIRVIEW ST)
  - STA 5+96.22 - 31.63'L (FAIRVIEW ST)

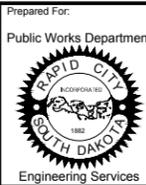
- REMOVE AND DISPOSE OF EXISTING SANITARY SEWER MAIN AT THE FOLLOWING LOCATIONS:
- STA 67+35.62 - 0.87'R TO 67+34.80 - 58.32'R, 57.5 LF
  - STA 65+40.55 - 78.29'L TO 65+40.25 - 66.10'R, 144.4 LF

**LEGEND**

- X PROPOSED UTILITY REMOVAL AND/OR SALVAGE
- PROPOSED UTILITY REMOVAL AND DISPOSAL
- PROPOSED UTILITY ABANDONMENT IN-PLACE
- ===== PROPOSED CURB AND GUTTER REMOVAL
- PROPOSED SDDOT WORK LIMITS
- ===== PROPOSED ASPHALT CONCRETE REMOVAL
- ===== PROPOSED SIDEWALK REMOVAL

**NOTE:**  
 REFER TO PROJECT NH 0016(79)67 PCN 027C FOR EXISTING STORM SEWER REMOVAL

Prepared By:



Public Works Department  
 Scale: AS NOTED  
 Designed By: RM  
 Drawn By: MS  
 Design Date: 07.2015  
 Print Date: 12.01.2015  
 Internal Job No: 11119.06  
 Surveyed By: SDDOT  
 Survey Date: 2012  
 Project Number: 13-2139, CIP NO.50950, PCN X03L

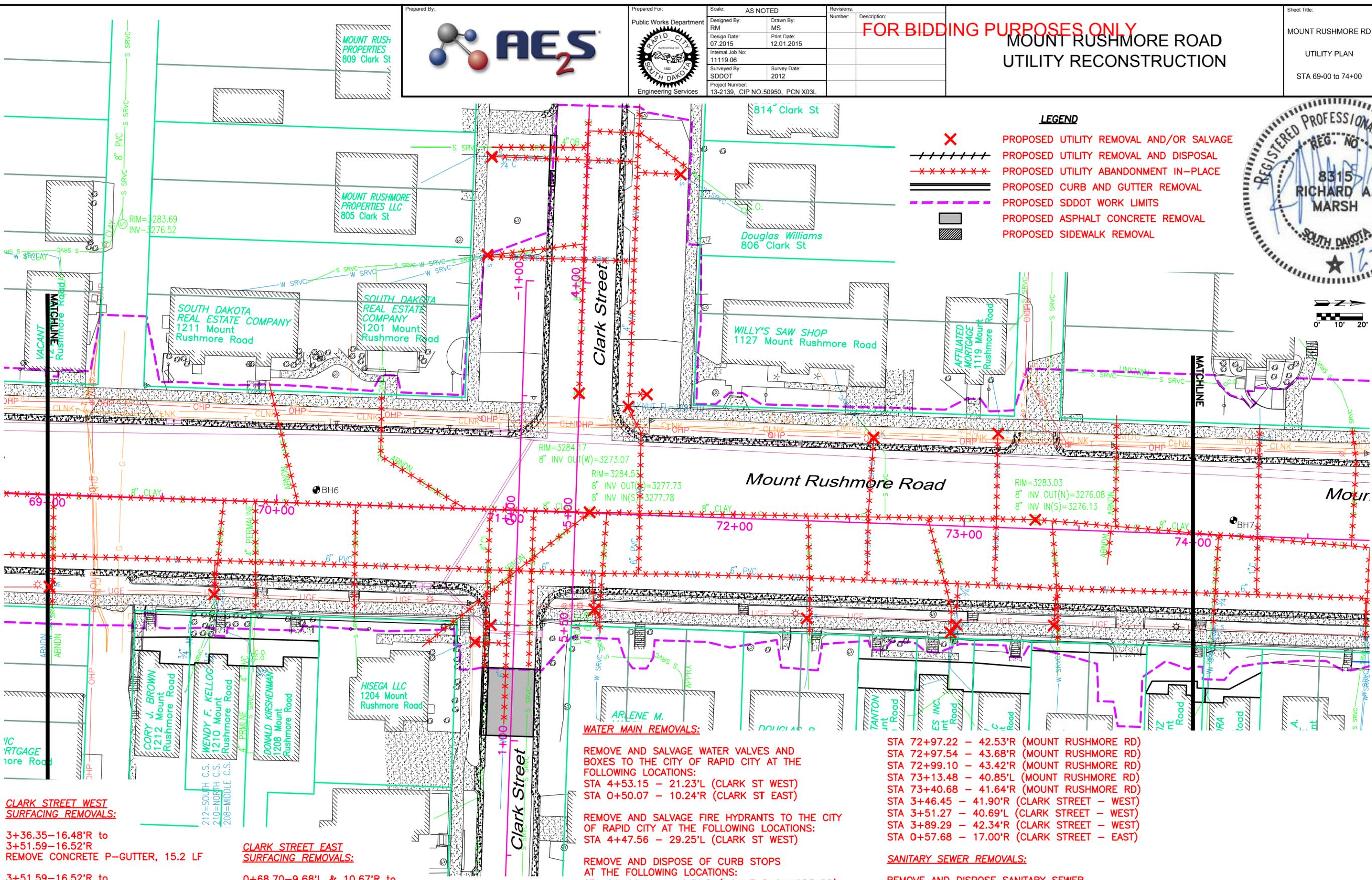
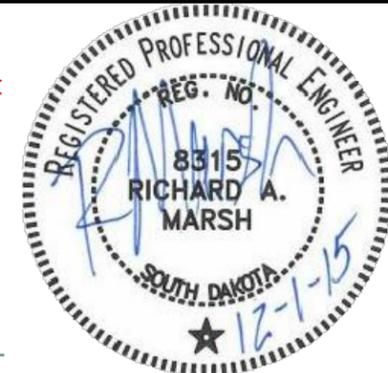
FOR BIDDING PURPOSES ONLY

# MOUNT RUSHMORE ROAD UTILITY RECONSTRUCTION

Sheet Title: MOUNT RUSHMORE RD  
 G22  
 of  
 G90  
 Utility Plan  
 STA 69-00 to 74+00

**LEGEND**

- PROPOSED UTILITY REMOVAL AND/OR SALVAGE
- PROPOSED UTILITY REMOVAL AND DISPOSAL
- PROPOSED UTILITY ABANDONMENT IN-PLACE
- PROPOSED CURB AND GUTTER REMOVAL
- PROPOSED SDDOT WORK LIMITS
- PROPOSED ASPHALT CONCRETE REMOVAL
- PROPOSED SIDEWALK REMOVAL



**CLARK STREET WEST SURFACING REMOVALS:**  
 3+36.35-16.48'R to 3+51.59-16.52'R  
 REMOVE CONCRETE P-GUTTER, 15.2 LF

3+51.59-16.52'R to 3+58.27-16.60'R  
 REMOVE CONCRETE CURB & GUTTER, 6.7 LF

3+36.35-16.48'R to 3+47.12-16.54'R  
 REMOVE GRAVEL SURFACING, 28.6 SY

**CLARK STREET EAST SURFACING REMOVALS:**  
 0+68.70-9.68'L & 10.67'R to 0+98.00-9.91'L & 10.73'R  
 REMOVE ASPHALT CONCRETE PAVEMENT, 66.7 SY

0+68.70-13.34'R to 0+98.01-13.34'R  
 REMOVE CONCRETE CURB & GUTTER, 29.3 LF

**WATER MAIN REMOVALS:**

REMOVE AND SALVAGE WATER VALVES AND BOXES TO THE CITY OF RAPID CITY AT THE FOLLOWING LOCATIONS:  
 STA 4+53.15 - 21.23'L (CLARK ST WEST)  
 STA 0+50.07 - 10.24'R (CLARK ST EAST)

REMOVE AND SALVAGE FIRE HYDRANTS TO THE CITY OF RAPID CITY AT THE FOLLOWING LOCATIONS:  
 STA 4+47.56 - 29.25'L (CLARK ST WEST)

REMOVE AND DISPOSE OF CURB STOPS AT THE FOLLOWING LOCATIONS:  
 STA 69+02.19 - 40.30'R (MOUNT RUSHMORE RD)  
 STA 69+73.99 - 39.30'R (3X) (MOUNT RUSHMORE RD)  
 STA 71+40.24 - 41.75'R (MOUNT RUSHMORE RD)  
 STA 72+32.70 - 42.34'R (MOUNT RUSHMORE RD)  
 STA 72+59.29 - 37.05'L (MOUNT RUSHMORE RD)  
 STA 72+95.72 - 46.30'R (MOUNT RUSHMORE RD)

STA 72+97.22 - 42.53'R (MOUNT RUSHMORE RD)  
 STA 72+97.54 - 43.68'R (MOUNT RUSHMORE RD)  
 STA 72+99.10 - 43.42'R (MOUNT RUSHMORE RD)  
 STA 73+13.48 - 40.85'L (MOUNT RUSHMORE RD)  
 STA 73+40.68 - 41.64'R (MOUNT RUSHMORE RD)  
 STA 3+46.45 - 41.90'R (CLARK STREET - WEST)  
 STA 3+51.27 - 40.69'L (CLARK STREET - WEST)  
 STA 3+89.29 - 42.34'R (CLARK STREET - WEST)  
 STA 0+57.68 - 17.00'R (CLARK STREET - EAST)

**SANITARY SEWER REMOVALS:**

REMOVE AND DISPOSE SANITARY SEWER MANHOLES AND SALVAGE FRAMES AND LIDS TO UTILITY MAINTENANCE AT THE FOLLOWING LOCATIONS:  
 STA 4+48.08 - 0.20'R (CLARK STREET WEST)  
 STA 71+36.66 - 0.39'L (MOUNT RUSHMORE RD)  
 STA 73+31.02 - 3.98'L (MOUNT RUSHMORE RD)

**NOTE:**  
 REFER TO PROJECT NH 0016(79)67 PCN 027C FOR EXISTING STORM SEWER REMOVAL

November 19, 2015 9:44:19 a.m. Drawing: DEMOLITION AND REMOVALS.DWG (SCHLLE) (P:\PROJECTS & PROPOSALS\11118.00 MT. RUSHMORE RD. UTILITIES RECONSTRUCTION DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY)

**LEGEND**

-  PROPOSED UTILITY REMOVAL AND/OR SALVAGE
-  PROPOSED UTILITY REMOVAL AND DISPOSAL
-  PROPOSED UTILITY ABANDONMENT IN-PLACE
-  PROPOSED CURB AND GUTTER REMOVAL
-  PROPOSED SDDOT WORK LIMITS
-  PROPOSED ASPHALT CONCRETE REMOVAL
-  PROPOSED SIDEWALK REMOVAL

**NOTE:**  
REFER TO PROJECT NH 0016(79)67 PCN  
027C FOR EXISTING STORM SEWER REMOVAL

Prepared By:  AES 2

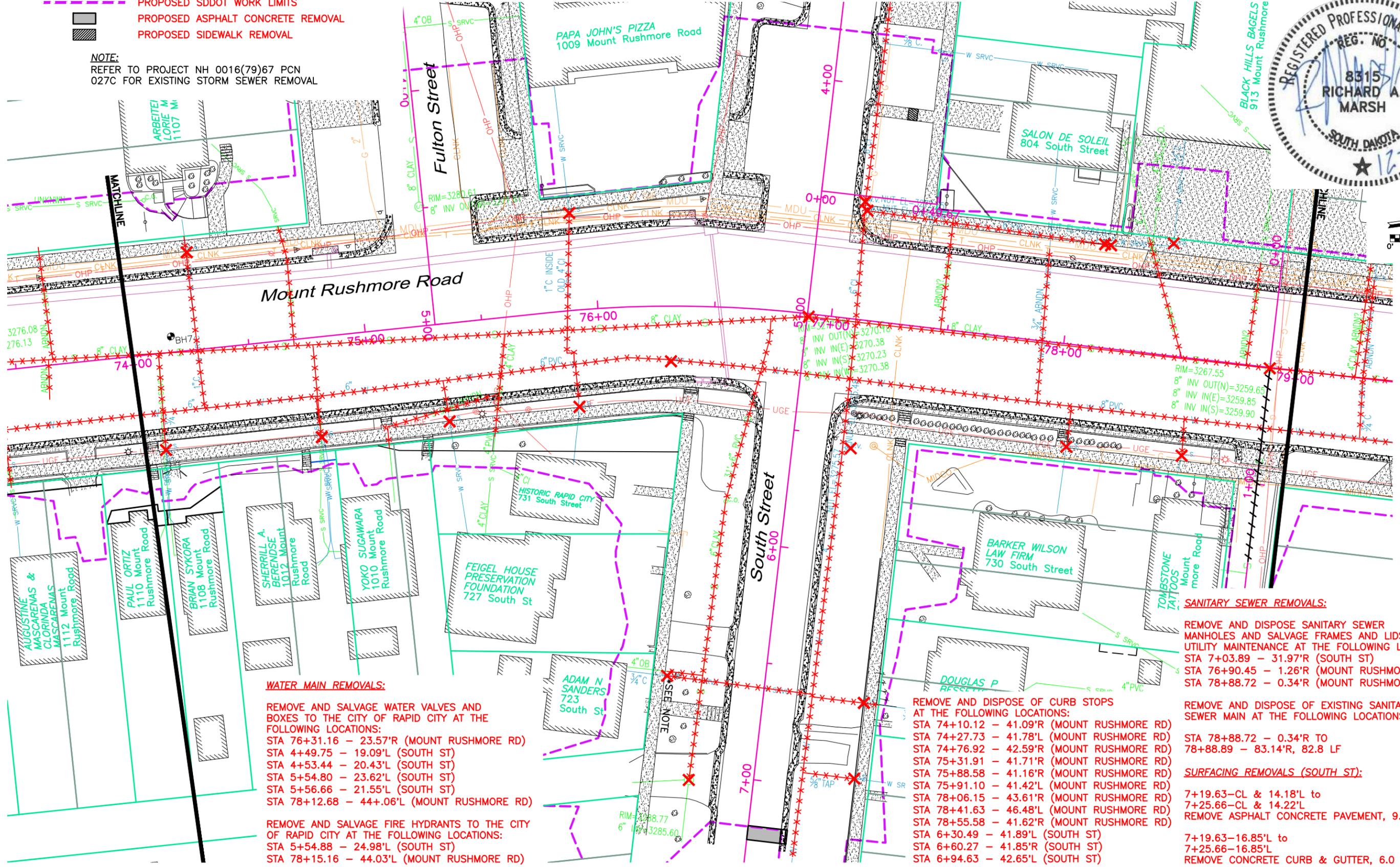
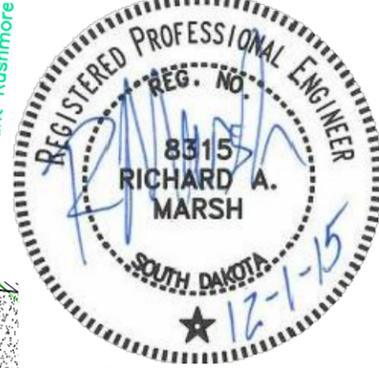
Public Works Department  
RAPID CITY  
SOUTH DAKOTA  
Engineering Services

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| Scale:            | AS NOTED                        |
| Designed By:      | RM                              |
| Drawn By:         | MS                              |
| Design Date:      | 07.2015                         |
| Print Date:       | 12.01.2015                      |
| Internal Job No.: | 11119.06                        |
| Surveyed By:      | SDDOT                           |
| Survey Date:      | 2012                            |
| Project Number:   | 13-2139, CIP NO.50950, PCN X03L |

**FOR BIDDING PURPOSES ONLY**

# MOUNT RUSHMORE ROAD UTILITY RECONSTRUCTION

|              |                    |            |     |
|--------------|--------------------|------------|-----|
| Sheet Title: | MOUNT RUSHMORE RD  | Sheet No.: | G23 |
|              | UTILITY PLAN       |            | of  |
|              | STA 74+00 to 79+00 |            | G90 |



**WATER MAIN REMOVALS:**

- REMOVE AND SALVAGE WATER VALVES AND BOXES TO THE CITY OF RAPID CITY AT THE FOLLOWING LOCATIONS:
- STA 76+31.16 - 23.57'R (MOUNT RUSHMORE RD)
  - STA 4+49.75 - 19.09'L (SOUTH ST)
  - STA 4+53.44 - 20.43'L (SOUTH ST)
  - STA 5+54.80 - 23.62'L (SOUTH ST)
  - STA 5+56.66 - 21.55'L (SOUTH ST)
  - STA 78+12.68 - 44+.06'L (MOUNT RUSHMORE RD)
- REMOVE AND SALVAGE FIRE HYDRANTS TO THE CITY OF RAPID CITY AT THE FOLLOWING LOCATIONS:
- STA 5+54.88 - 24.98'L (SOUTH ST)
  - STA 78+15.16 - 44.03'L (MOUNT RUSHMORE RD)

- REMOVE AND DISPOSE OF CURB STOPS AT THE FOLLOWING LOCATIONS:
- STA 74+10.12 - 41.09'R (MOUNT RUSHMORE RD)
  - STA 74+27.73 - 41.78'L (MOUNT RUSHMORE RD)
  - STA 74+76.92 - 42.59'R (MOUNT RUSHMORE RD)
  - STA 75+31.91 - 41.71'R (MOUNT RUSHMORE RD)
  - STA 75+88.58 - 41.16'R (MOUNT RUSHMORE RD)
  - STA 75+91.10 - 41.42'L (MOUNT RUSHMORE RD)
  - STA 78+06.15 - 43.61'R (MOUNT RUSHMORE RD)
  - STA 78+41.63 - 46.48'L (MOUNT RUSHMORE RD)
  - STA 78+55.58 - 41.62'R (MOUNT RUSHMORE RD)
  - STA 6+30.49 - 41.89'L (SOUTH ST)
  - STA 6+60.27 - 41.85'R (SOUTH ST)
  - STA 6+94.63 - 42.65'L (SOUTH ST)

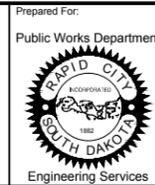
**SANITARY SEWER REMOVALS:**

- REMOVE AND DISPOSE SANITARY SEWER MANHOLES AND SALVAGE FRAMES AND LIDS TO UTILITY MAINTENANCE AT THE FOLLOWING LOCATIONS:
- STA 74+03.89 - 31.97'R (SOUTH ST)
  - STA 76+90.45 - 1.26'R (MOUNT RUSHMORE RD)
  - STA 78+88.72 - 0.34'R (MOUNT RUSHMORE RD)
- REMOVE AND DISPOSE OF EXISTING SANITARY SEWER MAIN AT THE FOLLOWING LOCATIONS:
- STA 78+88.72 - 0.34'R TO 78+88.89 - 83.14'R, 82.8 LF

**SURFACING REMOVALS (SOUTH ST):**

- 7+19.63-CL & 14.18'L to 7+25.66-CL & 14.22'L  
REMOVE ASPHALT CONCRETE PAVEMENT, 9.5 SY
- 7+19.63-16.85'L to 7+25.66-16.85'L  
REMOVE CONCRETE CURB & GUTTER, 6.0 LF

November 19, 2015 9:44:19 a.m. MT. RUSHMORE RD. UTILITIES RECONSTRUCTION DRAWINGS SHEETS PHASE 3 - SAINT JAMES TO KANSAS CITY  
Drawing: DEMOLITION AND REMOVALS.DWG (SCHILLE) (PA) PROJECTS & PROPOSALS\11118.00

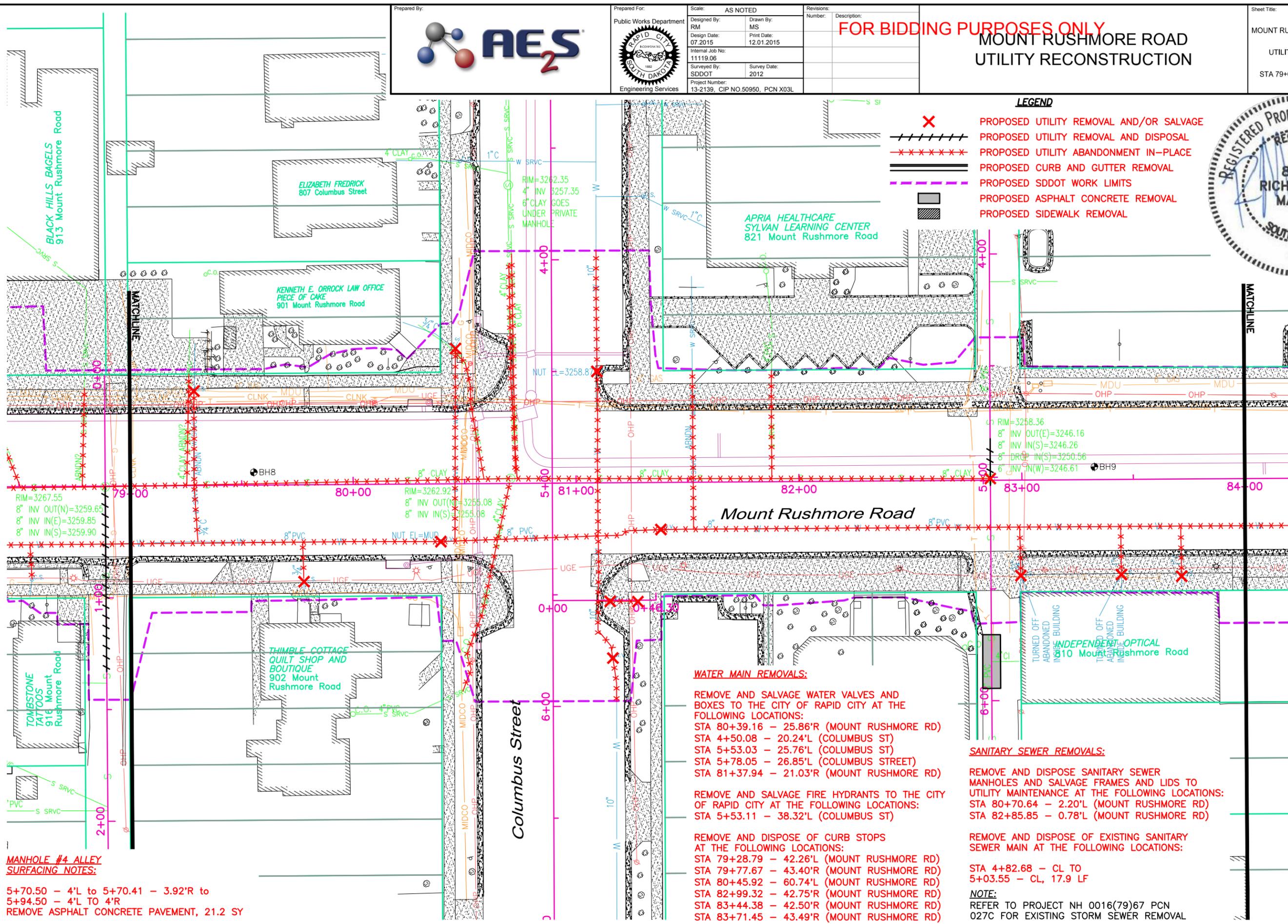
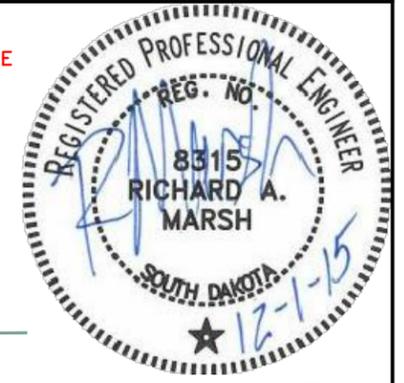


Prepared For: Public Works Department  
 Scale: AS NOTED  
 Designed By: RM  
 Drawn By: MS  
 Design Date: 07.2015  
 Print Date: 12.01.2015  
 Internal Job No: 11119.06  
 Surveyed By: SDDOT  
 Survey Date: 2012  
 Project Number: 13-2139, CIP NO.50950, PCN X03L

**FOR BIDDING PURPOSES ONLY**  
**MOUNT RUSHMORE ROAD**  
**UTILITY RECONSTRUCTION**

Sheet Title: MOUNT RUSHMORE RD  
 Utility Plan  
 STA 79+00 to 84+00  
 Sheet No: G24  
 of  
 G90

- LEGEND**
- PROPOSED UTILITY REMOVAL AND/OR SALVAGE
  - PROPOSED UTILITY REMOVAL AND DISPOSAL
  - PROPOSED UTILITY ABANDONMENT IN-PLACE
  - PROPOSED CURB AND GUTTER REMOVAL
  - PROPOSED SDDOT WORK LIMITS
  - PROPOSED ASPHALT CONCRETE REMOVAL
  - PROPOSED SIDEWALK REMOVAL



**WATER MAIN REMOVALS:**

- REMOVE AND SALVAGE WATER VALVES AND BOXES TO THE CITY OF RAPID CITY AT THE FOLLOWING LOCATIONS:
- STA 80+39.16 - 25.86'R (MOUNT RUSHMORE RD)
- STA 4+50.08 - 20.24'L (COLUMBUS ST)
- STA 5+53.03 - 25.76'L (COLUMBUS ST)
- STA 5+78.05 - 26.85'L (COLUMBUS STREET)
- STA 81+37.94 - 21.03'R (MOUNT RUSHMORE RD)
- REMOVE AND SALVAGE FIRE HYDRANTS TO THE CITY OF RAPID CITY AT THE FOLLOWING LOCATIONS:
- STA 5+53.11 - 38.32'L (COLUMBUS ST)

**SANITARY SEWER REMOVALS:**

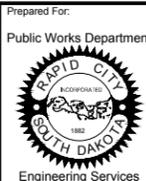
- REMOVE AND DISPOSE SANITARY SEWER MANHOLES AND SALVAGE FRAMES AND LIDS TO UTILITY MAINTENANCE AT THE FOLLOWING LOCATIONS:
- STA 80+70.64 - 2.20'L (MOUNT RUSHMORE RD)
- STA 82+85.85 - 0.78'L (MOUNT RUSHMORE RD)

- REMOVE AND DISPOSE OF CURB STOPS AT THE FOLLOWING LOCATIONS:
- STA 79+28.79 - 42.26'L (MOUNT RUSHMORE RD)
- STA 79+77.67 - 43.40'R (MOUNT RUSHMORE RD)
- STA 80+45.92 - 60.74'L (MOUNT RUSHMORE RD)
- STA 82+99.32 - 42.75'R (MOUNT RUSHMORE RD)
- STA 83+44.38 - 42.50'R (MOUNT RUSHMORE RD)
- STA 83+71.45 - 43.49'R (MOUNT RUSHMORE RD)

- REMOVE AND DISPOSE OF EXISTING SANITARY SEWER MAIN AT THE FOLLOWING LOCATIONS:
  - STA 4+82.68 - CL TO 5+03.55 - CL, 17.9 LF
- NOTE:**  
 REFER TO PROJECT NH 0016(79)67 PCN 027C FOR EXISTING STORM SEWER REMOVAL

**MANHOLE #4 ALLEY SURFACING NOTES:**  
 5+70.50 - 4'L to 5+70.41 - 3.92'R to  
 5+94.50 - 4'L TO 4'R  
 REMOVE ASPHALT CONCRETE PAVEMENT, 21.2 SY

November 19, 2015 9:44:19 a.m.  
 Drawing: DEMOLITION AND REPAIRS.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\11118.00 MT. RUSHMORE RD. UTILITIES RECONSTRUCTION DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY)



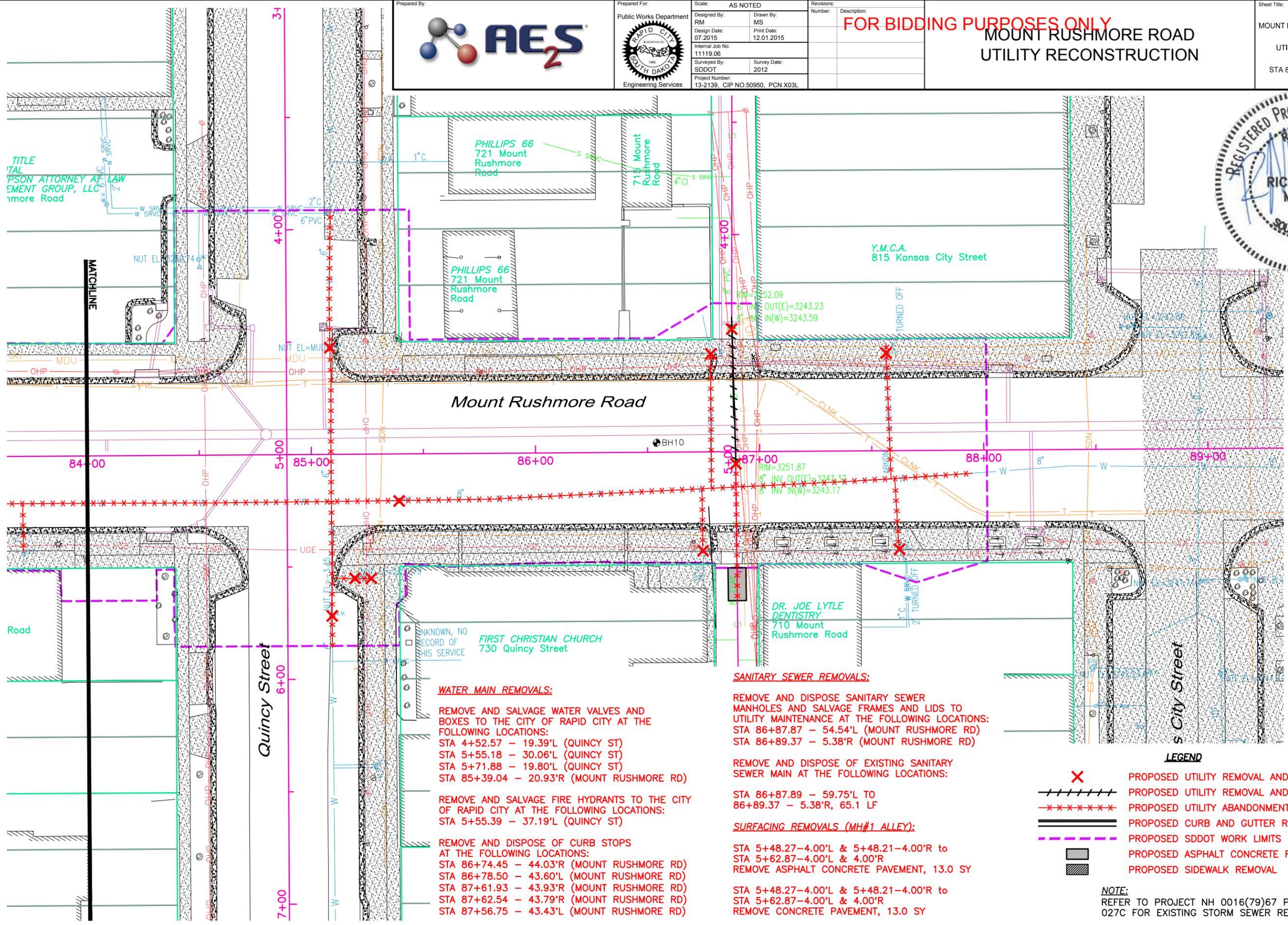
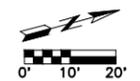
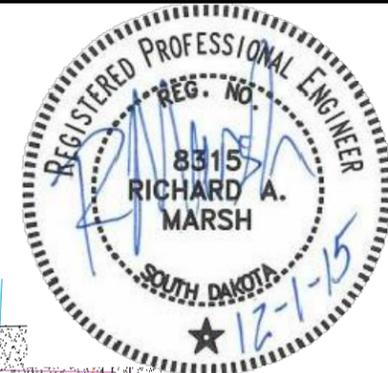
Prepared For: Public Works Department  
 Scale: AS NOTED  
 Designed By: RM  
 Drawn By: MS  
 Design Date: 07.2015  
 Print Date: 12.01.2015  
 Internal Job No: 11119.06  
 Surveyed By: SDDOT  
 Survey Date: 2012  
 Project Number: 13-2139, CIP NO.50950, PCN X03L

FOR BIDDING PURPOSES ONLY

# MOUNT RUSHMORE ROAD UTILITY RECONSTRUCTION

Sheet Title: MOUNT RUSHMORE RD  
 Utility Plan  
 STA 84+00 to END

Sheet No: G25  
 of  
 G90



- WATER MAIN REMOVALS:**
- REMOVE AND SALVAGE WATER VALVES AND BOXES TO THE CITY OF RAPID CITY AT THE FOLLOWING LOCATIONS:
    - STA 4+52.57 - 19.39'L (QUINCY ST)
    - STA 5+55.18 - 30.06'L (QUINCY ST)
    - STA 5+71.88 - 19.80'L (QUINCY ST)
    - STA 85+39.04 - 20.93'R (MOUNT RUSHMORE RD)
  - REMOVE AND SALVAGE FIRE HYDRANTS TO THE CITY OF RAPID CITY AT THE FOLLOWING LOCATIONS:
    - STA 5+55.39 - 37.19'L (QUINCY ST)
  - REMOVE AND DISPOSE OF CURB STOPS AT THE FOLLOWING LOCATIONS:
    - STA 86+74.45 - 44.03'R (MOUNT RUSHMORE RD)
    - STA 86+78.50 - 43.60'L (MOUNT RUSHMORE RD)
    - STA 87+61.93 - 43.93'R (MOUNT RUSHMORE RD)
    - STA 87+62.54 - 43.79'R (MOUNT RUSHMORE RD)
    - STA 87+56.75 - 43.43'L (MOUNT RUSHMORE RD)

- SANITARY SEWER REMOVALS:**
- REMOVE AND DISPOSE SANITARY SEWER MANHOLES AND SALVAGE FRAMES AND LIDS TO UTILITY MAINTENANCE AT THE FOLLOWING LOCATIONS:
    - STA 86+87.87 - 54.54'L (MOUNT RUSHMORE RD)
    - STA 86+89.37 - 5.38'R (MOUNT RUSHMORE RD)
  - REMOVE AND DISPOSE OF EXISTING SANITARY SEWER MAIN AT THE FOLLOWING LOCATIONS:
    - STA 86+87.89 - 59.75'L TO 86+89.37 - 5.38'R, 65.1 LF
  - SURFACING REMOVALS (MH#1 ALLEY):**
    - STA 5+48.27-4.00'L & 5+48.21-4.00'R to STA 5+62.87-4.00'L & 4.00'R  
REMOVE ASPHALT CONCRETE PAVEMENT, 13.0 SY
    - STA 5+48.27-4.00'L & 5+48.21-4.00'R to STA 5+62.87-4.00'L & 4.00'R  
REMOVE CONCRETE PAVEMENT, 13.0 SY

- LEGEND**
- X PROPOSED UTILITY REMOVAL AND/OR SALVAGE
  - ////// PROPOSED UTILITY REMOVAL AND DISPOSAL
  - x-x-x-x-x- PROPOSED UTILITY ABANDONMENT IN-PLACE
  - ==== PROPOSED CURB AND GUTTER REMOVAL
  - - - - - PROPOSED SDDOT WORK LIMITS
  - PROPOSED ASPHALT CONCRETE REMOVAL
  - ▨ PROPOSED SIDEWALK REMOVAL

**NOTE:**  
 REFER TO PROJECT NH 0016(79)67 PCN 027C FOR EXISTING STORM SEWER REMOVAL

November 19, 2015 9:54:19 a.m.  
 Drawing: DEMOLITION AND REPAIRS.DWG (SCHILLE) (PA) PROJECTS & PROPOSALS\11118.00 MT. RUSHMORE RD. UTILITIES RECONSTRUCTION DRAWINGS SHEETS PHASE 3 - SAINT JAMES TO KANSAS CITY

F&I PVC SANITARY SEWER SERVICE, CLEANOUT, CLEANOUT FRAME AND LID, AND RECONNECT TO EXISTING SANITARY SEWER SERVICE AT THE FOLLOWING LOCATIONS:

- STA 3+35.28 - CL TO 32.84'L, 41.8' 4"
- STA 3+36.28 - CL TO 28.33'R, 28.3' 4"
- STA 3+49.67 - CL TO 32.61'R, 40.1' 4"
- STA 5+90.34 - 18.48'R TO 26.07'R, 7.6' 4"

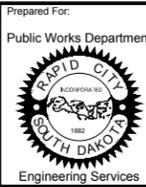
STA 62+48.59 - 0.69'R  
CONNECT TO EXISTING 8" SANITARY SEWER MAIN

STA 62+56.00 - 14.97'L  
F&I 2' 8" PVC STUB AND 8" CAP ON SEWER

STA 3+16.52 - CL  
F&I 2' 8" PVC STUB AND 8" CAP ON SEWER

STA 5+83.81 - CL  
F&I 2' 8" PVC STUB AND 8" CAP ON SEWER

STA 5+93.06 - 18.48'R  
CONNECT TO EXISTING 8" SANITARY SEWER MAIN

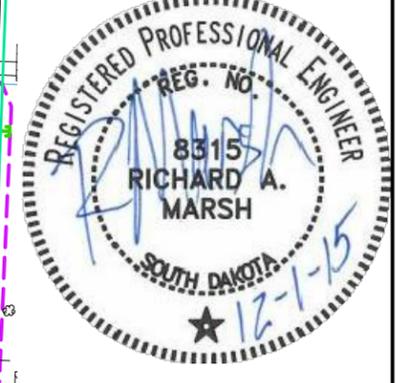


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Drawn By: MS  
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Survey Date: 2012  
Project Number: 13-2139, CIP NO.50950, PCN X03L

FOR BIDDING PURPOSES ONLY

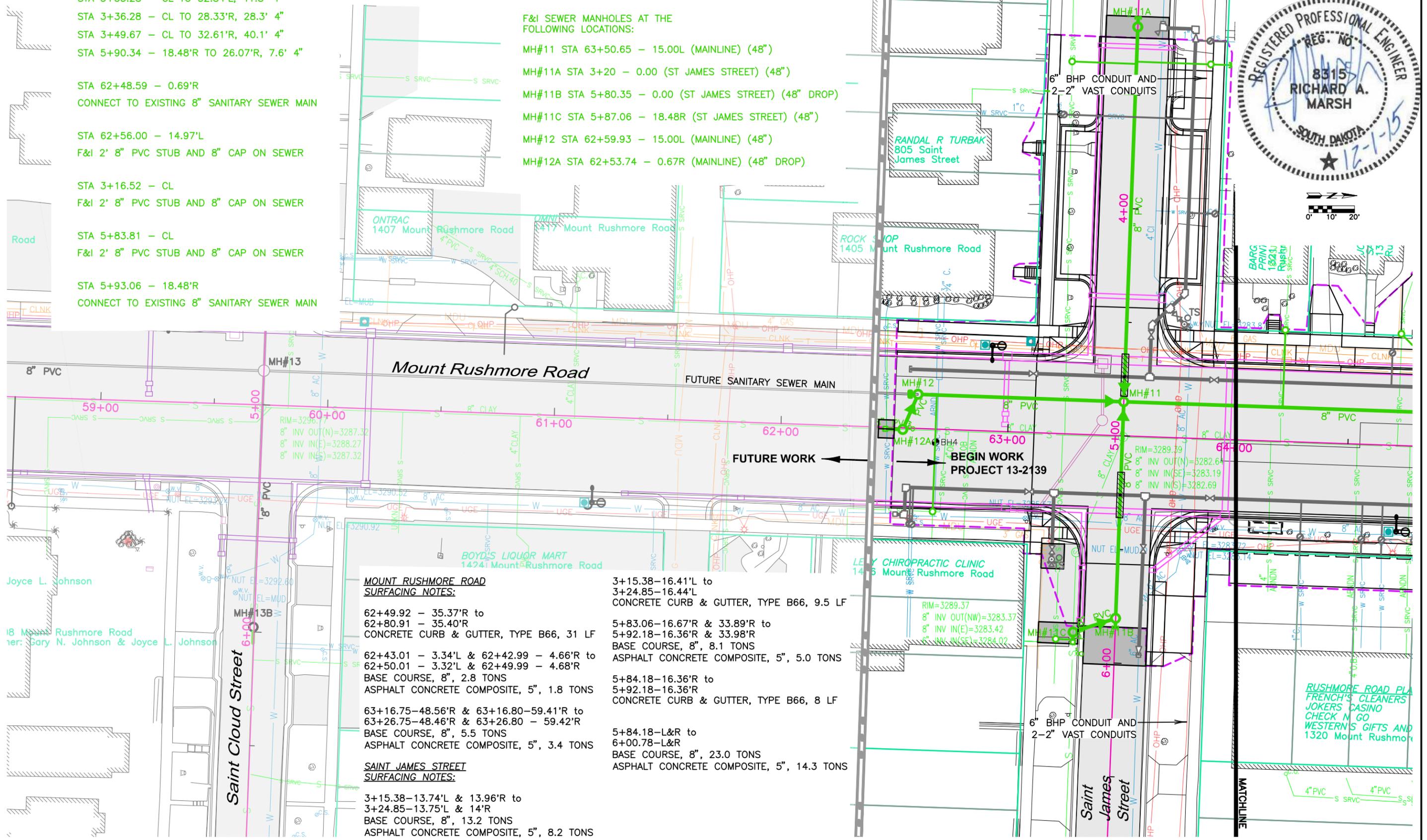
MOUNT RUSHMORE ROAD  
UTILITY RECONSTRUCTION

Sheet Title: MOUNT RUSHMORE RD  
SANITARY SEWER PLAN  
BEGIN to STA 64+00  
Sheet No: G26  
of  
G90



F&I SEWER MANHOLES AT THE FOLLOWING LOCATIONS:

- MH#11 STA 63+50.65 - 15.00L (MAINLINE) (48")
- MH#11A STA 3+20 - 0.00 (ST JAMES STREET) (48")
- MH#11B STA 5+80.35 - 0.00 (ST JAMES STREET) (48" DROP)
- MH#11C STA 5+87.06 - 18.48R (ST JAMES STREET) (48")
- MH#12 STA 62+59.93 - 15.00L (MAINLINE) (48")
- MH#12A STA 62+53.74 - 0.67R (MAINLINE) (48" DROP)



**MOUNT RUSHMORE ROAD SURFACING NOTES:**

- 62+49.92 - 35.37'R to 62+80.91 - 35.40'R  
CONCRETE CURB & GUTTER, TYPE B66, 31 LF
- 62+43.01 - 3.34'L & 62+42.99 - 4.66'R to 62+50.01 - 3.32'L & 62+49.99 - 4.68'R  
BASE COURSE, 8", 2.8 TONS
- 62+43.01 - 3.34'L & 62+42.99 - 4.66'R to 62+50.01 - 3.32'L & 62+49.99 - 4.68'R  
ASPHALT CONCRETE COMPOSITE, 5", 1.8 TONS
- 63+16.75-48.56'R & 63+16.80-59.41'R to 63+26.75-48.46'R & 63+26.80 - 59.42'R  
BASE COURSE, 8", 5.5 TONS
- 63+16.75-48.56'R & 63+16.80-59.41'R to 63+26.75-48.46'R & 63+26.80 - 59.42'R  
ASPHALT CONCRETE COMPOSITE, 5", 3.4 TONS

**SAINT JAMES STREET SURFACING NOTES:**

- 3+15.38-13.74'L & 13.96'R to 3+24.85-13.75'L & 14'R  
BASE COURSE, 8", 13.2 TONS
- 3+15.38-13.74'L & 13.96'R to 3+24.85-13.75'L & 14'R  
ASPHALT CONCRETE COMPOSITE, 5", 8.2 TONS

- 3+15.38-16.41'L to 3+24.85-16.44'L  
CONCRETE CURB & GUTTER, TYPE B66, 9.5 LF

- 5+83.06-16.67'R & 33.89'R to 5+92.18-16.36'R & 33.98'R  
BASE COURSE, 8", 8.1 TONS
- 5+83.06-16.67'R & 33.89'R to 5+92.18-16.36'R & 33.98'R  
ASPHALT CONCRETE COMPOSITE, 5", 5.0 TONS

- 5+84.18-16.36'R to 5+92.18-16.36'R  
CONCRETE CURB & GUTTER, TYPE B66, 8 LF

- 5+84.18-L&R to 6+00.78-L&R  
BASE COURSE, 8", 23.0 TONS
- 5+84.18-L&R to 6+00.78-L&R  
ASPHALT CONCRETE COMPOSITE, 5", 14.3 TONS

December 01, 2015 3:07:18 p.m. Drawing: PLAN AND PROFILES.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\11119.00 - MT. RUSHMORE RD. UTILITIES RECONSTRUCTION DRAWINGS SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY)





SCALE:  
 HORIZ. 1" = 40'  
 VERT. 1" = 10'

**NOTE:**  
 ALL SUBSURFACE UTILITIES ARE SHOWN BASED UPON GROUND LEVEL FIELD SURVEY AND APPROXIMATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE TO FIELD LOCATE AND VERIFY UTILITY INFORMATION PERTAINING TO THE WORK. SDDOT PROPOSED STORM SEWER IS SHOWN FOR INFORMATION ONLY AND MAY BE SHOWN DIFFERENTLY IN THE ROADWAY PLANS. PLEASE REFER TO PROJECT NH0016(79)67 FOR ALL STORM SEWER PLAN AND GRADE INFORMATION.



Prepared By:  
 Public Works Department  
 Rapid City  
 South Dakota  
 Engineering Services

Scale: AS NOTED  
 Designed By: RM  
 Design Date: 07.2015  
 Internal Job No: 11119.06  
 Surveyed By: SDDOT  
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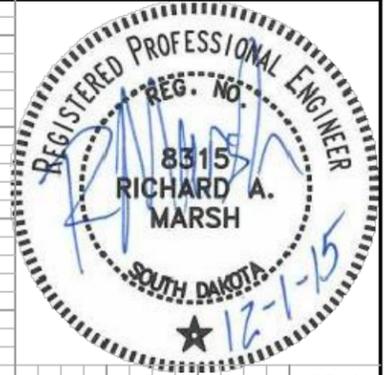
Revisions:  
 Number: Description:

**FOR BIDDING PURPOSES ONLY**

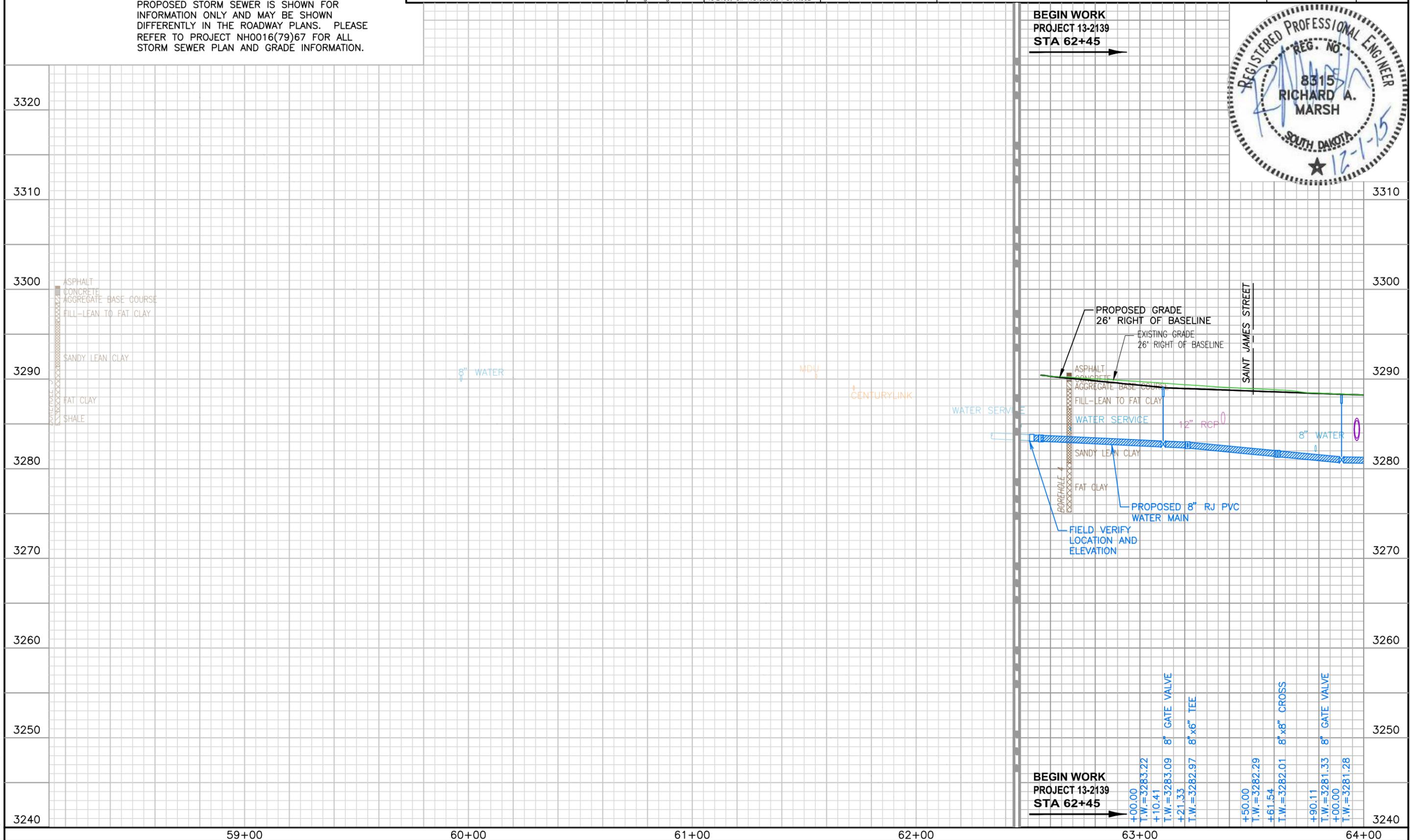
**MOUNT RUSHMORE ROAD  
 UTILITY RECONSTRUCTION**

Sheet Title:  
 MOUNT RUSHMORE RD  
 UTILITY PROFILE (northbound)  
 STA BEGIN to 64+00

Sheet No:  
 G29  
 of  
 G90

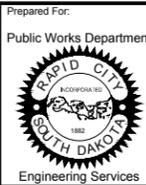


December 01, 2015 3:07:18 p.m.  
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Prepared By:



Scale: AS NOTED  
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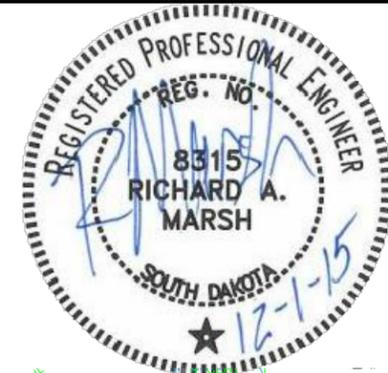
Revisions: Number: Description:  
 Drawn By: MS  
 Print Date: 12.01.2015  
 Survey Date: 2012

FOR BIDDING PURPOSES ONLY

# MOUNT RUSHMORE ROAD UTILITY RECONSTRUCTION

Sheet Title: MOUNT RUSHMORE RD  
 SAITARY SEWER PLAN  
 STA 64+00 to 69+00

Sheet No: G31  
 of  
 G90



F&I PVC SANITARY SEWER SERVICE, CLEANOUT, CLEANOUT FRAME AND LID, AND RECONNECT TO EXISTING SANITARY SEWER SERVICE AT THE FOLLOWING LOCATIONS:

- STA 64+20.76 - 15.00'L TO 49.05'L, 34.0' 4"
- STA 64+78.62 - 15.00'L TO 64+71.93 - 49.14'L, 37.0' 4"
- STA 65+35.30 - 66.65'L TO 65+40.52 - 66.63'L, 5.2' 4"
- STA 66+03.93 - 15.00'L TO 38.14'L, 23.1' 4"
- STA 68+38.37 - 15.00'L TO 40'L, 35.0' 4"
- STA 6+17.98 (FAIRVIEW STREET) - CL TO 32.67'L, 32.7' 4"

F&I SEWER MANHOLES AT THE FOLLOWING LOCATIONS:

- MH#9 STA 67+35.66 - 15.00L (MAINLINE) (48")
- MH#9B STA 6+62.63 - 0.00 (FAIRVIEW STREET) (48")
- MH#9C STA 6+62.63 - 31.87L (FAIRVIEW STREET) (48" DROP)
- MH#10 STA 65+40.37 - 15.00L (MAINLINE) (48")
- MH#10A STA 3+27.11 - 0.00 (MH#10 ALLEY SEWER) (48" DROP)
- MH#10B STA 4+52.09 - 0.00 (MH#10 ALLEY SEWER) (48" DROP)

**FAIRVIEW STREET SURFACING NOTES:**

- 3+60.37-9.56'L & 13.54'L to 3+70.93-9.53'L & 13.49'L  
 BASE COURSE, 8", 2.1 TONS  
 ASPHALT CONCRETE COMPOSITE, 5", 1.3 TONS
- 3+60.37-16.21'L to 3+75.49-16.14'L  
 CONCRETE CURB & GUTTER, TYPE B66, 15.1 LF
- 6+42.00-13.61'L & 14.00'R to 6+78.30-13.80'L & 14.13'R  
 BASE COURSE, 8", 50.7 TONS  
 ASPHALT CONCRETE COMPOSITE, 5", 31.5 TONS
- 6+42.00-16.28'L to 6+78.30-16.39'L  
 CONCRETE CURB & GUTTER, TYPE B66, 36.3 LF
- 6+10.30-33.42'L & 38.49'L to 6+68.66-33.14'L & 6+68.63-38.09'L  
 4" CONCRETE SIDEWALK, 287.9 SF

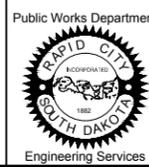
- STA 3+18.22 - CL (ALLEY)  
 CONNECT TO EXISTING 8" SANITARY SEWER MAIN
- STA 4+64.19 - CL (ALLEY)  
 CONNECT TO EXISTING 8" SANITARY SEWER MAIN
- STA 6+66.48 - CL (FAIRVIEW)  
 F&I 2' 8" PVC STUB AND 8" CAP ON SEWER
- STA 6+66.45 - 31.86'L (FAIRVIEW)  
 CONNECT TO EXISTING 8" SANITARY SEWER MAIN

December 01, 2015 3:07:18 PM: (P:\PROJECTS & PROPOSALS\11119.00 - MT. RUSHMORE RD. UTILITIES RECONSTRUCTION\DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY)

Prepared By:



Prepared For:



Engineering Services

Scale: AS NOTED

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Project Number: 13-2139, CIP NO.50950, PCN X03L

Revisions:

Table with 2 columns: Number, Description

FOR BIDDING PURPOSES ONLY

# MOUNT RUSHMORE ROAD UTILITY RECONSTRUCTION

Table with 2 columns: Sheet Title, Sheet No.  
MOUNT RUSHMORE RD G32  
WATER MAIN PLAN of  
STA 64+00 to 69+00 G90

F&I 6" TRANSITION COUPLING AND CONNECT TO EXISTING WATER MAIN AT THE FOLLOWING LOCATIONS:

STA 3+62.80 - 16.95L (FAIRVIEW STREET)

F&I 8" 90° BEND AT THE FOLLOWING LOCATIONS:

STA 4+74.07 - 22.46R (FAIRVIEW STREET)

STA 3+69.38 - 16.96L (FAIRVIEW STREET)

STA 3+69.38 - 30.52L (FAIRVIEW STREET)

STA 67+66.36 - 26.01R (MAINLINE)

F&I 4" 90° BEND AT THE FOLLOWING LOCATIONS:

STA 6+70.11 - 24.83L (FAIRVIEW STREET)

STA 6+70.17 - 15.97L (FAIRVIEW STREET)

F&I 4" GATE VALVE AND BOX AT THE FOLLOWING LOCATIONS:

STA 6+34.78 - 30.45L (FAIRVIEW STREET)

F&I 8"x4" TEE AT THE FOLLOWING LOCATIONS:

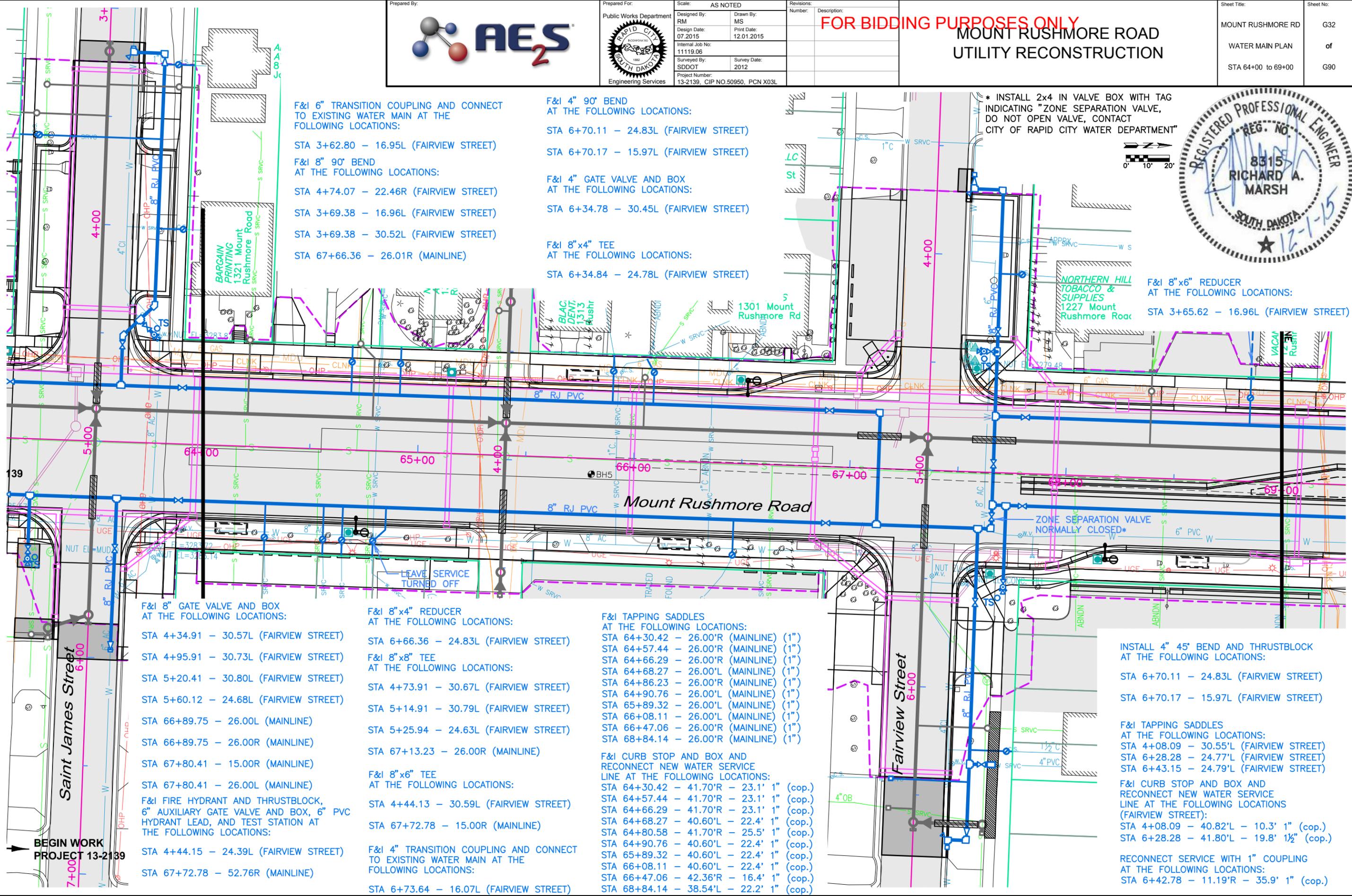
STA 6+34.84 - 24.78L (FAIRVIEW STREET)

\* INSTALL 2x4 IN VALVE BOX WITH TAG INDICATING "ZONE SEPARATION VALVE, DO NOT OPEN VALVE, CONTACT CITY OF RAPID CITY WATER DEPARTMENT"



F&I 8"x6" REDUCER AT THE FOLLOWING LOCATIONS:

STA 3+65.62 - 16.96L (FAIRVIEW STREET)



F&I 8" GATE VALVE AND BOX AT THE FOLLOWING LOCATIONS:

STA 4+34.91 - 30.57L (FAIRVIEW STREET)

STA 4+95.91 - 30.73L (FAIRVIEW STREET)

STA 5+20.41 - 30.80L (FAIRVIEW STREET)

STA 5+60.12 - 24.68L (FAIRVIEW STREET)

STA 66+89.75 - 26.00L (MAINLINE)

STA 66+89.75 - 26.00R (MAINLINE)

STA 67+80.41 - 15.00R (MAINLINE)

STA 67+80.41 - 26.00L (MAINLINE)

F&I FIRE HYDRANT AND THRUSTBLOCK, 6" AUXILIARY GATE VALVE AND BOX, 6" PVC HYDRANT LEAD, AND TEST STATION AT THE FOLLOWING LOCATIONS:

STA 4+44.15 - 24.39L (FAIRVIEW STREET)

STA 67+72.78 - 52.76R (MAINLINE)

F&I 8"x4" REDUCER AT THE FOLLOWING LOCATIONS:

STA 6+66.36 - 24.83L (FAIRVIEW STREET)

F&I 8"x8" TEE AT THE FOLLOWING LOCATIONS:

STA 4+73.91 - 30.67L (FAIRVIEW STREET)

STA 5+14.91 - 30.79L (FAIRVIEW STREET)

STA 5+25.94 - 24.63L (FAIRVIEW STREET)

STA 67+13.23 - 26.00R (MAINLINE)

F&I 8"x6" TEE AT THE FOLLOWING LOCATIONS:

STA 4+44.13 - 30.59L (FAIRVIEW STREET)

STA 67+72.78 - 15.00R (MAINLINE)

F&I 4" TRANSITION COUPLING AND CONNECT TO EXISTING WATER MAIN AT THE FOLLOWING LOCATIONS:

STA 6+73.64 - 16.07L (FAIRVIEW STREET)

F&I TAPPING SADDLES AT THE FOLLOWING LOCATIONS:

STA 64+30.42 - 26.00'R (MAINLINE) (1")

STA 64+57.44 - 26.00'R (MAINLINE) (1")

STA 64+66.29 - 26.00'R (MAINLINE) (1")

STA 64+68.27 - 26.00'L (MAINLINE) (1")

STA 64+86.23 - 26.00'R (MAINLINE) (1")

STA 64+90.76 - 26.00'L (MAINLINE) (1")

STA 65+89.32 - 26.00'L (MAINLINE) (1")

STA 66+08.11 - 26.00'L (MAINLINE) (1")

STA 66+47.06 - 26.00'R (MAINLINE) (1")

STA 68+84.14 - 26.00'R (MAINLINE) (1")

F&I CURB STOP AND BOX AND RECONNECT NEW WATER SERVICE LINE AT THE FOLLOWING LOCATIONS:

STA 64+30.42 - 41.70'R - 23.1' 1" (cop.)

STA 64+57.44 - 41.70'R - 23.1' 1" (cop.)

STA 64+66.29 - 41.70'R - 23.1' 1" (cop.)

STA 64+68.27 - 40.60'L - 22.4' 1" (cop.)

STA 64+80.58 - 41.70'R - 25.5' 1" (cop.)

STA 64+90.76 - 40.60'L - 22.4' 1" (cop.)

STA 65+89.32 - 40.60'L - 22.4' 1" (cop.)

STA 66+08.11 - 40.60'L - 22.4' 1" (cop.)

STA 66+47.06 - 42.36'R - 16.4' 1" (cop.)

STA 68+84.14 - 38.54'L - 22.2' 1" (cop.)

INSTALL 4" 45° BEND AND THRUSTBLOCK AT THE FOLLOWING LOCATIONS:

STA 6+70.11 - 24.83L (FAIRVIEW STREET)

STA 6+70.17 - 15.97L (FAIRVIEW STREET)

F&I TAPPING SADDLES AT THE FOLLOWING LOCATIONS:

STA 4+08.09 - 30.55'L (FAIRVIEW STREET)

STA 6+28.28 - 24.77'L (FAIRVIEW STREET)

STA 6+43.15 - 24.79'L (FAIRVIEW STREET)

F&I CURB STOP AND BOX AND RECONNECT NEW WATER SERVICE LINE AT THE FOLLOWING LOCATIONS (FAIRVIEW STREET):

STA 4+08.09 - 40.82'L - 10.3' 1" (cop.)

STA 6+28.28 - 41.80'L - 19.8' 1/2" (cop.)

RECONNECT SERVICE WITH 1" COUPLING AT THE FOLLOWING LOCATIONS:

STA 6+42.78 - 11.19'R - 35.9' 1" (cop.)

December 01, 2015 3:07:18 PM (SCHILLE) (P:\PROJECTS & PROPOSALS\1119.00 MT. RUSHMORE RD. UTILITIES RECONSTRUCTION DRAWINGS SHEETS PHASE 3 - SAINT JAMES TO KANSAS CITY)

BEGIN WORK PROJECT 13-2139

SCALE:  
HORIZ. 1" = 40'  
VERT. 1" = 10'

**NOTE:**  
ALL SUBSURFACE UTILITIES ARE SHOWN BASED UPON GROUND LEVEL FIELD SURVEY AND APPROXIMATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE TO FIELD LOCATE AND VERIFY UTILITY INFORMATION PERTAINING TO THE WORK. SDDOT PROPOSED STORM SEWER IS SHOWN FOR INFORMATION ONLY AND MAY BE SHOWN DIFFERENTLY IN THE ROADWAY PLANS. PLEASE REFER TO PROJECT NH0016(79)67 FOR ALL STORM SEWER PLAN AND GRADE INFORMATION.



Prepared For:  
Public Works Department  
RAPID CITY  
SOUTH DAKOTA  
Engineering Services

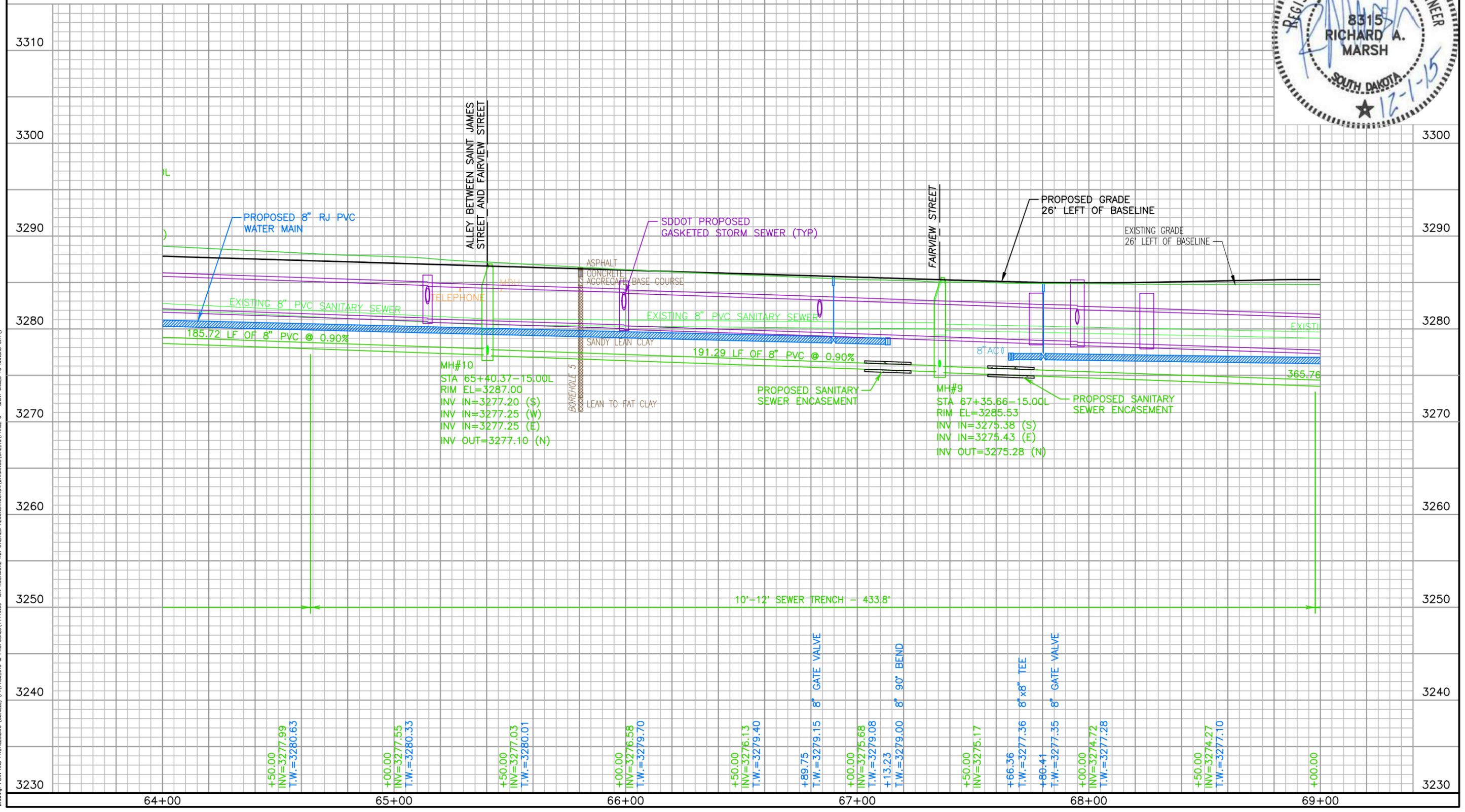
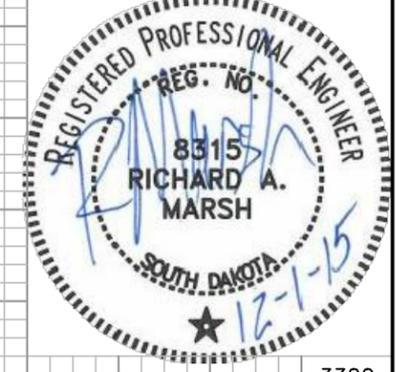
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Design Date: 07.2015  
Internal Job No: 11119.06  
Surveyed By: SDDOT  
Project Number: 13-2139, CIP NO.50950, PCN X03L

Revisions:  
Number: Description:

**FOR BIDDING PURPOSES ONLY**  
**MOUNT RUSHMORE ROAD**  
**UTILITY RECONSTRUCTION**

Sheet Title:  
MOUNT RUSHMORE RD  
UTILITY PROFILE (southbound)  
STA 64+00 to 69+00

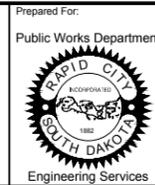
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G33  
of  
G90



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SCALE:  
HORIZ. 1" = 40'  
VERT. 1" = 10'

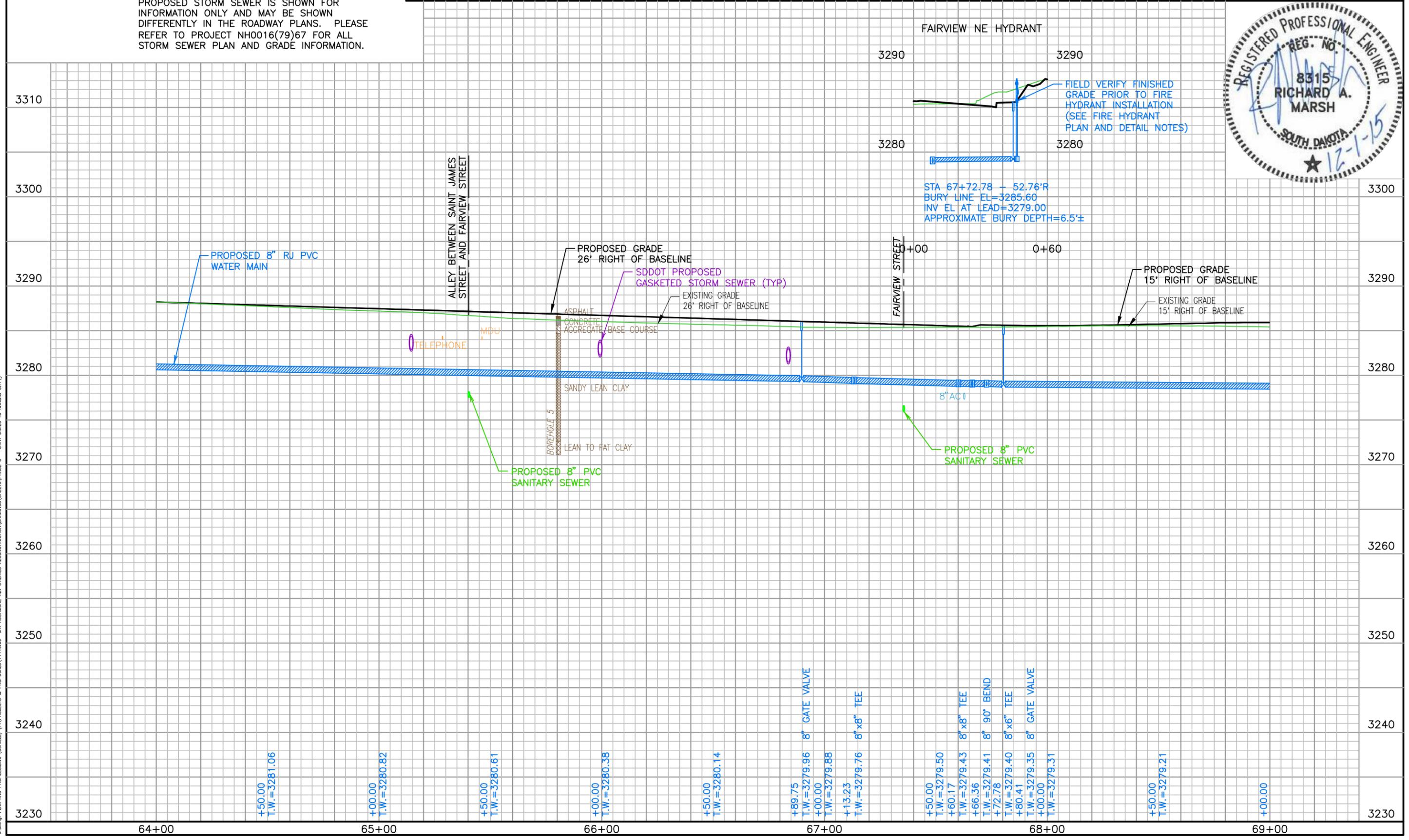
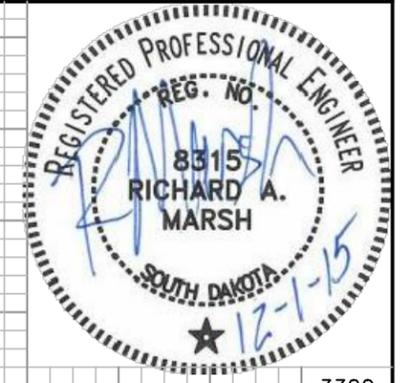
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Prepared For: Public Works Department  
Scale: AS NOTED  
Designed By: RM  
Design Date: 07.2015  
Internal Job No: 11119.06  
Surveyed By: SDDOT  
Project Number: 13-2139, CIP NO.50950, PCN X03L  
Drawn By: MS  
Print Date: 12.01.2015  
Survey Date: 2012

**FOR BIDDING PURPOSES ONLY**  
**MOUNT RUSHMORE ROAD**  
**UTILITY RECONSTRUCTION**

Sheet Title: MOUNT RUSHMORE RD  
UTILITY PROFILE (northbound)  
STA 64+00 to 69+00  
Sheet No: G34 of G90



December 01, 2015 3:07:18 p.m.  
Drawing: PLAN AND PROFILES.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\11119.00 - MT. RUSHMORE RD. UTILITIES RECONSTRUCTION DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY)

SCALE:  
 HORIZ. 1" = 40'  
 VERT. 1" = 10'

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Prepared By:  
 Public Works Department  
 Rapid City  
 South Dakota  
 Engineering Services

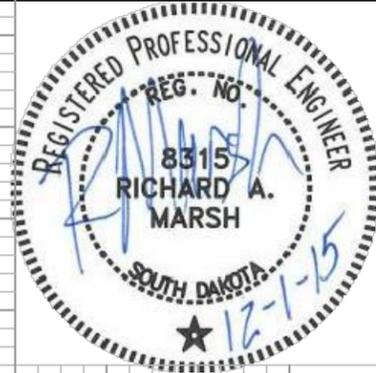
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 Design Date: 07.2015  
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 Surveyed By: SDDOT  
 Project Number: 13-2139, CIP NO.50950, PCN X03L

Revisions:  
 Number: Description:

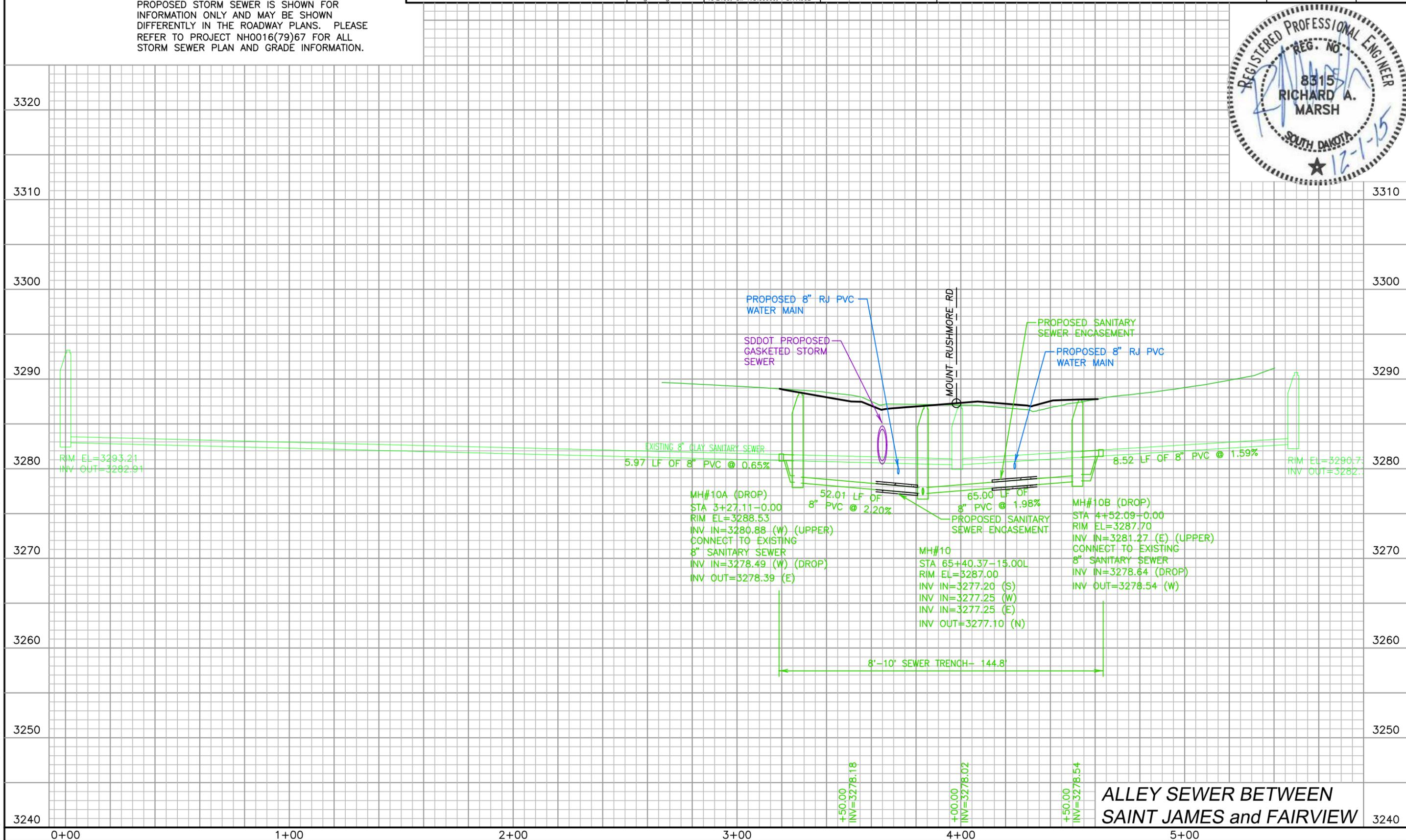
**FOR BIDDING PURPOSES ONLY**

**MOUNT RUSHMORE ROAD  
 UTILITY RECONSTRUCTION**

Sheet Title: MH#10  
 Alley Sewer  
 Profile  
 Sheet No: G35  
 of  
 G90



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 Drawing: PLAN AND PROFILES.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\11119.00 - MT. RUSHMORE RD. UTILITIES RECONSTRUCTION DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY)



**ALLEY SEWER BETWEEN  
 SAINT JAMES and FAIRVIEW**

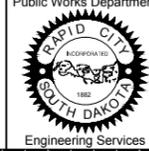
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HORIZ. 1" = 40'  
VERT. 1" = 10'

**NOTE:**  
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Prepared By:



Prepared For:



Scale: AS NOTED

Designed By: RM  
Design Date: 07.2015  
Internal Job No: 11119.06  
Surveyed By: SDDOT  
Project Number: 13-2139, CIP NO.50950, PCN X03L

Revisions:

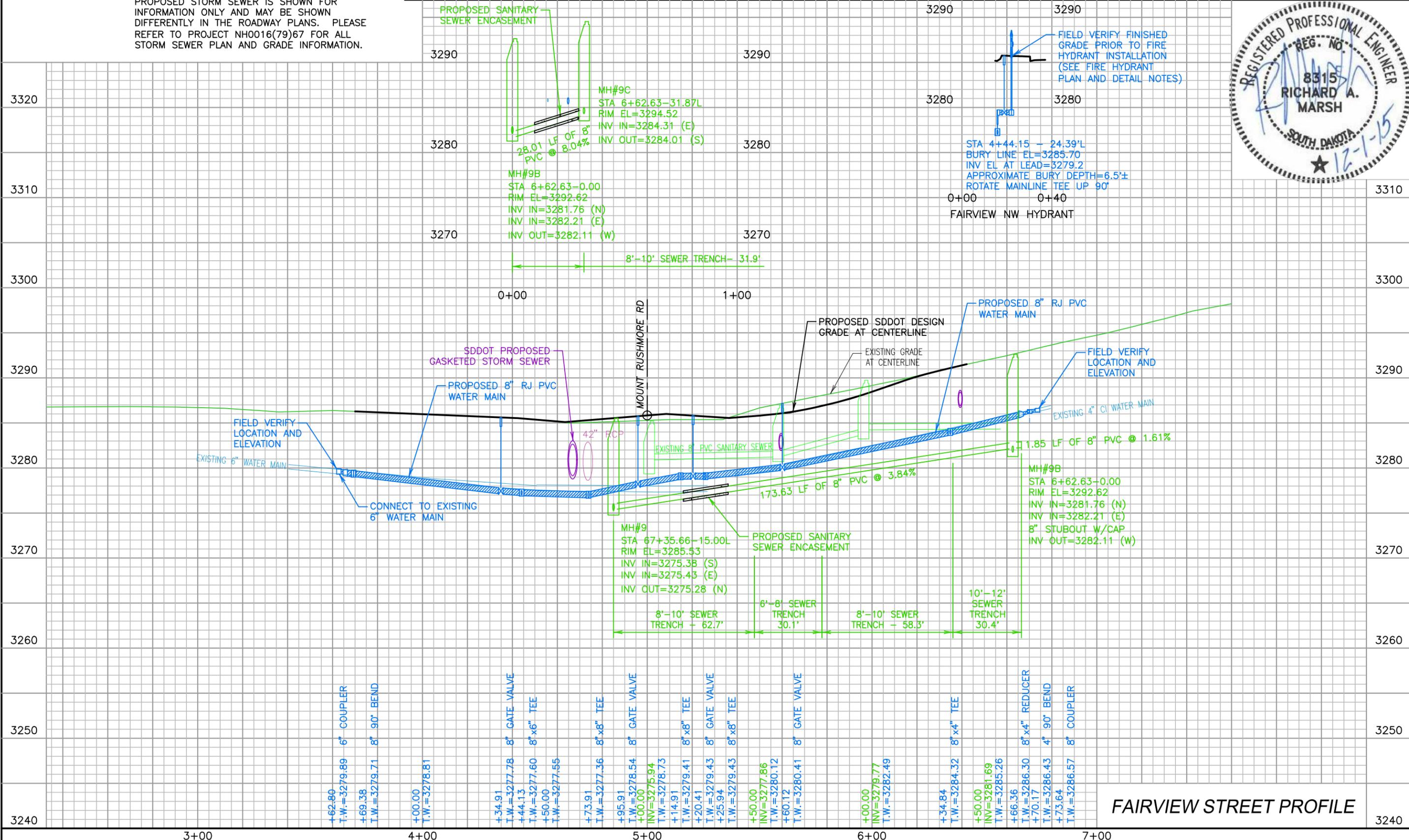
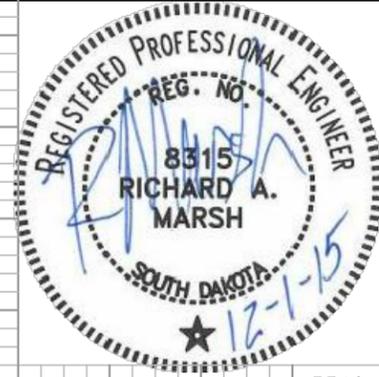
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Description:

**FOR BIDDING PURPOSES ONLY**

**MOUNT RUSHMORE ROAD  
UTILITY RECONSTRUCTION**

Sheet Title: Sheet No:

FAIRVIEW STREET G36  
UTILITY PROFILE of  
STA 0+00 to END G90



**FAIRVIEW STREET PROFILE**

\* SPECIAL NOTE: DURING FINAL PREPARATION OF THESE PLANS 1108 MOUNT RUSHMORE ROAD WAS CONDEMNED AND WATER & SEWER REPLACEMENT WAS NOT DETERMINED. CONTRACTOR SHALL CONFIRM WITH CITY OF RAPID CITY STAFF THAT THE WATER & SEWER SERVICE SHALL BE INSTALLED AS SHOWN PRIOR TO COMPLETING THE WORK. IF INSTALLATION IS NOT NECESSARY THIS WORK WILL BE REMOVED FROM THE CONTRACT VIA CONSTRUCTION CHANGE ORDER.

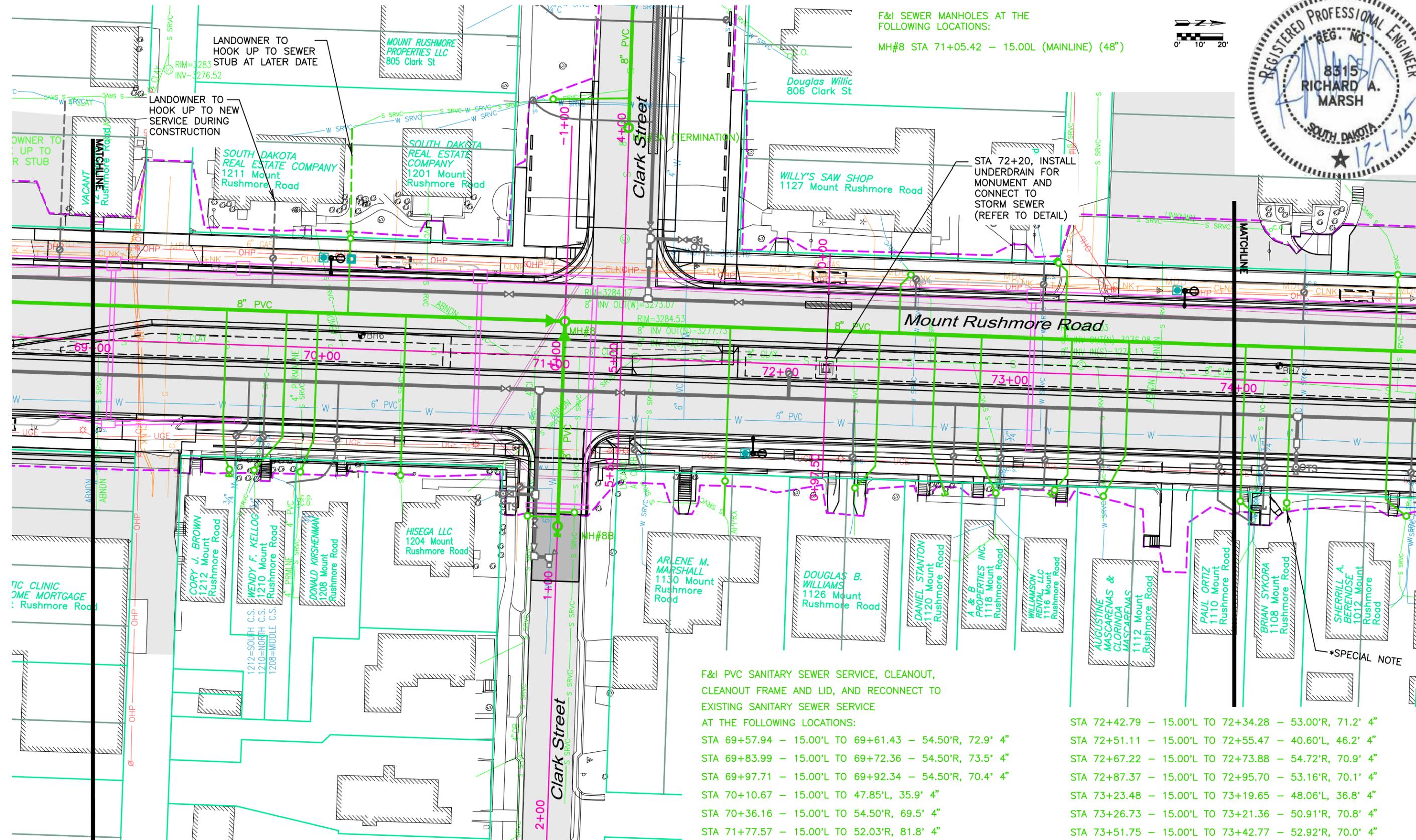


Prepared For: Public Works Department  
 Scale: AS NOTED  
 Designed By: RM  
 Drawn By: MS  
 Design Date: 07.2015  
 Print Date: 12.01.2015  
 Internal Job No: 11119.06  
 Surveyed By: SDDOT  
 Survey Date: 2012  
 Project Number: 13-2139, CIP NO.50950, PCN X03L

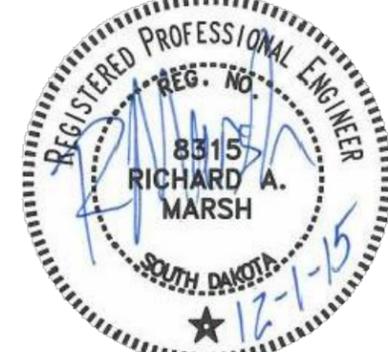
FOR BIDDING PURPOSES ONLY

MOUNT RUSHMORE ROAD  
 UTILITY RECONSTRUCTION

Sheet Title: MOUNT RUSHMORE RD  
 SANITARY SEWER PLAN  
 STA 69-00 to 74+00  
 Sheet No: G37  
 of  
 G90



F&I SEWER MANHOLES AT THE FOLLOWING LOCATIONS:  
 MH#8 STA 71+05.42 - 15.00L (MAINLINE) (48")



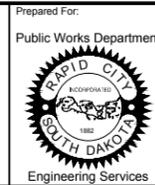
F&I PVC SANITARY SEWER SERVICE, CLEANOUT, CLEANOUT FRAME AND LID, AND RECONNECT TO EXISTING SANITARY SEWER SERVICE

- AT THE FOLLOWING LOCATIONS:
- STA 69+57.94 - 15.00'L TO 69+61.43 - 54.50'R, 72.9' 4"
  - STA 69+83.99 - 15.00'L TO 69+72.36 - 54.50'R, 73.5' 4"
  - STA 69+97.71 - 15.00'L TO 69+92.34 - 54.50'R, 70.4' 4"
  - STA 70+10.67 - 15.00'L TO 47.85'L, 35.9' 4"
  - STA 70+36.16 - 15.00'L TO 54.50'R, 69.5' 4"
  - STA 71+77.57 - 15.00'L TO 52.03'R, 81.8' 4"
  - STA 72+42.79 - 15.00'L TO 72+34.28 - 53.00'R, 71.2' 4"
  - STA 72+51.11 - 15.00'L TO 72+55.47 - 40.60'L, 46.2' 4"
  - STA 72+67.22 - 15.00'L TO 72+73.88 - 54.72'R, 70.9' 4"
  - STA 72+87.37 - 15.00'L TO 72+95.70 - 53.16'R, 70.1' 4"
  - STA 73+23.48 - 15.00'L TO 73+19.65 - 48.06'L, 36.8' 4"
  - STA 73+26.73 - 15.00'L TO 73+21.36 - 50.91'R, 70.8' 4"
  - STA 73+51.75 - 15.00'L TO 73+42.77 - 52.92'R, 70.0' 4"

December 01, 2015 3:07:18 PM  
 Drawing: PLAN AND PROFILES.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\11119.00 MT. RUSHMORE RD. UTILITIES RECONSTRUCTION\DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY)

F&I TAPPING SADDLES  
 AT THE FOLLOWING LOCATIONS:  
 STA 69+68.84 - 15.00'R (MAINLINE) (1")  
 STA 69+75.90 - 15.00'R (MAINLINE) (1")  
 STA 69+77.36 - 26.00'L (MAINLINE) (1")  
 STA 70+07.71 - 15.00'R (MAINLINE) (1")  
 STA 71+37.64 - 15.01'R (MAINLINE) (1")  
 STA 72+32.79 - 15.01'R (MAINLINE) (1")  
 STA 72+57.84 - 26.00'L (MAINLINE) (1")  
 STA 72+76.90 - 15.00'R (MAINLINE) (1")  
 STA 72+97.37 - 15.00'R (MAINLINE) (1")  
 STA 73+13.41 - 26.00'L (MAINLINE) (1")  
 STA 73+16.62 - 15.00'R (MAINLINE) (1")  
 STA 73+40.75 - 15.00'R (MAINLINE) (1")  
 STA 73+92.67 - 15.00'R (MAINLINE) (1")

Prepared By:



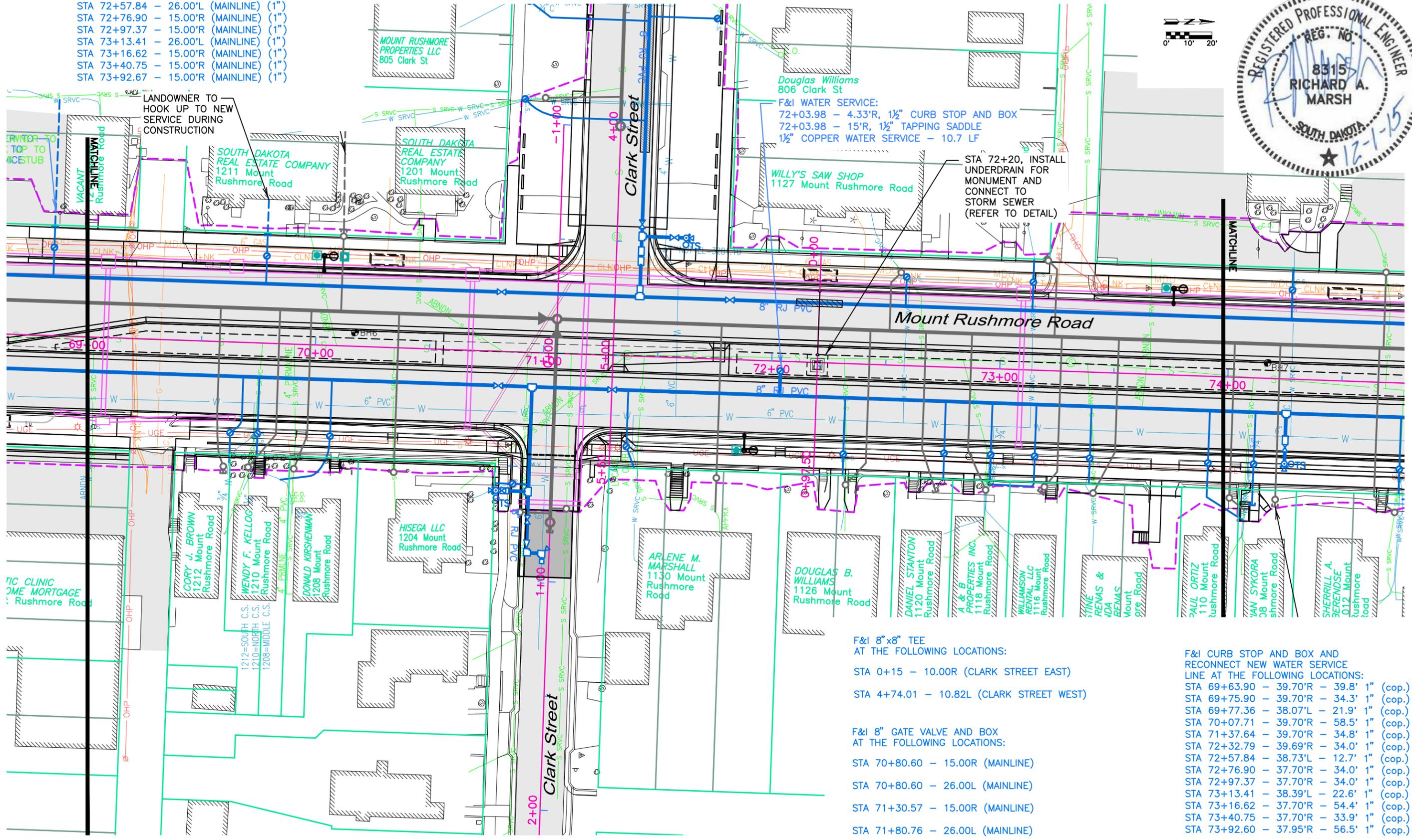
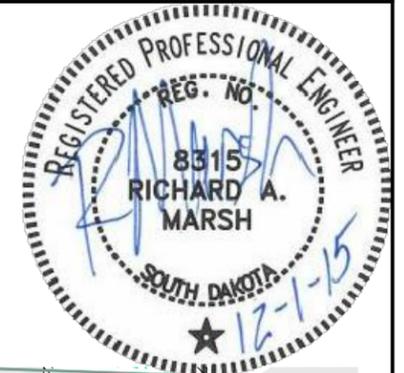
Prepared For: Public Works Department  
 Scale: AS NOTED  
 Designed By: RM  
 Drawn By: MS  
 Design Date: 07.2015  
 Print Date: 12.01.2015  
 Internal Job No: 11119.06  
 Surveyed By: SDDOT  
 Survey Date: 2012  
 Project Number: 13-2139, CIP NO.50950, PCN X03L

Revisions: Number: Description:

**FOR BIDDING PURPOSES ONLY**

**MOUNT RUSHMORE ROAD  
 UTILITY RECONSTRUCTION**

Sheet Title: MOUNT RUSHMORE RD  
 WATER MAIN PLAN  
 STA 69-00 TO 74+00  
 Sheet No: G38  
 of  
 G90



LANDOWNER TO  
 HOOK UP TO NEW  
 SERVICE DURING  
 CONSTRUCTION

**F&I WATER SERVICE:**  
 72+03.98 - 4.33'R, 1 1/2" CURB STOP AND BOX  
 72+03.98 - 15'R, 1 1/2" TAPPING SADDLE  
 1 1/2" COPPER WATER SERVICE - 10.7 LF

STA 72+20, INSTALL  
 UNDERDRAIN FOR  
 MONUMENT AND  
 CONNECT TO  
 STORM SEWER  
 (REFER TO DETAIL)

**F&I 8"x8" TEE**  
 AT THE FOLLOWING LOCATIONS:

- STA 0+15 - 10.00R (CLARK STREET EAST)
- STA 4+74.01 - 10.82L (CLARK STREET WEST)

**F&I 8" GATE VALVE AND BOX**  
 AT THE FOLLOWING LOCATIONS:

- STA 70+80.60 - 15.00R (MAINLINE)
- STA 70+80.60 - 26.00L (MAINLINE)
- STA 71+30.57 - 15.00R (MAINLINE)
- STA 71+80.76 - 26.00L (MAINLINE)

**F&I CURB STOP AND BOX AND  
 RECONNECT NEW WATER SERVICE  
 LINE AT THE FOLLOWING LOCATIONS:**

- STA 69+63.90 - 39.70'R - 39.8' 1" (cop.)
- STA 69+75.90 - 39.70'R - 34.3' 1" (cop.)
- STA 69+77.36 - 38.07'L - 21.9' 1" (cop.)
- STA 70+07.71 - 39.70'R - 58.5' 1" (cop.)
- STA 71+37.64 - 39.70'R - 34.8' 1" (cop.)
- STA 72+32.79 - 39.69'R - 34.0' 1" (cop.)
- STA 72+57.84 - 38.73'L - 12.7' 1" (cop.)
- STA 72+76.90 - 37.70'R - 34.0' 1" (cop.)
- STA 72+97.37 - 37.70'R - 34.0' 1" (cop.)
- STA 73+13.41 - 38.39'L - 22.6' 1" (cop.)
- STA 73+16.62 - 37.70'R - 54.4' 1" (cop.)
- STA 73+40.75 - 37.70'R - 33.9' 1" (cop.)
- STA 73+92.60 - 37.95'R - 56.5' 1" (cop.)

December 01, 2015 3:07:18 PM  
 Drawing: PLAN AND PROFILES.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\11119.00 - MT. RUSHMORE RD. UTILITIES RECONSTRUCTION DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY)

SCALE:  
 HORIZ. 1" = 40'  
 VERT. 1" = 10'

**NOTE:**  
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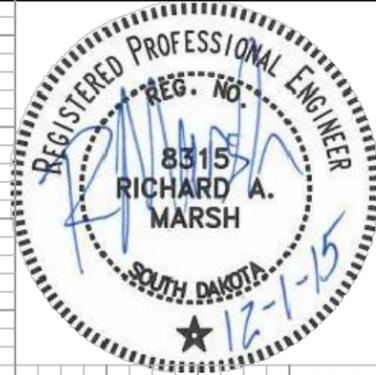
Prepared For:  
 Public Works Department  
 RAPID CITY  
 SOUTH DAKOTA  
 Engineering Services

Scale: AS NOTED  
 Designed By: RM  
 Design Date: 07.2015  
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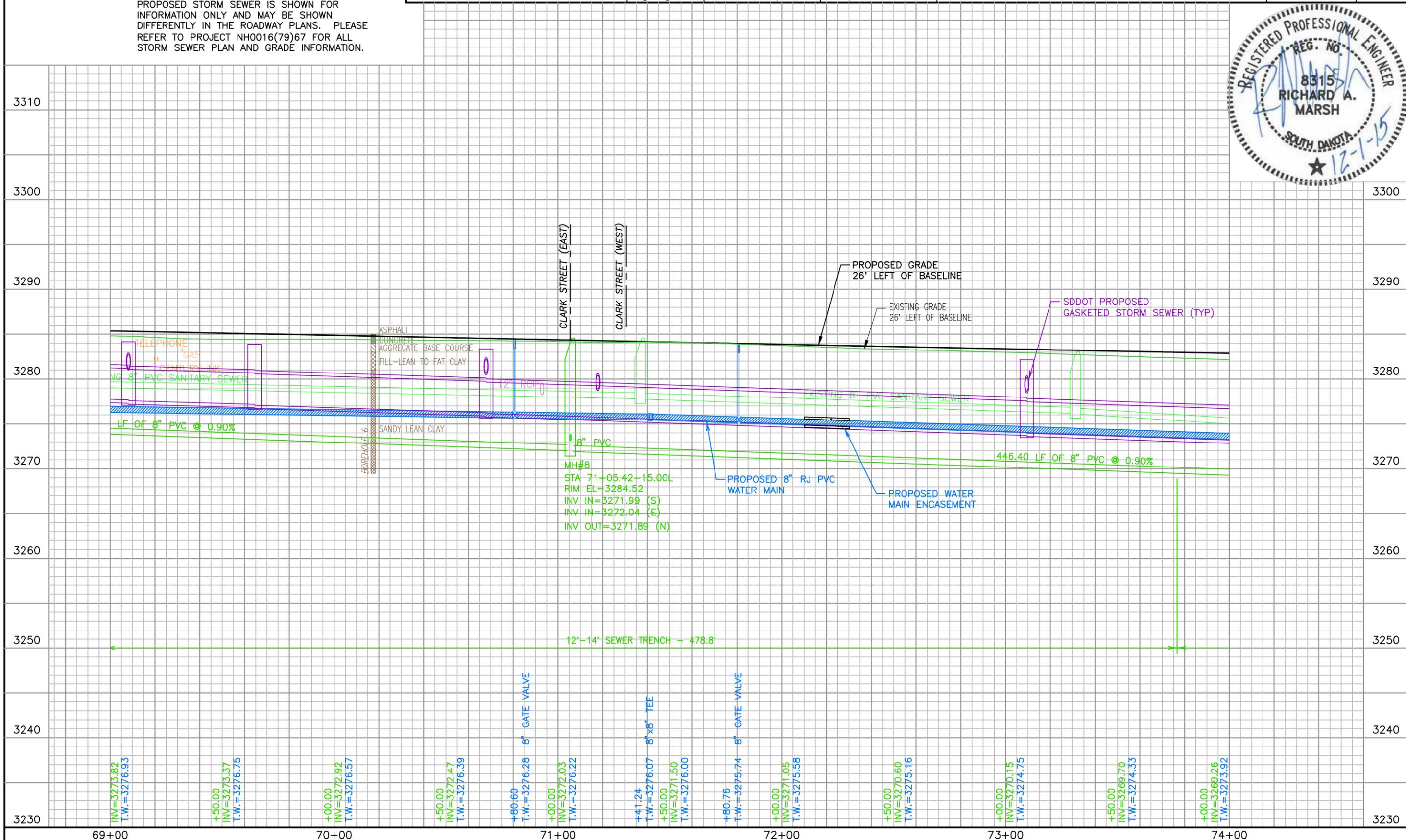
**FOR BIDDING PURPOSES ONLY**

**MOUNT RUSHMORE ROAD  
 UTILITY RECONSTRUCTION**

Sheet Title: MOUNT RUSHMORE RD  
 UTILITY PROFILE (southbound)  
 STA 69+00 to 74+00  
 Sheet No: G39  
 of  
 G90



December 01, 2015 3:02:18 p.m.  
 Drawing: PLAN AND PROFILES.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\11119.00 - MT. RUSHMORE RD. UTILITIES RECONSTRUCTION DRAWINGS\PHASE 3 - SAINT JAMES TO KANSAS CITY)



SCALE:  
 HORIZ. 1" = 40'  
 VERT. 1" = 10'

**NOTE:**  
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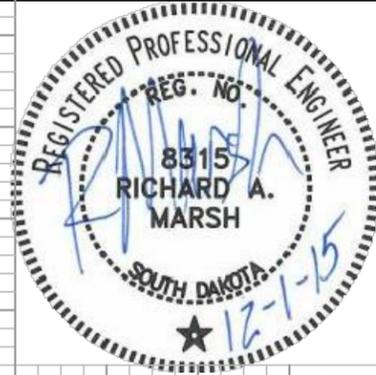
Prepared For:  
 Public Works Department  
 RAPID CITY  
 SOUTH DAKOTA  
 Engineering Services

Scale: AS NOTED  
 Designed By: RM  
 Design Date: 07.2015  
 Internal Job No: 11119.06  
 Surveyed By: SDDOT  
 Project Number: 13-2139, CIP NO.50950, PCN X03L  
 Drawn By: MS  
 Print Date: 12.01.2015  
 Survey Date: 2012

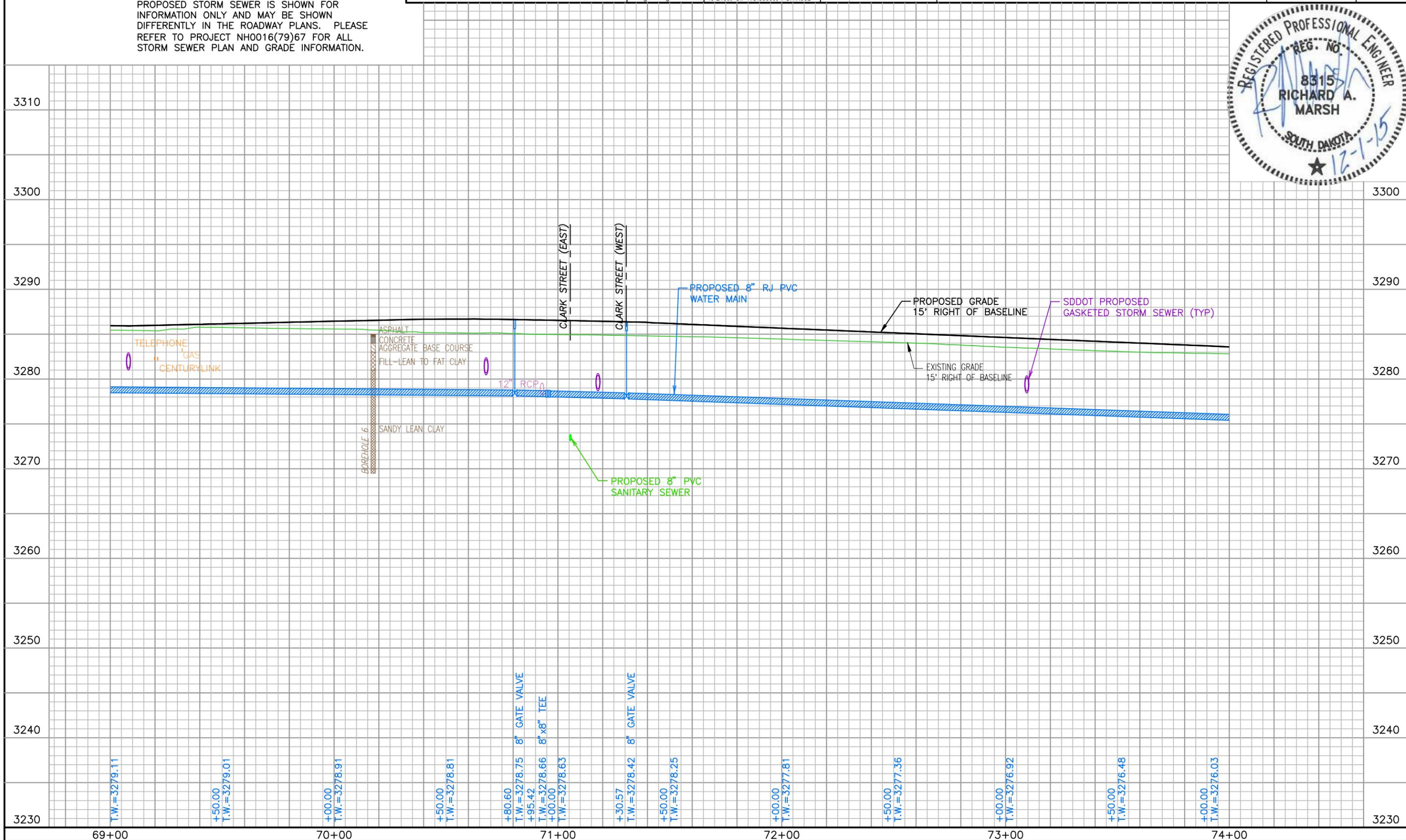
Revisions:  
 Number: Description:

**FOR BIDDING PURPOSES ONLY**  
**MOUNT RUSHMORE ROAD**  
**UTILITY RECONSTRUCTION**

Sheet Title: MOUNT RUSHMORE RD  
 UTILITY PROFILE (northbound)  
 STA 69+00 to 74+00  
 Sheet No: G40  
 of  
 G90



December 01, 2015 3:07:18 p.m.  
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F&I 4" TRANSITION COUPLING AND CONNECT TO EXISTING WATER MAIN AT THE FOLLOWING LOCATIONS:

STA 3+21.24 - 21.79L (CLARK STREET WEST)

F&I 8"x4" REDUCER AT THE FOLLOWING LOCATIONS:

STA 3+24.48 - 21.78L (CLARK STREET WEST)

F&I 8" 90° BEND AT THE FOLLOWING LOCATIONS:

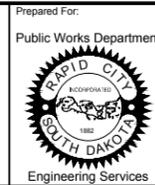
STA 3+28.47 - 10.82L (CLARK STREET WEST)

STA 3+28.47 - 21.76L (CLARK STREET WEST)

F&I 8" GATE VALVE AND BOX AT THE FOLLOWING LOCATIONS:

STA 0+73.16 - 10.00R (CLARK STREET EAST)

STA 4+42.28 - 10.81L (CLARK STREET WEST)

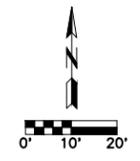
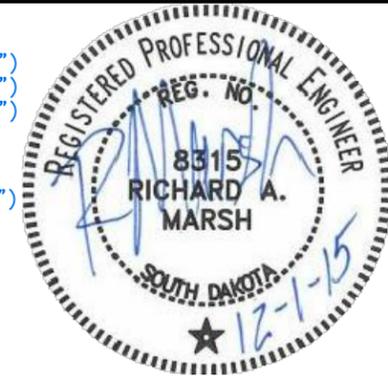


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| Scale:            | AS NOTED                        |
| Designed By:      | RM                              |
| Drawn By:         | MS                              |
| Design Date:      | 07.2015                         |
| Print Date:       | 12.01.2015                      |
| Internal Job No.: | 11119.06                        |
| Surveyed By:      | SDDOT                           |
| Survey Date:      | 2012                            |
| Project Number:   | 13-2139, CIP NO.50950, PCN X03L |

**FOR BIDDING PURPOSES ONLY**

**MOUNT RUSHMORE ROAD UTILITY RECONSTRUCTION**

|              |                           |            |     |
|--------------|---------------------------|------------|-----|
| Sheet Title: | CLARK STREET              | Sheet No.: | G41 |
|              | WATER MAIN and SEWER MAIN |            | of  |
|              | STA 69-00 to 74+00        |            | G90 |



F&I 8" 45° VERTICAL BEND AT THE FOLLOWING LOCATIONS:

STA 4+54.07 - 10.82L (CLARK STREET WEST)

STA 4+58.43 - 10.82L (CLARK STREET WEST)

STA 4+70.98 - 10.82L (CLARK STREET WEST)

F&I 8"x6" TEE AT THE FOLLOWING LOCATIONS:

STA 0+60.85 - 10.00R (CLARK STREET EAST)

STA 4+47.58 - 10.81L (CLARK STREET WEST)

F&I FIRE HYDRANT AND THRUSTBLOCK, 6" AUXILIARY GATE VALVE AND BOX, 6" PVC HYDRANT LEAD, AND TEST STATION AT THE FOLLOWING LOCATIONS:

STA 0+60.85 - 24.31R (CLARK STREET EAST)

STA 4+47.58 - 30.32L (CLARK STREET WEST)

F&I 8"x6" REDUCER AT THE FOLLOWING LOCATIONS:

STA 0+83.91 - 10.00R (CLARK STREET EAST)

F&I 6" 90° BEND AT THE FOLLOWING LOCATIONS:

STA 0+87.66 - 10.00R (CLARK STREET EAST)

STA 0+87.66 - 3.10R (CLARK STREET EAST)

F&I 6" TRANSITION COUPLING AND CONNECT TO EXISTING WATER MAIN AT THE FOLLOWING LOCATIONS:

STA 0+91.20 - 3.11R (CLARK STREET EAST)

F&I TAPPING SADDLES AT THE FOLLOWING LOCATIONS:

STA 3+51.27 - 10.82'L (CLARK STREET WEST) (1")

STA 3+53.27 - 10.82'L (CLARK STREET WEST) (1")

STA 3+96.92 - 10.82'L (CLARK STREET WEST) (1")

F&I TAPPING SADDLES AT THE FOLLOWING LOCATIONS:

STA 0+57.68 - 10.00'R (CLARK STREET EAST) (1")

F&I CURB STOP AND BOX AND RECONNECT NEW WATER SERVICE LINE AT THE FOLLOWING LOCATIONS (CLARK STREET WEST):

STA 3+46.45 - 41.90'R - 54.9' 1" (cop.)

STA 3+51.27 - 40.69'L - 29.9' 1" (cop.)

STA 3+89.29 - 42.34'R - 55.2' 1" (cop.)

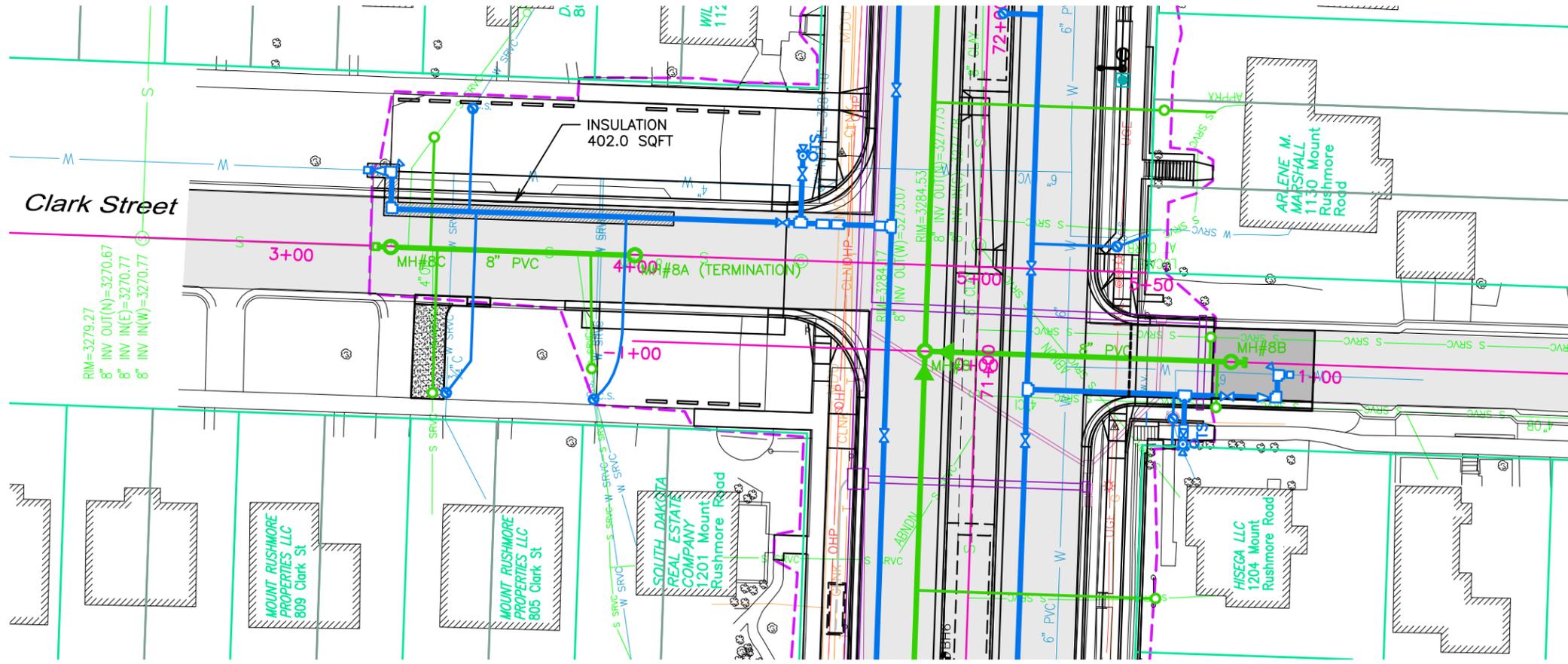
(CONNECT 1201 MRR ONLY)

F&I CURB STOP AND BOX AND RECONNECT NEW WATER SERVICE LINE AT THE FOLLOWING LOCATIONS (CLARK STREET EAST):

STA 0+57.68 - 17.00'R - 14.6' 1" (cop.)

INSTALL 6" 1 1/4" VERTICAL BEND AT THE FOLLOWING LOCATIONS:

STA 0+60.85 - 20.53R (CLARK STREET EAST)



**CLARK STREET WEST SURFACING NOTES:**

3+36.35-16.48'R to 3+51.59-16.52'R  
CONCRETE P-GUTTER, 15.2 LF

3+51.59-16.52'R to 3+58.27-16.60'R  
CONCRETE CURB & GUTTER, TYPE B66, 6.7 LF

3+36.35-16.48'R to 3+47.12-16.54'R  
GRAVEL SURFACING, 4", 6.4 TONS

**CLARK STREET EAST SURFACING NOTES:**

0+68.70-9.68'L & 10.67'R to 0+98.00-9.91'L & 10.73'R  
BASE COURSE, 8", 30.1 TONS  
ASPHALT CONCRETE COMPOSITE, 5", 18.8 TONS

0+68.70-13.34'R to 0+98.01-13.34'R  
CONCRETE CURB & GUTTER, TYPE B66, 29.3 LF

F&I SEWER MANHOLES AT THE FOLLOWING LOCATIONS:

MH#8A (TERMINATION) STA 3+99.78 - 0.21R (CLARK STREET WEST) (48")

MH#8B STA 0+74 - 0.00 (CLARK STREET EAST) (48")

MH#8C STA 3+28.87 - 0.24R (CLARK STREET WEST) (48")

STA 3+24.53 - 0.24'R (CLARK STREET WEST)  
CONNECT TO EXISTING 8" SANITARY SEWER MAIN

STA 0+78.39 - CL (CLARK STREET EAST)

F&I 2' 8" PVC STUB AND 8" CAP ON SEWER

F&I PVC SANITARY SEWER SERVICE, CLEANOUT, CLEANOUT FRAME AND LID, AND RECONNECT TO EXISTING SANITARY SEWER SERVICE

AT THE FOLLOWING LOCATIONS (CLARK STREET WEST):

STA 3+40.40 - 0.23'R TO 31.93'L, 32.2' 4"

STA 3+42.41 - 0.23'R TO 42.02'R, 41.8' 4"

STA 3+88.44 - 33.38'R TO 3+86.92 - 0.21'R, 33.2' 4"

F&I PVC SANITARY SEWER SERVICE, CLEANOUT, CLEANOUT FRAME AND LID, AND RECONNECT TO EXISTING SANITARY SEWER SERVICE

AT THE FOLLOWING LOCATIONS (CLARK STREET EAST):

STA 0+67.79 - CL TO 6.94'L, 6.9' 4"

STA 0+70.04 - CL TO 13.36'R, 13.4' 4"

December 01, 2015 3:07:18 PM Drawing: PLAN AND PROFILES.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\1119.00 MT. RUSHMORE RD. UTILITIES RECONSTRUCTION DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY)

SCALE:  
HORIZ. 1" = 40'  
VERT. 1" = 10'

**NOTE:**  
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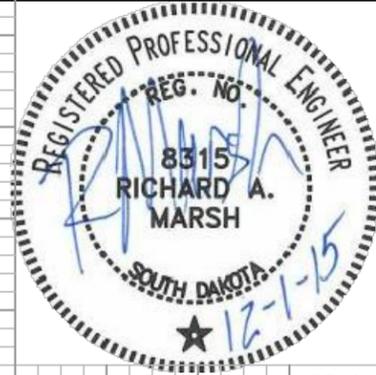
Prepared For:  
Public Works Department  
RAPID CITY  
SOUTH DAKOTA  
Engineering Services

Scale: AS NOTED  
Designed By: RM  
Design Date: 07.2015  
Internal Job No: 11119.06  
Surveyed By: SDDOT  
Project Number: 13-2139, CIP NO.50950, PCN X03L

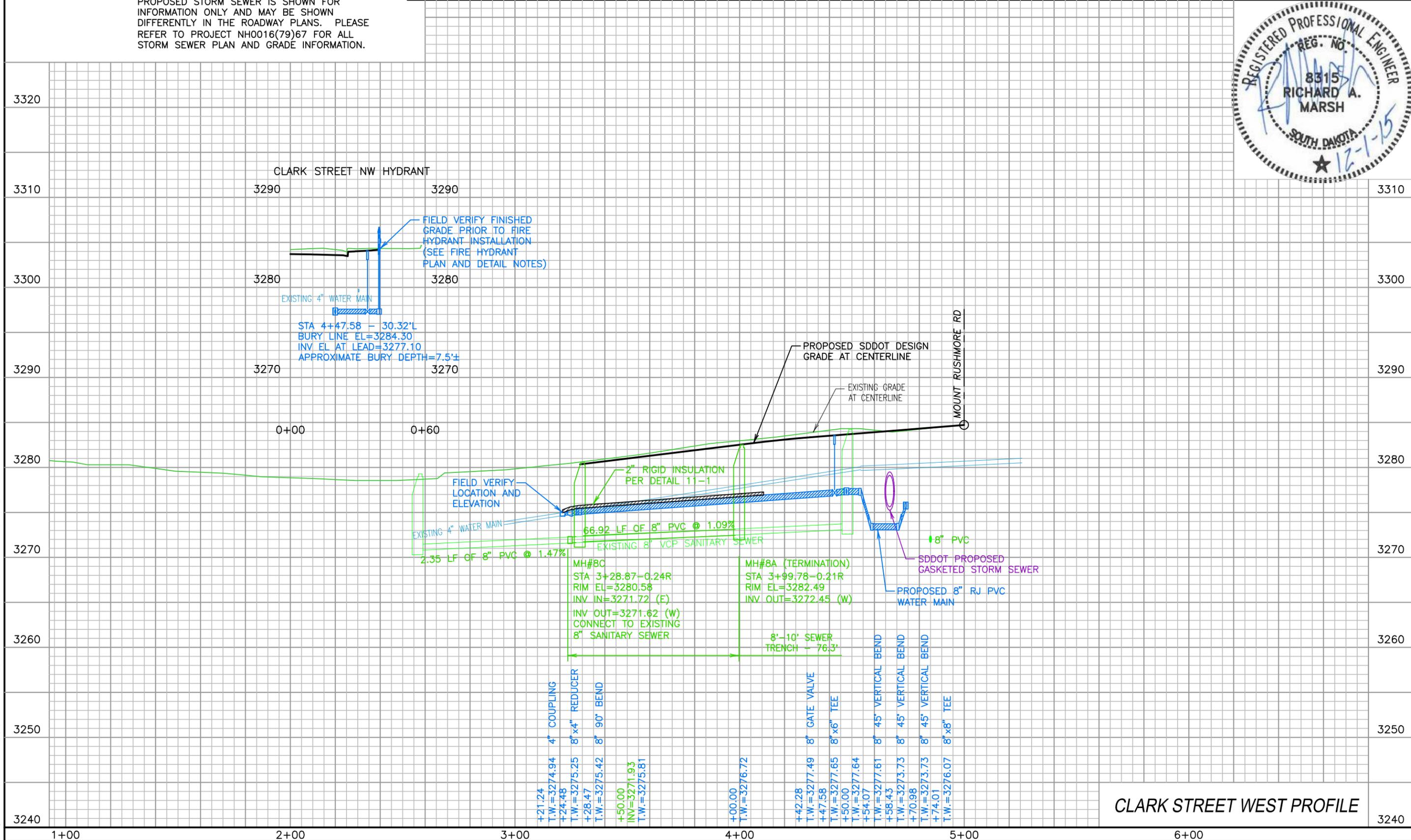
Revisions:  
Number: Description:

**FOR BIDDING PURPOSES ONLY**  
**MOUNT RUSHMORE ROAD**  
**UTILITY RECONSTRUCTION**

Sheet Title: CLARK STREET WEST  
UTILITY PROFILE  
STA 0+00 to END  
Sheet No: G42  
of  
G90

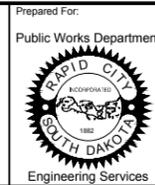


December 01, 2015 3:07:18 p.m.  
Drawing: PLAN AND PROFILES.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\11119.00 - MT. RUSHMORE RD. UTILITIES RECONSTRUCTION\DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY\)



SCALE:  
HORIZ. 1" = 40'  
VERT. 1" = 10'

**NOTE:**  
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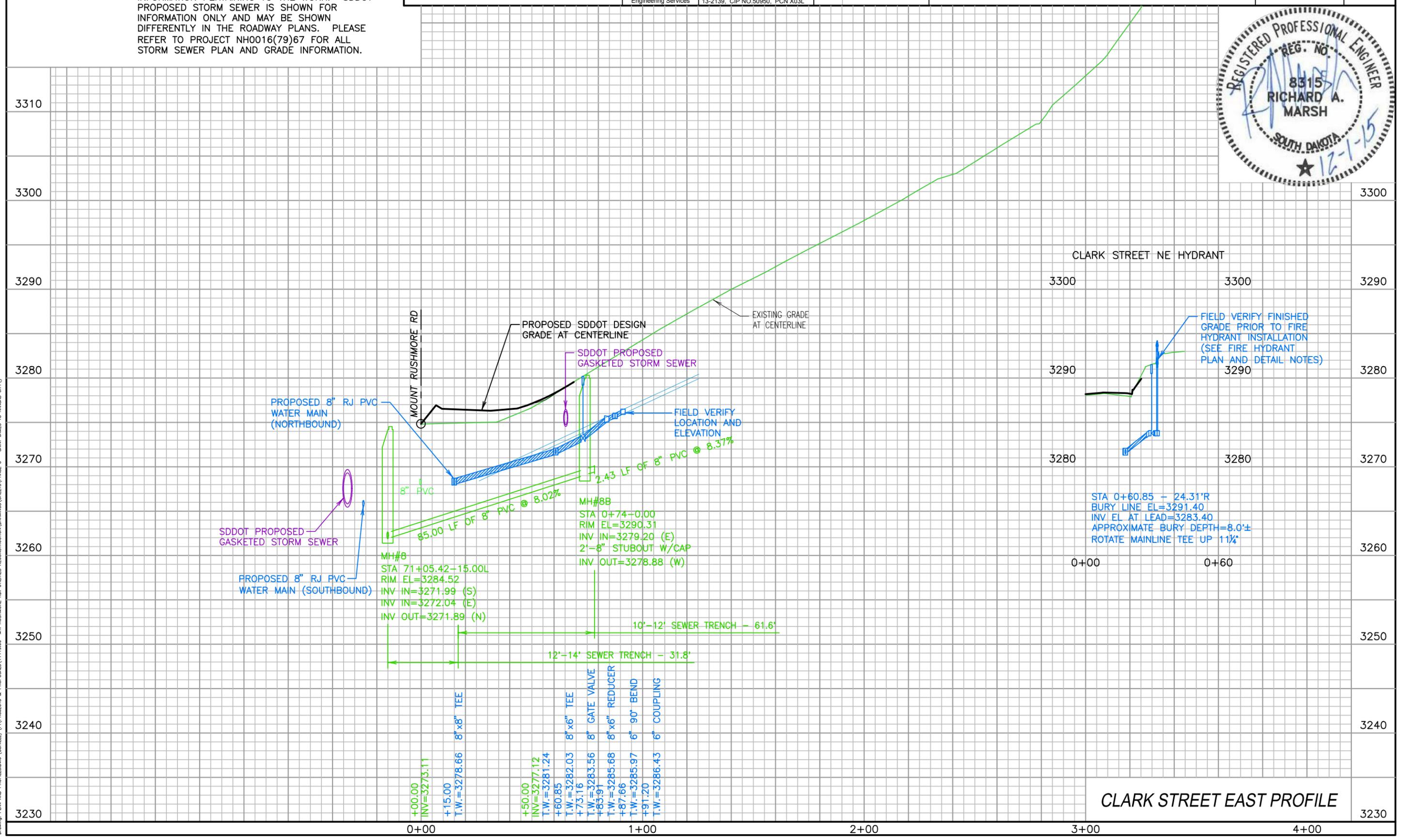
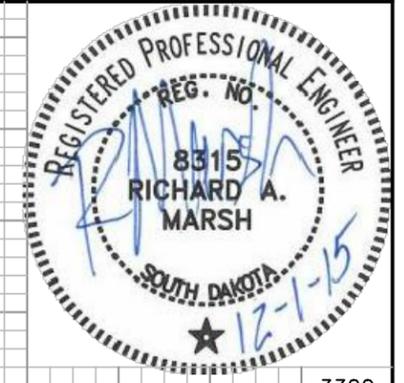


|                   |                                 |
|-------------------|---------------------------------|
| Scale:            | AS NOTED                        |
| Designed By:      | RM                              |
| Design Date:      | 07.2015                         |
| Internal Job No.: | 11119.06                        |
| Surveyed By:      | SDDOT                           |
| Project Number:   | 13-2139, CIP NO.50950, PCN X03L |
| Drawn By:         | MS                              |
| Print Date:       | 12.01.2015                      |
| Survey Date:      | 2012                            |

**FOR BIDDING PURPOSES ONLY**

**MOUNT RUSHMORE ROAD  
UTILITY RECONSTRUCTION**

|              |                   |            |     |
|--------------|-------------------|------------|-----|
| Sheet Title: | CLARK STREET EAST | Sheet No.: | G43 |
|              | UTILITY PROFILE   |            | of  |
|              | STA 0+00 to END   |            | G90 |



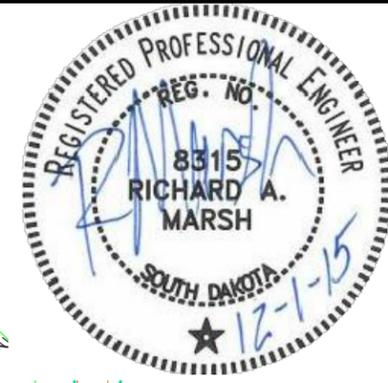
**CLARK STREET EAST PROFILE**

December 01, 2015 3:07:18 p.m. Drawing: PLAN AND PROFILES.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\11119.06 MT. RUSHMORE RD. UTILITIES RECONSTRUCTION DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY)

FOR BIDDING PURPOSES ONLY

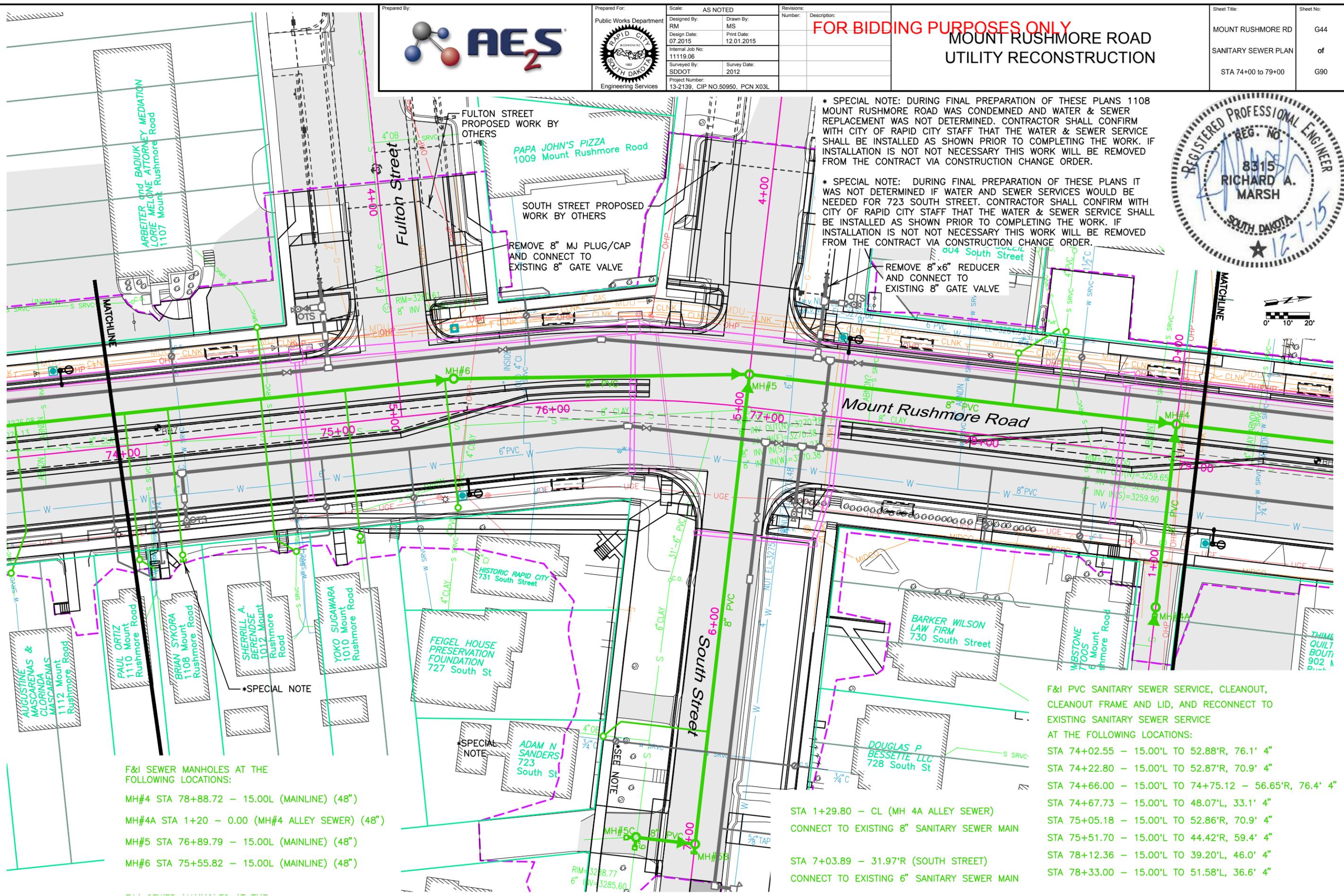
## MOUNT RUSHMORE ROAD UTILITY RECONSTRUCTION

|                     |           |
|---------------------|-----------|
| Sheet Title:        | Sheet No: |
| MOUNT RUSHMORE RD   | G44       |
| SANITARY SEWER PLAN | of        |
| STA 74+00 to 79+00  | G90       |



\* SPECIAL NOTE: DURING FINAL PREPARATION OF THESE PLANS 1108 MOUNT RUSHMORE ROAD WAS CONDEMNED AND WATER & SEWER REPLACEMENT WAS NOT DETERMINED. CONTRACTOR SHALL CONFIRM WITH CITY OF RAPID CITY STAFF THAT THE WATER & SEWER SERVICE SHALL BE INSTALLED AS SHOWN PRIOR TO COMPLETING THE WORK. IF INSTALLATION IS NOT NECESSARY THIS WORK WILL BE REMOVED FROM THE CONTRACT VIA CONSTRUCTION CHANGE ORDER.

\* SPECIAL NOTE: DURING FINAL PREPARATION OF THESE PLANS IT WAS NOT DETERMINED IF WATER AND SEWER SERVICES WOULD BE NEEDED FOR 723 SOUTH STREET. CONTRACTOR SHALL CONFIRM WITH CITY OF RAPID CITY STAFF THAT THE WATER & SEWER SERVICE SHALL BE INSTALLED AS SHOWN PRIOR TO COMPLETING THE WORK. IF INSTALLATION IS NOT NECESSARY THIS WORK WILL BE REMOVED FROM THE CONTRACT VIA CONSTRUCTION CHANGE ORDER.



F&I SEWER MANHOLES AT THE FOLLOWING LOCATIONS:

- MH#4 STA 78+88.72 - 15.00L (MAINLINE) (48")
- MH#4A STA 1+20 - 0.00 (MH#4 ALLEY SEWER) (48")
- MH#5 STA 76+89.79 - 15.00L (MAINLINE) (48")
- MH#6 STA 75+55.82 - 15.00L (MAINLINE) (48")

- STA 1+29.80 - CL (MH 4A ALLEY SEWER)  
CONNECT TO EXISTING 8" SANITARY SEWER MAIN
- STA 7+03.89 - 31.97'R (SOUTH STREET)  
CONNECT TO EXISTING 6" SANITARY SEWER MAIN

F&I PVC SANITARY SEWER SERVICE, CLEANOUT, CLEANOUT FRAME AND LID, AND RECONNECT TO EXISTING SANITARY SEWER SERVICE AT THE FOLLOWING LOCATIONS:

- STA 74+02.55 - 15.00'L TO 52.88'R, 76.1' 4"
- STA 74+22.80 - 15.00'L TO 52.87'R, 70.9' 4"
- STA 74+66.00 - 15.00'L TO 74+75.12 - 56.65'R, 76.4' 4"
- STA 74+67.73 - 15.00'L TO 48.07'L, 33.1' 4"
- STA 75+05.18 - 15.00'L TO 52.86'R, 70.9' 4"
- STA 75+51.70 - 15.00'L TO 44.42'R, 59.4' 4"
- STA 78+12.36 - 15.00'L TO 39.20'L, 46.0' 4"
- STA 78+33.00 - 15.00'L TO 51.58'L, 36.6' 4"

December 01, 2015 3:07:18 p.m. Drawing: PLAN AND PROFILES.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\11119.00 - MT. RUSHMORE RD. UTILITIES RECONSTRUCTION DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY)

F&I 8" 1 1/4" BEND  
AT THE FOLLOWING LOCATIONS:

- STA 76+23.26 - 28.03L (MAINLINE)
- STA 76+35.18 - 11.98R (MAINLINE)

F&I 8" GATE VALVE AND BOX  
AT THE FOLLOWING LOCATIONS:

- STA 74+79.28 - 26.00L (MAINLINE)
- STA 75+79.73 - 26.00L (MAINLINE)
- STA 76+44.04 - 12.86R (MAINLINE)
- STA 77+06.99 - 15.00R (MAINLINE)
- STA 77+39.13 - 26.00L (MAINLINE)

F&I 8"x6" TEE  
AT THE FOLLOWING LOCATIONS:

- STA 4+45.70 - 31.40R (FULTON STREET)
- STA 4+47.33 - 30.40L (SOUTH STREET)
- STA 74+26.12 - 15.00R (MAINLINE)
- STA 77+17.70 - 15.00R (MAINLINE)

F&I FIRE HYDRANT AND THRUSTBLOCK,  
6" AUXILIARY GATE VALVE AND BOX, 6" PVC  
HYDRANT LEAD, AND TEST STATION AT  
THE FOLLOWING LOCATIONS:

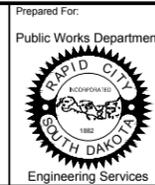
- STA 4+45.70 - 42.64R (FULTON STREET)
- STA 4+47.35 - 44.32L (SOUTH STREET)
- STA 74+26.06 - 37.13R (MAINLINE)
- STA 77+17.70 - 46.65R (MAINLINE)

F&I 8"x8" TEE  
AT THE FOLLOWING LOCATIONS:

- STA 4+74 - 30.40L (SOUTH STREET)
- STA 5+15 - 11.00L (SOUTH STREET)
- STA 5+15 - 36.31L (SOUTH STREET)

F&I 8" HIGH DEFLECTION VERTICAL COUPLING  
AT THE FOLLOWING LOCATIONS:

- STA 4+62.91 - 30.40L (SOUTH STREET)



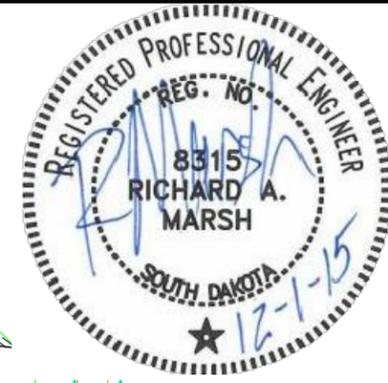
Prepared For: Public Works Department  
Designed By: RM  
Design Date: 07.2015  
Internal Job No: 11119.06  
Surveyed By: SDDOT  
Project Number: 13-2139, CIP NO.50950, PCN X03L

Scale: AS NOTED  
Drawn By: MS  
Print Date: 12.01.2015  
Survey Date: 2012

**FOR BIDDING PURPOSES ONLY**

**MOUNT RUSHMORE ROAD  
UTILITY RECONSTRUCTION**

|                    |           |
|--------------------|-----------|
| Sheet Title:       | Sheet No: |
| MOUNT RUSHMORE RD  | G45       |
| WATER MAIN PLAN    | of        |
| STA 74+00 to 79+00 | G90       |



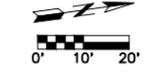
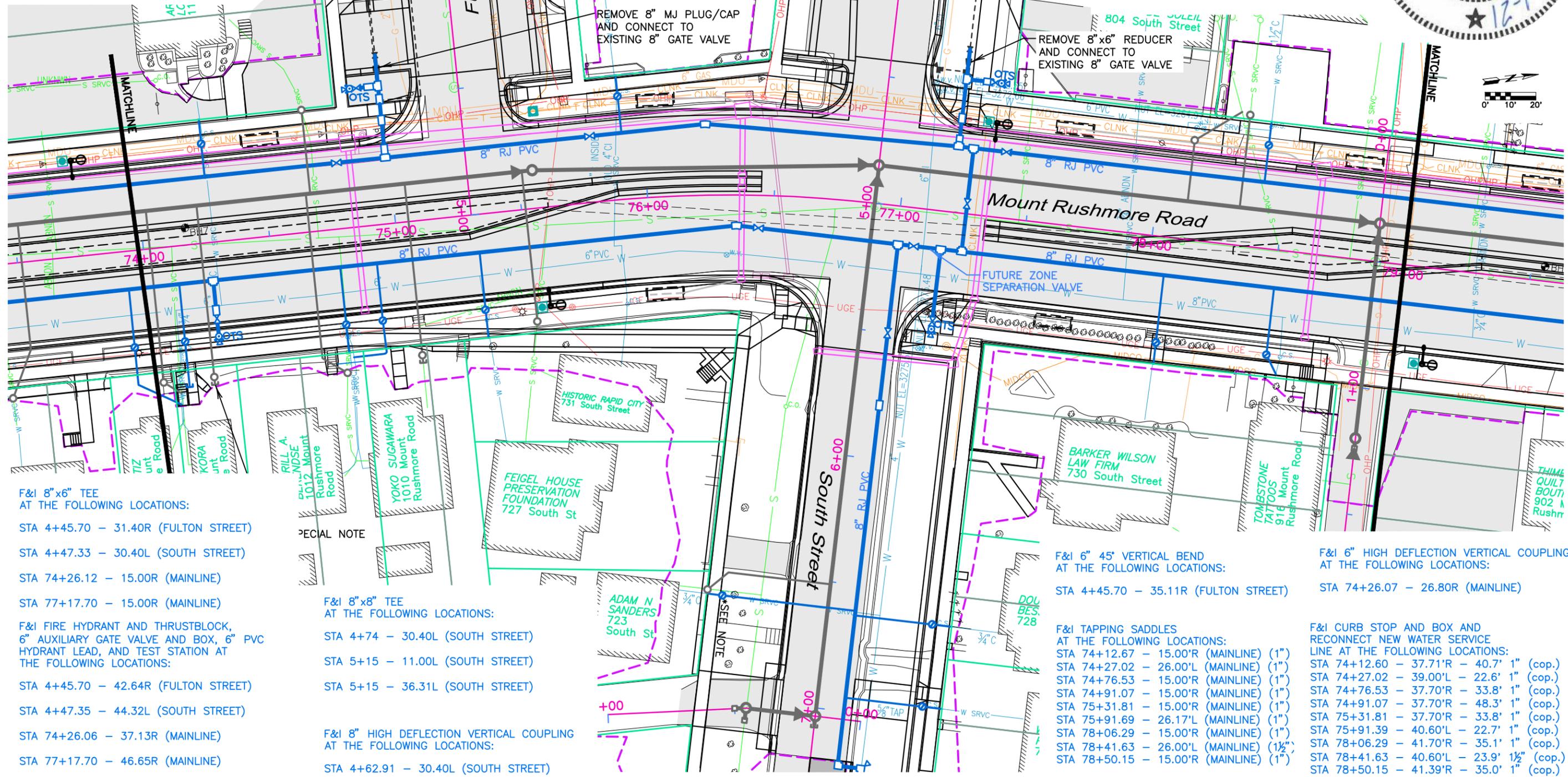
F&I 8" 45" VERTICAL BEND  
AT THE FOLLOWING LOCATIONS:

- STA 4+70.79 - 31.42R (FULTON STREET)

INSTALL 8" 1 1/4" VERTICAL BEND  
AT THE FOLLOWING LOCATIONS:

- STA 4+50.97 - 31.41R (FULTON STREET)
- STA 4+59.29 - 31.41R (FULTON STREET)

REMOVE 8"x6" REDUCER  
AND CONNECT TO  
EXISTING 8" GATE VALVE



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SCALE:  
HORIZ. 1" = 40'  
VERT. 1" = 10'

**NOTE:**  
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Prepared By:  
Public Works Department  
RAPID CITY  
SOUTH DAKOTA  
Engineering Services

Scale: AS NOTED  
Designed By: RM  
Design Date: 07.2015  
Internal Job No: 11119.06  
Surveyed By: SDDOT  
Project Number: 13-2139, CIP NO.50950, PCN X03L

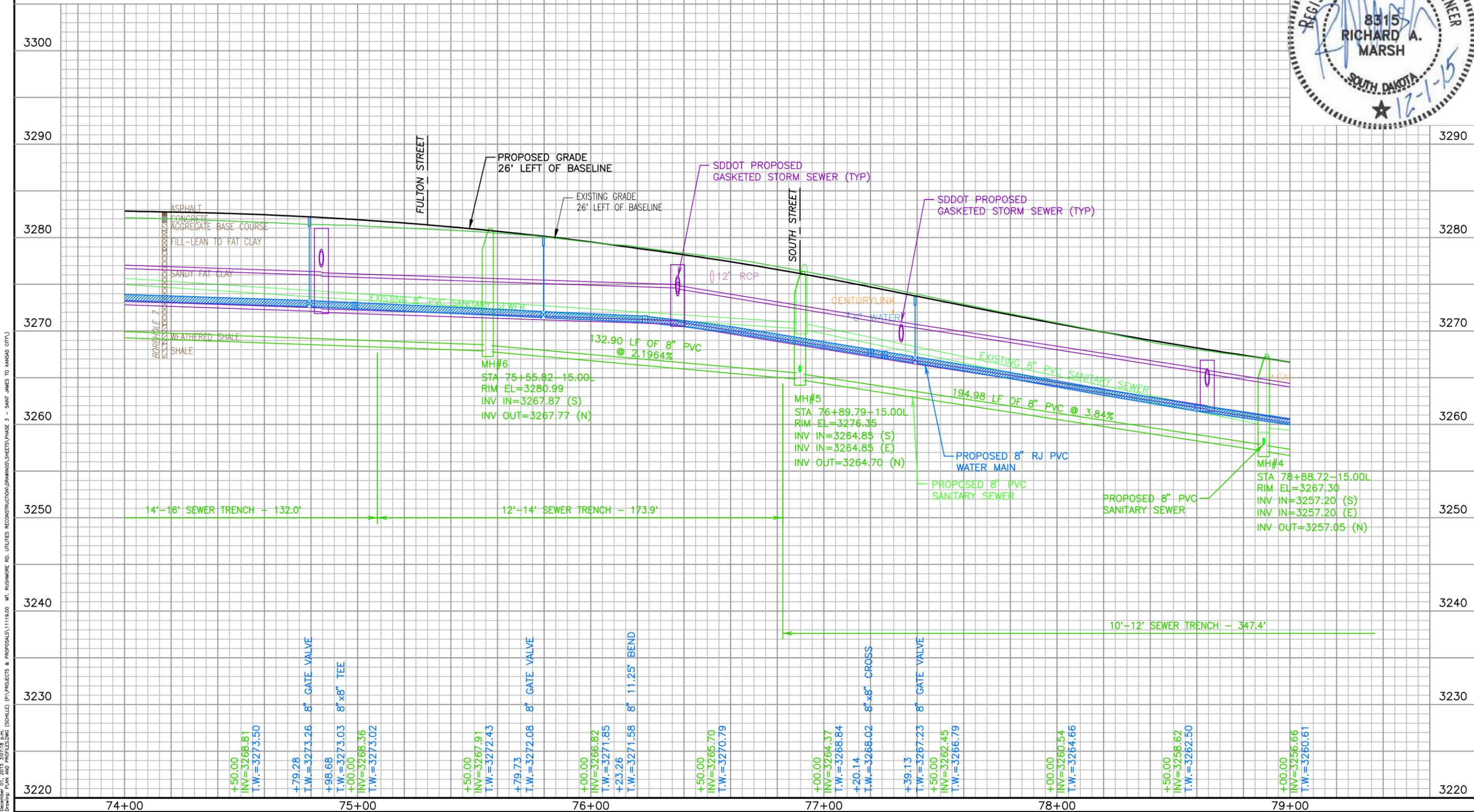
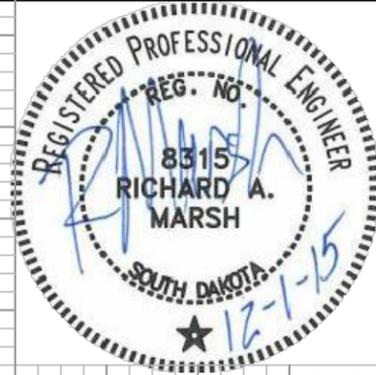
Revisions:  
Number: Description:

**FOR BIDDING PURPOSES ONLY**

**MOUNT RUSHMORE ROAD  
UTILITY RECONSTRUCTION**

Sheet Title: MOUNT RUSHMORE RD  
UTILITY PROFILE (southbound)  
STA 74+00 to 79+00

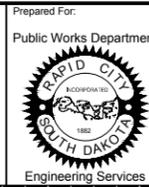
Sheet No: G46  
of  
G90



December 01, 2015 3:07:18 p.m. Drawing: PLAN AND PROFILES.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\1119.00 MT. RUSHMORE RD. UTILITIES RECONSTRUCTION\DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY)

SCALE:  
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VERT. 1" = 10'

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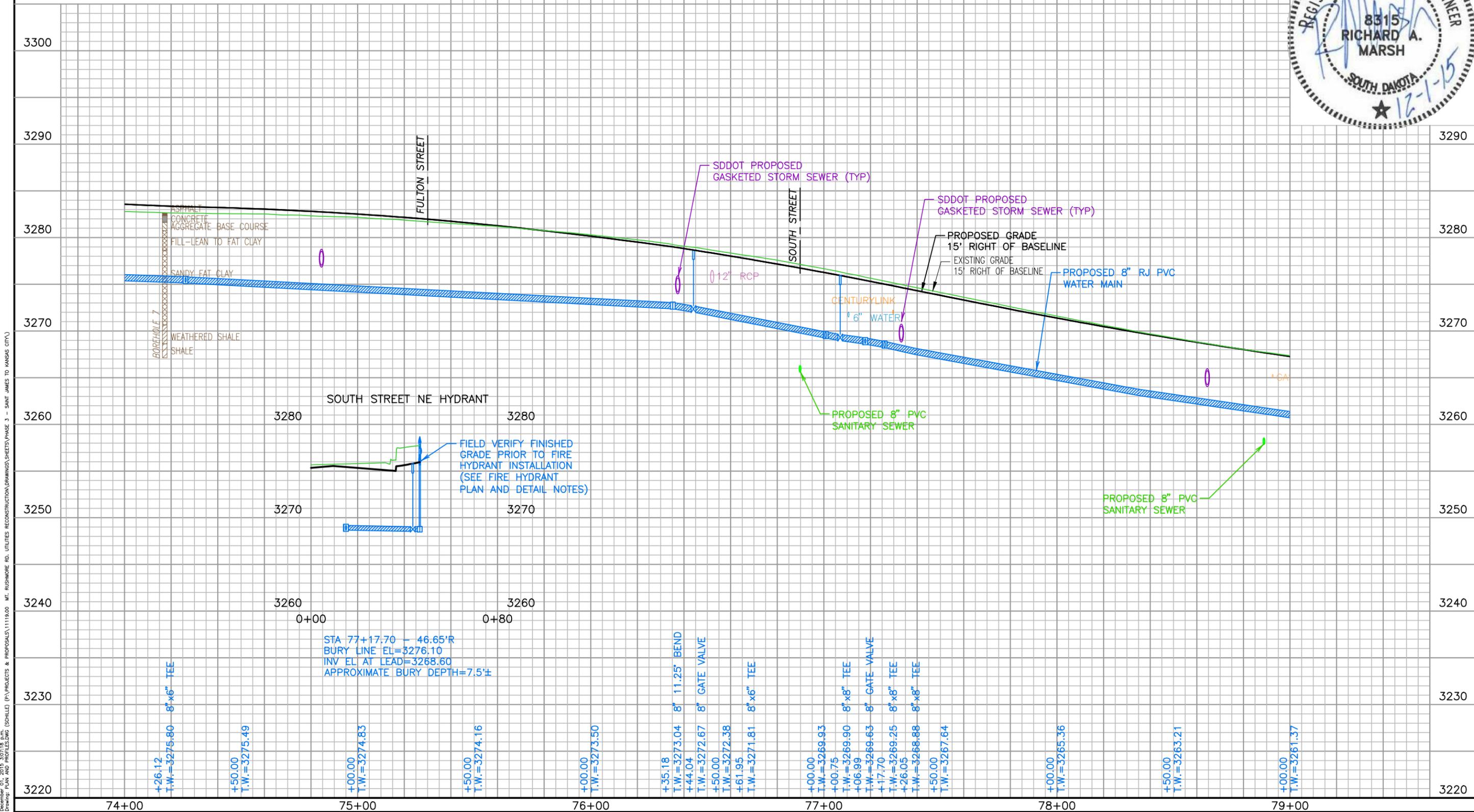
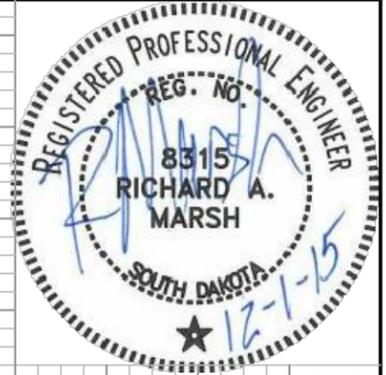


Prepared For: Public Works Department  
Scale: AS NOTED  
Designed By: RM  
Design Date: 07.2015  
Internal Job No: 11119.06  
Surveyed By: SDDOT  
Project Number: 13-2139, CIP NO.50950, PCN X03L  
Drawn By: MS  
Print Date: 12.01.2015  
Survey Date: 2012

**FOR BIDDING PURPOSES ONLY**

**MOUNT RUSHMORE ROAD  
UTILITY RECONSTRUCTION**

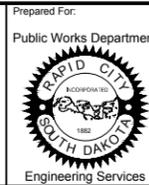
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UTILITY PROFILE (northbound)  
STA 74+00 to 79+00  
Sheet No: G47  
of  
G90



December 01, 2015 3:07:18 p.m.  
Drawing: PLAN AND PROFILES.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\11119.00 MT. RUSHMORE RD. UTILITIES RECONSTRUCTION DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY)

SCALE:  
HORIZ. 1" = 40'  
VERT. 1" = 10'

**NOTE:**  
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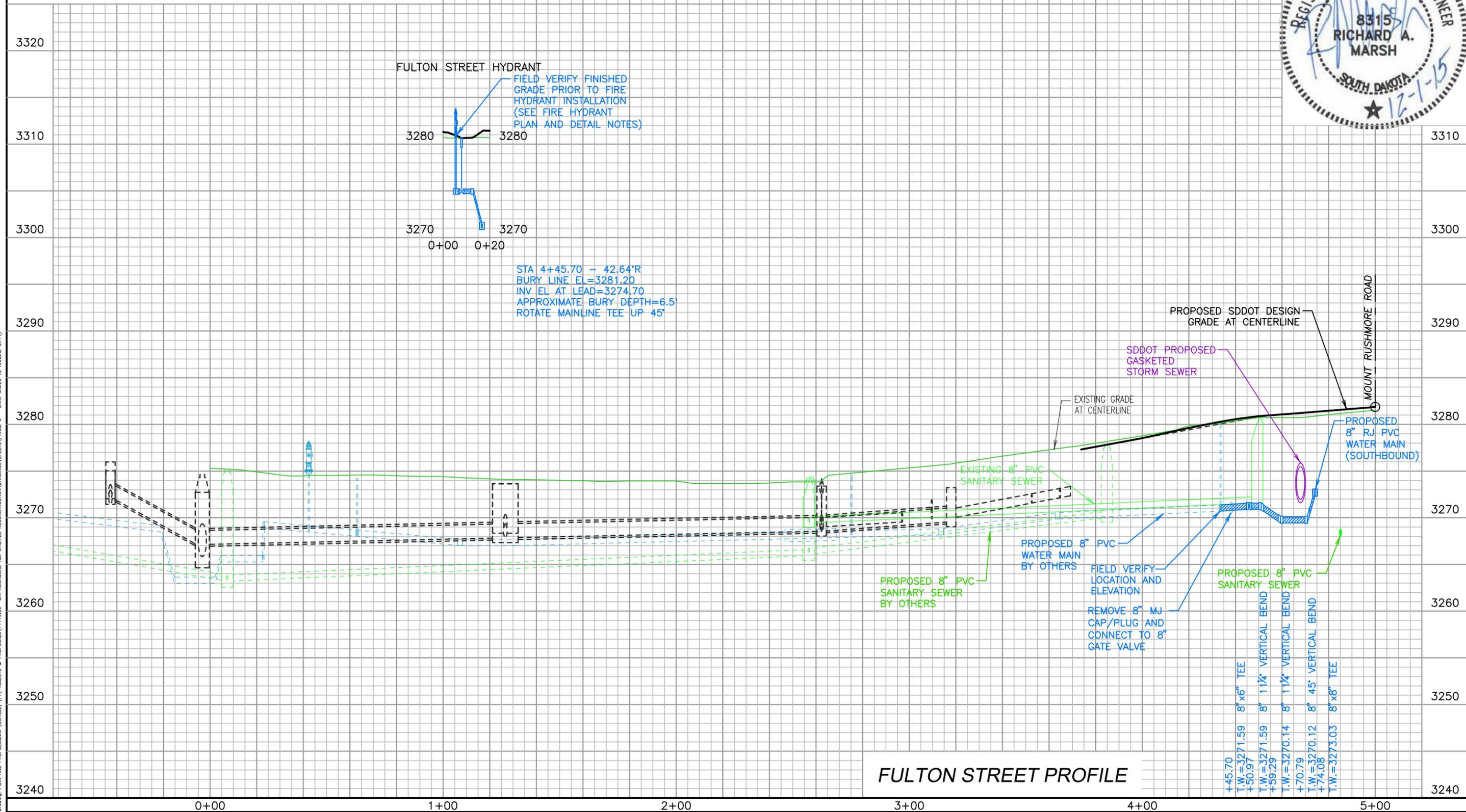
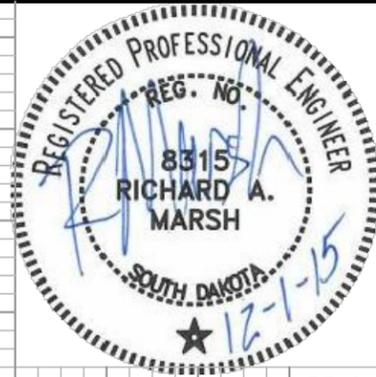


Prepared For: Public Works Department  
Scale: AS NOTED  
Designed By: RM  
Design Date: 07.2015  
Internal Job No: 11119.06  
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Project Number: 13-2139, CIP NO.50950, PCN X03L  
Drawn By: MS  
Print Date: 12.01.2015  
Survey Date: 2012

**FOR BIDDING PURPOSES ONLY**

**MOUNT RUSHMORE ROAD  
UTILITY RECONSTRUCTION**

Sheet Title: FULTON STREET  
UTILITY PROFILE  
STA 0+00 to END  
Sheet No: G48  
of  
G90



December 01, 2015 3:07:18 p.m. Drawing: PLAN AND PROFILES.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\11119.00 - MT. RUSHMORE RD. UTILITIES RECONSTRUCTION DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY)

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|  |                         |                                 |              |            |  |                    |                           |            |     |
|--|-------------------------|---------------------------------|--------------|------------|--|--------------------|---------------------------|------------|-----|
|  | Prepared For:           | Scale:                          | AS NOTED     | Revisions: | <p style="color: red; font-weight: bold;">FOR BIDDING PURPOSES ONLY</p> <p style="text-align: center; font-weight: bold;">MOUNT RUSHMORE ROAD<br/>UTILITY RECONSTRUCTION</p> | Sheet Title:       | SOUTH STREET              | Sheet No.: | G49 |
|  | Public Works Department | Designed By:                    | RM           | MS         |  | Number:            | WATER MAIN and SEWER MAIN | of         | G90 |
|  | Design Date:            | 07.2015                         | Print Date:  | 12.01.2015 |  | STA 74+00 to 79+00 |                           |            |     |
| Engineering Services   | Internal Job No.:       | 11119.06                        | Survey Date: | 2012       |  |                    |                           |            |     |
|  | Project Number:         | 13-2139, CIP NO.50950, PCN X03L |              |            |  |                    |                           |            |     |

F&I 8" x 4" REDUCER  
AT THE FOLLOWING LOCATIONS:

STA 7+25.41 - 20.35L (SOUTH STREET)

F&I 8" HIGH DEFLECTION VERTICAL COUPLING  
AT THE FOLLOWING LOCATIONS:

STA 5+78.84 - 11.00L (SOUTH STREET)

F&I 8" GATE VALVE AND BOX  
AT THE FOLLOWING LOCATIONS:

STA 4+96 - 36.31L (SOUTH STREET)

STA 5+50.20 - 11.00L (SOUTH STREET)

F&I 8" 90° BEND  
AT THE FOLLOWING LOCATIONS:

STA 7+21.66 - 11.00L (SOUTH STREET)

STA 7+21.66 - 20.41L (SOUTH STREET)

F&I 6" TRANSITION COUPLING AND CONNECT  
TO EXISTING WATER MAIN AT THE  
FOLLOWING LOCATIONS:

STA 7+29.72 - 20.31L (SOUTH STREET)

F&I 8" x 8" TEE  
AT THE FOLLOWING LOCATIONS:

STA 4+74 - 30.40L (SOUTH STREET)

STA 5+15 - 11.00L (SOUTH STREET)

STA 5+15 - 36.31L (SOUTH STREET)

F&I TAPPING SADDLES  
AT THE FOLLOWING LOCATIONS:

STA 6+60.27 - 11.00'L (SOUTH STREET) (1")

STA 6+62.10 - 11.00'L (SOUTH STREET) (1")

STA 6+94.69 - 11.00'L (SOUTH STREET) (1")

F&I CURB STOP AND BOX AND  
RECONNECT NEW WATER SERVICE  
LINE AT THE FOLLOWING LOCATIONS  
(SOUTH STREET):

STA 6+60.27 - 41.85'R - 59.1' 1" (cop.)

STA 6+62.09 - 41.68'L - 38.4' 1" (cop.)

STA 6+94.64 - 41.61'L - 38.4' 1" (cop.)

INSTALL 8" 11¼" VERTICAL BEND  
AT THE FOLLOWING LOCATIONS:

STA 4+71.48 - 30.40L (SOUTH STREET)

INSTALL 6" 11¼" VERTICAL BEND  
AT THE FOLLOWING LOCATIONS:

STA 4+47.34 - 39.06L (SOUTH STREET)

F&I SEWER MANHOLES AT THE  
FOLLOWING LOCATIONS:

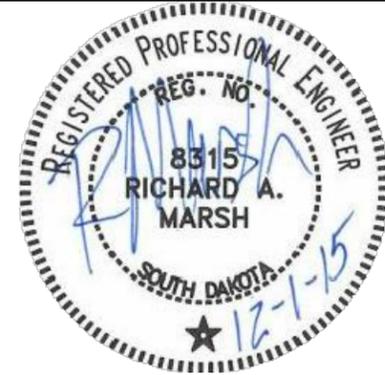
MH#5B STA 7+03.28 - 0.00 (SOUTH STREET) (48")

MH#5C STA 7+03.28 - 27.46R (SOUTH STREET) (48" DROP)

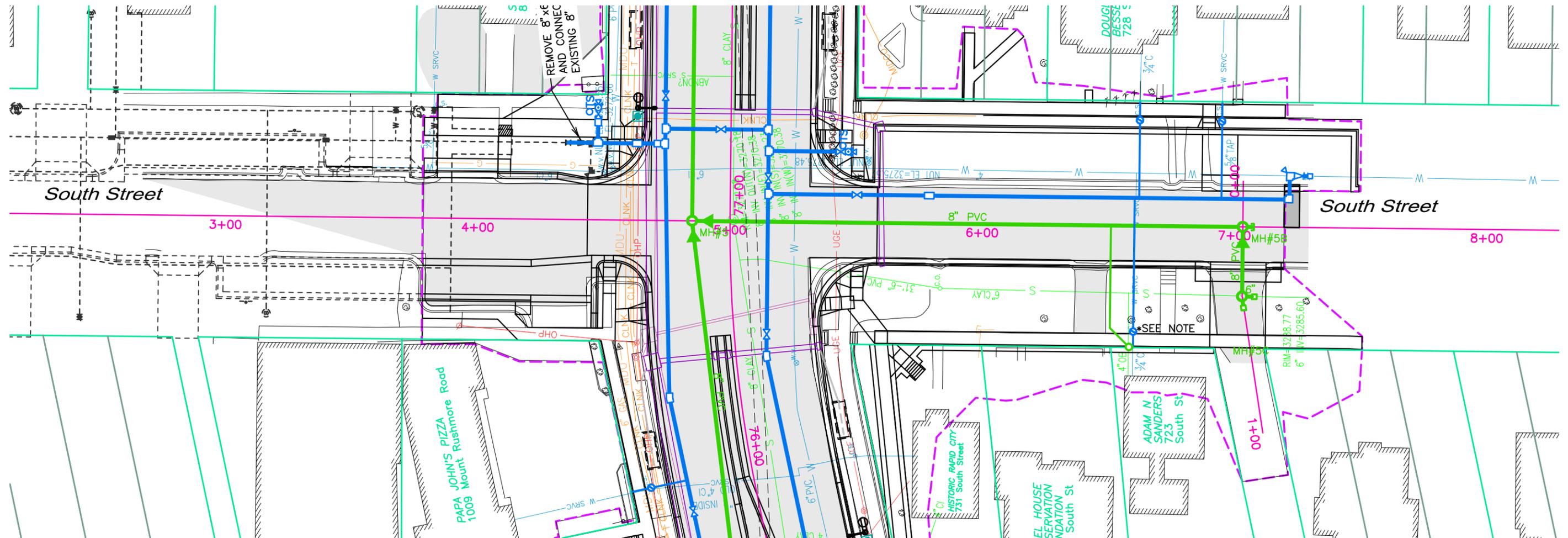
SOUTH STREET  
SURFACING NOTES:

7+19.63-CL & 14.18'L to  
7+25.66-CL & 14.22'L  
BASE COURSE, 8", 4.3 TONS  
ASPHALT CONCRETE COMPOSITE, 5", 2.7 TONS

7+19.63-16.85'L to  
7+25.66-16.85'L  
CONCRETE CURB & GUTTER, TYPE B66, 6.0 LF



December 01, 2015 3:02:18 p.m.  
Drawing: PLAN AND PROFILES.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\11119.06 - MOUNT RUSHMORE RD. UTILITIES RECONSTRUCTION\DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY)





SCALE:  
 HORIZ. 1" = 40'  
 VERT. 1" = 10'

**NOTE:**  
 ALL SUBSURFACE UTILITIES ARE SHOWN BASED UPON GROUND LEVEL FIELD SURVEY AND APPROXIMATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE TO FIELD LOCATE AND VERIFY UTILITY INFORMATION PERTAINING TO THE WORK. SDDOT PROPOSED STORM SEWER IS SHOWN FOR INFORMATION ONLY AND MAY BE SHOWN DIFFERENTLY IN THE ROADWAY PLANS. PLEASE REFER TO PROJECT NH0016(79)67 FOR ALL STORM SEWER PLAN AND GRADE INFORMATION.



Prepared By:  
 Public Works Department  
 Rapid City  
 South Dakota  
 Engineering Services

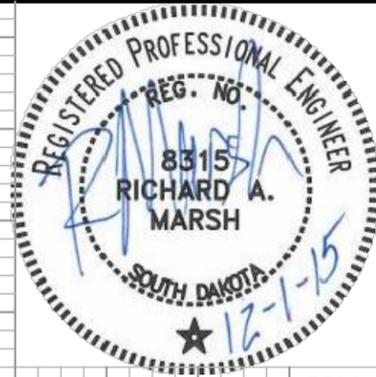
Scale: AS NOTED  
 Designed By: RM  
 Design Date: 07.2015  
 Internal Job No: 11119.06  
 Surveyed By: SDDOT  
 Project Number: 13-2139, CIP NO.50950, PCN X03L

Drawn By: MS  
 Print Date: 12.01.2015  
 Survey Date: 2012

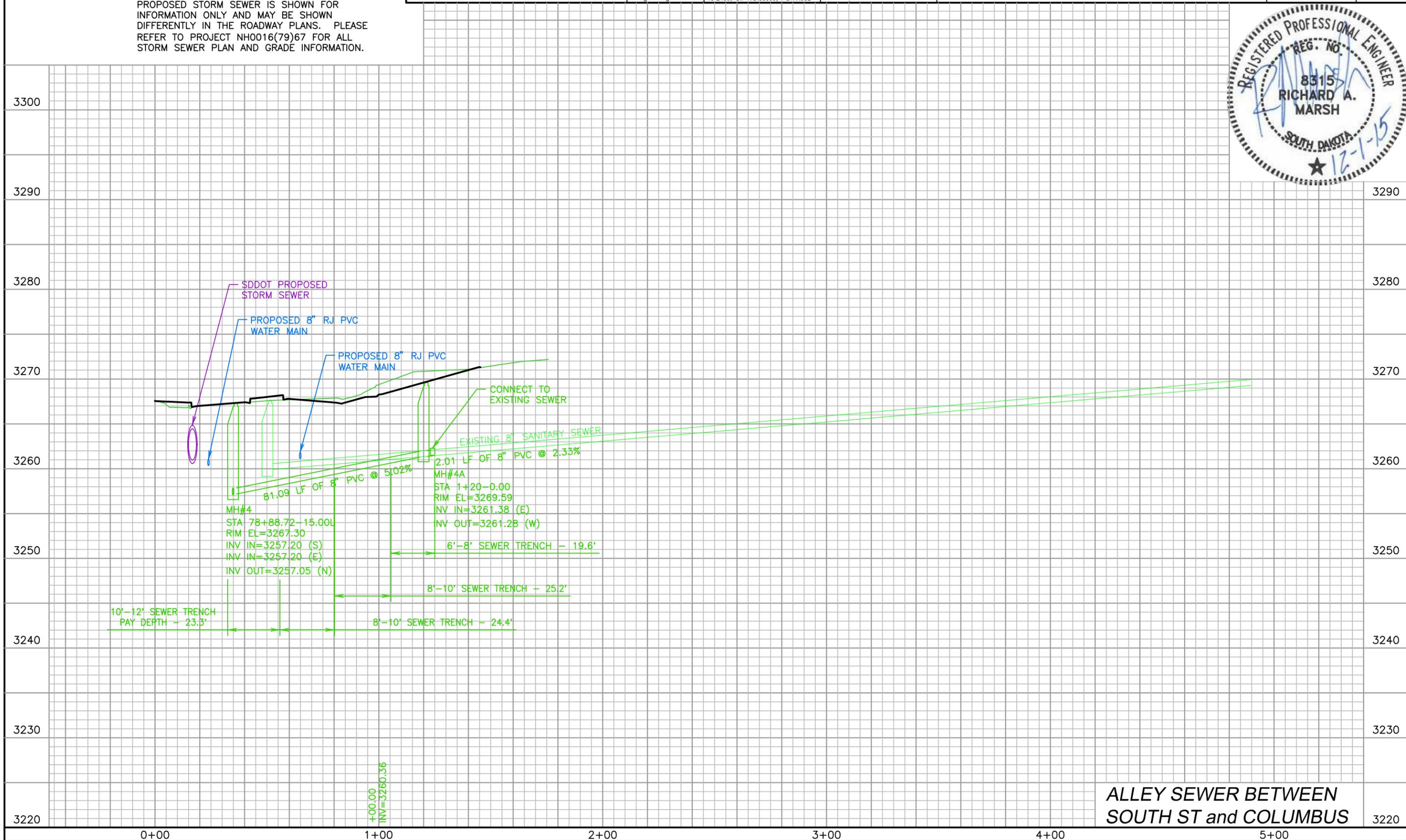
**FOR BIDDING PURPOSES ONLY**

**MOUNT RUSHMORE ROAD  
 UTILITY RECONSTRUCTION**

Sheet Title: MH#4  
 ALLEY SEWER  
 PROFILE  
 Sheet No: G51  
 of  
 G90



December 01, 2015 3:07:18 p.m.  
 Drawing: PLAN AND PROFILES.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\11119.00 - MT. RUSHMORE RD. UTILITIES RECONSTRUCTION DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY\)



**ALLEY SEWER BETWEEN  
 SOUTH ST and COLUMBUS**

F&I PVC SANITARY SEWER SERVICE, CLEANOUT, CLEANOUT FRAME AND LID, AND RECONNECT TO EXISTING SANITARY SEWER SERVICE AT THE FOLLOWING LOCATIONS:  
 STA 81+87.82 - 15.00'L TO 40.51'L, 25.5' 4"

F&I PVC SANITARY SEWER SERVICE, CLEANOUT, CLEANOUT FRAME AND LID, AND RECONNECT TO EXISTING SANITARY SEWER SERVICE AT THE FOLLOWING LOCATIONS (COLUMBUS STREET):  
 STA 4+23.04 - 18.74'R, 1.2' 4", TIE IN TO 6" PVC TO NORTH  
 STA 4+34.49 - 17.72'R TO 51.58'R, 33.9' 4"  
 STA 5+89.63 - 17.61'R TO 5+92.95 - 40.53'R, 23.2' 4"

F&I SEWER MANHOLES AT THE FOLLOWING LOCATIONS:  
 MH#2 STA 82+85.86 - 15.00L (MAINLINE) (48")  
 MH#3 STA 80+71.67 - 15.04L (MAINLINE) (48")  
 MH#3A STA 4+04.18 - 17.75R (COLUMBUS STREET) (48")  
 MH#3B STA 5+92.63 - 17.61R (COLUMBUS STREET) (48")



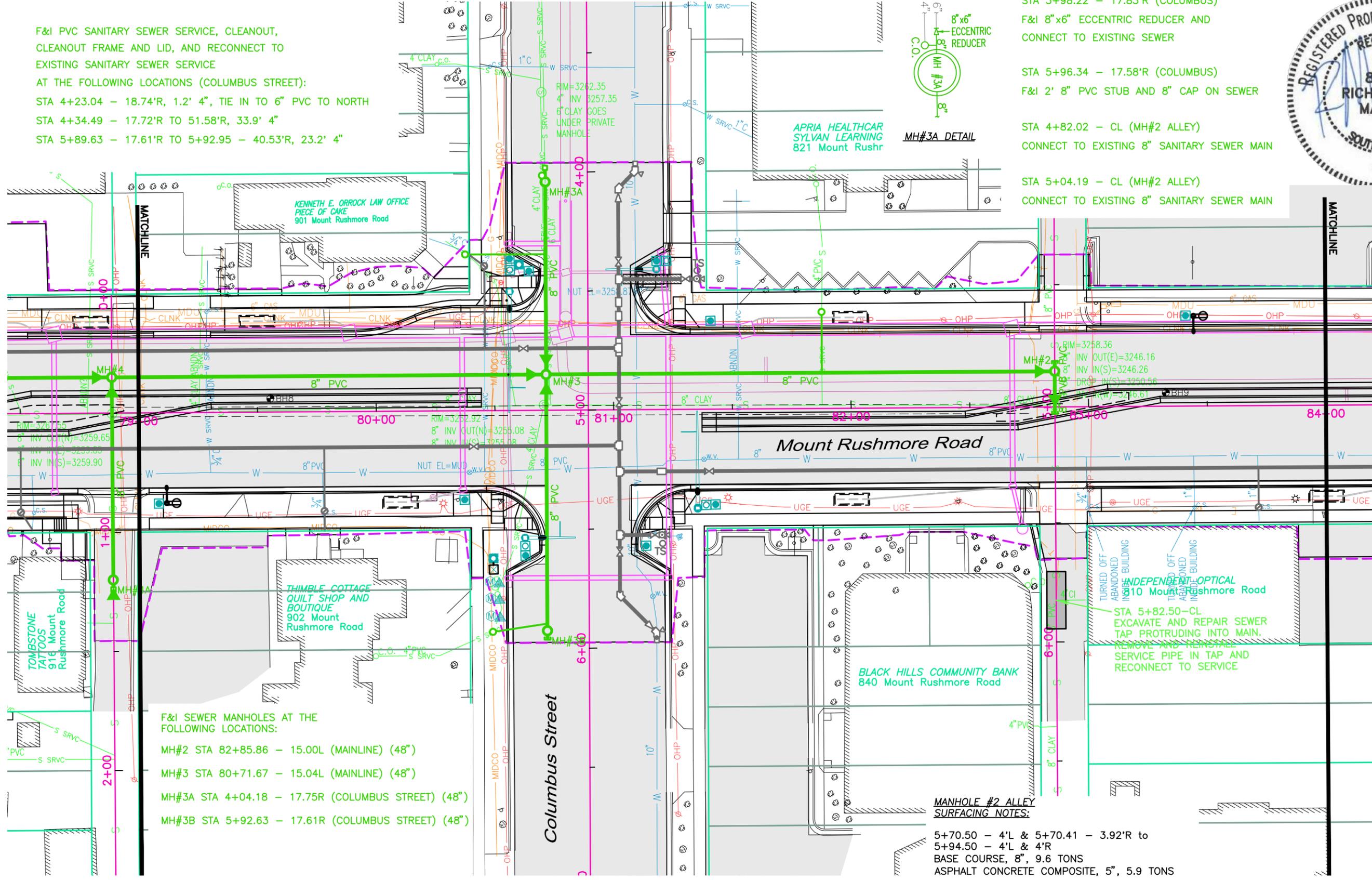
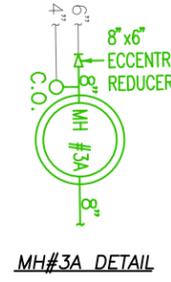
|                   |                                 |              |            |            |         |              |
|-------------------|---------------------------------|--------------|------------|------------|---------|--------------|
| Prepared For:     | Public Works Department         | Scale:       | AS NOTED   | Revisions: | Number: | Description: |
| Designed By:      | RM                              | Drawn By:    | MS         |            |         |              |
| Design Date:      | 07.2015                         | Print Date:  | 12.01.2015 |            |         |              |
| Internal Job No.: | 11119.06                        | Survey Date: | 2012       |            |         |              |
| SDDOT:            |                                 |              |            |            |         |              |
| Project Number:   | 13-2139, CIP NO.50950, PCN X03L |              |            |            |         |              |

**FOR BIDDING PURPOSES ONLY**  
**MOUNT RUSHMORE ROAD**  
**UTILITY RECONSTRUCTION**

|                     |            |
|---------------------|------------|
| Sheet Title:        | Sheet No.: |
| MOUNT RUSHMORE RD   | G52        |
| SANITARY SEWER PLAN | of         |
| STA 79+00 to 84+00  | G90        |



- STA 3+98.22 - 17.83'R (COLUMBUS)
- F&I 8"x6" ECCENTRIC REDUCER AND CONNECT TO EXISTING SEWER
- STA 5+96.34 - 17.58'R (COLUMBUS)
- F&I 2' 8" PVC STUB AND 8" CAP ON SEWER
- STA 4+82.02 - CL (MH#2 ALLEY)
- CONNECT TO EXISTING 8" SANITARY SEWER MAIN
- STA 5+04.19 - CL (MH#2 ALLEY)
- CONNECT TO EXISTING 8" SANITARY SEWER MAIN



**MANHOLE #2 ALLEY SURFACING NOTES:**  
 5+70.50 - 4'L & 5+70.41 - 3.92'R to  
 5+94.50 - 4'L & 4'R  
 BASE COURSE, 8", 9.6 TONS  
 ASPHALT CONCRETE COMPOSITE, 5", 5.9 TONS

December 01, 2015 3:07:18 p.m. Drawing: PLAN AND PROFILES.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\1119.00 MT. RUSHMORE RD. UTILITIES RECONSTRUCTION\DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY)

F&I 8" GATE VALVE AND BOX  
AT THE FOLLOWING LOCATIONS:

STA 80+41 - 15.00R (MAINLINE)

STA 80+62.16 - 26.00L (MAINLINE)

F&I 12"x12" TEE  
AT THE FOLLOWING LOCATIONS:

STA 5+25.92 - 13.00L (COLUMBUS STREET)

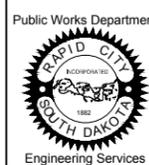
F&I 12" COUPLINGS  
AT THE FOLLOWING LOCATIONS:

STA 81+20.03 - 25.97R (MAINLINE)

Prepared By:



Prepared For:



Scale: AS NOTED

Designed By: RM  
Drawn By: MS  
Design Date: 07.2015  
Print Date: 12.01.2015  
Internal Job No: 11119.06  
Surveyed By: SDDOT  
Survey Date: 2012  
Project Number: 13-2139, CIP NO.50950, PCN X03L

Revisions:

Number: Description:

**FOR BIDDING PURPOSES ONLY**

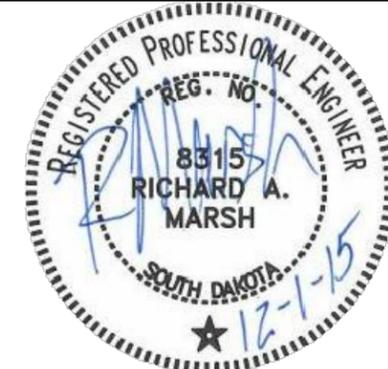
# MOUNT RUSHMORE ROAD UTILITY RECONSTRUCTION

Sheet Title:

MOUNT RUSHMORE RD  
WATER MAIN PLAN  
STA 79+00 to 84+00

Sheet No:

G53  
of  
G90



BLACK HILLS BAGELS  
913 Mount Rushmore Road

H. FREDRICK  
imbus Street

KENNETH E. ORROCK LAW OFFICE  
PIECE OF CAKE  
901 Mount Rushmore Road

TOMBSTONE  
TATTOOS  
916 Mount  
Rushmore Road

THIMBLE COTTAGE  
QUILT SHOP AND  
BOUTIQUE  
902 Mount  
Rushmore Road

TURNED OFF  
ABANDONED  
BUILDING  
INDEPENDENT OPTICAL  
TURNED OFF  
ABANDONED  
BUILDING  
910 Mount  
Rushmore Road

F&I 10" COUPLING AND CONNECT  
TO EXISTING WATER MAIN AT THE  
FOLLOWING LOCATIONS:

STA 5+96.85 - 28.44L (COLUMBUS STREET)

STA 3+96.61 - 20.23L (COLUMBUS STREET)

F&I 10" 45° BEND AT  
THE FOLLOWING LOCATIONS:

STA 3+99.81 - 20.16L (COLUMBUS STREET)

STA 4+07 - 13.00L (COLUMBUS STREET)

STA 5+93.53 - 28.45L (COLUMBUS STREET)

F&I 12"x10" REDUCER  
AT THE FOLLOWING LOCATIONS:

STA 4+10.75 - 13.00L (COLUMBUS STREET)

STA 5+90.87 - 25.79L (COLUMBUS STREET)

F&I 12" x8" TEE  
AT THE FOLLOWING LOCATIONS:

STA 4+73.97 - 13.00L (COLUMBUS STREET)

STA 5+14.97 - 13.00L (COLUMBUS STREET)

INSULATION  
96.0 SQFT

Mount Rushmore Road

Columbus Street

INSTALL 12" 45° BEND  
AT THE FOLLOWING LOCATIONS:  
STA 5+78.08 - 13.00L (COLUMBUS STREET)

F&I FIRE HYDRANT AND THRUSTBLOCK,  
6" AUXILIARY GATE VALVE AND BOX, 6" PVC  
HYDRANT LEAD, AND TEST STATION AT  
THE FOLLOWING LOCATIONS:

STA 4+45.13 - 45.93L (COLUMBUS STREET)

STA 5+52.56 - 30.88L (COLUMBUS STREET)

F&I 12" 45° VERTICAL BEND  
AT THE FOLLOWING LOCATIONS:

STA 4+54.76 - 13.00L (COLUMBUS STREET)

STA 4+60.58 - 13.00L (COLUMBUS STREET)

STA 4+75.47 - 13.00L (COLUMBUS STREET)

STA 4+71.74 - 13.00L (COLUMBUS STREET)

F&I 12" GATE VALVE AND BOX  
AT THE FOLLOWING LOCATIONS:

STA 4+37.76 - 13.00L (COLUMBUS STREET)

STA 4+96.77 - 13.00L (COLUMBUS STREET)

STA 5+59.52 - 13.00L (COLUMBUS STREET)

STA 81+40 - 26.00R (MAINLINE)

F&I TAPPING SADDLES  
AT THE FOLLOWING LOCATIONS:

STA 79+78.00 - 15.00'R (MAINLINE) (1")

STA 80+45.90 - 26.00'L (MAINLINE) (1")

STA 83+71.40 - 26.00'R (MAINLINE) (1")

F&I CURB STOP AND BOX AND  
RECONNECT NEW WATER SERVICE  
LINE AT THE FOLLOWING LOCATIONS:

STA 79+78.00 - 41.70'R - 35.1' 1" (cop.)

STA 80+45.92 - 60.74'L - 42.8' 1" (cop.)

STA 83+71.39 - 42.64'R - 16.7' 1" (cop.)

F&I 12" x6" TEE  
AT THE FOLLOWING LOCATIONS:

STA 4+45.13 - 13.00L (COLUMBUS STREET)

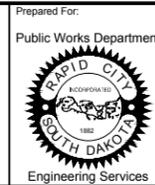
STA 5+52.56 - 13.00L (COLUMBUS STREET)

December 01, 2015 3:07:18 p.m.  
Drawing: PLAN AND PROFILES.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\11119.00 MT. RUSHMORE RD. UTILITIES RECONSTRUCTION DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY)



SCALE:  
 HORIZ. 1" = 40'  
 VERT. 1" = 10'

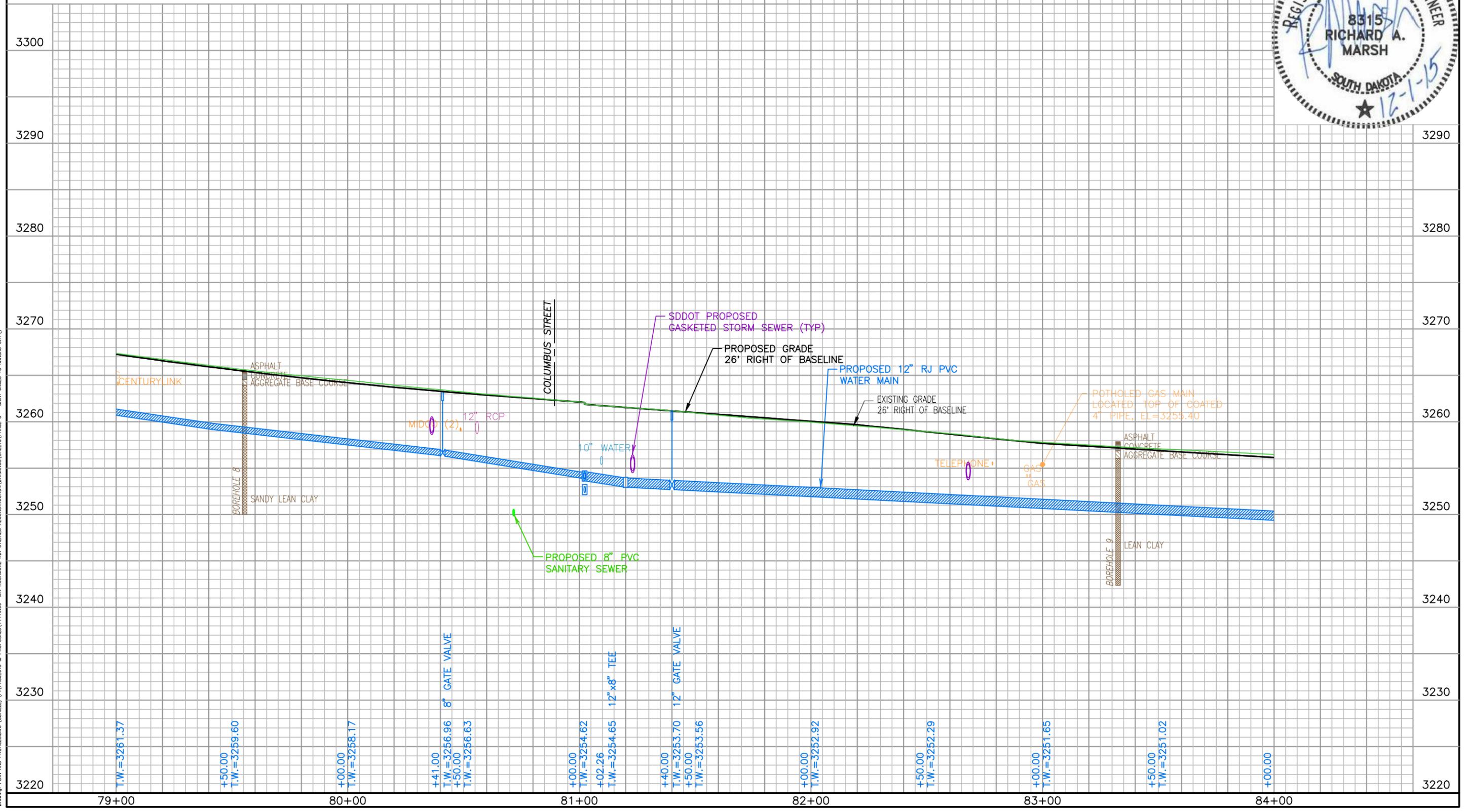
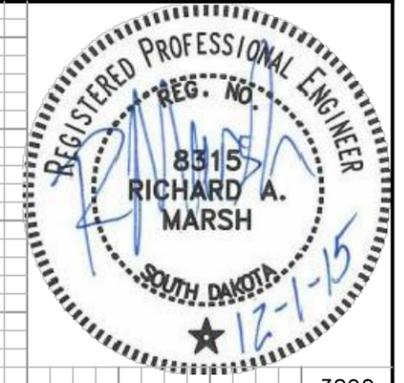
**NOTE:**  
 ALL SUBSURFACE UTILITIES ARE SHOWN BASED UPON GROUND LEVEL FIELD SURVEY AND APPROXIMATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE TO FIELD LOCATE AND VERIFY UTILITY INFORMATION PERTAINING TO THE WORK. SDDOT PROPOSED STORM SEWER IS SHOWN FOR INFORMATION ONLY AND MAY BE SHOWN DIFFERENTLY IN THE ROADWAY PLANS. PLEASE REFER TO PROJECT NH0016(79)67 FOR ALL STORM SEWER PLAN AND GRADE INFORMATION.



Prepared For: Public Works Department  
 Scale: AS NOTED  
 Designed By: RM  
 Drawn By: MS  
 Design Date: 07.2015  
 Print Date: 12.01.2015  
 Internal Job No: 11119.06  
 Surveyed By: SDDOT  
 Survey Date: 2012  
 Project Number: 13-2139, CIP NO.50950, PCN X03L

**FOR BIDDING PURPOSES ONLY**  
**MOUNT RUSHMORE ROAD**  
**UTILITY RECONSTRUCTION**

Sheet Title: MOUNT RUSHMORE RD  
 G55  
 UTILITY PROFILE (northbound)  
 of  
 STA 79+00 to 84+00  
 G90



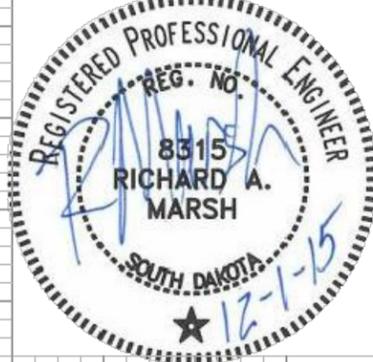
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 Drawing: PLAN AND PROFILES.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\11119.00 - MT. RUSHMORE RD. UTILITIES RECONSTRUCTION DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY)



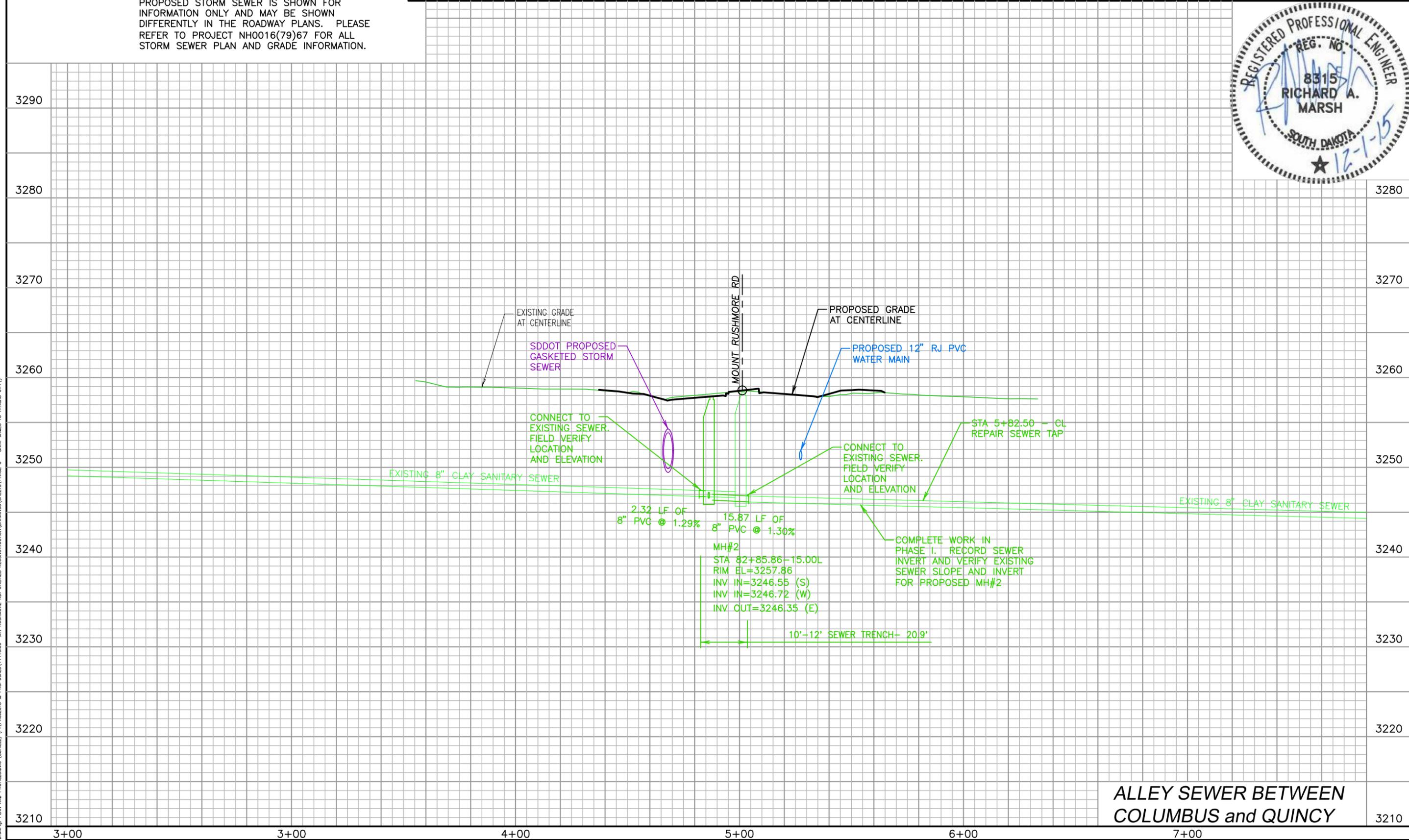
SCALE:  
 HORIZ. 1" = 40'  
 VERT. 1" = 10'

**NOTE:**  
 ALL SUBSURFACE UTILITIES ARE SHOWN BASED UPON GROUND LEVEL FIELD SURVEY AND APPROXIMATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE TO FIELD LOCATE AND VERIFY UTILITY INFORMATION PERTAINING TO THE WORK. SDDOT PROPOSED STORM SEWER IS SHOWN FOR INFORMATION ONLY AND MAY BE SHOWN DIFFERENTLY IN THE ROADWAY PLANS. PLEASE REFER TO PROJECT NH0016(79)67 FOR ALL STORM SEWER PLAN AND GRADE INFORMATION.

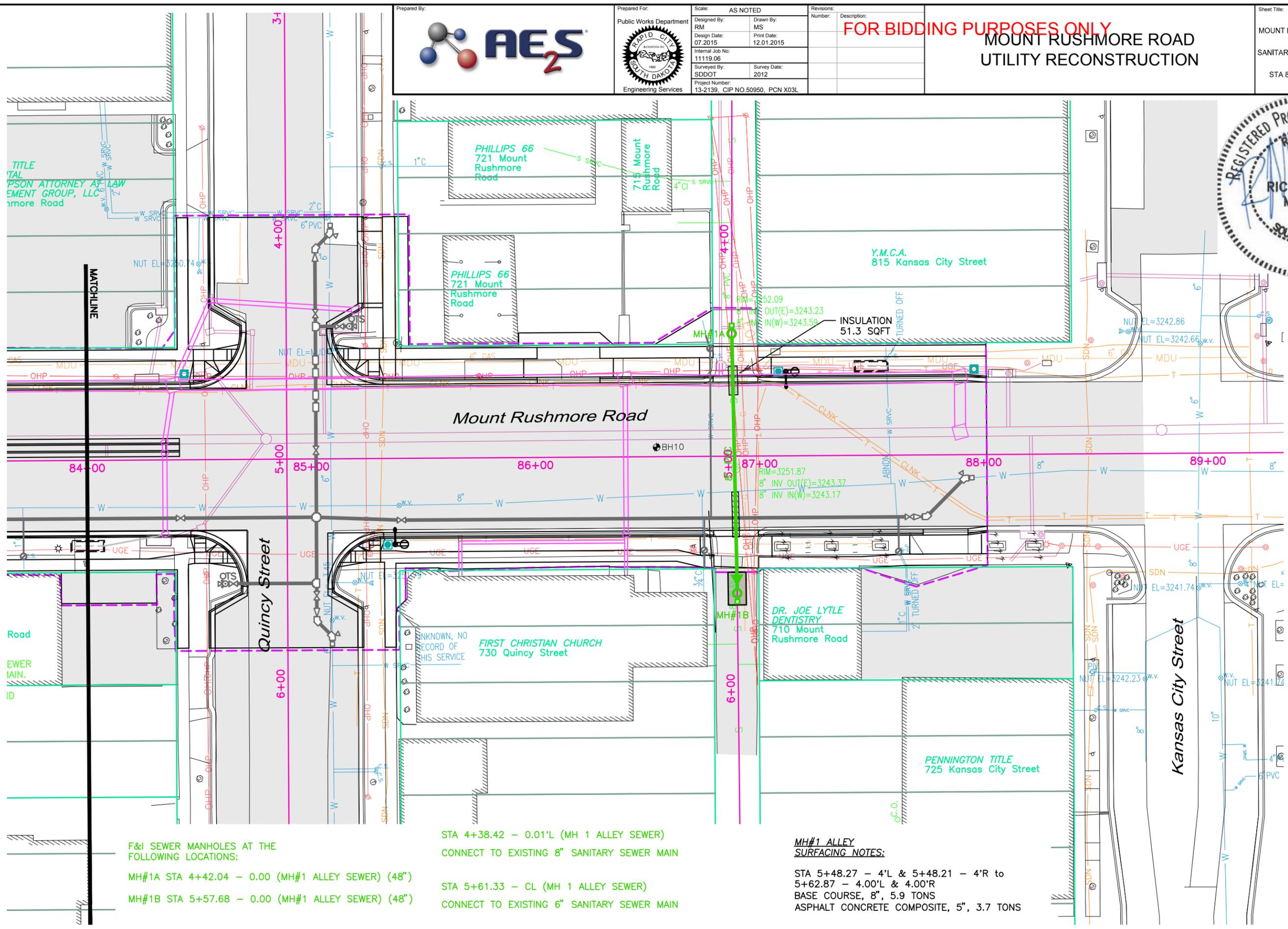
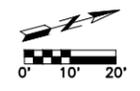
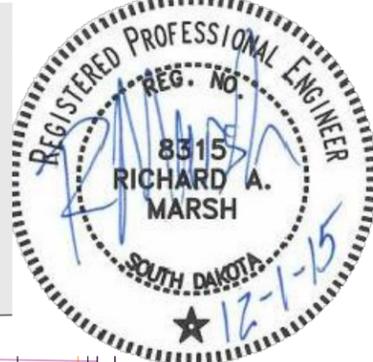
|  |   |   |   |                           |   |                                |                  |
|--|---|---|---|---------------------------|---|--------------------------------|------------------|
| Prepared By:<br> | Prepared For:<br>Public Works Department<br> Engineering Services | Scale: AS NOTED   | Revisions:<br>Number:      Description:                     | FOR BIDDING PURPOSES ONLY | MOUNT RUSHMORE ROAD<br>UTILITY RECONSTRUCTION | Sheet Title:                   | Sheet No:        |
|  |   | Designed By: RM<br>Design Date: 07.2015<br>Internal Job No: 11119.06<br>Surveyed By: SDDOT<br>Project Number: 13-2139, CIP NO.50950, PCN X03L | Drawn By: MS<br>Print Date: 12.01.2015<br>Survey Date: 2012 |                           |   | MH#2<br>ALLEY SEWER<br>PROFILE | G57<br>of<br>G90 |



December 01, 2015 3:07:18 p.m.  
 Drawing: PLAN AND PROFILES.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\11119.00 - MT. RUSHMORE RD. UTILITIES RECONSTRUCTION DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY)



**ALLEY SEWER BETWEEN  
 COLUMBUS and QUINCY**



F&I SEWER MANHOLES AT THE FOLLOWING LOCATIONS:

MH#1A STA 4+42.04 - 0.00 (MH#1 ALLEY SEWER) (48")

MH#1B STA 5+57.68 - 0.00 (MH#1 ALLEY SEWER) (48")

STA 4+38.42 - 0.01'L (MH 1 ALLEY SEWER)  
CONNECT TO EXISTING 8" SANITARY SEWER MAIN

STA 5+61.33 - CL (MH 1 ALLEY SEWER)  
CONNECT TO EXISTING 6" SANITARY SEWER MAIN

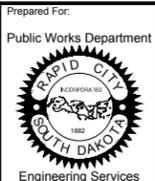
**MH#1 ALLEY SURFACING NOTES:**

STA 5+48.27 - 4'L & 5+48.21 - 4'R to 5+62.87 - 4.00'L & 4.00'R  
BASE COURSE, 8", 5.9 TONS  
ASPHALT CONCRETE COMPOSITE, 5", 3.7 TONS

December 01, 2015 3:07:18 p.m. Drawing: PLAN AND PROFILES.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\11119.06 - MT. RUSHMORE RD. UTILITIES RECONSTRUCTION\DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY)

F&I TAPPING SADDLES  
AT THE FOLLOWING LOCATIONS:  
STA 86+75.07 - 26.00'R (MAINLINE) (1")  
STA 86+78.16 - 26.00'R (MAINLINE) (1")  
STA 87+61.82 - 26.00'R (MAINLINE) (1")

F&I CURB STOP AND BOX AND  
RECONNECT NEW WATER SERVICE  
LINE AT THE FOLLOWING LOCATIONS:  
STA 86+75.07 - 41.76'R - 24.1' 1" (cop.)  
STA 86+78.16 - 48.02'L - 79.9' 1" (cop.)  
STA 87+61.82 - 42.94'R - 16.9' 1" (cop.)

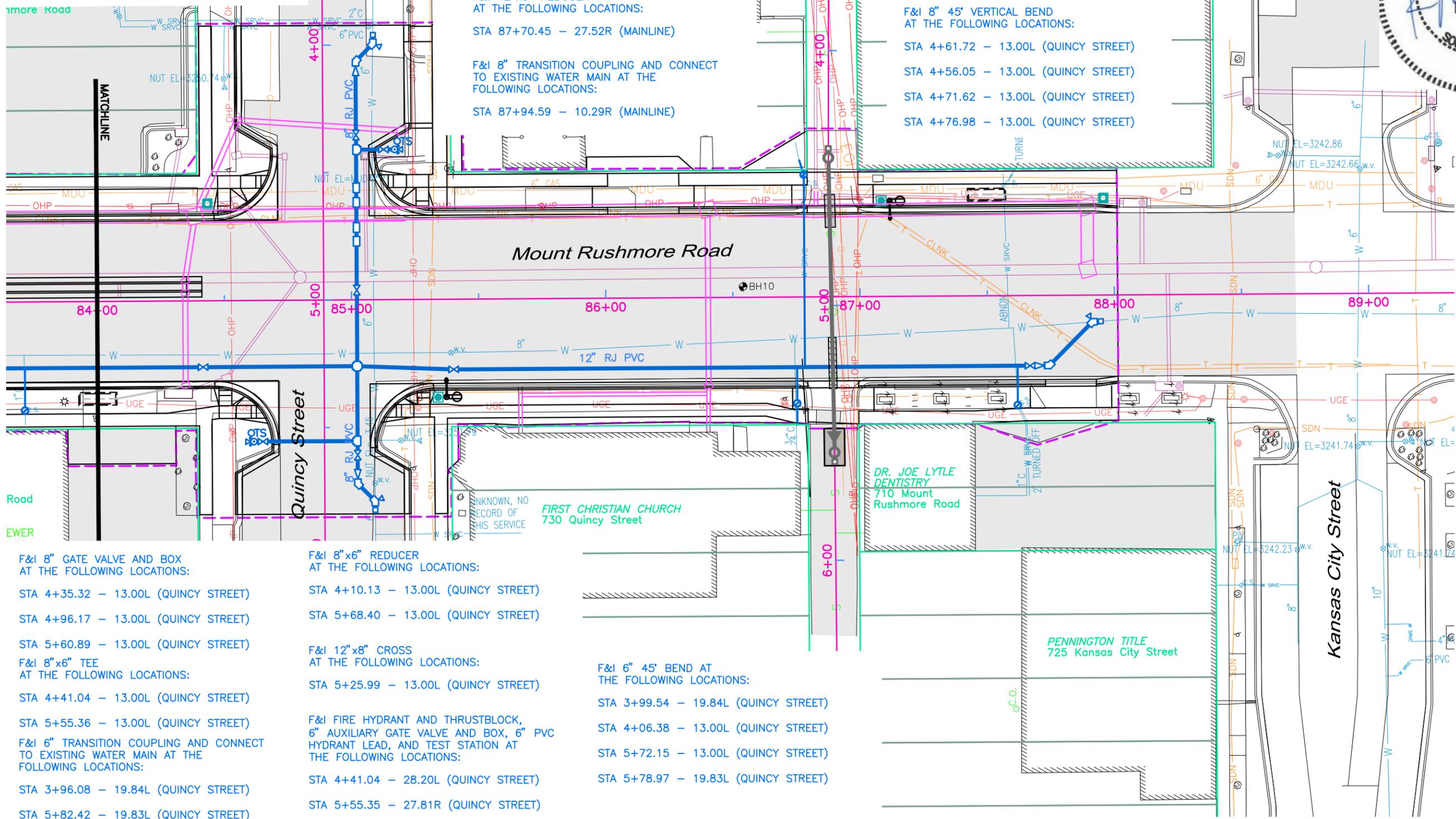
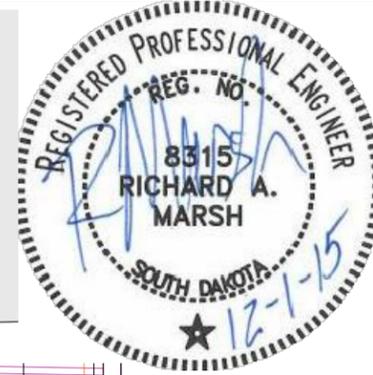


|                   |                                 |              |            |              |  |
|-------------------|---------------------------------|--------------|------------|--------------|--|
| Prepared For:     | Public Works Department         | Scale:       | AS NOTED   | Revisions:   |  |
| Designed By:      | RM                              | Drawn By:    | MS         | Number:      |  |
| Design Date:      | 07.2015                         | Print Date:  | 12.01.2015 | Description: |  |
| Internal Job No.: | 11119.06                        | Survey Date: | 2012       |              |  |
| SDDOT:            |                                 |              |            |              |  |
| Project Number:   | 13-2139, CIP NO.50950, PCN X03L |              |            |              |  |

**FOR BIDDING PURPOSES ONLY**

**MOUNT RUSHMORE ROAD  
UTILITY RECONSTRUCTION**

|                   |            |
|-------------------|------------|
| Sheet Title:      | Sheet No.: |
| MOUNT RUSHMORE RD | G59        |
| WATER MAIN PLAN   | of         |
| STA 84+00 to END  | G90        |



F&I 8" 45° BEND  
AT THE FOLLOWING LOCATIONS:  
STA 87+74.35 - 27.50R (MAINLINE)  
STA 87+91.34 - 10.51R (MAINLINE)

F&I 12"x8" REDUCER  
AT THE FOLLOWING LOCATIONS:  
STA 87+70.45 - 27.52R (MAINLINE)

F&I 8" TRANSITION COUPLING AND CONNECT  
TO EXISTING WATER MAIN AT THE  
FOLLOWING LOCATIONS:  
STA 87+94.59 - 10.29R (MAINLINE)

F&I 12" GATE VALVE AND BOX  
AT THE FOLLOWING LOCATIONS:  
STA 84+41.49 - 26.00R (MAINLINE)  
STA 85+40.01 - 27.50R (MAINLINE)  
STA 87+66.68 - 27.50R (MAINLINE)

F&I 8" 45° VERTICAL BEND  
AT THE FOLLOWING LOCATIONS:  
STA 4+61.72 - 13.00L (QUINCY STREET)  
STA 4+56.05 - 13.00L (QUINCY STREET)  
STA 4+71.62 - 13.00L (QUINCY STREET)  
STA 4+76.98 - 13.00L (QUINCY STREET)

F&I 8" GATE VALVE AND BOX  
AT THE FOLLOWING LOCATIONS:  
STA 4+35.32 - 13.00L (QUINCY STREET)  
STA 4+96.17 - 13.00L (QUINCY STREET)  
STA 5+60.89 - 13.00L (QUINCY STREET)

F&I 8"x6" TEE  
AT THE FOLLOWING LOCATIONS:  
STA 4+41.04 - 13.00L (QUINCY STREET)  
STA 5+55.36 - 13.00L (QUINCY STREET)

F&I 6" TRANSITION COUPLING AND CONNECT  
TO EXISTING WATER MAIN AT THE  
FOLLOWING LOCATIONS:  
STA 3+96.08 - 19.84L (QUINCY STREET)  
STA 5+82.42 - 19.83L (QUINCY STREET)

F&I 8"x6" REDUCER  
AT THE FOLLOWING LOCATIONS:  
STA 4+10.13 - 13.00L (QUINCY STREET)  
STA 5+68.40 - 13.00L (QUINCY STREET)

F&I 12"x8" CROSS  
AT THE FOLLOWING LOCATIONS:  
STA 5+25.99 - 13.00L (QUINCY STREET)

F&I FIRE HYDRANT AND THRUSTBLOCK,  
6" AUXILIARY GATE VALVE AND BOX, 6" PVC  
HYDRANT LEAD, AND TEST STATION AT  
THE FOLLOWING LOCATIONS:  
STA 4+41.04 - 28.20L (QUINCY STREET)  
STA 5+55.35 - 27.81R (QUINCY STREET)

F&I 6" 45° BEND AT  
THE FOLLOWING LOCATIONS:  
STA 3+99.54 - 19.84L (QUINCY STREET)  
STA 4+06.38 - 13.00L (QUINCY STREET)  
STA 5+72.15 - 13.00L (QUINCY STREET)  
STA 5+78.97 - 19.83L (QUINCY STREET)

December 01, 2015 3:07:18 PM  
Drawing: PLAN AND PROFILES.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\11119.06 MT. RUSHMORE RD. UTILITIES RECONSTRUCTION DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY)

HORIZ. 1" = 40'  
VERT. 1" = 10'

**NOTE:**  
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Prepared By:



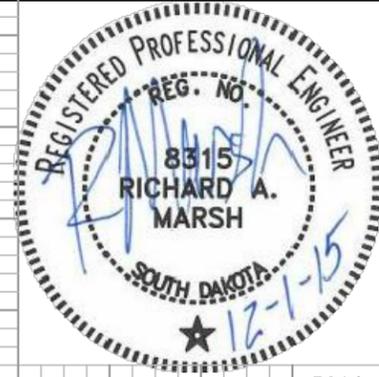
Prepared For:  
Public Works Department  
RAPID CITY  
SOUTH DAKOTA  
Engineering Services

Scale: AS NOTED  
Designed By: RM  
Design Date: 07.2015  
Internal Job No: 11119.06  
Surveyed By: SDDOT  
Project Number: 13-2139, CIP NO.50950, PCN X03L  
Drawn By: MS  
Print Date: 12.01.2015  
Survey Date: 2012

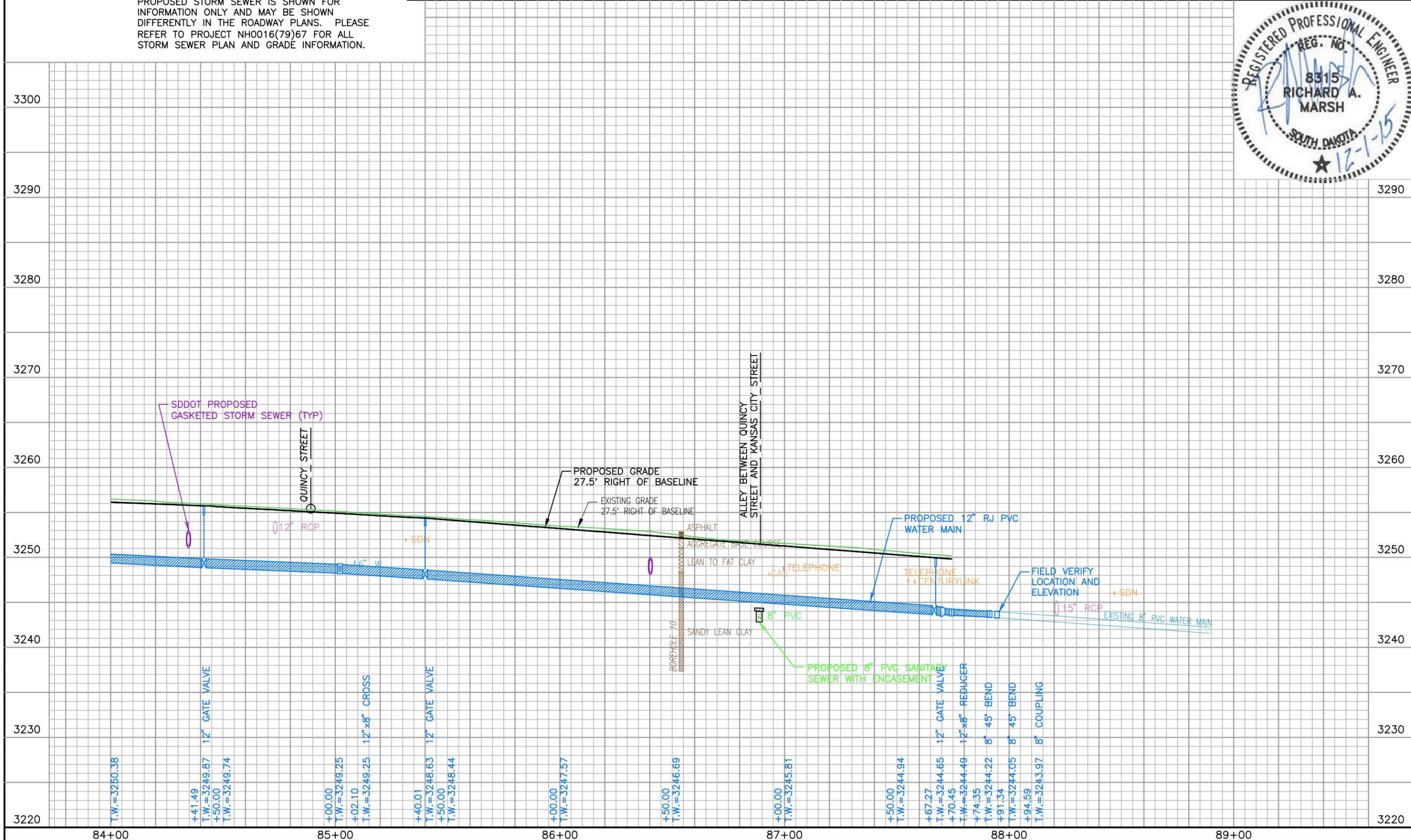
Revisions:  
Number: Description:

**FOR BIDDING PURPOSES ONLY**  
**MOUNT RUSHMORE ROAD**  
**UTILITY RECONSTRUCTION**

Sheet Title: MOUNT RUSHMORE RD  
UTILITY PROFILE (northbound)  
STA 84+00 to 89+00  
Sheet No: G60  
of  
G90



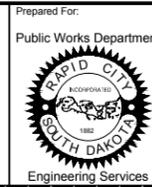
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Drawing: PLAN AND PROFILES.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\11119.00 - MT. RUSHMORE RD. UTILITIES RECONSTRUCTION DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY\)



HORIZ. 1" = 40'  
VERT. 1" = 10'

**NOTE:**  
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Prepared By:



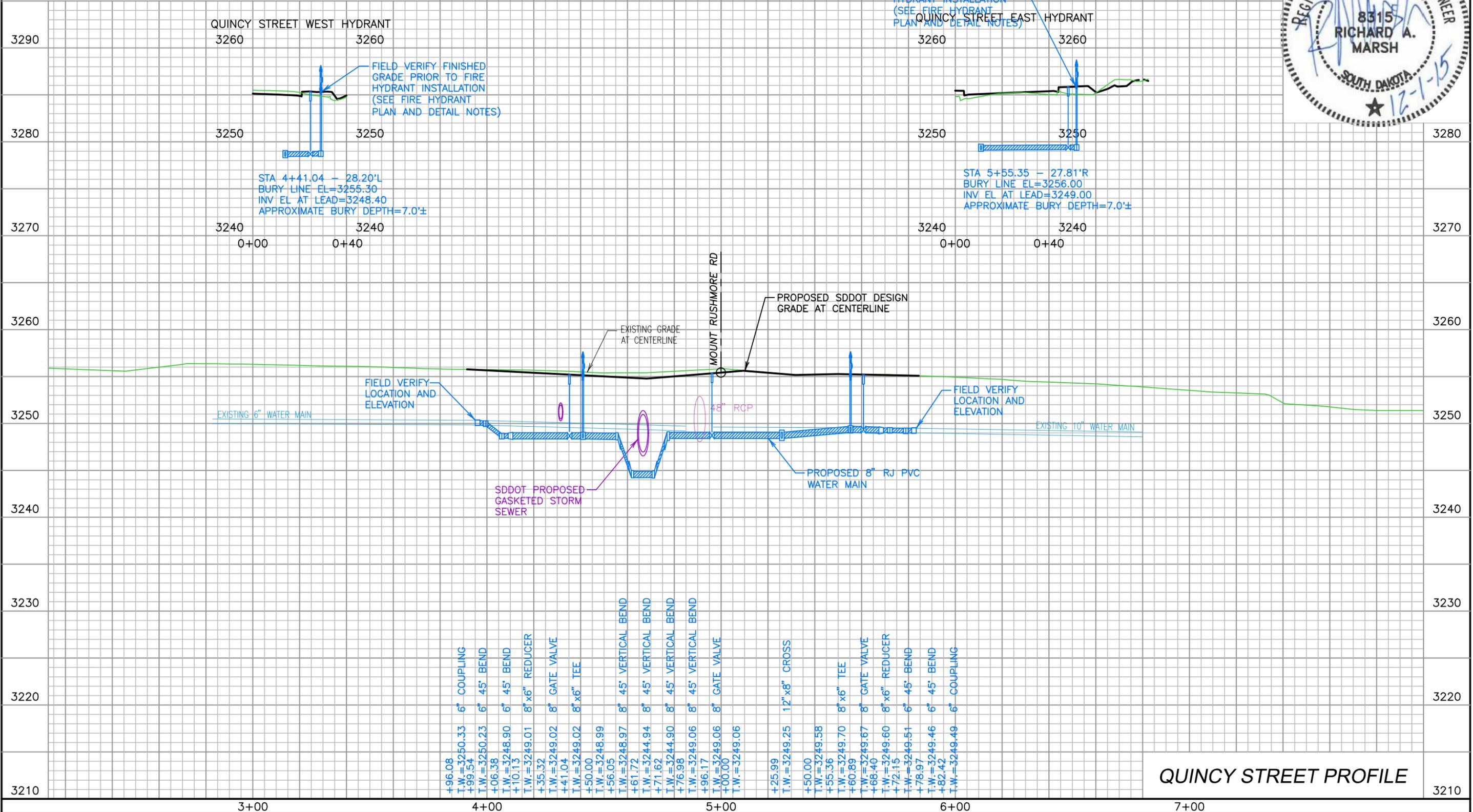
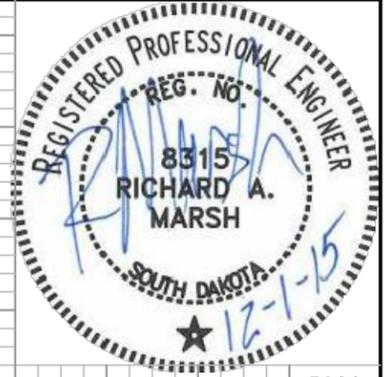
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Designed By: RM  
Design Date: 07.2015  
Internal Job No: 11119.06  
Surveyed By: SDDOT  
Project Number: 13-2139, CIP NO.50950, PCN X03L

Revisions: Number: Description:  
Drawn By: MS  
Print Date: 12.01.2015  
Survey Date: 2012

**FOR BIDDING PURPOSES ONLY**

**MOUNT RUSHMORE ROAD  
UTILITY RECONSTRUCTION**

Sheet Title: QUINCY STREET PROFILE  
Utility Profile  
STA 0+00 to END  
Sheet No: G61 of G90



|              |                      |
|--------------|----------------------|
| +96.08       | 6" COUPLING          |
| T.W.=3250.33 |                      |
| +99.54       | 6" 45° BEND          |
| T.W.=3250.23 |                      |
| +06.38       | 6" 45° BEND          |
| T.W.=3248.90 |                      |
| +10.13       | 8" x6" REDUCER       |
| T.W.=3249.01 |                      |
| +35.32       | 8" GATE VALVE        |
| T.W.=3249.02 |                      |
| +41.04       | 8" x6" TEE           |
| T.W.=3249.02 |                      |
| +50.00       | 8" 45° VERTICAL BEND |
| T.W.=3248.97 |                      |
| +61.72       | 8" 45° VERTICAL BEND |
| T.W.=3244.94 |                      |
| +71.62       | 8" 45° VERTICAL BEND |
| T.W.=3244.90 |                      |
| +76.98       | 8" 45° VERTICAL BEND |
| T.W.=3249.06 |                      |
| +96.17       | 8" GATE VALVE        |
| T.W.=3249.06 |                      |
| +00.00       |                      |
| T.W.=3249.06 |                      |
| +25.99       | 12" x8" CROSS        |
| T.W.=3249.25 |                      |
| +50.00       |                      |
| T.W.=3249.58 |                      |
| +55.36       | 8" x6" TEE           |
| T.W.=3249.70 |                      |
| +60.89       | 8" GATE VALVE        |
| T.W.=3249.67 |                      |
| +68.40       | 8" x6" REDUCER       |
| T.W.=3249.60 |                      |
| +72.15       | 6" 45° BEND          |
| T.W.=3249.51 |                      |
| +78.97       | 6" 45° BEND          |
| T.W.=3249.46 |                      |
| +82.42       | 6" COUPLING          |
| T.W.=3249.49 |                      |

**QUINCY STREET PROFILE**

December 01, 2015 3:07:18 p.m.  
Drawing: PLAN AND PROFILES.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\11119.00 - MT. RUSHMORE RD. UTILITIES RECONSTRUCTION\DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY\)

SCALE:  
HORIZ. 1" = 40'  
VERT. 1" = 10'

**NOTE:**  
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Prepared By:  
Public Works Department  
RAPID CITY  
SOUTH DAKOTA  
Engineering Services

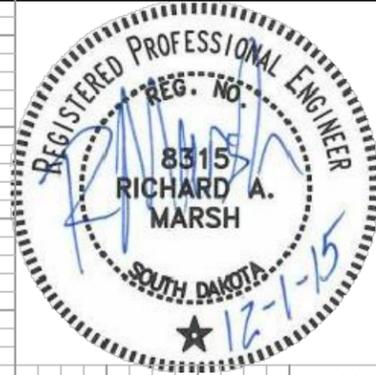
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Designed By: RM  
Design Date: 07.2015  
Internal Job No: 11119.06  
Surveyed By: SDDOT  
Project Number: 13-2139, CIP NO.50950, PCN X03L

Drawn By: MS  
Print Date: 12.01.2015  
Survey Date: 2012

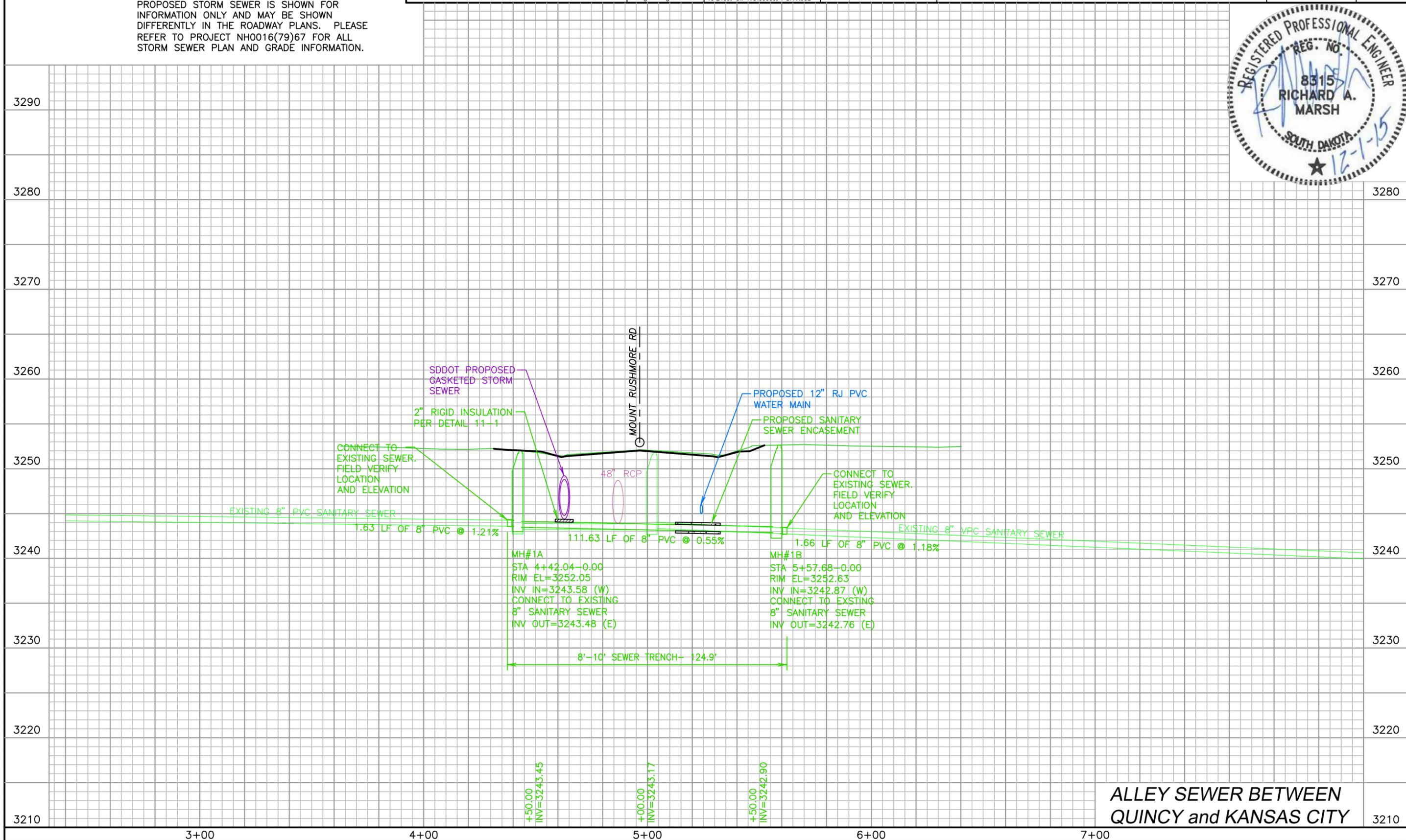
FOR BIDDING PURPOSES ONLY

MOUNT RUSHMORE ROAD  
UTILITY RECONSTRUCTION

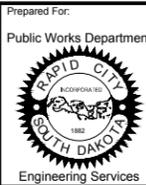
Sheet Title: MH#1  
ALLEY SEWER  
PROFILE  
Sheet No: G62  
of  
G90



December 01, 2015 3:07:18 p.m.  
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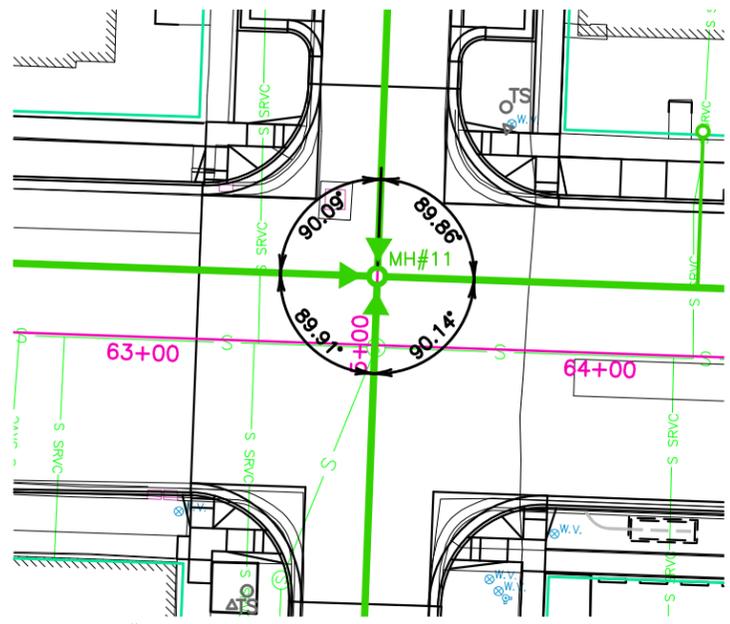
ALLEY SEWER BETWEEN  
QUINCY and KANSAS CITY



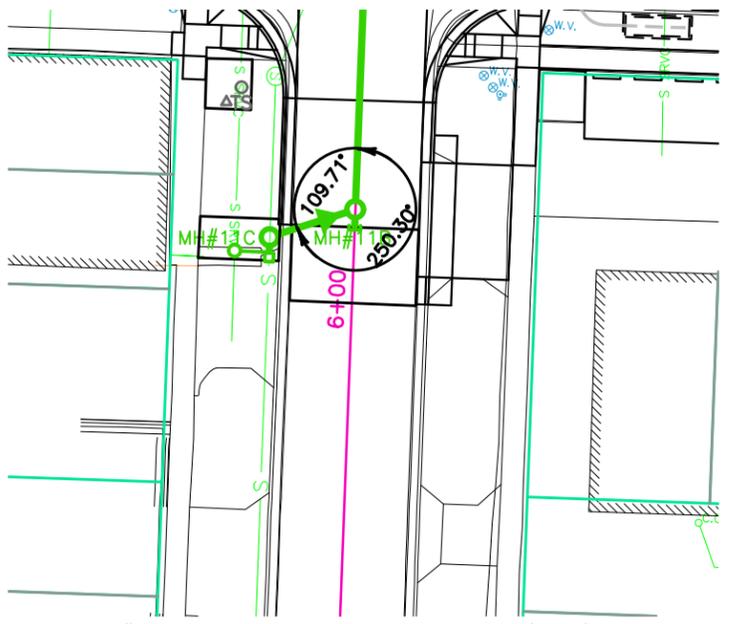
Prepared For: Public Works Department  
 Scale: AS NOTED  
 Designed By: RM  
 Drawn By: MS  
 Design Date: 07.2015  
 Print Date: 12.01.2015  
 Internal Job No: 11119.06  
 Surveyed By: SDDOT  
 Survey Date: 2012  
 Project Number: 13-2139, CIP NO.50950, PCN X03L

**FOR BIDDING PURPOSES ONLY**  
**MOUNT RUSHMORE ROAD  
 UTILITY RECONSTRUCTION**

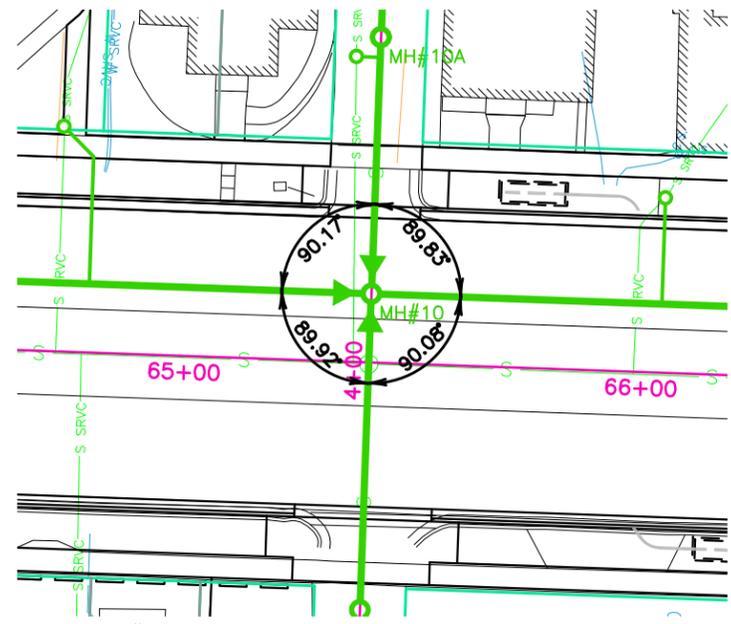
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| Sheet Title:        | Sheet No: |
| MOUNT RUSHMORE RD   | G63       |
| SANITARY SEWER PLAN | of        |
| MANHOLE DETAILS     | G90       |



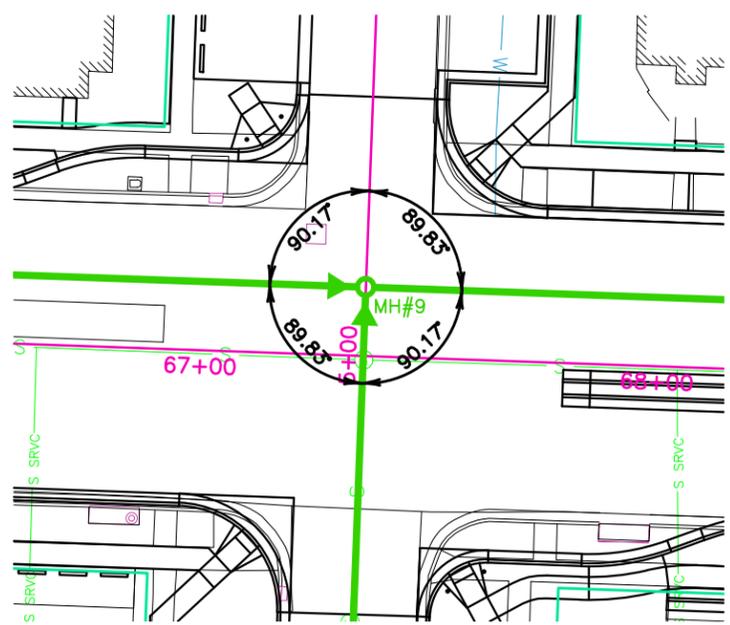
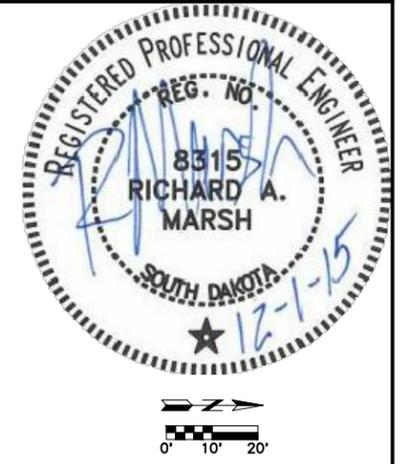
**MANHOLE #11, MT. RUSHMORE ROAD and SAINT JAMES STREET**  
 SCALE: 1"=40'



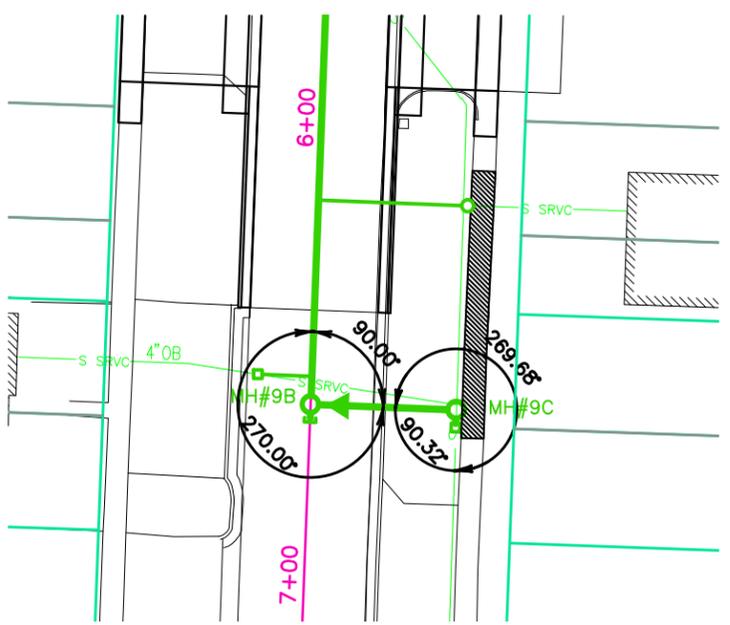
**MANHOLE #11B & 11C, SAINT JAMES STREET (EAST)**  
 SCALE: 1"=40'



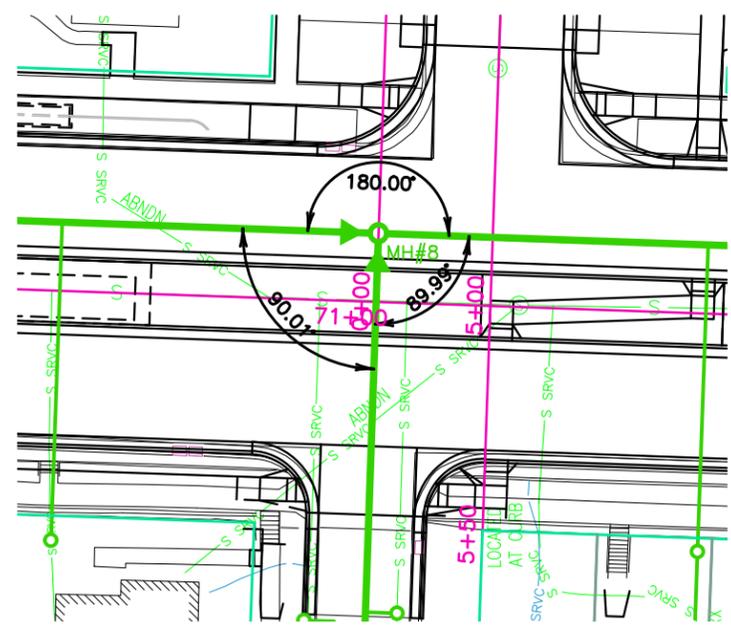
**MANHOLE #10, BETWEEN SAINT JAMES STREET and FAIRVIEW STREET**  
 SCALE: 1"=40'



**MANHOLE #9, MT. RUSHMORE ROAD and FAIRVIEW STREET**  
 SCALE: 1"=40'



**MANHOLE #9B & 9C, FAIRVIEW STREET (EAST)**  
 SCALE: 1"=40'



**MANHOLE #8, MT. RUSHMORE ROAD and CLARK STREET**  
 SCALE: 1"=40'

December 01, 2015 3:07:18 p.m.  
 Drawing: PLAN AND PROFILES.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\11119.06 MT. RUSHMORE RD. UTILITIES RECONSTRUCTION\DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY)

Prepared By:



Public Works Department  
RAPID CITY  
SOUTH DAKOTA  
Engineering Services

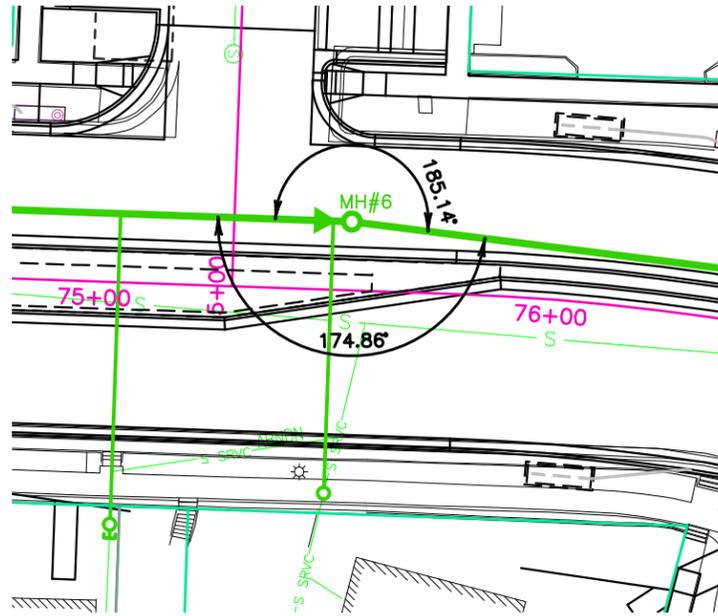
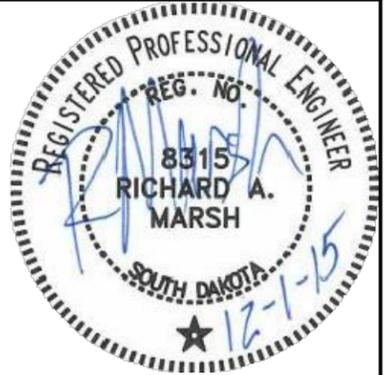
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Designed By: RM  
Design Date: 07.2015  
Internal Job No: 11119.06  
Surveyed By: SDDOT  
Project Number: 13-2139, CIP NO.50950, PCN X03L

Drawn By: MS  
Print Date: 12.01.2015  
Survey Date: 2012

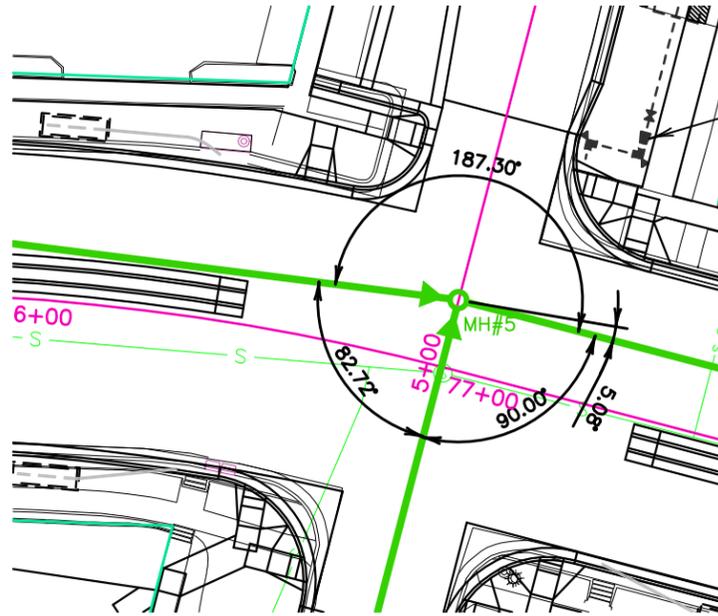
FOR BIDDING PURPOSES ONLY

# MOUNT RUSHMORE ROAD UTILITY RECONSTRUCTION

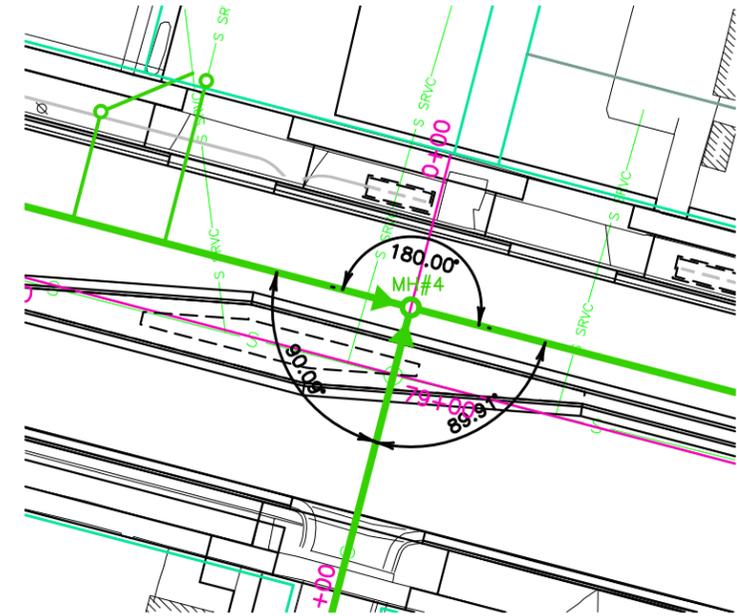
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SANITARY SEWER PLAN  
MANHOLE DETAILS  
Sheet No: G64  
of  
G90



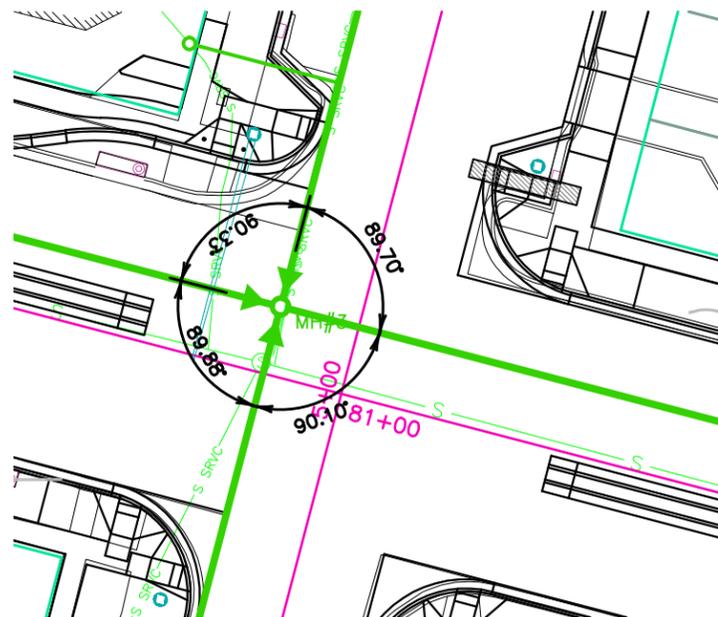
**MANHOLE #6, MT. RUSHMORE ROAD and SOUTH STREET**  
SCALE: 1" = 40'



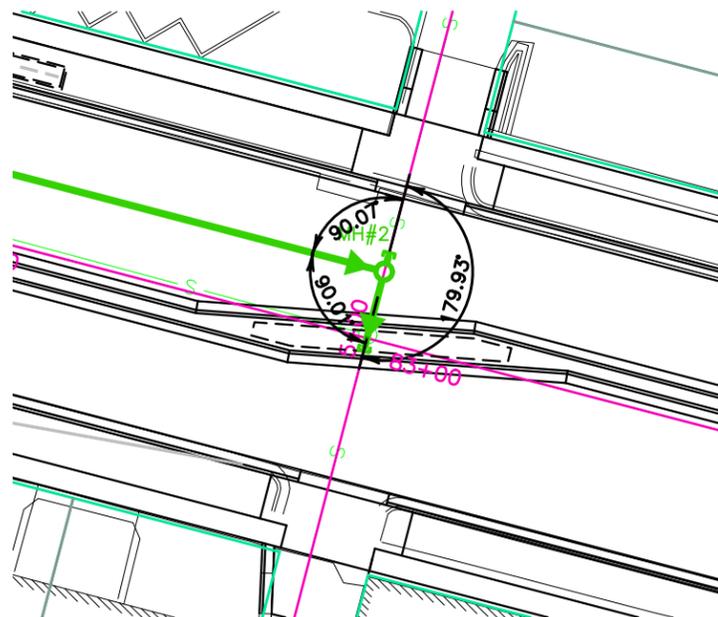
**MANHOLE #5, MT. RUSHMORE ROAD and SOUTH STREET**  
SCALE: 1" = 40'



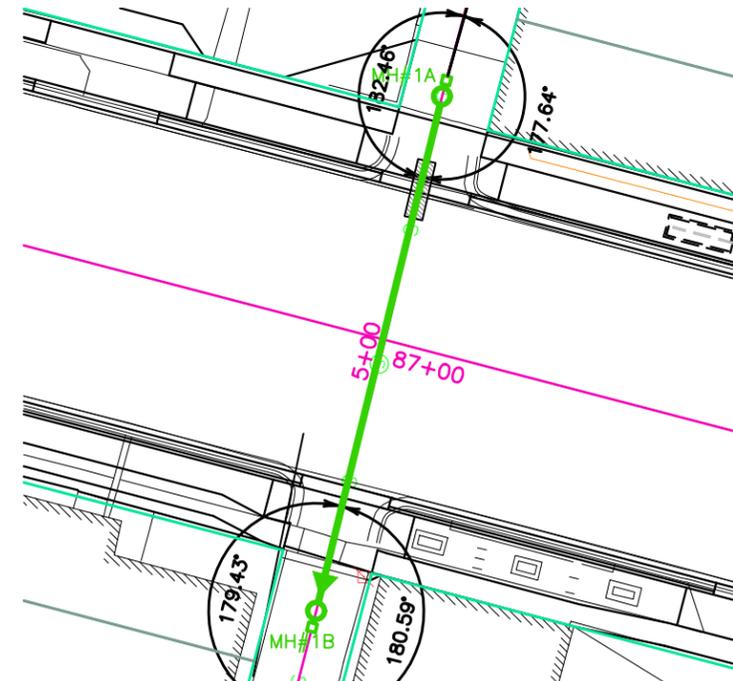
**MANHOLE #4, BETWEEN SOUTH STREET and COLUMBUS STREET**  
SCALE: 1" = 40'



**MANHOLE #3, MT. RUSHMORE ROAD and COLUMBUS STREET**  
SCALE: 1" = 40'



**MANHOLE #2, BETWEEN COLUMBUS STREET and QUINCY STREET**  
SCALE: 1" = 40'



**MANHOLE #1, BETWEEN QUINCY STREET and KANSAS CITY STREET**  
SCALE: 1" = 40'

Prepared By:



Prepared For:  
Public Works Department  
RAPID CITY  
SOUTH DAKOTA  
Engineering Services

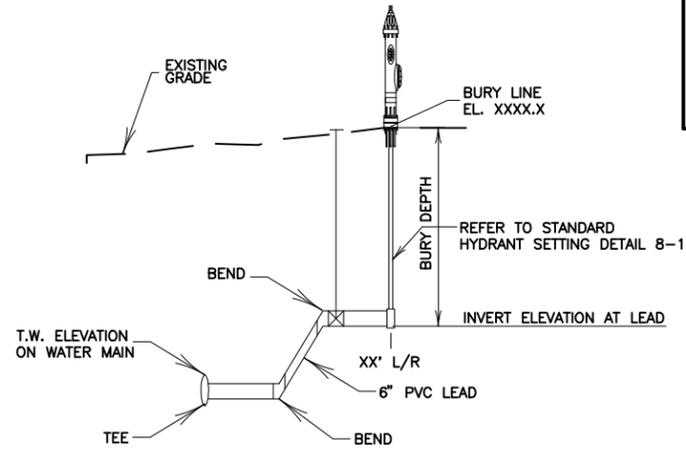
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Designed By: RM  
Design Date: 07.2015  
Internal Job No: 11119.06  
Surveyed By: SDDOT  
Project Number: 13-2139, CIP NO.50950, PCN X03L

Revisions:  
Number: Description:

FOR BIDDING PURPOSES ONLY

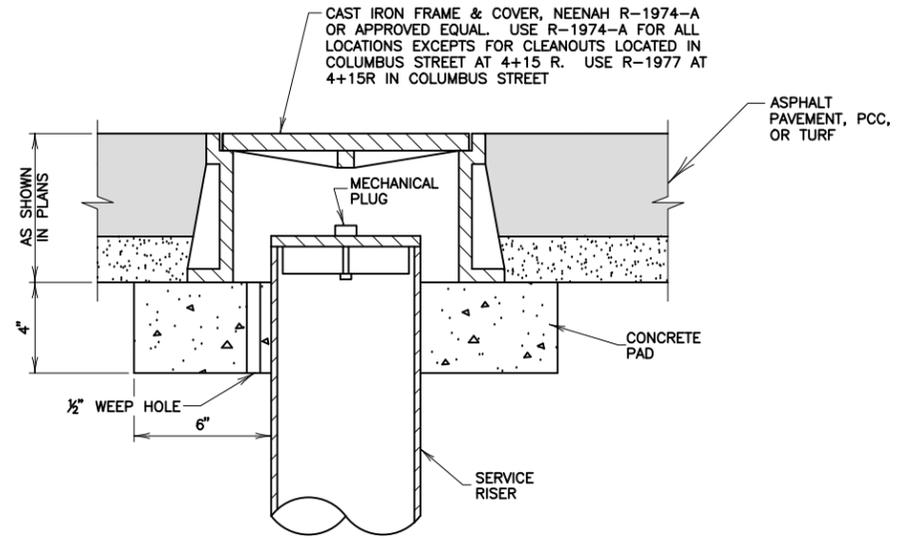
# MOUNT RUSHMORE ROAD UTILITY RECONSTRUCTION

Sheet Title: PROJECT DETAILS  
Sheet No: G65 of G90

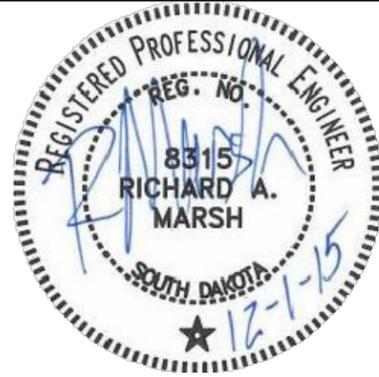


## FIRE HYDRANT BURY DEPTH ADJUSTMENT NOT TO SCALE

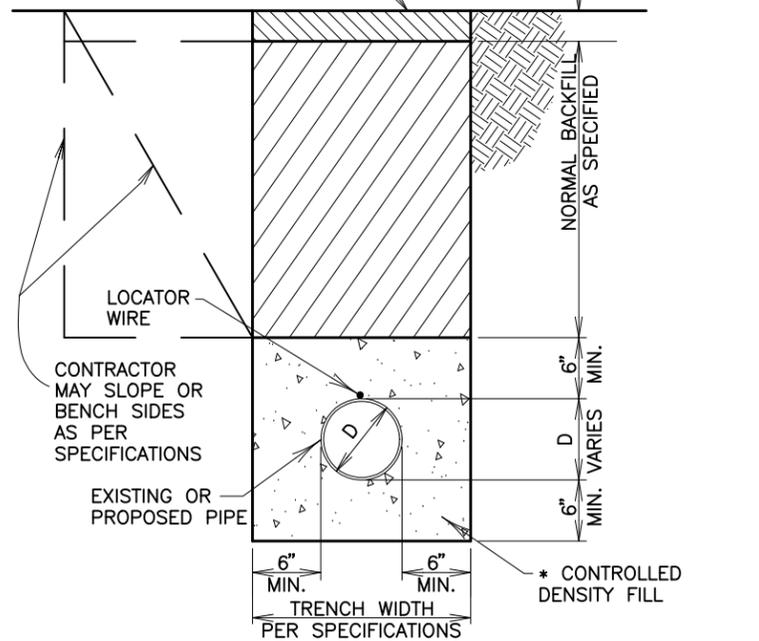
THE PROPOSED BURY DEPTHS SHOWN ARE APPROXIMATE AND ARE DEPENDENT UPON SEVERAL FACTORS SUCH AS: EXISTING WATER MAIN DEPTH, OTHER UTILITIES, FIELD CHANGES, ETC. THE CONTRACTOR SHALL VERIFY ALL REQUIRED FIRE HYDRANT DEPTHS IN THE FIELD. VERTICAL BENDS ARE INCLUDED ON SELECT HYDRANT LEADS AS NOTED ON THE PLANS AND PROFILES. NO VERTICAL EXTENSIONS ARE ALLOWED. 6" PVC HYDRANT LEAD PIPE IS NOT INCLUDED IN THE FIRE HYDRANT BID ITEM AND WILL BE PAID SEPARATELY. VERTICAL BENDS ARE NOT INCLUDED AND WILL BE PAID FOR SEPARATELY. THE AUXILIARY GATE VALVE IS INCIDENTAL TO THE FIRE HYDRANT BID ITEM. REFER TO THE STANDARD SPECIFICATIONS FOR ADDITIONAL INFORMATION.



## CLEANOUT COVER (SPECIAL MANHOLE FRAME AND LID) NOT TO SCALE

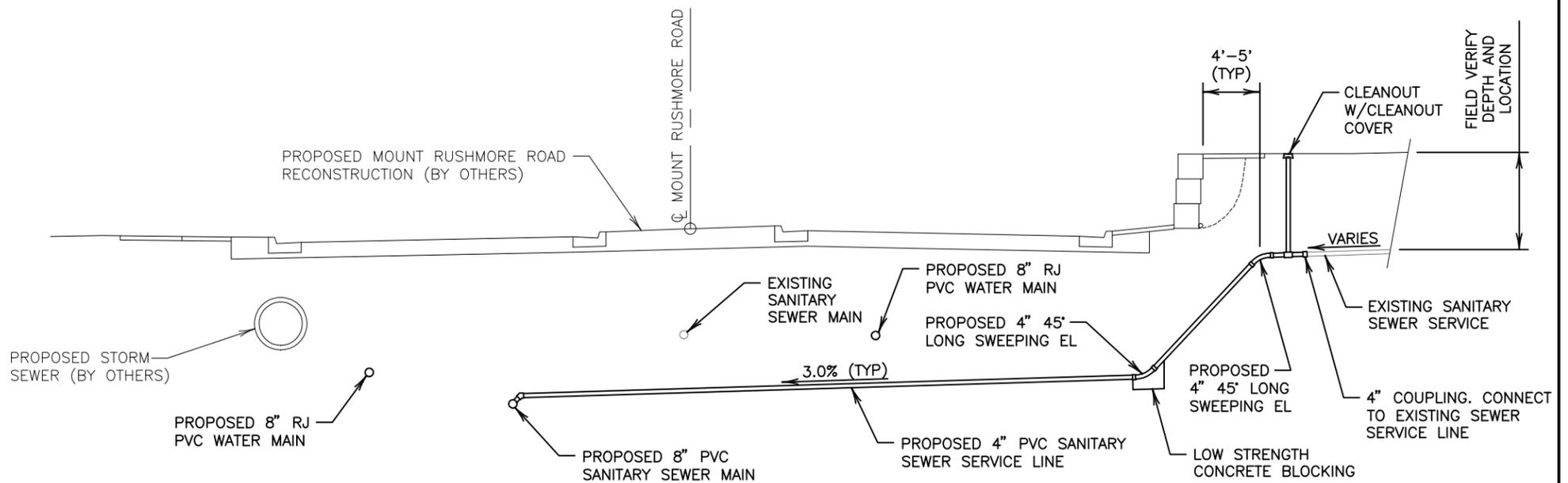


PAVEMENT, GRAVEL SURFACING OR TOPSOILING & SODDING, AS REQUIRED BY SPECIFICATIONS AND SDDOT CONTRACT  
SURFACE RESTORATION (DEPTH VARIES)



\* CONTROLLED DENSITY FILL IS REFERRED TO AS CONTROLLED LOW STRENGTH BACKFILL MATERIAL IN THE STANDARD CITY SPECIFICATIONS.

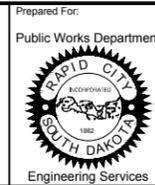
## PIPE ENCASEMENT NOT TO SCALE



## MOUNT RUSHMORE ROAD EAST SIDE SEWER SERVICE INSTALLATION DETAIL, STA 69+50 - 76+00R NOT TO SCALE

USE DETAIL AT THE FOLLOWING LOCATIONS:  
STA 69+61.43    STA 73+21.36  
STA 69+72.36    STA 73+42.77  
STA 69+92.34    STA 74+02.55  
STA 70+36.16    STA 74+22.61  
STA 71+77.57    STA 74+75.12  
STA 72+34.28    STA 75+05.18  
STA 72+95.70    STA 75+51.70

Number: 19, 2015, 04/26/15, 07/15, MOUNT RUSHMORE RD., UTILITIES RECONSTRUCTION, DRAWINGS SHEETS PHASE 3 - SAINT JAMES TO KANSAS CITY, DRAWING DETAILS: DWG (SCHULE) (PROJECTS & PROPOSALS) 11119.00

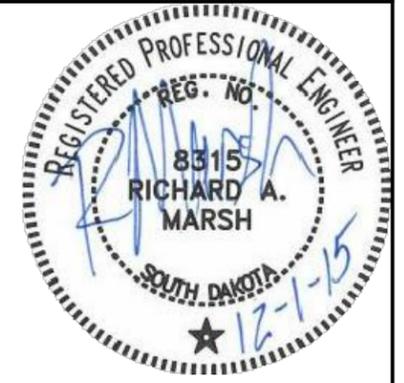


|                   |                                 |
|-------------------|---------------------------------|
| Scale:            | AS NOTED                        |
| Designed By:      | RM                              |
| Drawn By:         | MS                              |
| Design Date:      | 07.2015                         |
| Print Date:       | 12.01.2015                      |
| Internal Job No.: | 11119.06                        |
| Surveyed By:      | SDDOT                           |
| Survey Date:      | 2012                            |
| Project Number:   | 13-2139, CIP NO.50950, PCN X03L |

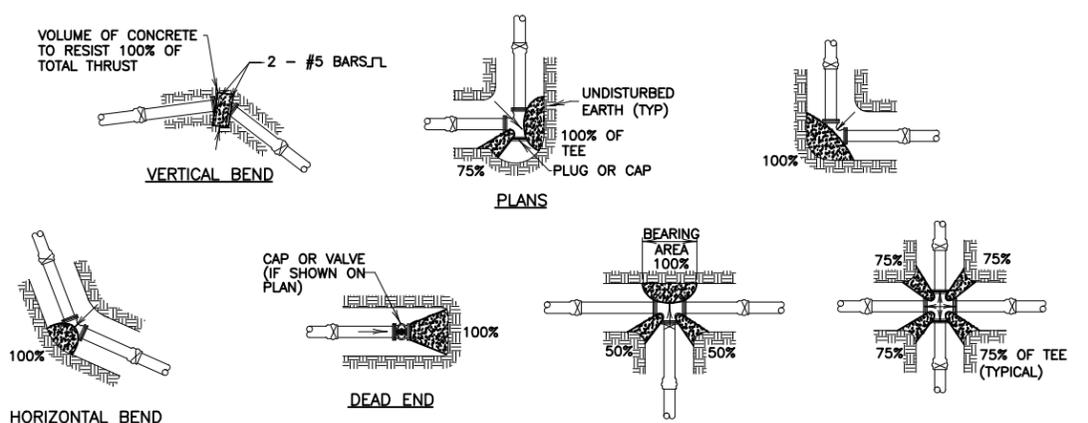
FOR BIDDING PURPOSES ONLY

## MOUNT RUSHMORE ROAD UTILITY RECONSTRUCTION

|              |                  |
|--------------|------------------|
| Sheet Title: | PROJECT DETAILS  |
| Sheet No.:   | G66<br>of<br>G90 |



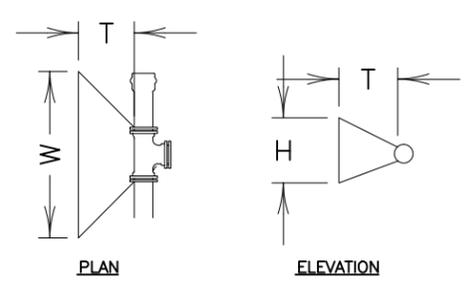
| THRUST BLOCK TABLES (RECOMMENDED DIMENSIONS INCLUDED)                |                |                       |        |        |                                |  |
|--|----------------|-----------------------|--------|--------|--------------------------------|--|
| <b>NOTES:</b>  |                | SOIL BEARING CAPACITY | 2000   | psf    |                                |  |
|  |                | WATER MAIN PRESSURE   | 150    | psi    |                                |  |
|  |                | FACTOR OF SAFETY      | 2      |        | per Rapid City Design Criteria |  |
| TEES/VALVES AND DEAD END TABLE (d = 6", 8", 10", 12", 14", 18", 20") |                |                       |        |        |                                |  |
| Fitting Size   | Min. Area (SF) | Min Conc Volume (CY)  | w (ft) | h (ft) | T (ft)                         |  |
| d x 4"   | 2.7            | 0.2                   | 2.40   | 1.20   | 1.50                           |  |
| d x 6"   | 5.6            | 0.3                   | 3.40   | 1.70   | 1.50                           |  |
| d x 8"   | 9.6            | 0.5                   | 4.40   | 2.20   | 1.50                           |  |
| d x 10"  | 14.5           | 0.8                   | 5.40   | 2.70   | 1.50                           |  |
| d x 12"  | 20.5           | 1.1                   | 6.50   | 3.30   | 1.50                           |  |
| d x 14"  | 27.6           | 1.5                   | 7.50   | 3.80   | 1.50                           |  |
| d x 16"  | 35.6           | 2.6                   | 8.00   | 4.00   | 2.30                           |  |
| d x 18"  | 44.8           | 3.3                   | 8.00   | 4.00   | 2.80                           |  |
| d x 20"  | 54.9           | 4.1                   | 8.00   | 4.00   | 3.50                           |  |
| 90 degree HORIZONTAL BEND TABLE                                      |                |                       |        |        |                                |  |
| Fitting Size   | Min. Area (SF) | Min Conc Volume (CY)  | w (ft) | h (ft) | T (ft)                         |  |
| 4" Pipe  | 3.8            | 0.2                   | 2.80   | 1.40   | 1.50                           |  |
| 6" Pipe  | 7.9            | 0.4                   | 4.00   | 2.00   | 1.50                           |  |
| 8" Pipe  | 13.6           | 0.8                   | 5.40   | 2.70   | 1.50                           |  |
| 10" Pipe   | 20.5           | 1.1                   | 6.50   | 3.30   | 1.50                           |  |
| 12" Pipe   | 29.0           | 1.6                   | 7.80   | 3.90   | 1.50                           |  |
| 14" Pipe   | 39.0           | 2.2                   | 8.00   | 4.00   | 1.90                           |  |
| 16" Pipe   | 50.4           | 3.7                   | 8.00   | 4.00   | 3.20                           |  |
| 18" Pipe   | 63.3           | 4.7                   | 8.00   | 4.00   | 4.00                           |  |
| 20" Pipe   | 77.7           | 5.8                   | 8.00   | 4.00   | 4.90                           |  |
| 24" Pipe   | 110.8          | 8.2                   | 8.00   | 4.00   | 7.00                           |  |
| REDUCER/INCREASER TABLE  |                |                       |        |        |                                |  |
| Fitting Size   | Min. Area (SF) | Min Conc Volume (CY)  | w (ft) | h (ft) | T (ft)                         |  |
| 8"x6"  | 4.0            | 0.2                   | 3.00   | 1.50   | 1.50                           |  |
| 10"x8"   | 4.9            | 0.3                   | 3.20   | 1.60   | 1.50                           |  |
| 12"x6"   | 14.9           | 0.8                   | 5.60   | 2.80   | 1.50                           |  |
| 12"x8"   | 10.9           | 0.6                   | 4.80   | 2.40   | 1.50                           |  |
| 12"x10"  | 6.0            | 0.3                   | 3.50   | 1.80   | 1.50                           |  |
| 14"x6"   | 22.4           | 1.2                   | 6.80   | 3.40   | 2.00                           |  |
| 14"x8"   | 17.9           | 1.3                   | 6.00   | 3.00   | 2.00                           |  |
| 14"x10"  | 13.1           | 1.0                   | 5.20   | 2.60   | 2.00                           |  |
| 14"x12"  | 7.0            | 0.5                   | 3.80   | 1.90   | 2.00                           |  |
| 16"x6"   | 30.0           | 2.2                   | 7.80   | 3.90   | 2.00                           |  |
| 16"x8"   | 26.0           | 1.9                   | 7.40   | 3.70   | 2.00                           |  |
| 16"x10"  | 21.1           | 1.6                   | 6.60   | 3.30   | 2.00                           |  |
| 16"x12"  | 15.1           | 1.1                   | 5.60   | 2.80   | 2.00                           |  |
| 16"x14"  | 8.1            | 0.6                   | 4.20   | 2.10   | 2.00                           |  |
| 20"x6"   | 49.3           | 3.7                   | 8.00   | 4.00   | 3.10                           |  |
| 20"x8"   | 45.3           | 3.4                   | 8.00   | 4.00   | 2.90                           |  |
| 20"x10"  | 40.4           | 3.0                   | 8.00   | 4.00   | 2.60                           |  |
| 20"x12"  | 34.4           | 2.5                   | 8.00   | 4.00   | 2.20                           |  |
| 20"x14"  | 27.4           | 2.0                   | 7.40   | 3.70   | 2.00                           |  |
| 20"x16"  | 19.3           | 1.4                   | 6.40   | 3.20   | 2.00                           |  |
| 45 degree HORIZONTAL BEND TABLE                                      |                |                       |        |        |                                |  |
| Fitting Size   | Min. Area (SF) | Min Conc Volume (CY)  | w (ft) | h (ft) | T (ft)                         |  |
| 4" Pipe  | 2.1            | 0.1                   | 2.20   | 1.10   | 1.50                           |  |
| 6" Pipe  | 4.3            | 0.2                   | 3.00   | 1.50   | 1.50                           |  |
| 8" Pipe  | 7.4            | 0.4                   | 4.00   | 2.00   | 1.50                           |  |
| 10" Pipe   | 11.1           | 0.6                   | 4.80   | 2.40   | 1.50                           |  |
| 12" Pipe   | 15.7           | 0.9                   | 5.80   | 2.90   | 1.50                           |  |
| 14" Pipe   | 21.1           | 1.2                   | 6.50   | 3.30   | 1.50                           |  |
| 16" Pipe   | 27.3           | 2.0                   | 7.40   | 3.70   | 2.00                           |  |
| 18" Pipe   | 34.3           | 2.5                   | 8.00   | 4.00   | 2.20                           |  |
| 20" Pipe   | 42.0           | 3.1                   | 8.00   | 4.00   | 2.70                           |  |
| 24" Pipe   | 60.0           | 4.4                   | 8.00   | 4.00   | 3.80                           |  |
| 22.5 degree HORIZONTAL BEND TABLE                                    |                |                       |        |        |                                |  |
| Fitting Size   | Min. Area (SF) | Min Conc Volume (CY)  | w (ft) | h (ft) | T (ft)                         |  |
| 4" Pipe  | 1.1            | 0.1                   | 1.50   | 0.80   | 1.50                           |  |
| 6" Pipe  | 2.2            | 0.1                   | 2.20   | 1.10   | 1.50                           |  |
| 8" Pipe  | 3.8            | 0.2                   | 2.80   | 1.40   | 1.50                           |  |
| 10" Pipe   | 5.7            | 0.3                   | 3.40   | 1.70   | 1.50                           |  |
| 12" Pipe   | 8.0            | 0.4                   | 4.00   | 2.00   | 1.50                           |  |
| 14" Pipe   | 10.7           | 0.6                   | 4.80   | 2.40   | 1.50                           |  |
| 16" Pipe   | 13.9           | 1.0                   | 5.40   | 2.70   | 2.00                           |  |
| 18" Pipe   | 17.5           | 1.3                   | 6.00   | 3.00   | 2.00                           |  |
| 20" Pipe   | 21.4           | 1.6                   | 6.60   | 3.30   | 2.00                           |  |
| 24" Pipe   | 30.6           | 2.3                   | 8.00   | 4.00   | 2.00                           |  |
| 11.25 degree HORIZONTAL BEND TABLE                                   |                |                       |        |        |                                |  |
| Fitting Size   | Min. Area (SF) | Min Conc Volume (CY)  | w (ft) | h (ft) | T (ft)                         |  |
| 4" Pipe  | 0.5            | 0.0                   | 1.20   | 0.60   | 1.50                           |  |
| 6" Pipe  | 1.1            | 0.1                   | 1.60   | 0.80   | 1.50                           |  |
| 8" Pipe  | 1.9            | 0.1                   | 2.00   | 1.00   | 1.50                           |  |
| 10" Pipe   | 2.8            | 0.2                   | 2.40   | 1.20   | 1.50                           |  |
| 12" Pipe   | 4.0            | 0.2                   | 3.00   | 1.50   | 1.50                           |  |
| 14" Pipe   | 5.4            | 0.3                   | 3.40   | 1.70   | 1.50                           |  |
| 16" Pipe   | 7.0            | 0.5                   | 3.80   | 1.90   | 2.00                           |  |
| 18" Pipe   | 8.8            | 0.6                   | 4.20   | 2.10   | 2.00                           |  |
| 20" Pipe   | 10.8           | 0.8                   | 4.80   | 2.40   | 2.00                           |  |
| 24" Pipe   | 15.4           | 1.1                   | 5.60   | 2.80   | 2.00                           |  |
| CROSS TABLE (d = 6", 8", 12", 14", 16", 20")                         |                |                       |        |        |                                |  |
| Fitting Size   | Min. Area (SF) | Min Conc Volume (CY)  | w (ft) | h (ft) | T (ft)                         |  |
| d x 4"   | 3.8            | 0.2                   | 2.80   | 1.40   | 1.50                           |  |
| d x 6"   | 7.9            | 0.4                   | 4.00   | 2.00   | 1.50                           |  |
| d x 8"   | 13.6           | 0.8                   | 5.40   | 2.70   | 1.50                           |  |
| d x 10"  | 20.5           | 1.1                   | 6.60   | 3.30   | 1.50                           |  |
| d x 12"  | 29.0           | 1.6                   | 7.80   | 3.90   | 1.50                           |  |
| d x 14"  | 39.0           | 2.2                   | 8.00   | 4.00   | 1.90                           |  |
| d x 16"  | 50.4           | 3.7                   | 8.00   | 4.00   | 3.20                           |  |
| d x 18"  | 63.3           | 4.7                   | 8.00   | 4.00   | 4.00                           |  |
| d x 20"  | 77.7           | 5.8                   | 8.00   | 4.00   | 4.90                           |  |
| d x 24"  | 110.8          | 8.2                   | 8.00   | 4.00   | 7.00                           |  |



NOTE: MECHANICAL JOINT RESTRAINTS REQUIRED ON ALL DEAD END VALVES.

### CONCRETE THRUST BLOCKS FOR PVC PIPE

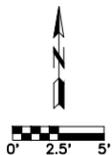
NOT TO SCALE



### TABLE OF THRUST BLOCK RESTRAINTS ON WATER MAINS

NOT TO SCALE

Number: 19\_0215\_04608\_01119.06 MT. RUSHMORE RD. UTILITIES RECONSTRUCTION DRAWINGS SHEETS PHASE 3 - SAINT JAMES TO KANSAS CITY  
 Drawing Details: DWG (SCHULLE) PROJECTS & PROPOSALS \11119.06



Prepared For:  
Public Works Department  
RAPID CITY  
SOUTH DAKOTA  
Engineering Services

Scale: AS NOTED  
Designed By: RM  
Design Date: 07.2015  
Internal Job No: 11119.06  
Surveyed By: SDDOT  
Project Number: 13-2139, CIP NO.50950, PCN X03L

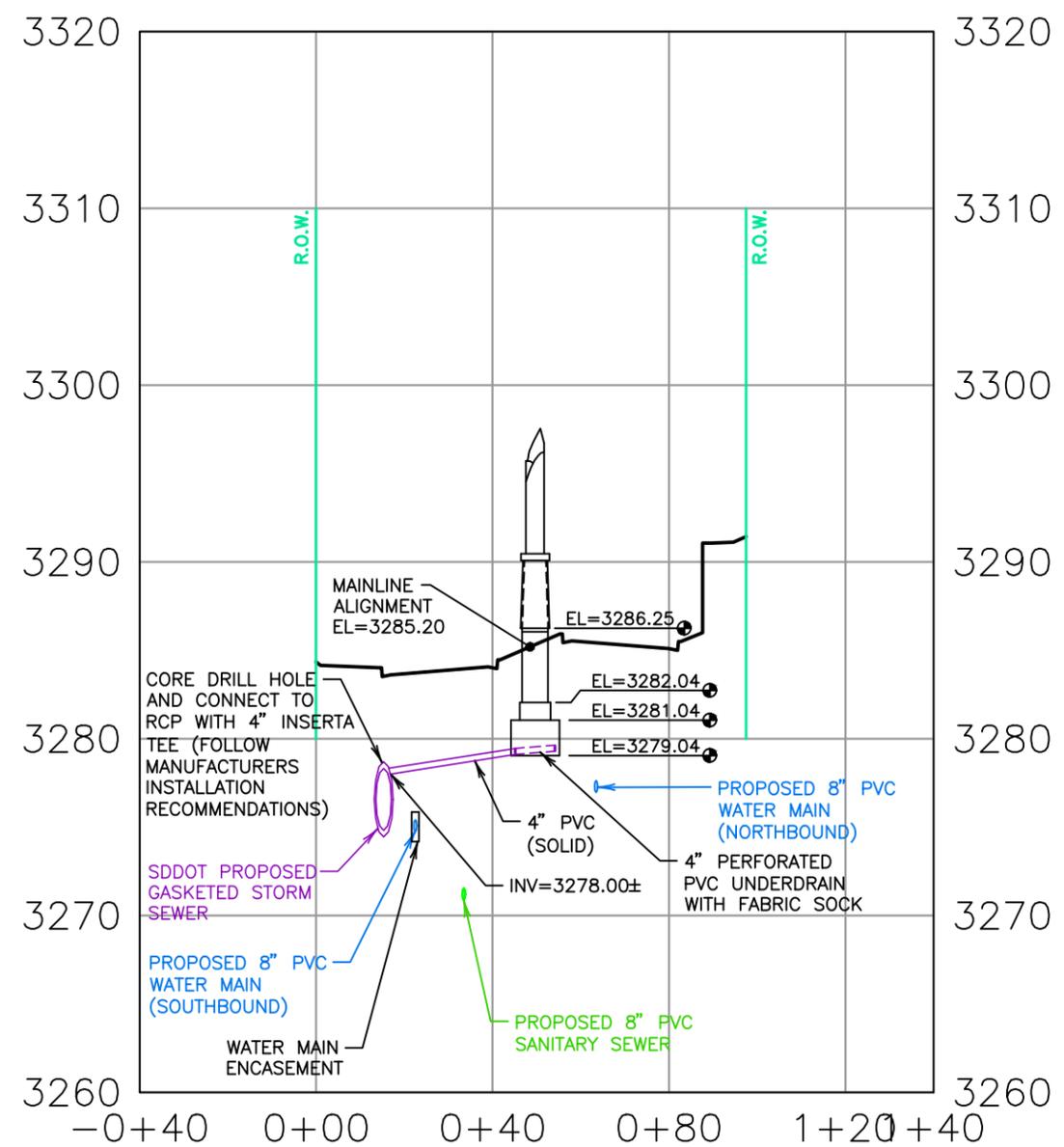
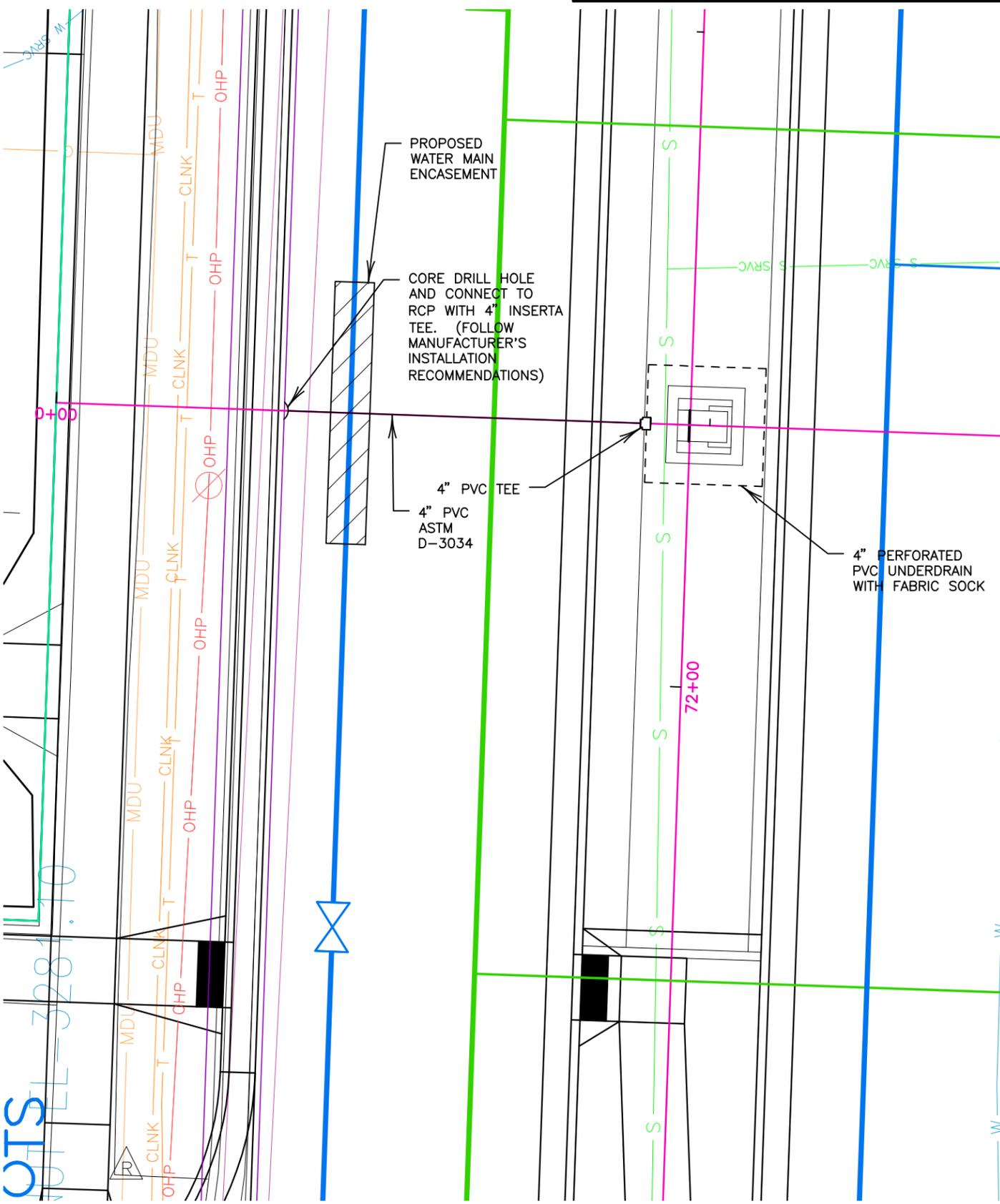
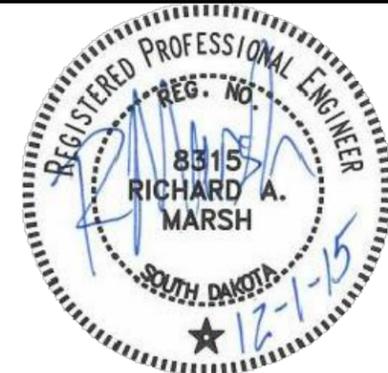
Drawn By: MS  
Print Date: 12.01.2015  
Survey Date: 2012

FOR BIDDING PURPOSES ONLY

MOUNT RUSHMORE ROAD  
UTILITY RECONSTRUCTION

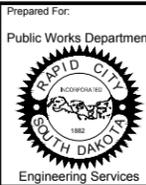
Sheet Title:  
MONUMENT  
FOUNDATION  
DRAIN

Sheet No:  
G67  
of  
G90



Number: 10, 0215, 04668, 011, MOUNT RUSHMORE RD. UTILITIES RECONSTRUCTION DRAWINGS SHEETS PHASE 3 - SAINT JAMES TO KANSAS CITY  
Drawing: DETAILS (SCHULE) PROJECTS & PROPOSALS 11119.00

OTIS

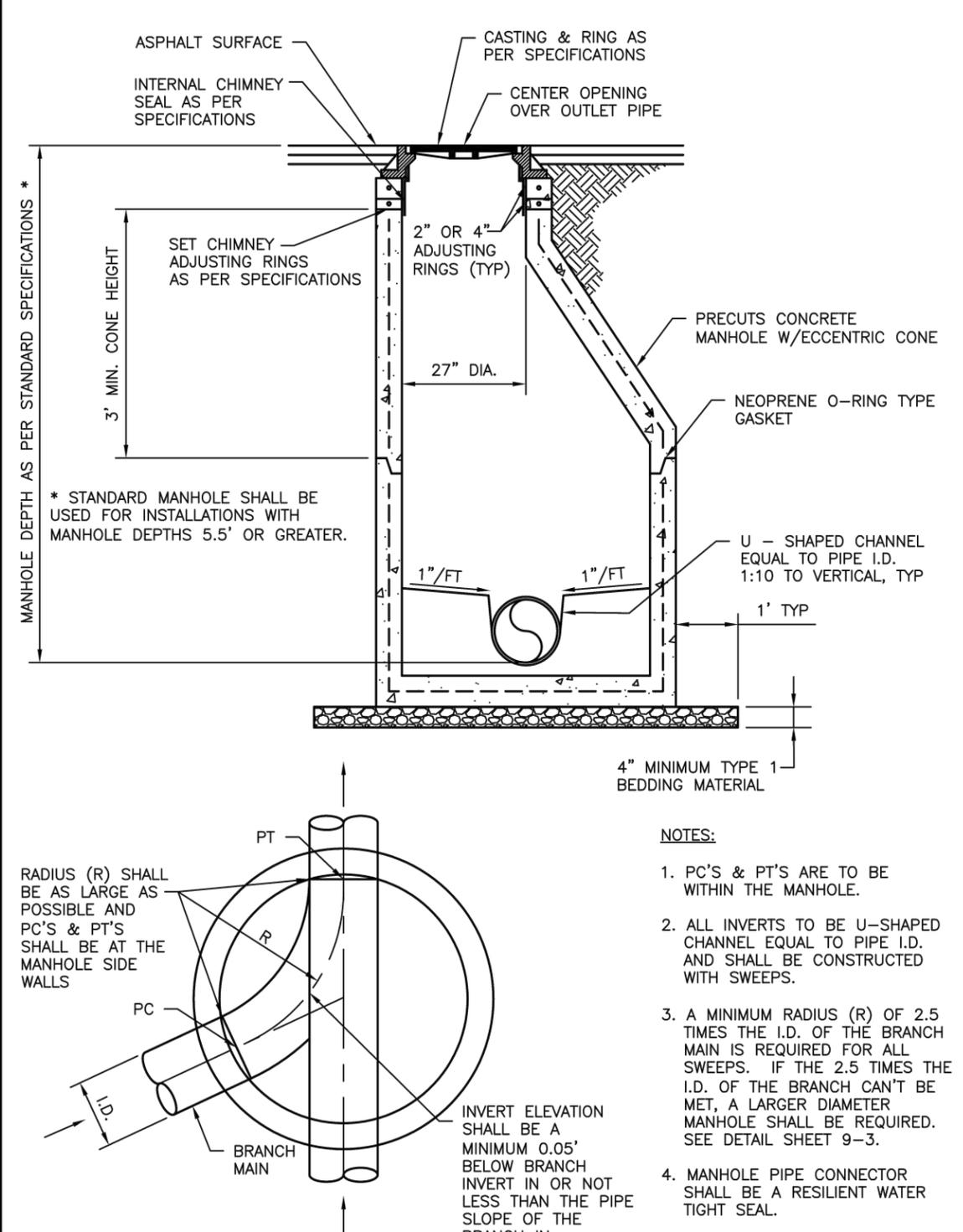
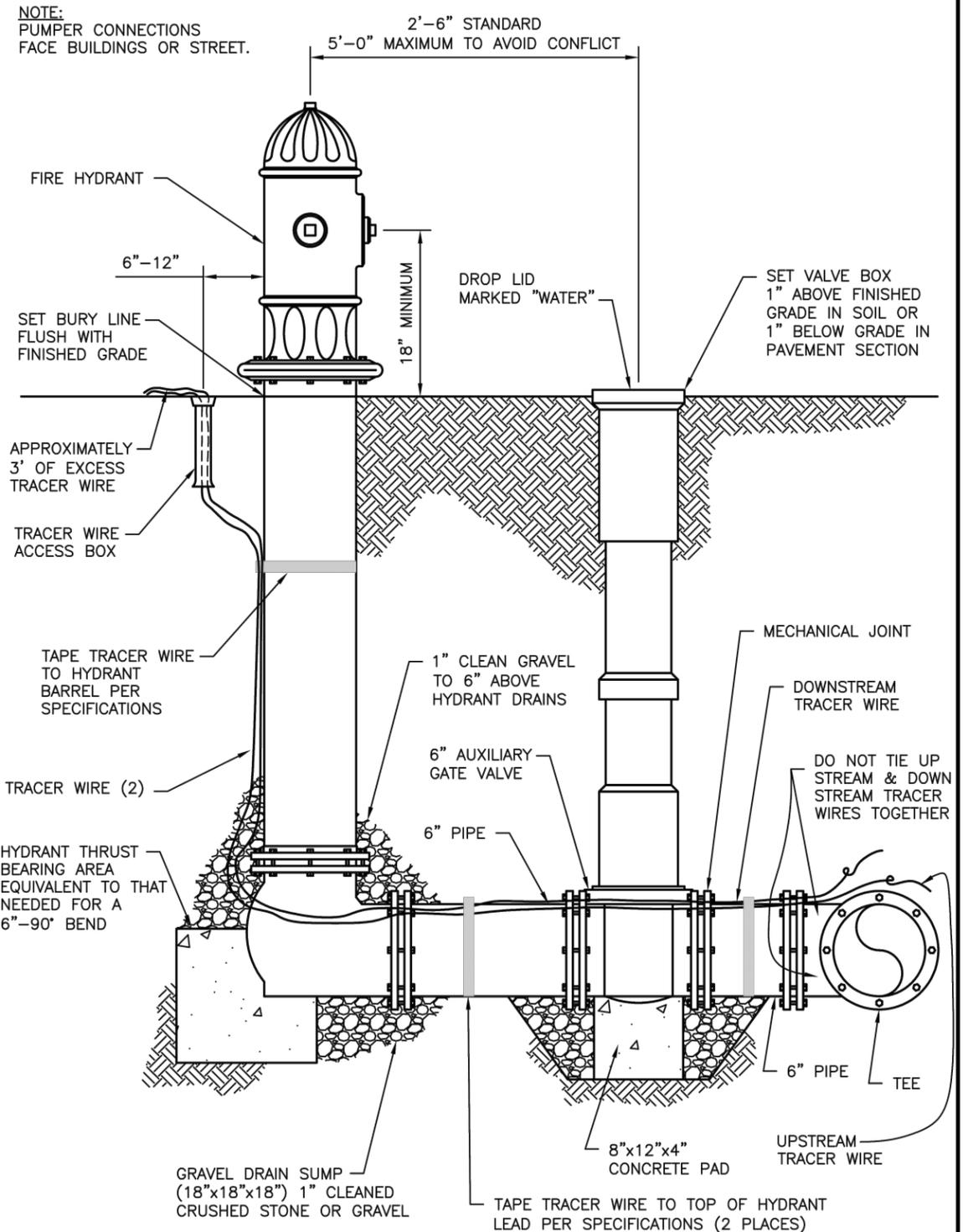


|                   |                                 |
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| Scale:            | AS NOTED                        |
| Designed By:      | RM                              |
| Drawn By:         | MS                              |
| Design Date:      | 07.2015                         |
| Print Date:       | 12.01.2015                      |
| Internal Job No.: | 11119.06                        |
| Surveyed By:      | SDDOT                           |
| Survey Date:      | 2012                            |
| Project Number:   | 13-2139, CIP NO.50950, PCN X03L |

FOR BIDDING PURPOSES ONLY

MOUNT RUSHMORE ROAD  
UTILITY RECONSTRUCTION

|              |                  |
|--------------|------------------|
| Sheet Title: | STANDARD DETAILS |
| Sheet No.:   | G68<br>of<br>G90 |



November 19, 2015, 9:46:08 AM, MOUNT RUSHMORE ROAD, UTILITY RECONSTRUCTION, DRAWINGS SHEETS PHASE 3 - SAINT JAMES TO KANSAS CITY, DRAWING DETAILS.DWG (SCHULE) (PROJECTS & PROPOSALS\11119.00 MT. RUSHMORE RD. UTILITY RECONSTRUCTION\DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY)

|                    |                         |
|--------------------|-------------------------|
| CITY OF RAPID CITY | PUBLIC WORKS DEPARTMENT |
| DATE: 5-1-07       |                         |
| SEC. SHT.          |                         |
| 8-1                |                         |

|                    |                         |
|--------------------|-------------------------|
| CITY OF RAPID CITY | PUBLIC WORKS DEPARTMENT |
| DATE: 5-1-07       |                         |
| SEC. SHT.          |                         |
| 9-1                |                         |

HYDRANT SETTING DETAIL

STANDARD MANHOLE DETAIL WITH  
MONOLITHIC BASE (48" & 60")

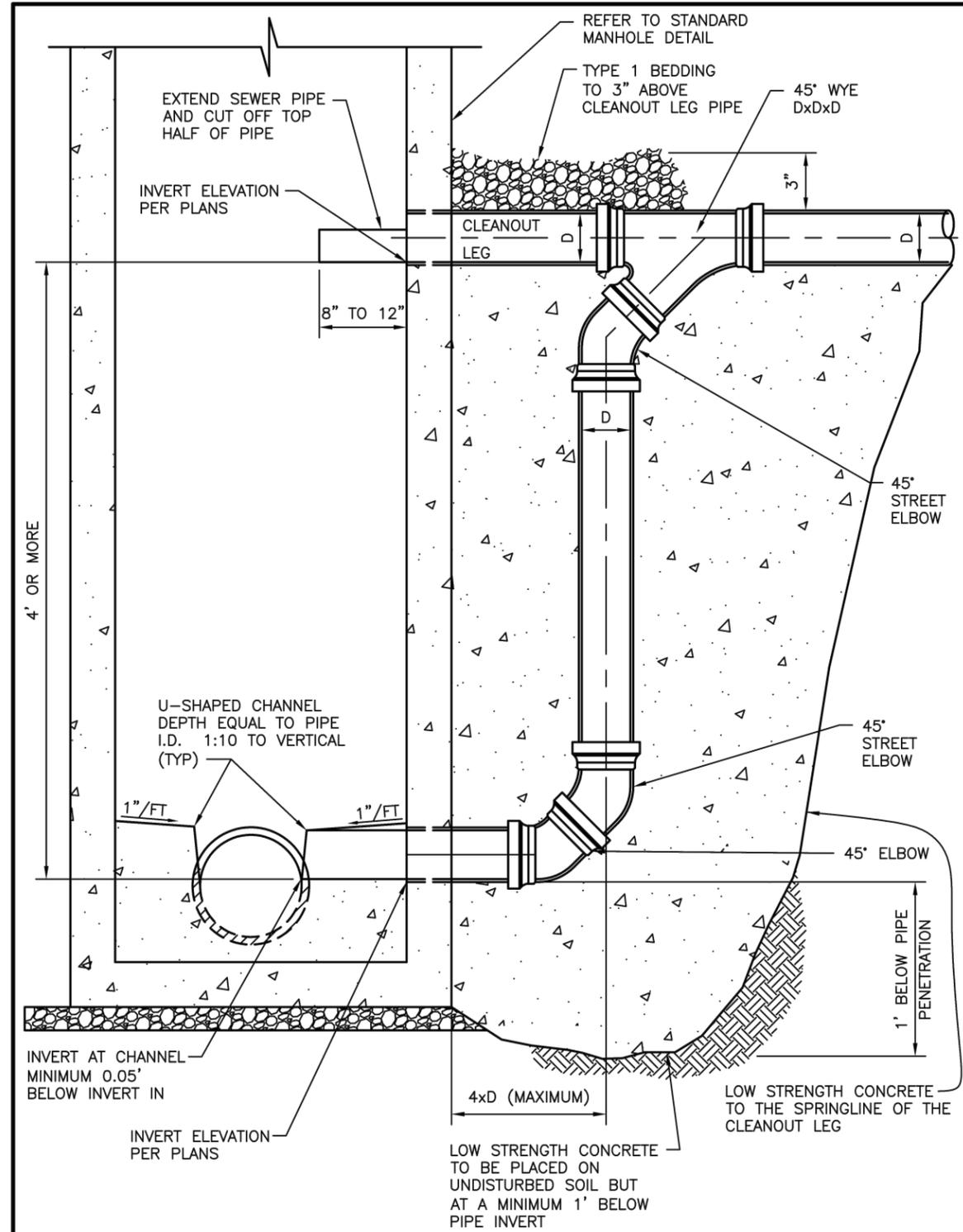
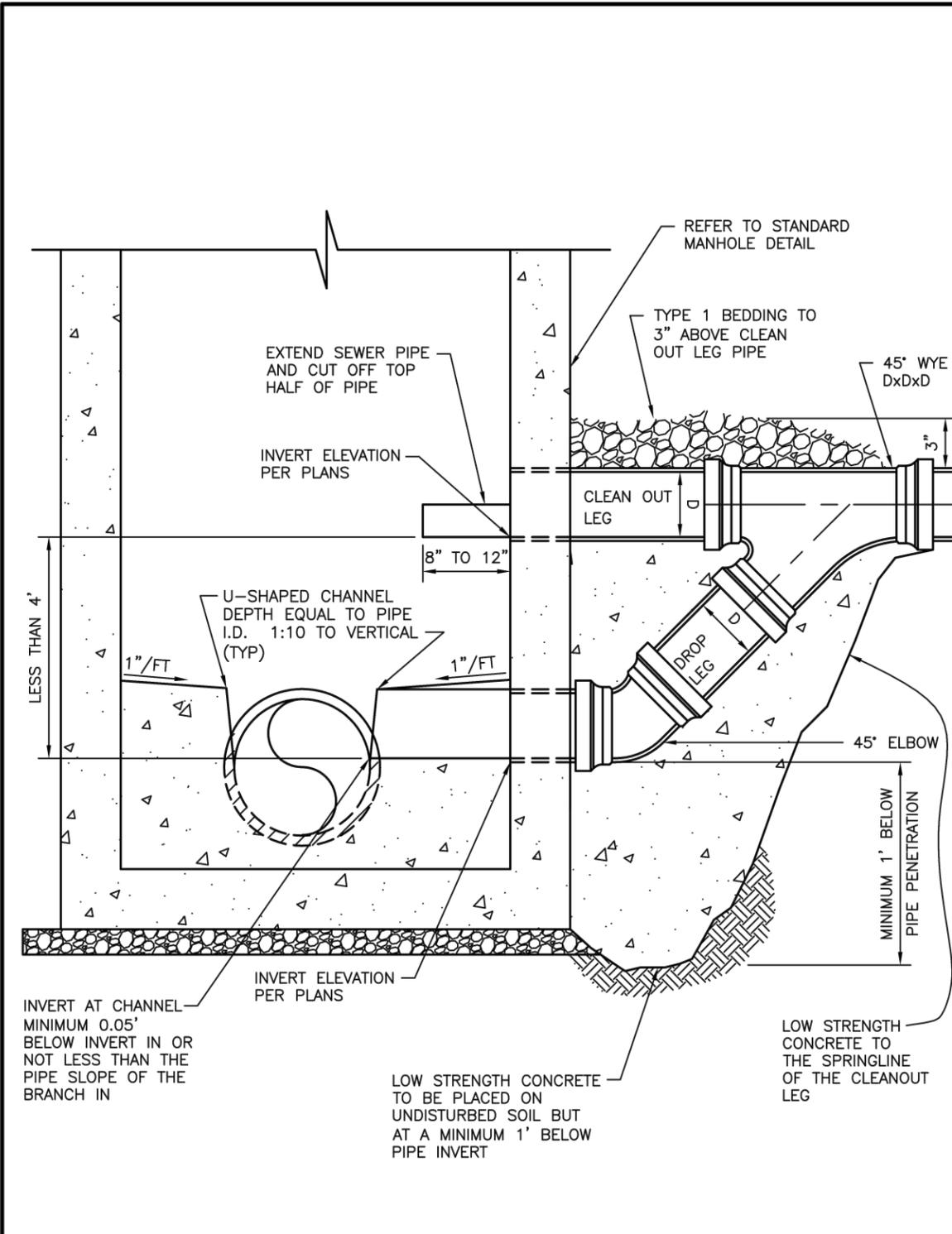


Prepared For: Public Works Department  
 Scale: AS NOTED  
 Designed By: RM  
 Drawn By: MS  
 Design Date: 07.2015  
 Print Date: 12.01.2015  
 Internal Job No: 11119.06  
 Surveyed By: SDDOT  
 Survey Date: 2012  
 Project Number: 13-2139, CIP NO.50950, PCN X03L

FOR BIDDING PURPOSES ONLY

MOUNT RUSHMORE ROAD  
 UTILITY RECONSTRUCTION

Sheet Title: STANDARD DETAILS  
 Sheet No: G69 of G90



CITY OF RAPID CITY PUBLIC WORKS DEPARTMENT  
 STANDARD DROP MANHOLE DETAIL  
 FOR INVERT CHANGES LESS THAN 4'  
 DATE: 5-1-07  
 SEC. SHT. 9-4

CITY OF RAPID CITY PUBLIC WORKS DEPARTMENT  
 STANDARD DROP MANHOLE DETAILS  
 FOR INVERT CHANGES MORE THAN 4'  
 DATE: 5-1-07  
 SEC. SHT. 9-5

November 19, 2015, 9:46:08 AM, MOUNT RUSHMORE RD. UTILITIES RECONSTRUCTION DRAWINGS SHEETS PHASE 3 - SAINT JAMES TO KANSAS CITY  
 DRAWING DETAILS DWG (SCHULE) PROJECTS & PROPOSALS 11119.00



Prepared For:  
Public Works Department  
Engineering Services

Scale: AS NOTED  
Designed By: RM  
Design Date: 07.2015  
Internal Job No: 11119.06  
Surveyed By: SDDOT  
Project Number: 13-2139, CIP NO.50950, PCN X03L

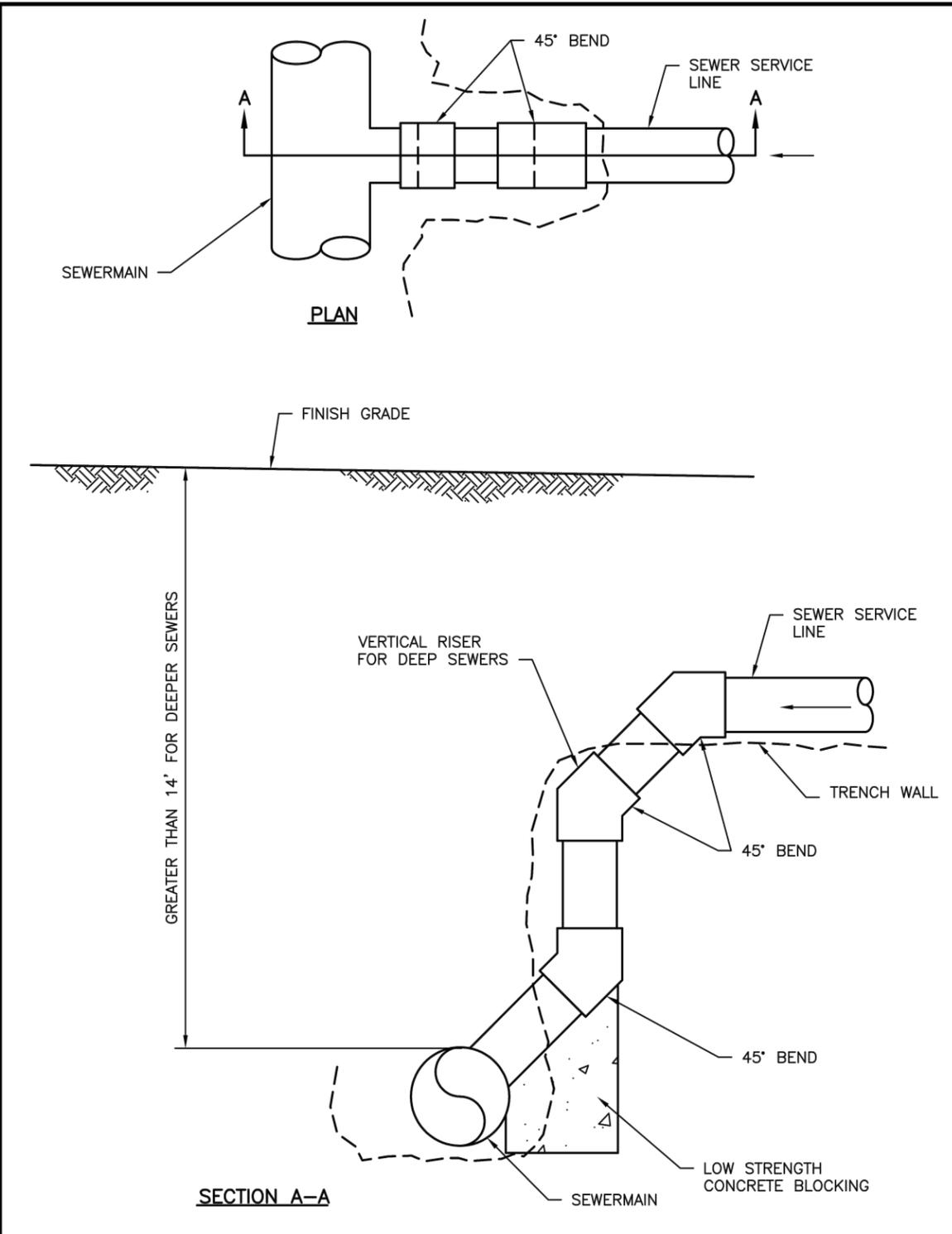
Revisions:  
Number: Description:

**FOR BIDDING PURPOSES ONLY**

**MOUNT RUSHMORE ROAD  
UTILITY RECONSTRUCTION**

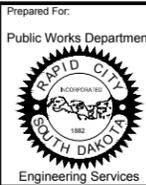
Sheet Title:  
STANDARD DETAILS

Sheet No:  
G70  
of  
G90



|   |                         |
|---|-------------------------|
| CITY OF RAPID CITY                          | PUBLIC WORKS DEPARTMENT |
| <b>DEEP SANITARY<br/>SERVICE CONNECTION</b> |                         |
| DATE: 5-1-07                                |                         |
| SEC. 9                                      | SHT. 9                  |

November 19, 2015 9:46:08 AM Drawing Details.DWG (SCHULE) (PROJECTS & PROPOSALS\11119.00 MT. RUSHMORE RD. UTILITIES RECONSTRUCTION\DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY)

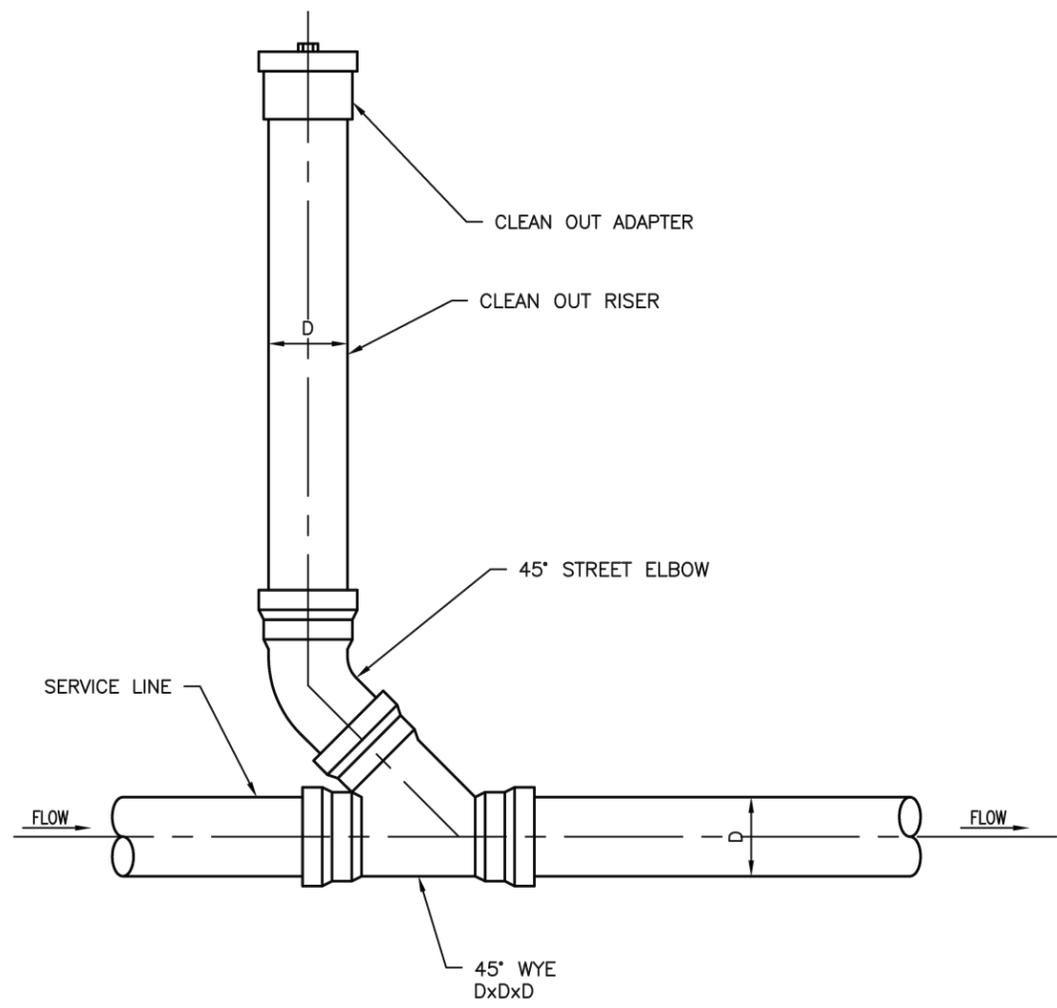


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| Scale:            | AS NOTED | Revisions:      |                                 |
| Designed By:      | RM       | Drawn By:       | MS                              |
| Design Date:      | 07.2015  | Print Date:     | 12.01.2015                      |
| Internal Job No.: | 11119.06 | Surveyed By:    | SDDOT                           |
| Surveyed Date:    | 2012     | Project Number: | 13-2139, CIP NO.50950, PCN X03L |

FOR BIDDING PURPOSES ONLY

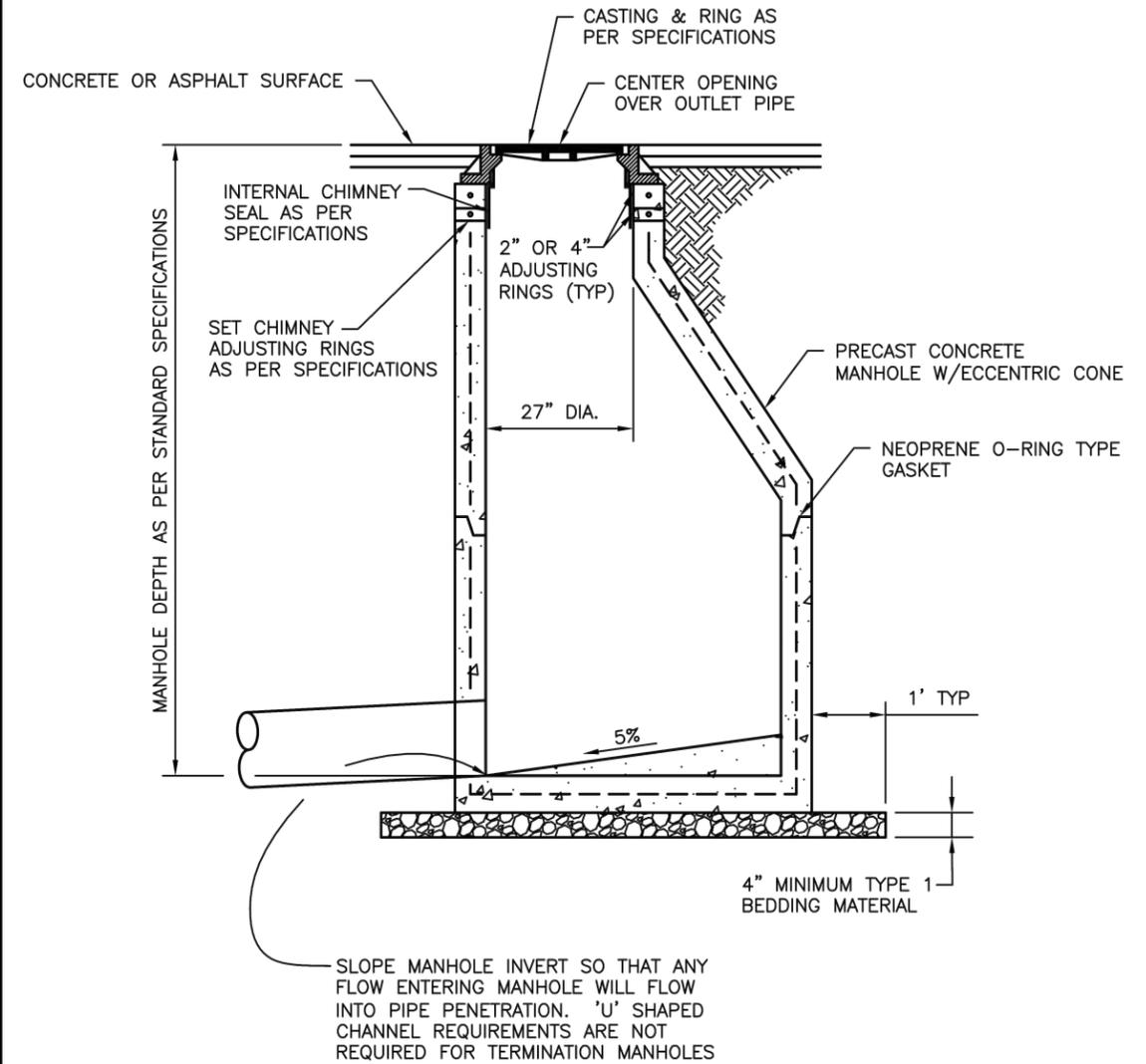
**MOUNT RUSHMORE ROAD  
UTILITY RECONSTRUCTION**

|              |                  |            |     |
|--------------|------------------|------------|-----|
| Sheet Title: | STANDARD DETAILS | Sheet No.: | G71 |
|              |                  |            | of  |
|              |                  |            | G90 |



**ELEVATION**

- NOTES:**
1. ALL FITTINGS SHALL BE GASKETED.
  2. CLEAN OUTS TO BE SAME DIAMETER (D) AS SERVICE LINE.

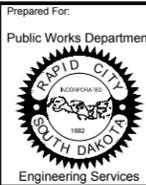


- NOTE:**
- MANHOLE PIPE CONNECTOR SHALL BE A RESILIENT WATER TIGHT SEAL.

November 19, 2015, 9:46:08 AM  
 Drawing Details: DWG (SCHULE) \PROJECTS & PROPOSALS\11119.00 MT. RUSHMORE RD. UTILITIES RECONSTRUCTION\DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY\

|  |                         |
|--|-------------------------|
| CITY OF RAPID CITY                                 | PUBLIC WORKS DEPARTMENT |
| <b>SANITARY SEWER SERVICE<br/>CLEAN OUT DETAIL</b> | DATE: 5-1-07            |
|  | SEC. SHT.               |
|  | <b>9-10</b>             |

|                            |                         |
|----------------------------|-------------------------|
| CITY OF RAPID CITY         | PUBLIC WORKS DEPARTMENT |
| <b>TERMINATION MANHOLE</b> | DATE: 5-1-07            |
|                            | SEC. SHT.               |
|                            | <b>9-13</b>             |

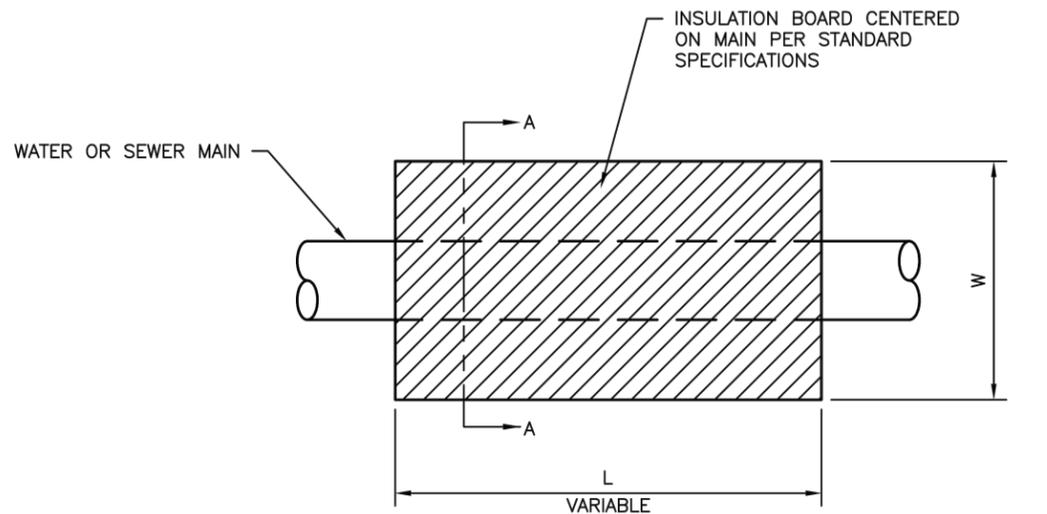


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|-------------------|---------------------------------|
| Scale:            | AS NOTED                        |
| Designed By:      | RM                              |
| Drawn By:         | MS                              |
| Design Date:      | 07.2015                         |
| Print Date:       | 12.01.2015                      |
| Internal Job No.: | 11119.06                        |
| Surveyed By:      | SDDOT                           |
| Survey Date:      | 2012                            |
| Project Number:   | 13-2139, CIP NO.50950, PCN X03L |

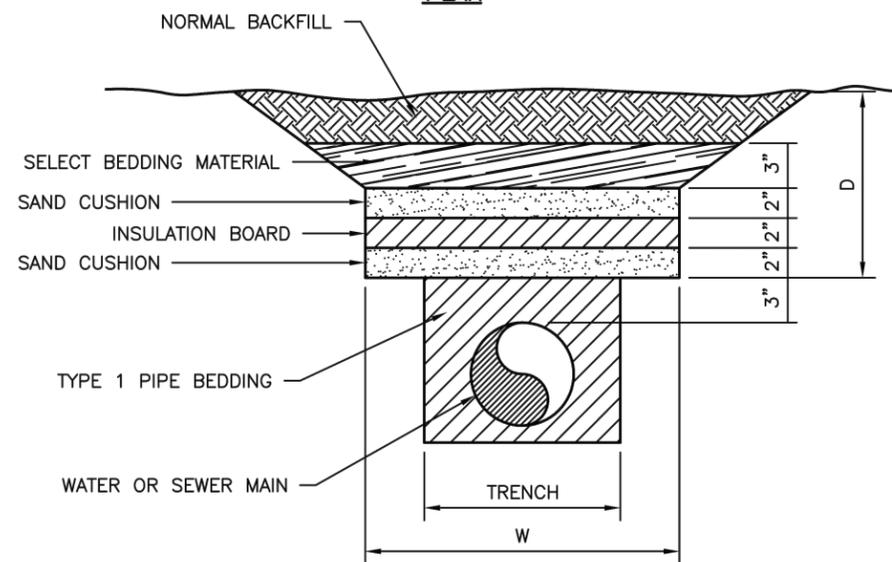
**FOR BIDDING PURPOSES ONLY**

**MOUNT RUSHMORE ROAD  
UTILITY RECONSTRUCTION**

|              |                  |
|--------------|------------------|
| Sheet Title: | STANDARD DETAILS |
| Sheet No.:   | G72<br>of<br>G90 |



**PLAN**

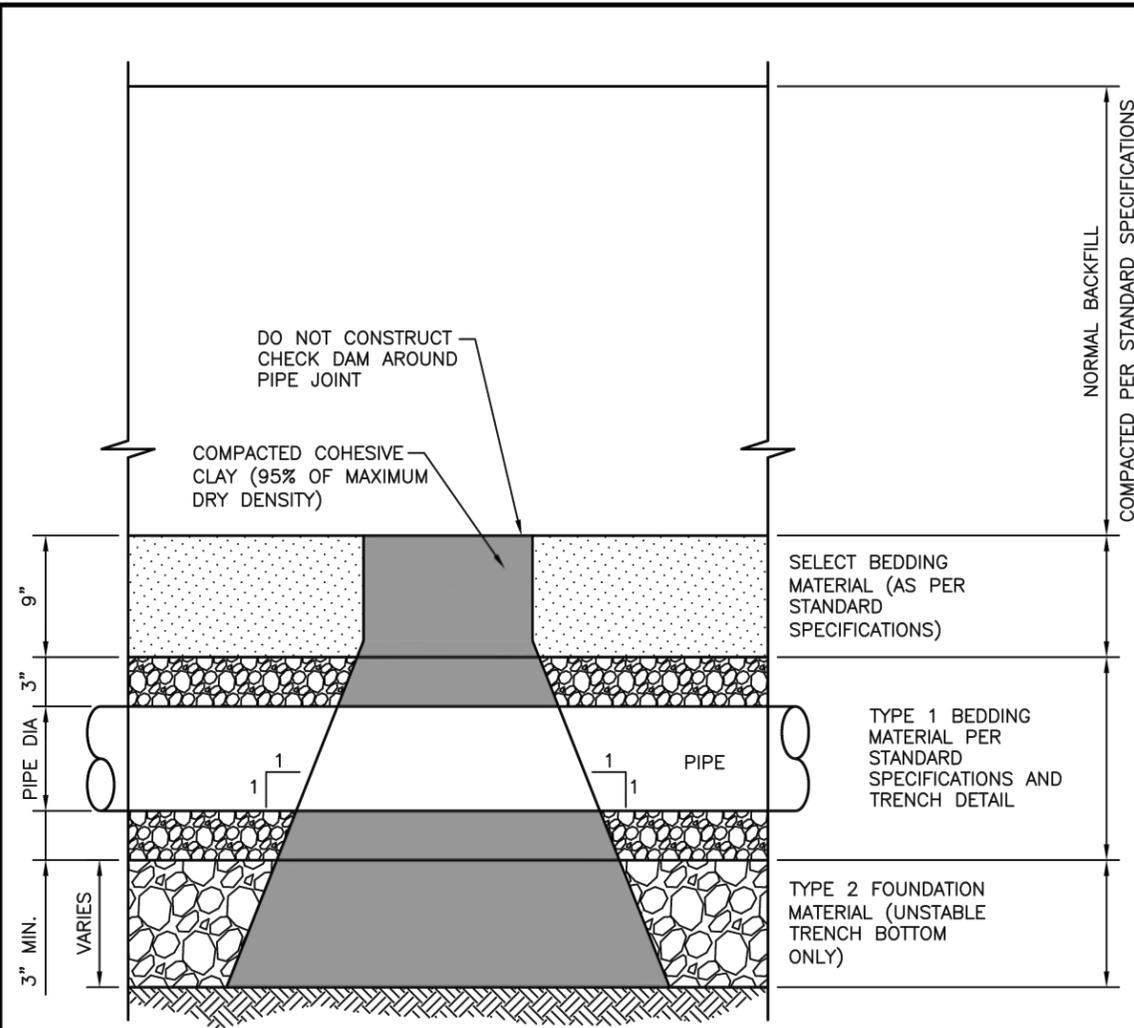


**SECTION A-A**

INSULATION WIDTH VS. PIPE DEPTH

| WATER    |          | SEWER    |          |
|----------|----------|----------|----------|
| D (FEET) | W (FEET) | D (FEET) | W (FEET) |
| 3        | 8        | 2.5      | 8        |
| 4        | 6        | 3        | 6        |
| 5        | 4        | 3.5      | 4        |

\* THE USE OF INSULATION REQUIRES PRIOR APPROVAL BY THE ENGINEER.



**ELEVATION**

**NOTE:**

CHECK DAM INSTALLATION LOCATIONS SHALL BE AS INDICATED ON THE PLANS. HOWEVER DURING CONSTRUCTION, CHECK DAM INSTALLATION LOCATIONS MAY BE MOVED DUE TO FIELD CONDITIONS.

THE CHECK DAM SHALL EXTEND FROM THE BOTTOM OF THE EXCAVATION THROUGH THE BEDDING MATERIAL TO THE "NORMAL BACKFILL" AND SHALL EXTEND COMPLETELY TO EACH TRENCH SIDEWALL. CHECK DAM MATERIAL SHALL BE COMPACTED COHESIVE CLAY THAT CONTAINS A MINIMUM OF 25% MINUS NO. 200 SIEVE MATERIAL, WITH 70% PASSING A 3/4 INCH SIEVE. IF THE NORMAL EXCAVATED MATERIAL IS NOT SUITABLE FOR CONSTRUCTION OF THE CHECK DAM, THEN THE CONTRACTOR SHALL OBTAIN MATERIAL FROM OUTSIDE SOURCES. CHECK DAM INSTALLATION AND MATERIAL SHALL BE CONSIDERED AS INCIDENTAL TO THE PIPE INSTALLATION.

CITY OF RAPID CITY

PUBLIC WORKS DEPARTMENT

**WATER & SEWER MAIN  
INSULATION DETIAL**

DATE: 5-1-07  
SEC. SHT.  
**11-1**

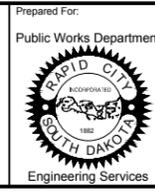
CITY OF RAPID CITY

PUBLIC WORKS DEPARTMENT

**TYPICAL TRENCH CHECK DAM DETAIL  
FOR WATER & SEWER MAINS**

DATE: 5-1-07  
SEC. SHT.  
**11-2**

November 19, 2015, 9:46:08 AM, MT, RUSHMORE RD., UTILITIES RECONSTRUCTION, DRAWINGS, SHEETS, PHASE 3 - SAINT JAMES TO KANSAS CITY, DRAWING DETAILS, DWG, (SCHULE) PROJECTS & PROPOSALS, 11119.00

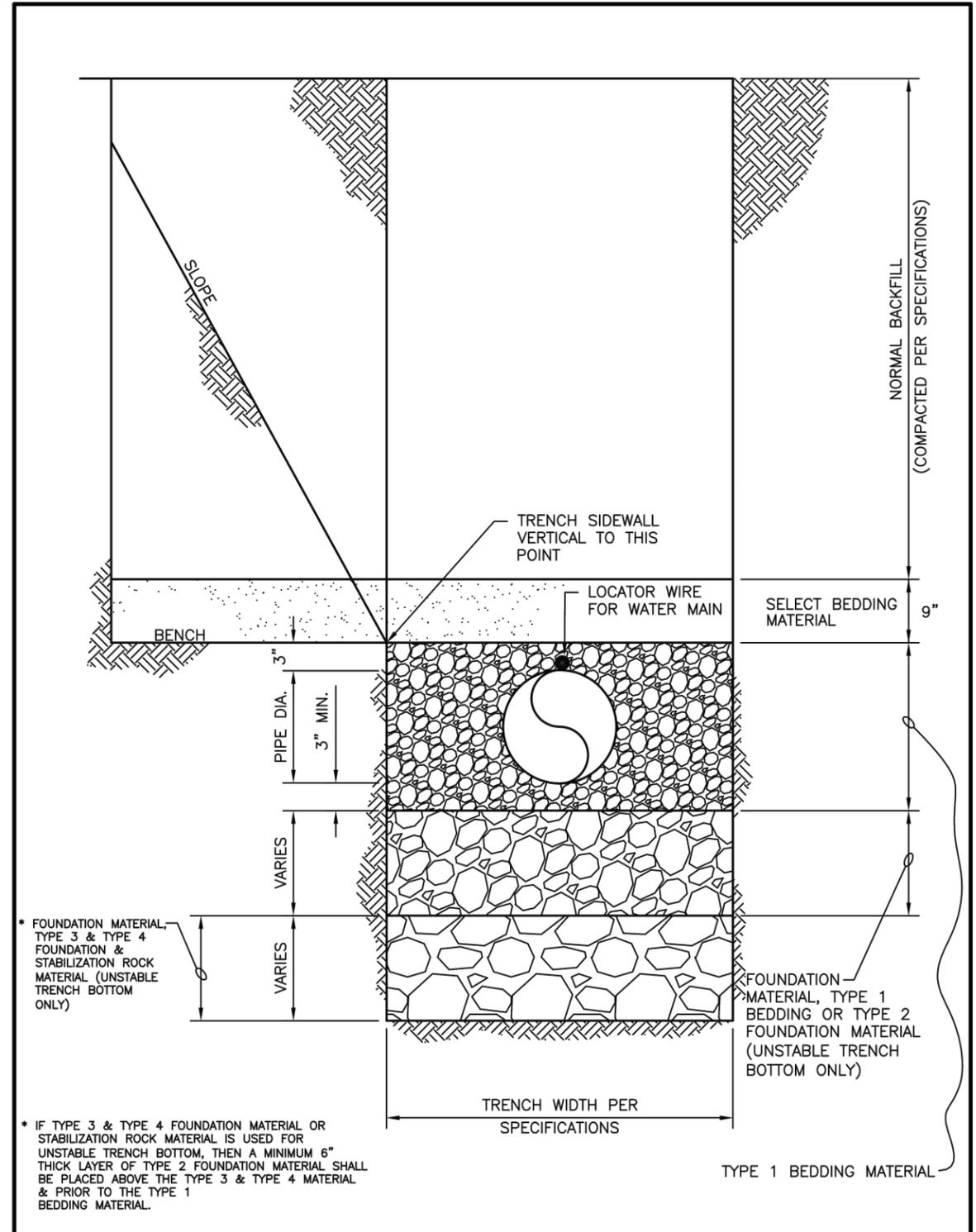


|                   |                                 |
|-------------------|---------------------------------|
| Scale:            | AS NOTED                        |
| Designed By:      | RM                              |
| Drawn By:         | MS                              |
| Design Date:      | 07.2015                         |
| Print Date:       | 12.01.2015                      |
| Internal Job No.: | 11119.06                        |
| Surveyed By:      | SDDOT                           |
| Survey Date:      | 2012                            |
| Project Number:   | 13-2139, CIP NO.50950, PCN X03L |

**FOR BIDDING PURPOSES ONLY**

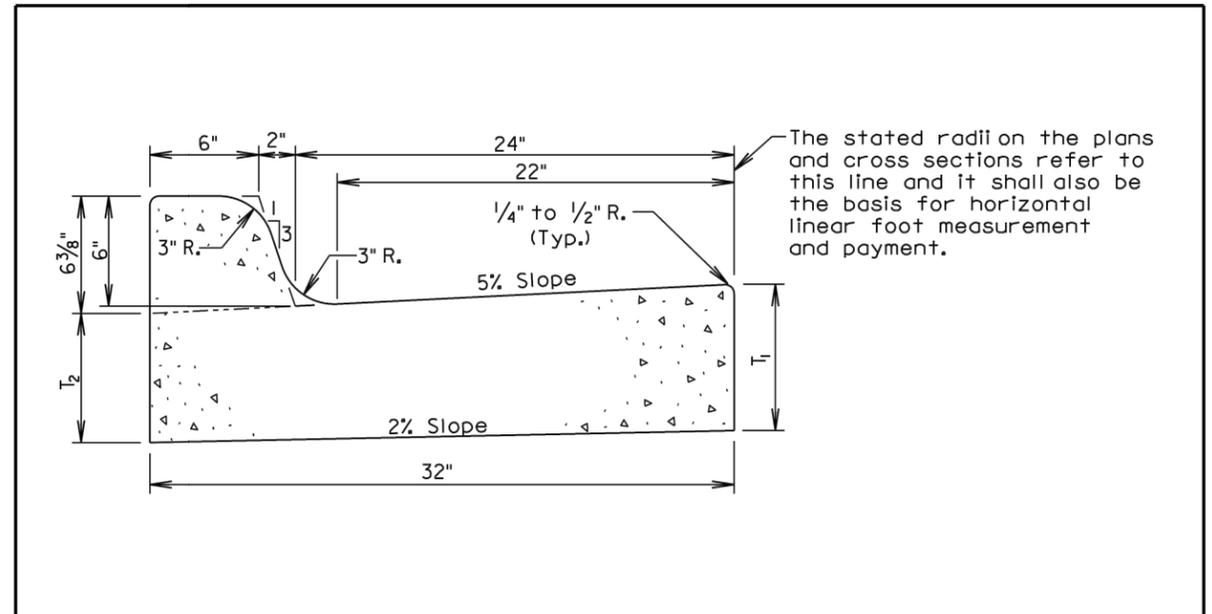
**MOUNT RUSHMORE ROAD  
UTILITY RECONSTRUCTION**

|              |                  |
|--------------|------------------|
| Sheet Title: | STANDARD DETAILS |
| Sheet No.:   | G73<br>of<br>G90 |



\* FOUNDATION MATERIAL, TYPE 3 & TYPE 4 FOUNDATION & STABILIZATION ROCK MATERIAL (UNSTABLE TRENCH BOTTOM ONLY)

\* IF TYPE 3 & TYPE 4 FOUNDATION MATERIAL OR STABILIZATION ROCK MATERIAL IS USED FOR UNSTABLE TRENCH BOTTOM, THEN A MINIMUM 6" THICK LAYER OF TYPE 2 FOUNDATION MATERIAL SHALL BE PLACED ABOVE THE TYPE 3 & TYPE 4 MATERIAL & PRIOR TO THE TYPE 1 BEDDING MATERIAL.



| Type   | T <sub>1</sub><br>(Inches) | T <sub>2</sub><br>(Inches)      | Cu. Yd.<br>Per<br>Lin. Ft. | Lin. Ft.<br>Per<br>Cu. Yd. |
|--------|----------------------------|---------------------------------|----------------------------|----------------------------|
| B66    | 6                          | 5 <sup>5</sup> / <sub>16</sub>  | 0.057                      | 17.7                       |
| B67    | 7                          | 6 <sup>1</sup> / <sub>16</sub>  | 0.065                      | 15.4                       |
| B68    | 8                          | 7 <sup>1</sup> / <sub>16</sub>  | 0.073                      | 13.7                       |
| B68.5  | 8.5                        | 7 <sup>9</sup> / <sub>16</sub>  | 0.077                      | 13.0                       |
| B69    | 9                          | 8 <sup>1</sup> / <sub>16</sub>  | 0.081                      | 12.3                       |
| B69.5  | 9.5                        | 8 <sup>9</sup> / <sub>16</sub>  | 0.085                      | 11.7                       |
| B610   | 10                         | 9 <sup>1</sup> / <sub>16</sub>  | 0.090                      | 11.2                       |
| B610.5 | 10.5                       | 9 <sup>9</sup> / <sub>16</sub>  | 0.094                      | 10.7                       |
| B611   | 11                         | 10 <sup>1</sup> / <sub>16</sub> | 0.098                      | 10.2                       |
| B611.5 | 11.5                       | 10 <sup>9</sup> / <sub>16</sub> | 0.102                      | 9.8                        |
| B612   | 12                         | 11 <sup>1</sup> / <sub>16</sub> | 0.106                      | 9.4                        |

**GENERAL NOTES:**

When concrete curb and gutter longitudinally adjoins new concrete pavement, the method of attachment shall be by one of the methods shown on Standard Plate 380.11.

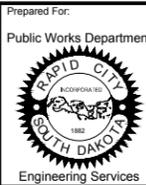
See Standard Plate 650.90 for expansion and contraction joints in the curb and gutter.

September 6, 2008

|   |                          |
|---|--------------------------|
| CITY OF RAPID CITY                                  | PUBLIC WORKS DEPARTMENT  |
| <b>TRENCH DETAIL FOR<br/>WATER &amp; SEWER MAIN</b> | DATE: 5-1-07             |
|   | SEC. SHT.<br><b>11-3</b> |

|              |  |                               |
|--------------|--|-------------------------------|
| <b>SDDOT</b> | <b>TYPE B CONCRETE CURB AND GUTTER</b> | PLATE NUMBER<br><b>650.01</b> |
|              | <i>Published Date: 3rd Qtr. 2015</i>   | Sheet 1 of 1                  |

Number: 19\_0215\_04608\_01119.00 MT. RUSHMORE RD. UTILITIES RECONSTRUCTION DRAWINGS SHEETS PHASE 3 - SAINT JAMES TO KANSAS CITY  
Drawing Details: DWG (SCHULE) / PROJECTS & PROPOSALS / 11119.00

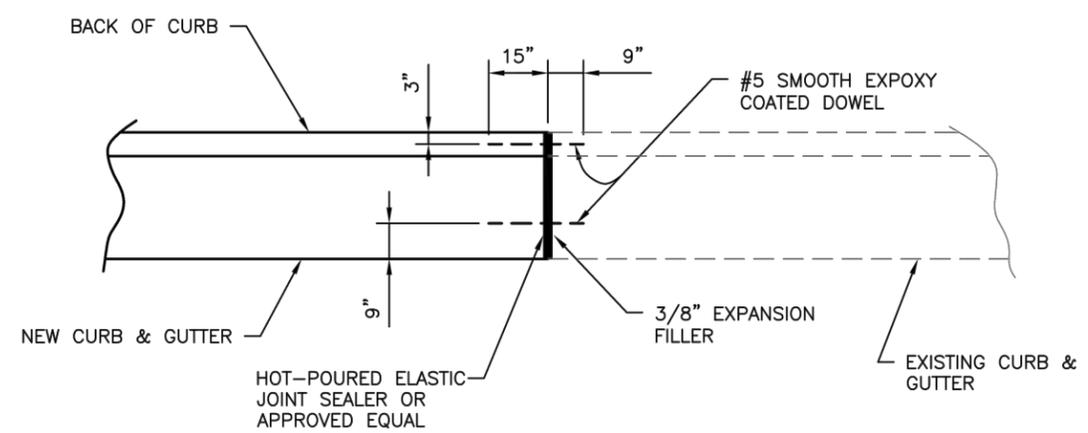


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| Scale:            | AS NOTED                        |
| Designed By:      | RM                              |
| Design Date:      | 07.2015                         |
| Internal Job No.: | 11119.06                        |
| Surveyed By:      | SDDOT                           |
| Project Number:   | 13-2139, CIP NO.50950, PCN X03L |
| Drawn By:         | MS                              |
| Print Date:       | 12.01.2015                      |
| Survey Date:      | 2012                            |

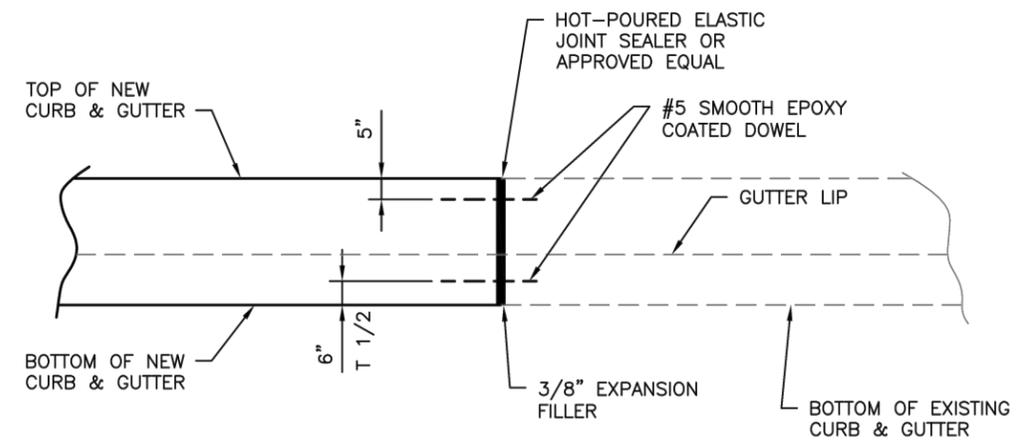
FOR BIDDING PURPOSES ONLY

**MOUNT RUSHMORE ROAD  
UTILITY RECONSTRUCTION**

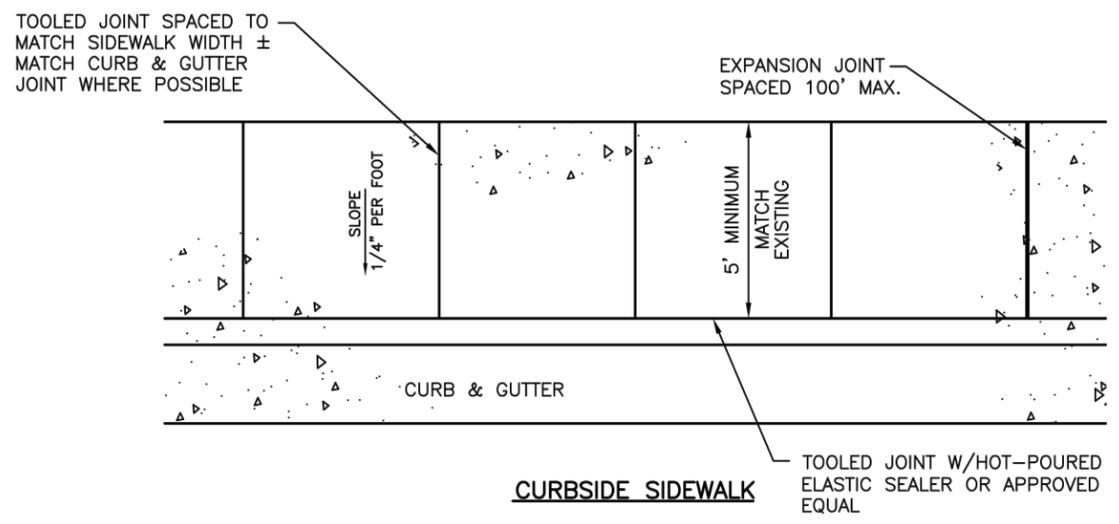
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| Sheet Title: | STANDARD DETAILS |
| Sheet No.:   | G74<br>of<br>G90 |



**PLAN**

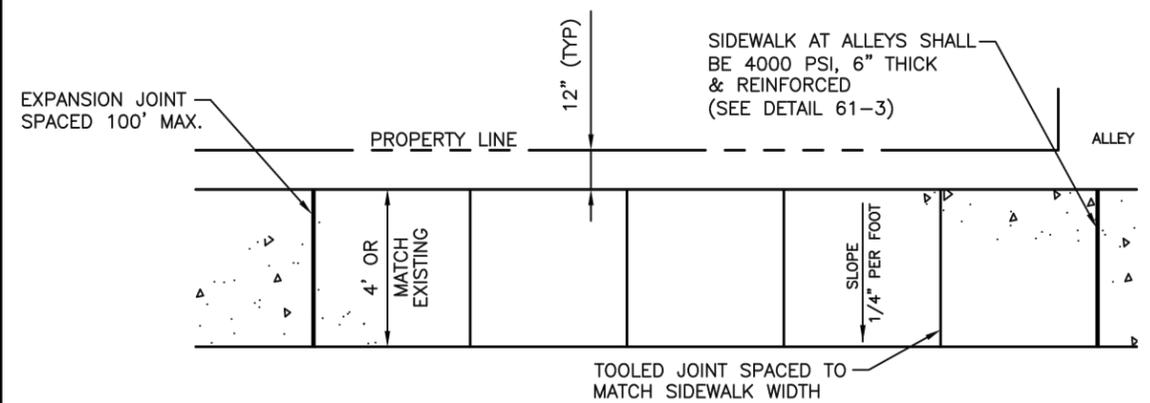


**PROFILE**



**CURBSIDE SIDEWALK**

ALL SIDEWALKS SHALL BE A MINIMUM OF 4" THICK 4000 PSI CONCRETE WITH A MINIMUM OF 2" OF COMPACTED CUSHION MATERIAL PLACED UNDER THE SIDEWALK



**PROPERTY LINE SIDEWALK**

|                               |                         |
|-------------------------------|-------------------------|
| CITY OF RAPID CITY            | PUBLIC WORKS DEPARTMENT |
| CURB & GUTTER EXPANSION JOINT | DATE: 5-1-07            |
|                               | SEC. SHT.               |
|                               | 60-7                    |

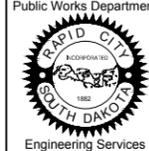
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| CITY OF RAPID CITY | PUBLIC WORKS DEPARTMENT |
| SIDEWALKS          | DATE: 5-1-07            |
|                    | SEC. SHT.               |
|                    | 61-2                    |

November 19, 2015, 9:46:08 AM, MOUNT RUSHMORE RD. UTILITIES RECONSTRUCTION DRAWINGS SHEETS PHASE 3 - SAINT JAMES TO KANSAS CITY, DRAWING DETAILS DWG (SCHULE) PROJECTS & PROPOSALS \11119.00

Prepared By:



Prepared For:



Scale: AS NOTED

|                           |   |
|---------------------------|---|
| Designed By: RM           | Drawn By: MS                                    |
| Design Date: 07.2015      | Print Date: 12.01.2015                          |
| Internal Job No: 11119.06 | Survey Date: 2012                               |
| Surveyed By: SDDOT        | Project Number: 13-2139, CIP NO.50950, PCN X03L |

Revisions:

| Number: | Description: |
|---------|--------------|
|         |              |
|         |              |

FOR BIDDING PURPOSES ONLY

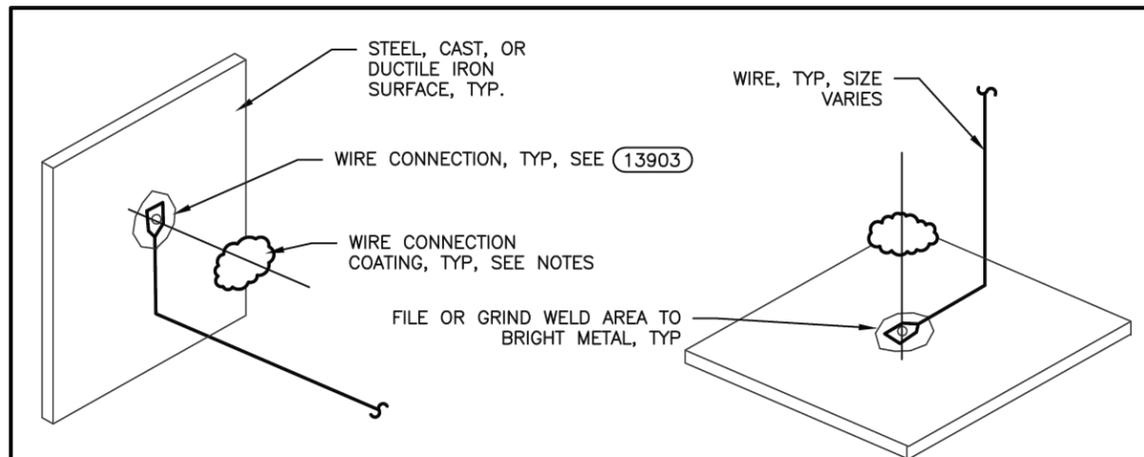
# MOUNT RUSHMORE ROAD UTILITY RECONSTRUCTION

Sheet Title:

CATHODIC  
PROTECTION  
DETAILS

Sheet No:

G75  
of  
G90



**NOTES:**

1. COPPER SLEEVE REQUIRED FOR THERMITE WELDING OF No. 10 AWG AND SMALLER WIRE AND No. 4 AND No. 2 AWG SIZE WIRES.
2. WELDER AND CARTRIDGE SIZE VARIES ACCORDING TO SURFACE SHAPE, MATERIAL, AND HORIZONTAL OR VERTICAL SURFACE. CONSULT WELDER MANUFACTURER FOR RECOMMENDED WELDER AND CARTRIDGE.
3. FOR MULTIPLE WIRE CONNECTIONS TO PIPE SEPARATE THERMITE WELD CONNECTIONS BY ONE PIPE DIAMETER MINIMUM, 2'-0" MAXIMUM.
4. WIRE CONNECTIONS TO FOREIGN PIPELINES SHALL BE MADE BY FOREIGN PIPELINE REPRESENTATIVE.
5. USE 15 GRAM MAXIMUM SIZE WELD CARTRIDGES FOR CONNECTIONS TO PETROLEUM AND NATURAL GAS PIPELINES OR STRUCTURES. THERMITE CONNECTIONS ONLY AS SPECIFIED & APPROVED BY OWNER. CROW'S FOOT LARGER WIRE CONNECTIONS IF SPECIFIED & APPROVED BY OWNER.
6. COAT COMPLETED THERMITE WELD CONNECTIONS WITH EPOXY REPAIR COATING, OR AS OWNER SPECIFIED.
7. UTILIZE INSULATED STRANDED COPPER WIRE ONLY, SIZE AS SPECIFIED. COLOR CODE WIRES ACCORDING TO WIRE COLOR CODE, SEE 13902PRC
8. CONNECT BOND AND TEST WIRES TO METALLIC FITTINGS PRIOR TO ASSEMBLY, AS REQUIRED TO ALLOW CONNECTIONS TO BE MADE TO LEVEL FLAT (HORIZONTAL TYPE) SURFACES ON TOP OF FITTINGS.
9. ATTACH THERMITE WELD TO STUD OR WELD BASE PLATE IF PROVIDED OR TO DRY SIDE OF JOINT IF APPROVED BY PIPE MANUFACTURER.

NTS



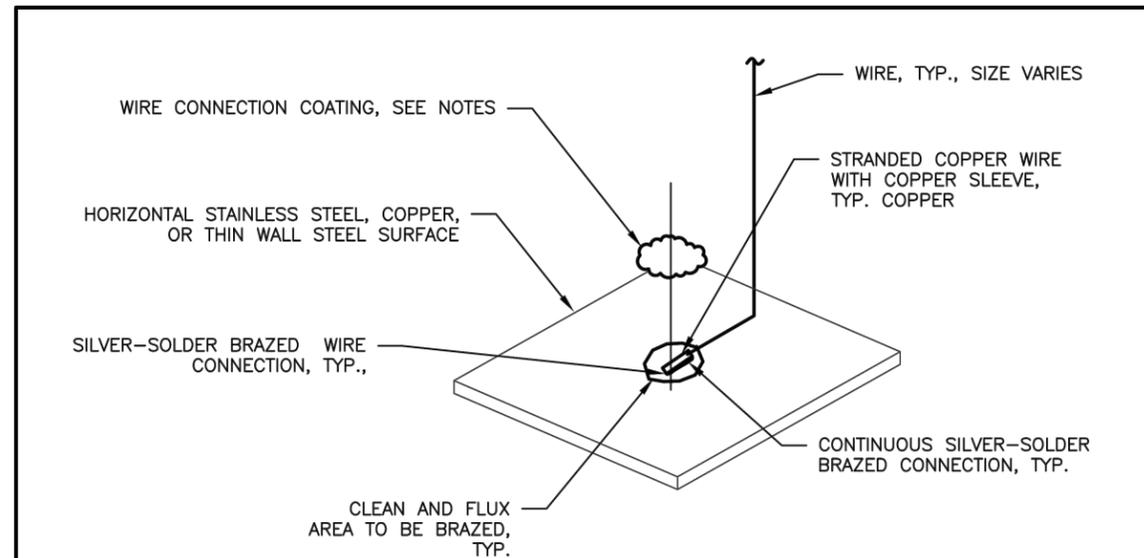
CITY OF RAPID CITY

PUBLIC WORKS DEPARTMENT

## VERTICAL AND HORIZONTAL WIRE THERMITE WELD CONNECTIONS

DATE: 2-19-13

13901A



**NOTES:**

1. BRAZE (SILVER-SOLDER) COPPER WIRE ELECTRICAL CONNECTION TO COPPER, STAINLESS STEEL, AND THIN WALL STEEL (0.035" OR LESS) PIPING OR TUBING.
2. SELECT A LOCATION TO BRAZE ON FITTING EDGE OR LIP, SO AS TO NOT DAMAGE INTERNAL COATINGS, RUBBER LINING, OR GASKETS.
3. CLEAN AND PREPARE SURFACE FOR BRAZING. FLUX SURFACE WITH A SUITABLE TYPE FLUX FOR MATERIAL TYPES BEING SOLDERED IN ACCORDANCE WITH THE SILVER SOLDER MANUFACTURER'S INSTRUCTIONS..
4. BRAZE THE SLEEVED COPPER WIRE WITH A SUITABLE TYPE SILVER BRAZING ALLOY FOR THE MATERIALS BEING CONNECTED IN ACCORDANCE WITH BRAZE MATERIAL MANUFACTURER'S DIRECTIONS.
5. SILVER-SOLDER WIRE TO PROPERLY PREPARED AND FLUXED AREA IN A MANNER SO AS TO NOT LEAVE CRACKS OR CREVICES IN THE COMPLETED BRAZED CONNECTION. VISUALLY INSPECT AND TAP WITH HAMMER TO TEST ADHESION.
6. ALLOW TO COOL AND REMOVE REMAINING FLUX WITH (STAINLESS STEEL) WIRE BRUSH AND SOLVENT CLEAN (SSPC SP-1).
7. ONLY COAT WIRE CONNECTIONS TO COPPER AND THIN WALL STEEL PIPING OR TUBING IN SPECIFIED THERMITE WELD COATING METHOD. STAINLESS STEEL WIRE CONNECTIONS DO NOT NEED TO BE COATED.
8. UTILIZE INSULATED STRANDED COPPER WIRE ONLY, SIZE AS SPECIFIED.

NTS



CITY OF RAPID CITY

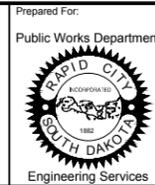
PUBLIC WORKS DEPARTMENT

## BRAZED WIRE CONNECTIONS

DATE: 2-19-13

13901B

Number: 13\_0115\_06010\_017  
Drawing: CATHODIC DETAILS.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\11119.00 MT. RUSHMORE RD. UTILITIES RECONSTRUCTION\DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY\)

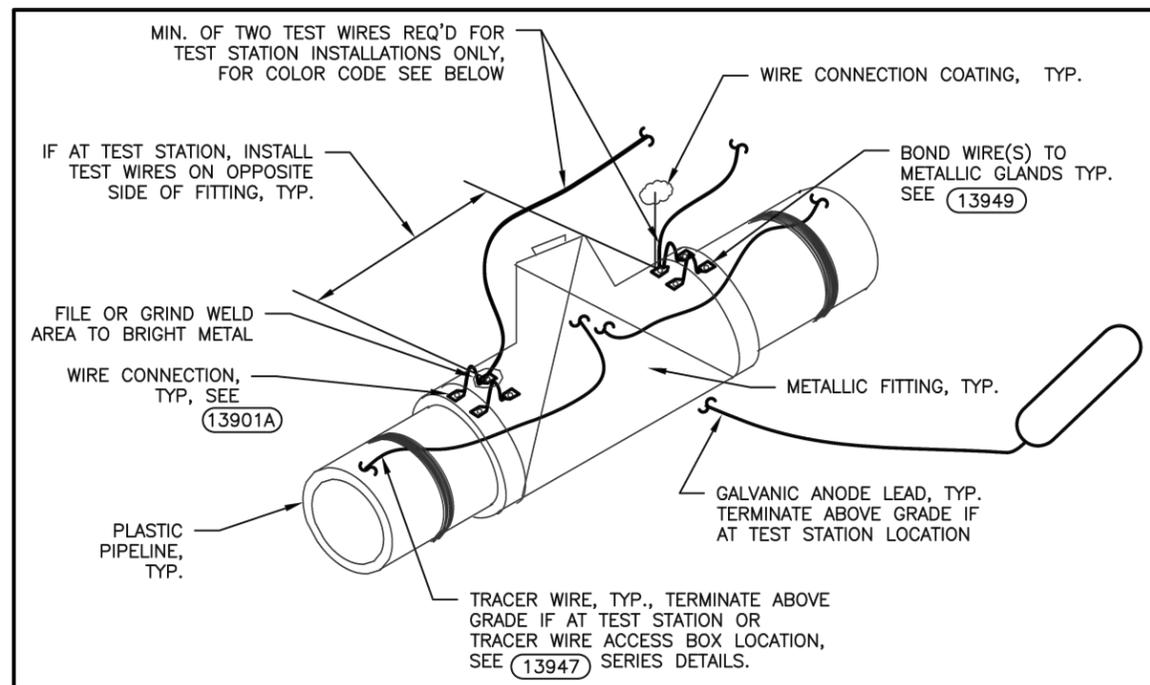


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| Designed By:      | RM                              |
| Drawn By:         | MS                              |
| Design Date:      | 07.2015                         |
| Print Date:       | 12.01.2015                      |
| Internal Job No.: | 11119.06                        |
| Surveyed By:      | SDDOT                           |
| Survey Date:      | 2012                            |
| Project Number:   | 13-2139, CIP NO.50950, PCN X03L |

**FOR BIDDING PURPOSES ONLY**

**MOUNT RUSHMORE ROAD  
UTILITY RECONSTRUCTION**

|              |                             |            |            |
|--------------|-----------------------------|------------|------------|
| Sheet Title: | CATHODIC PROTECTION DETAILS | Sheet No.: | G76 of G90 |
|--------------|-----------------------------|------------|------------|



**NOTES:**

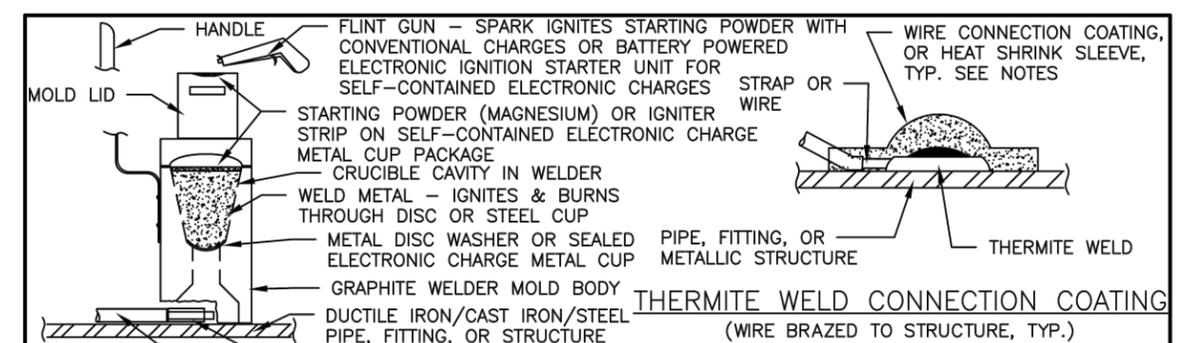
1. THERMITE OR PIN BRAZE WELD TO METALLIC PIPE, FITTINGS, & STRUCTURES ONLY.
2. STANDARD LOCATION FOR ANODE PLACEMENT IS ON EAST SIDE OF NORTH-SOUTH MAIN AND NORTH SIDE OF EAST-WEST MAIN. ACTUAL PLACEMENT LOCATION WILL VARY BASED UPON OTHER UTILITY CONFLICTS.
3. UTILIZE INSULATED STRANDED COPPER WIRE ONLY, SIZE AS SPECIFIED.
4. UTILIZE PURPLE TAPE TO IDENTIFY NORTH (1 STRIP) OR WEST (2 STRIPS) WIRE DIRECTION & GRAY TAPE TO IDENTIFY SOUTH (1 STRIP) OR EAST (2 STRIPS) WIRE DIRECTION, AS REQ'D.

**WIRE COLOR CODE**

1. PIPELINE TEST WIRES:  
WATER - BLUE  
HIGH LEVEL - DARK BLUE WITH 1 STRIP OF BLUE TAPE  
LOW LEVEL - LIGHT BLUE WITH 1 STRIP OF WHITE TAPE
2. UNPROTECTED PIPELINE (NOT CATHODICALLY PROTECTED-e.g. PUMP STATION SIDE OF METALLIC PIPE) - BLACK
3. ANODE LEADS - BLACK
4. REFERENCE ELECTRODE WIRES - YELLOW
5. TRACER WIRES NON-METALLIC PIPE - GREEN W/ 2 STRIPS BLACK TAPE AND STRIPS OF PURPLE OR GRAY TAPE PER WIRE DIRECTION, SEE NOTE ABOVE



CITY OF RAPID CITY PUBLIC WORKS DEPARTMENT  
**PLASTIC PIPELINE METALLIC FITTING  
WIRE CONNECTION AND COLOR CODE**  
 DATE: 2-19-13  
**13902PRC**

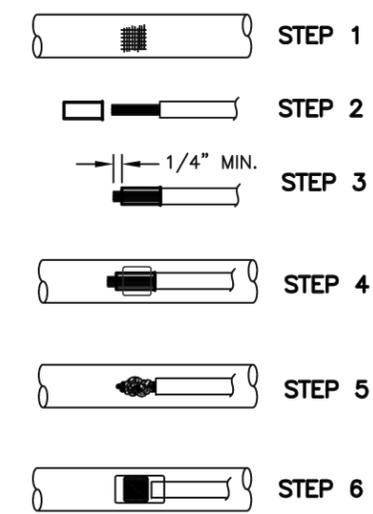


**THERMITE WELD**

USE CAST IRON CHARGES FOR DUCTILE IRON AND CAST IRON STRUCTURES. USE STEEL CHARGES FOR STEEL STRUCTURES.  
 (SIMILAR SIZE AND TYPE OF CONVENTIONAL OR ELECTRONIC IGNITION TYPE CHARGES ACCEPTABLE)  
 COMPLETE WELDS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS

**CONVENTIONAL WELD METAL CAPSULE**

TYPE & SIZE VARIES (MAXIMUM 25 GRAM FOR STEEL, 32 GRAM FOR CAST & DUCTILE IRON, & 15 GRAM SIZE FOR OIL & GAS TYPE PIPELINES)



- FILE STRUCTURE CONNECTION AREA (2"x2") TO BARE BRIGHT SHINY METAL & CLEAN. ALL WIRE WELDS SHALL BE A MINIMUM OF ONE PIPE DIAMETER APART UP TO A MAXIMUM OF 2 FEET SEPARATION DISTANCE.
- STRIP INSULATION FROM WIRE. ATTACH COPPER SLEEVE (REQUIRED ON No. 10 AWG WIRE & SMALLER & No. 2 & No. 4 AWG JOINT BOND WIRES AS SPECIFIED)
- ATTACH COPPER SLEEVE TO WIRE WITH CORRECT HAMMER DIE OR CRIMP TOOL. FACTORY SLEEVES SHALL BE ANGLED AND FIELD MADE BONDS SHALL HAVE WIRE EXTEND 1/4" PAST SLEEVE SO WIRE IS EXPOSED TO THERMITE WELD.
- PLACE WASHER IN BOTTOM OF MOLD AND FILL CRUCIBLE W/POWDER OR INSERT PREPACKED ELECTRONIC CANISTER CHARGE, CLOSE LID, HOLD FIRMLY W/OPENING AWAY FROM OPERATOR, & IGNITE W/FLINT GUN OR ELECTRONIC IGNITION STARTER.
- REMOVE SLAG FROM CONNECTION, VISUALLY INSPECT & TAP WELD TO TEST FOR SOUNDNESS & ADHESION W/ HAMMER. MEASURE JOINT BOND RESISTANCE AS SPECIFIED. REPLACE ALL POORLY FORMED, UNSIGHTLY, POROUS, HIGH RESISTANT, OR DEFECTIVE WELDS. INSTALL ADDITIONAL BOND WIRE OR STRAP IF REQUIRED.
- CLEAN AND COAT CONNECTION AND EXPOSED STRUCTURE SURFACE WITH HEAT SHRINK SLEEVE, PRIMERLESS HANDYCAP, OR EPOXY REPAIR COATING MATERIALS PER BELOW, APPLY IN ACCORDANCE WITH COATING MANUFACTURER'S RECOMMENDATIONS.

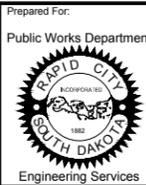
- 6-A. IF THERMITE WELD CONNECTION LOCATED AT PIPE JOINT TO BE COATED WITH HEAT SHRINK SLEEVE, APPLY MASTIC FILLER & HEAT SHRINK SLEEVE OVER CONNECTION. NO WELD CAP REQUIRED. IF NOT HEAT SHRINKED, THEN EITHER:
- 6-B. UTILIZE REGULAR SIZE PRIMERLESS THERMITE WELD CAP FOR No. 8 AWG AND SMALLER WIRE.
- 6-C. UTILIZE PRIMERLESS HANDYCAP XL-IP (EXTRA LARGE) OR EQUAL FOR No. 6 AND LARGER WIRE AND PIN WELD TYPE CONNECTIONS.
- 6-D. OR UTILIZE 100 PERCENT MOISTURE TOLERANT EPOXY REPAIR COATING FOR HARD TO COAT CONNECTIONS AND SPOT EXTERNAL COATING REPAIRS.
- 6-E. REPAIR PIPE OR STRUCTURE COATING DAMAGE WITH SPECIFIED AND APPROVED COATING REPAIR MATERIALS FOR ORIGINAL COATING TYPE.

**GENERAL EXOTHERMIC WELD AND COATING PROCEDURES**



CITY OF RAPID CITY PUBLIC WORKS DEPARTMENT  
**THERMITE WELD WIRE CONNECTIONS**  
 DATE: 2-19-13  
**13903**

Number: 19\_0115\_04016\_001 - MT, RUSHMORE RD, UTILITIES RECONSTRUCTION DRAWINGS SHEETS PHASE 3 - SAINT JAMES TO KANSAS CITY  
 Drawing: CATHODIC DETAILS.DWG (SCHILLE) (P) PROJECTS & PROPOSALS \11119.00

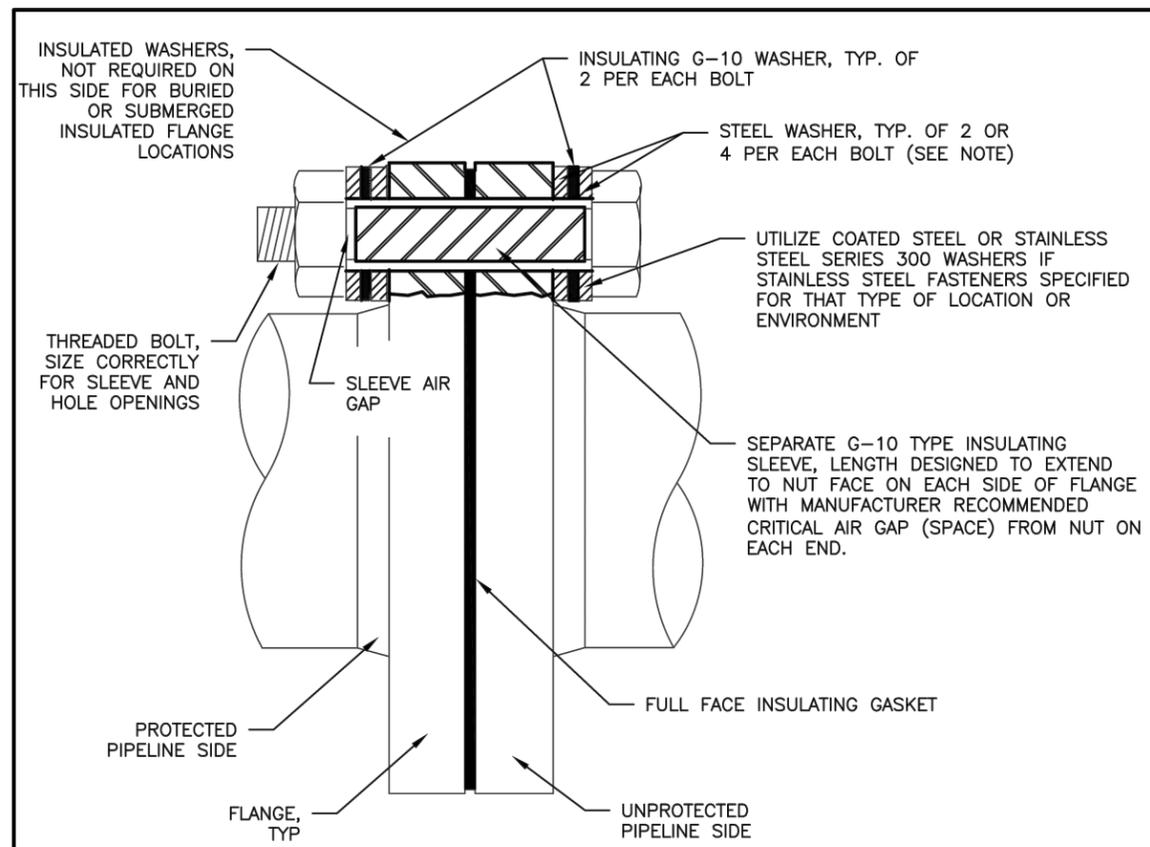


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| Scale:            | AS NOTED                        |
| Designed By:      | RM                              |
| Drawn By:         | MS                              |
| Design Date:      | 07.2015                         |
| Print Date:       | 12.01.2015                      |
| Internal Job No.: | 11119.06                        |
| Surveyed By:      | SDDOT                           |
| Survey Date:      | 2012                            |
| Project Number:   | 13-2139, CIP NO.50950, PCN X03L |

**FOR BIDDING PURPOSES ONLY**

**MOUNT RUSHMORE ROAD  
UTILITY RECONSTRUCTION**

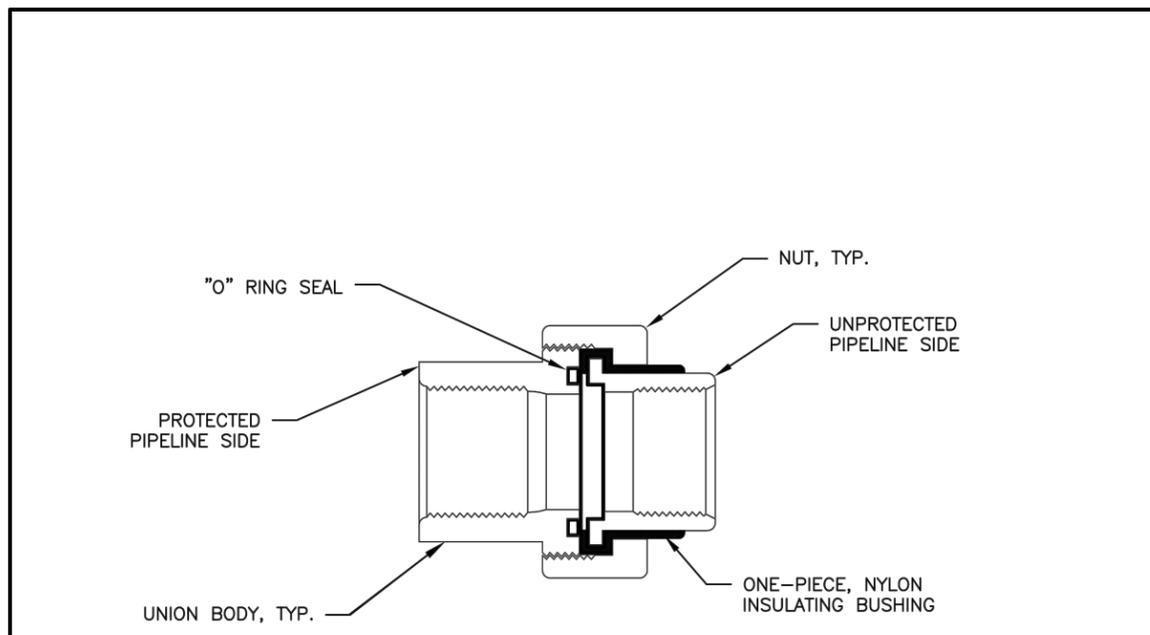
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| Sheet Title: | CATHODIC PROTECTION DETAILS | Sheet No.: | G77 of G90 |
|--------------|-----------------------------|------------|------------|



- NOTES:**
1. ABOVE GRADE INSULATED FLANGE INSTALLATION SHOWN. FOR BURIED OR SUBMERGED INSULATING FLANGE INSTALLATIONS, DO NOT INSTALL INSULATING WASHER ON PROTECTED SIDE OF INSULATING FLANGE.
  2. COAT BURIED OR SUBMERGED FLANGE AFTER ASSEMBLY PER SPECIFICATIONS.
  3. INSULATED FLANGES IN BURIED APPLICATIONS ALLOWED ONLY FOR PIPE UP TO 36" DIAMETER.
  4. TEST INSULATED FLANGES FOR ELECTRICAL ISOLATION. TEST BURIED INSULATORS BOTH PRIOR TO AND AFTER BURIAL.



CITY OF RAPID CITY PUBLIC WORKS DEPARTMENT  
 DATE: 2-19-13  
**INSULATING FLANGE**  
 13911

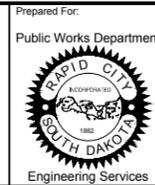


- NOTES:**
1. "O" RING TYPE INSULATING UNION SHOWN. OTHER TYPES (BRASS INSULATED CURB BALL VALVES, STRAIGHT COUPLINGS, CORPORATION BALL VALVES, METER COUPLINGS, ETC.) SIMILAR.
  2. INSULATING O-RING AND NYLON INSULATOR BUSHING SHALL BE MOLDED & BONDED TO THE UNION BODY BY MANUFACTURER.
  3. ABOVEGRADE IRON PIPE SHALL HAVE GALV. OR COATED STEEL BODIES, UNIONS IN BURIED OR CORROSIVE AREAS SHALL BE COATED.
  4. COPPER SERVICE LINE INSULATORS SHALL HAVE BRASS UNION BODY WITH INSULATORS FORMED AND MOLDED INTO BRASS BODY, MUELLER OR APPROVED EQUAL.
  5. STAINLESS STEEL LINE INSULATORS SHALL HAVE STAINLESS STEEL BODY WITH INSULATORS FORMED AND MOLDED INTO STAINLESS STEEL FITTING BODY.



CITY OF RAPID CITY PUBLIC WORKS DEPARTMENT  
 DATE: 2-19-13  
**INSULATING UNIONS AND/OR  
COPPER SERVICE INSULATORS**  
 13913

November 19, 2015 8:56:16 AM  
 Drawing: CATHODIC DETAILS.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\11119.00 MT. RUSHMORE RD. UTILITIES RECONSTRUCTION\DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY\

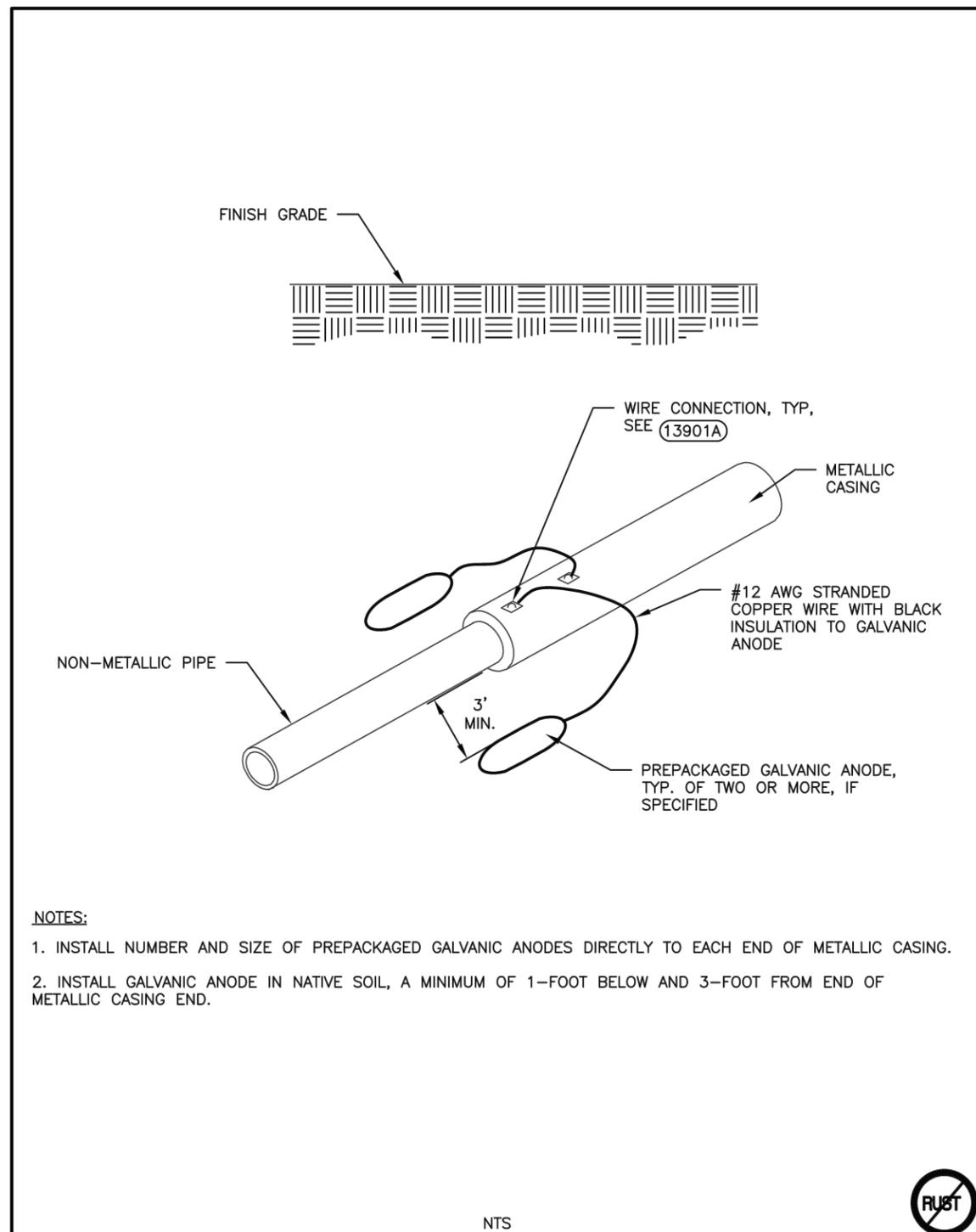


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| Designed By:      | RM                              |
| Drawn By:         | MS                              |
| Design Date:      | 07.2015                         |
| Print Date:       | 12.01.2015                      |
| Internal Job No.: | 11119.06                        |
| Surveyed By:      | SDDOT                           |
| Survey Date:      | 2012                            |
| Project Number:   | 13-2139, CIP NO.50950, PCN X03L |

FOR BIDDING PURPOSES ONLY

MOUNT RUSHMORE ROAD  
UTILITY RECONSTRUCTION

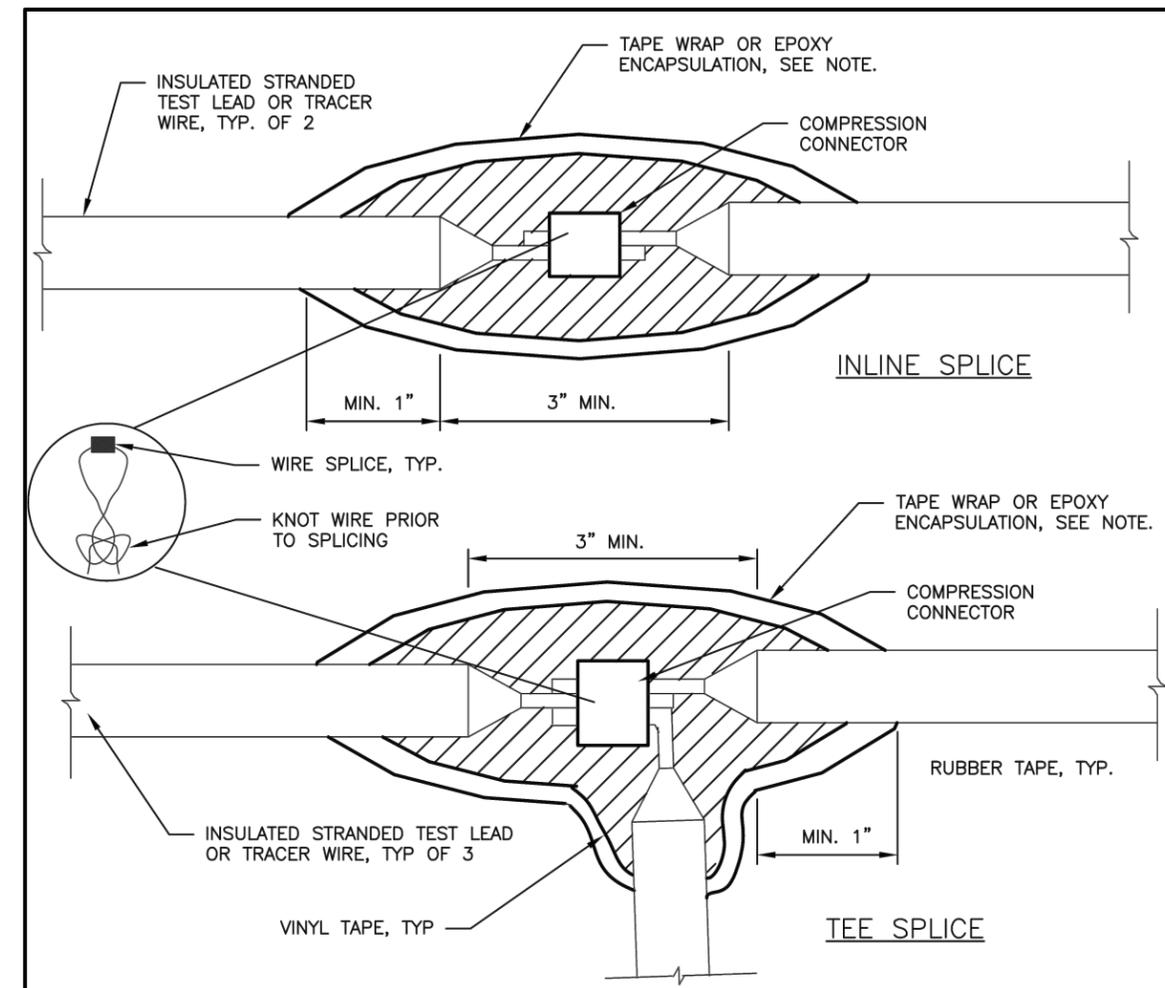
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|--------------|-----------------------------|------------|------------|
| Sheet Title: | CATHODIC PROTECTION DETAILS | Sheet No.: | G78 of G90 |
|--------------|-----------------------------|------------|------------|



- NOTES:**
1. INSTALL NUMBER AND SIZE OF PREPACKAGED GALVANIC ANODES DIRECTLY TO EACH END OF METALLIC CASING.
  2. INSTALL GALVANIC ANODE IN NATIVE SOIL, A MINIMUM OF 1-FOOT BELOW AND 3-FOOT FROM END OF METALLIC CASING END.



CITY OF RAPID CITY PUBLIC WORKS DEPARTMENT  
DATE: 2-19-13  
**GALVANIC ANODES AT CASINGS**  
**(13916A)**

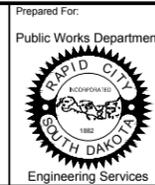


- NOTES:**
1. KNOT WIRES PRIOR TO MAKING SPLICE TO MINIMIZE STRESS ON SPLICE.
  2. MAKE WIRE SPLICE CONNECTION WITH COMPRESSION TYPE CONNECTOR IN ACCORDANCE WITH COMPRESSION CONNECTOR MANUFACTURER RECOMMENDATIONS OR SECURE WITH SPLIT BOLT AND SILVER SOLDER FOR TEST WIRES DO NOT USE BUTT SPLICES OR WIRE NUTS. COMPLETE ALL SPLICES ONLY IN THE PRESENCE OF THE ENGINEER.
  3. WRAP ENTIRE CONNECTION WITH TWO (2) LAYERS OF HIGH VOLTAGE RUBBER TAPE AND THEN WRAP WITH TWO (2) LAYERS OF VINYL ELECTRICAL TAPE AND COAT WITH SEALER OR ENCAPSULATE IN EPOXY SPLICE KIT. EXTEND A MINIMUM OF 1-INCH ONTO INTACT WIRE INSULATION.
  4. TEST LEADS SHALL BE COMPLETED PER DETAIL.



CITY OF RAPID CITY PUBLIC WORKS DEPARTMENT  
DATE: 2-19-13  
**TEST LEAD SPLICES**  
**(13929S)**

Number: 19\_0215\_05016.dwg Date: 02/19/13  
Drawing: CATHODIC DETAILS.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\11119.00 MT. RUSHMORE RD. UTILITIES RECONSTRUCTION\DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY\)

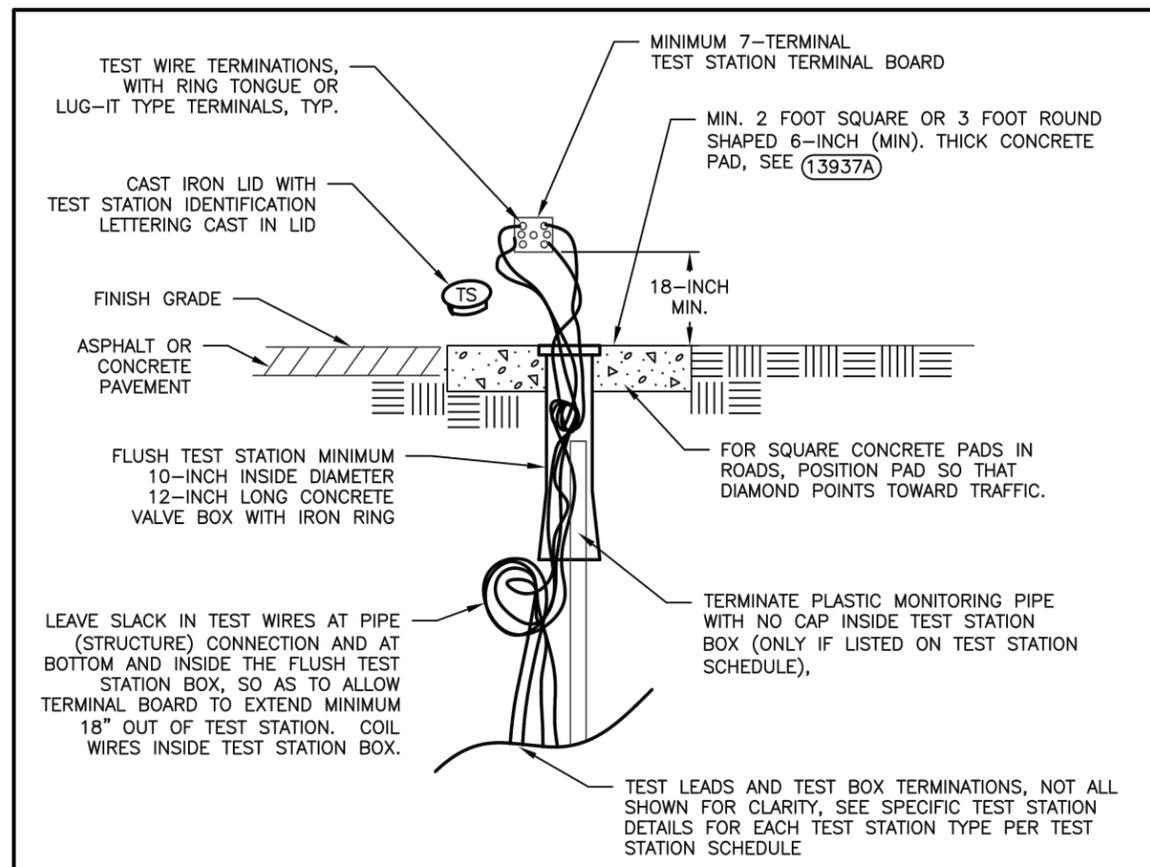


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| Scale:            | AS NOTED                        |
| Designed By:      | RM                              |
| Drawn By:         | MS                              |
| Design Date:      | 07.2015                         |
| Print Date:       | 12.01.2015                      |
| Internal Job No.: | 11119.06                        |
| Surveyed By:      | SDDOT                           |
| Survey Date:      | 2012                            |
| Project Number:   | 13-2139, CIP NO.50950, PCN X03L |

FOR BIDDING PURPOSES ONLY

MOUNT RUSHMORE ROAD  
UTILITY RECONSTRUCTION

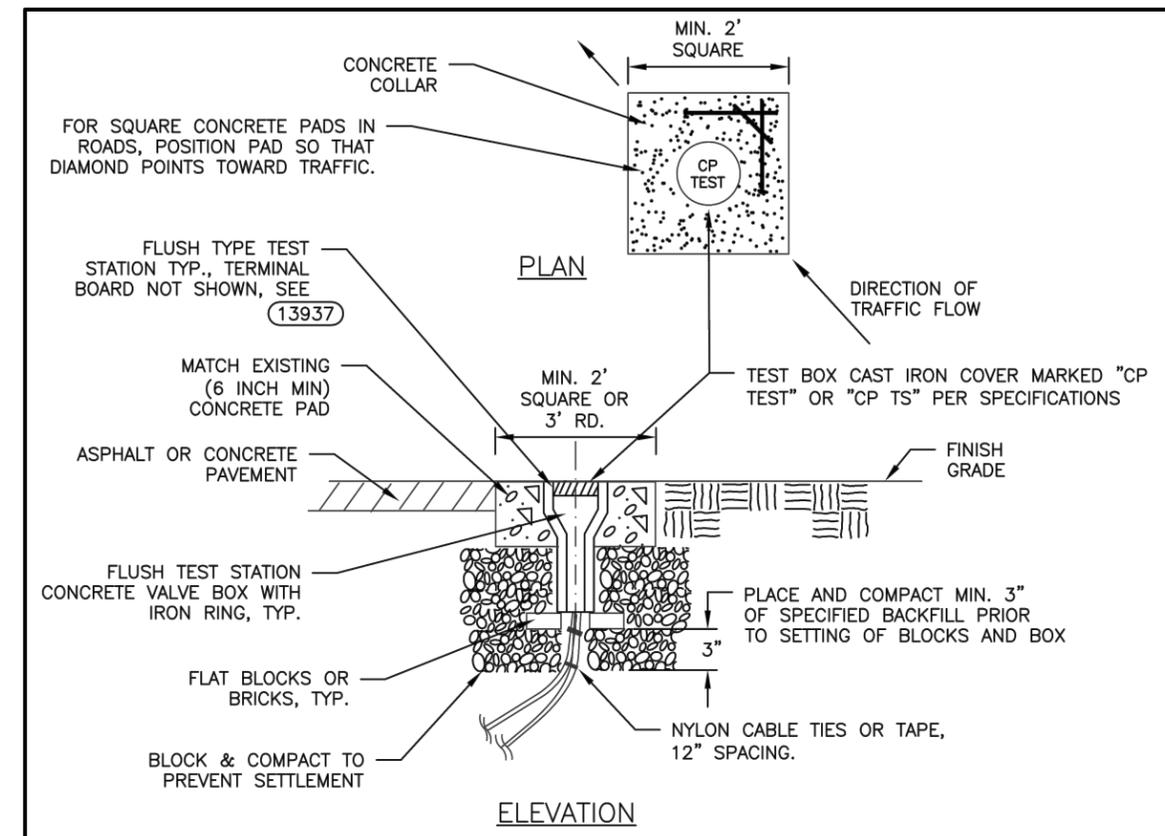
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|--------------|-----------------------------|
| Sheet Title: | CATHODIC PROTECTION DETAILS |
| Sheet No.:   | G79 of G90                  |



- NOTES:**
1. INSTALL PLASTIC MONITORING PIPE OR REFERENCE ELECTRODE ONLY AT TEST STATION LOCATIONS INDICATED ON TEST STATION LOCATION SCHEDULE OR DRAWINGS. INSTALL PIPE MARKING SIGNS NEXT TO TEST STATIONS IF SPECIFIED.
  2. UTILIZE INSULATED STRANDED COPPER WIRE ONLY, SIZE AS SPECIFIED. COLOR CODE WIRES ACCORDING TO WIRE COLOR CODE, SEE (13902PRC)
  3. LOCATE TEST STATION IN PROTECTED LOCATION DIRECTLY OVER PIPE UNLESS OFFSET REQUIRED BY SPECS. OR FIELD CONDITIONS (IN ROAD, FIELD, ETC.). OFFSET TO APPURTENANCES, R.O.W. FENCELINE OR EDGE OF ROADWAY, IF NO PROTECTED LOCATION AVAILABLE OVER PIPELINE. COORDINATE LOCATIONS WITH ENGINEER.
  4. IF TEST STATION AND TRACER WIRE ACCESS BOXES AT SAME LOCATION, SEE INSET ON (13942FH)



CITY OF RAPID CITY PUBLIC WORKS DEPARTMENT  
**FLUSH-MOUNTED TEST STATION STANDARD FLUSH TYPES**  
 DATE: 2-19-13  
 (13937)

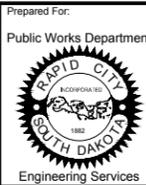


- NOTES:**
1. TEST STATION TYPE AND NUMBER OF TEST LEADS SHALL BE AS INDICATED ON TEST STATION SCHEDULE OR DRAWINGS. UTILIZE INSULATED STRANDED COPPER WIRE ONLY, SIZE AS SPECIFIED. COLOR CODE WIRES ACCORDING TO WIRE COLOR CODE SPECIFIED, SEE (13902PRC)
  2. ALL WIRES SHALL BE RUN WITHOUT SPLICES FROM THE CONNECTION TO THE TEST STATION BOX. TERMINATE WITH RING TONGUE OR LUG-IT TYPE TERMINALS AND BUNDLE WIRES TOGETHER AT 12-INCH INTERVALS WITH ELECTRICAL TAPE OR NYLON CABLE TIES.
  3. PROVIDE ALL WIRES WITH SUFFICIENT SLACK SO THAT THE TERMINAL BOARD MAY BE EXTENDED A MINIMUM 18-INCHES ABOVE THE TOP OF THE TEST BOX. COIL WIRES IN TEST STATION. LOOP WIRES BOTH AT BOTTOM OF TEST STATION AND AT PIPE OR STRUCTURE TO MINIMIZE DAMAGE DURING BACKFILLING AND FUTURE SETTLEMENT.



CITY OF RAPID CITY PUBLIC WORKS DEPARTMENT  
**TYPICAL FLUSH MOUNTED TEST STATION BOX SUPPORT**  
 DATE: 2-19-13  
 (13937A)

Number: 19\_2015\_06010\_001  
 Drawing: CATHODIC DETAILS.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\11119.00 MT. RUSHMORE RD. UTILITIES RECONSTRUCTION\DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY)

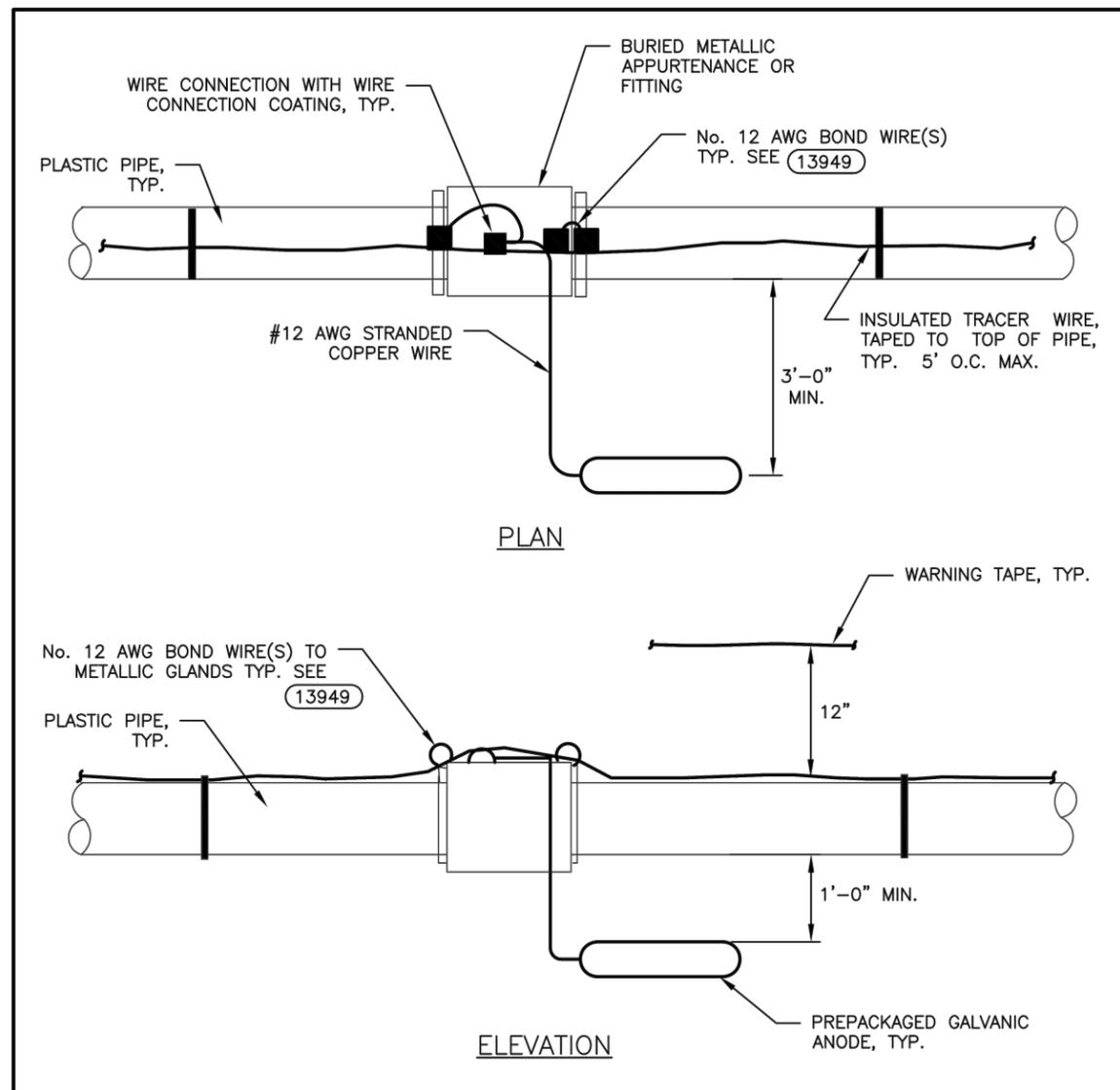


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| Scale:            | AS NOTED                        |
| Designed By:      | RM                              |
| Drawn By:         | MS                              |
| Design Date:      | 07.2015                         |
| Print Date:       | 12.01.2015                      |
| Internal Job No.: | 11119.06                        |
| Surveyed By:      | SDDOT                           |
| Survey Date:      | 2012                            |
| Project Number:   | 13-2139, CIP NO.50950, PCN X03L |

FOR BIDDING PURPOSES ONLY

MOUNT RUSHMORE ROAD  
UTILITY RECONSTRUCTION

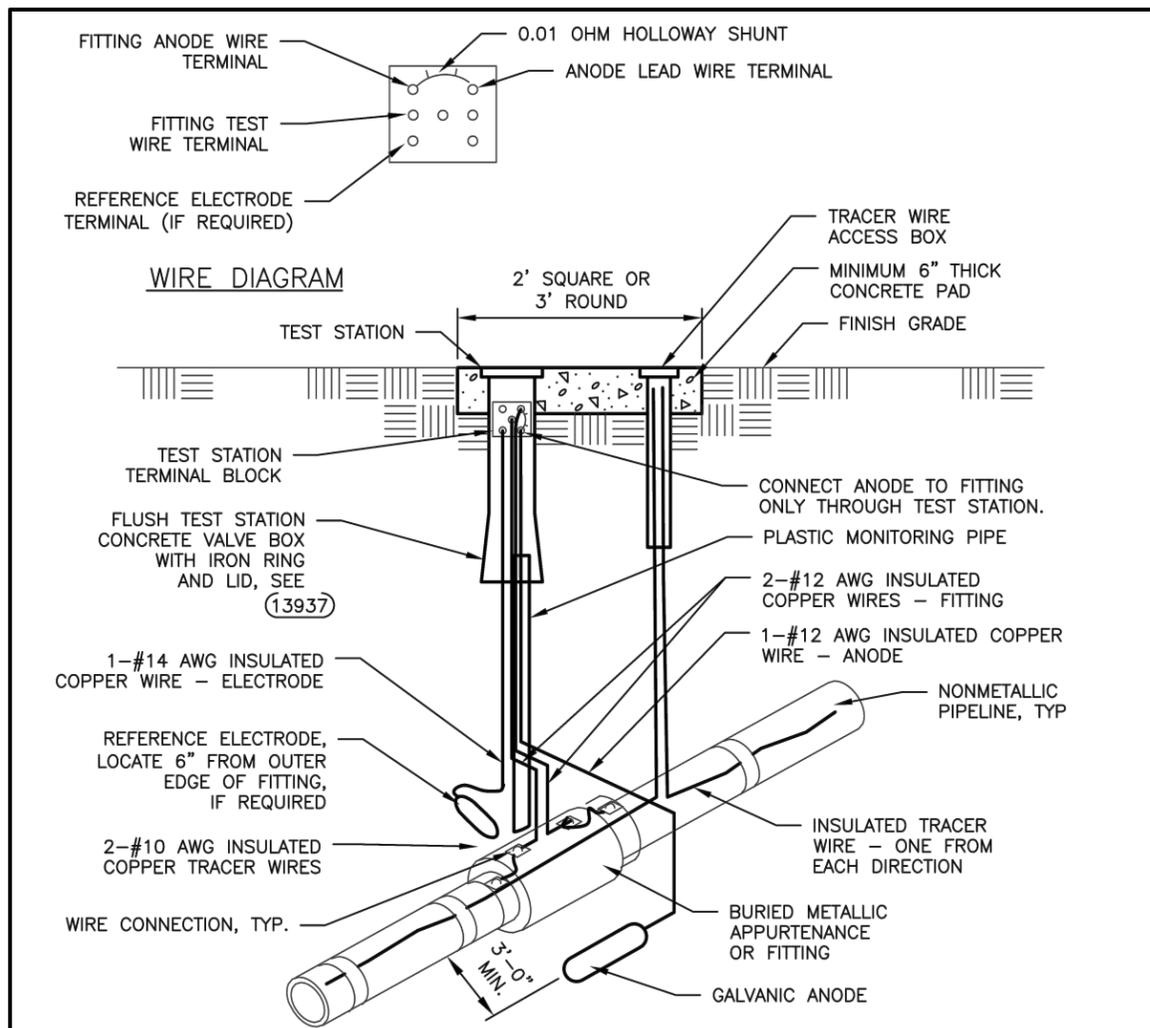
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|--------------|-----------------------------|------------|------------|
| Sheet Title: | CATHODIC PROTECTION DETAILS | Sheet No.: | G80 of G90 |
|--------------|-----------------------------|------------|------------|



- NOTES**
1. MINIMUM OF TWO No. 12 AWG BOND WIRES EACH FOR 12" AND LARGER PIPE, ONE BOND WIRE FOR SMALLER PIPE.
  2. PROVIDE TYPE, NUMBER & SIZE OF ANODES AS SPECIFIED, MINIMUM SHALL BE ONE ANODE PER FITTING



CITY OF RAPID CITY PUBLIC WORKS DEPARTMENT  
**GALVANIC ANODE INSTALLATION AT BURIED METALLIC FITTINGS**  
 DATE: 2-19-13  
**13940**

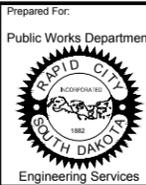


- NOTES:**
1. PROVIDE SUFFICIENT SLACK IN TEST WIRES TO ALLOW TERMINAL BLOCK TO EXTEND 18" OUT OF TEST STATION. COIL WIRES IN TEST STATION.
  2. INSTALL GALVANIC ANODE MINIMUM 1'-0" BELOW PIPE INVERT ELEVATION.
  3. INSTALL REFERENCE ELECTRODE OR PLASTIC MONITORING PIPE ONLY AT TEST STATIONS INDICATED ON TEST STATION LOCATION SCHEDULE.
  4. COLOR CODE WIRES ACCORDING TO WIRE COLOR CODE, SEE 13902PRC
  5. IF TEST STATION AND TRACER WIRE ACCESS BOXES AT SAME LOCATION, SEE INSET ON 13942FH



CITY OF RAPID CITY PUBLIC WORKS DEPARTMENT  
**FLUSH-MOUNTED TEST STATION WITH GALVANIC ANODE ( GALVANIC ANODE TO FITTING)**  
 DATE: 2-19-13  
**13942**

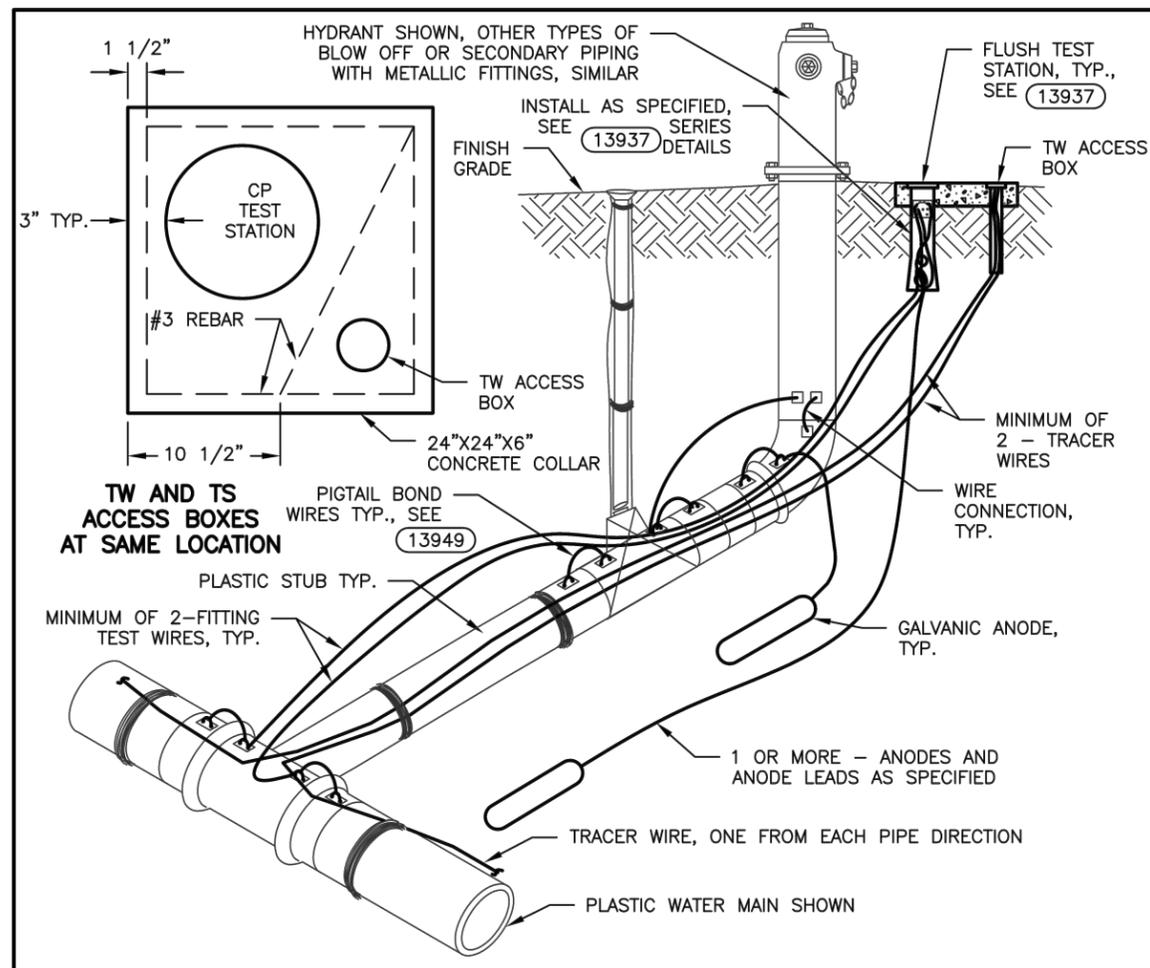
Number: 19\_0915\_06010\_001.MXD  
 Drawing: CATHODIC DETAILS.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\11119.00 MT. RUSHMORE RD. UTILITIES RECONSTRUCTION\DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY)



Scale: AS NOTED  
 Designed By: RM  
 Drawn By: MS  
 Design Date: 07.2015  
 Print Date: 12.01.2015  
 Internal Job No: 11119.06  
 Surveyed By: SDDOT  
 Survey Date: 2012  
 Project Number: 13-2139, CIP NO.50950, PCN X03L

**FOR BIDDING PURPOSES ONLY**  
**MOUNT RUSHMORE ROAD**  
**UTILITY RECONSTRUCTION**

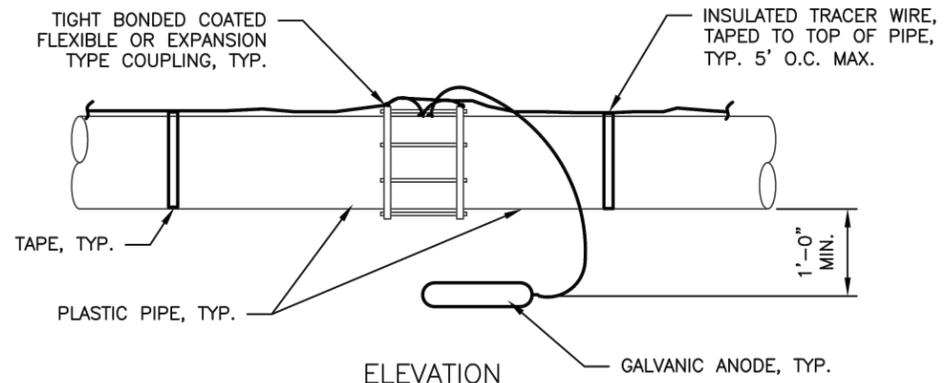
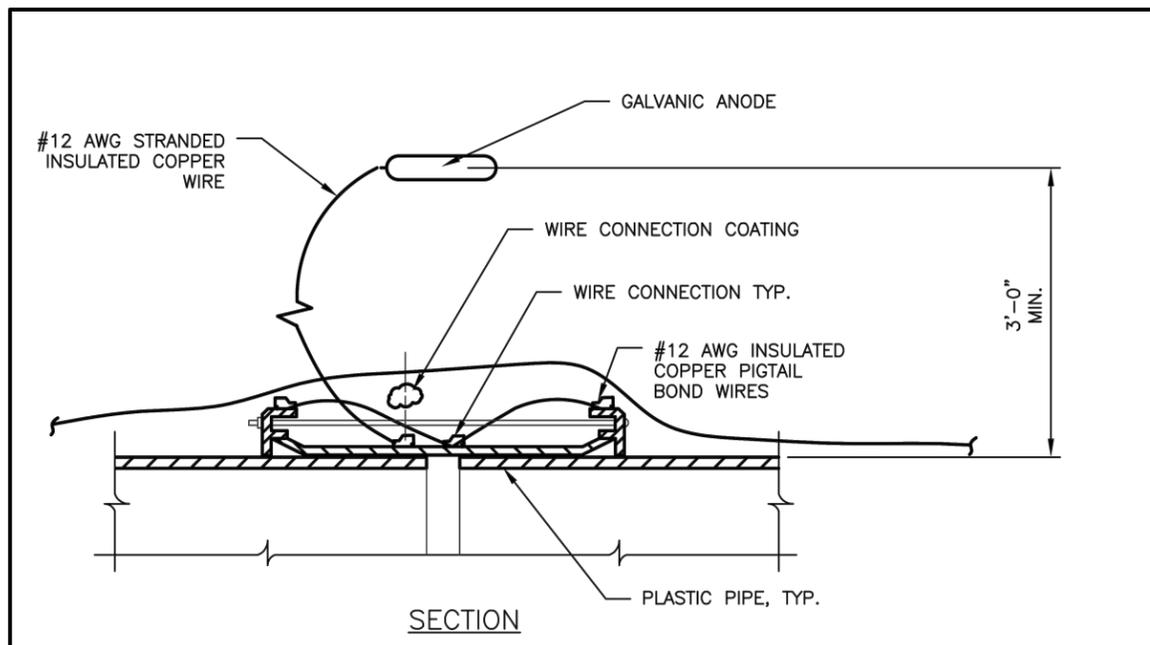
Sheet Title: CATHODIC PROTECTION DETAILS  
 Sheet No: G81 of G90



- NOTES:**
1. PLACE TEST STATION IN A PROTECTED LOCATION SO AS TO NOT INTERFERE WITH OPERATION OF VALVES OR FIRE HYDRANT. TERMINATE FITTING TEST WIRES, ANODE LEAD AND TRACER WIRES IN TEST STATION WITH MIN. 18" SLACK.
  2. INSTALL GALVANIC ANODE MINIMUM 3'-0" FROM AND 1'-0" BELOW PIPELINE, FITTING, OR VALVE INVERT ELEVATION. INSTALL MINIMUM NUMBER, TYPE, & SIZE OF GALVANIC ANODES SPECIFIED,



CITY OF RAPID CITY PUBLIC WORKS DEPARTMENT  
 DATE: 2-19-13  
**FLUSH TYPE TEST STATIONS AT HYDRANT ASSEMBLIES W/ PLASTIC STUB**  
**13942FH**

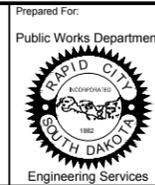


- NOTES:**
1. MIN. TWO EACH No. 12 AWG BONDS EACH FOR 12" AND LARGER PIPE, ONE BOND ALLOWED FOR SMALLER PIPE.
  2. PROVIDE TYPE, NUMBER & SIZE OF ANODES AS SPECIFIED, MINIMUM SHALL BE ONE ANODE PER FITTING



CITY OF RAPID CITY PUBLIC WORKS DEPARTMENT  
 DATE: 2-19-13  
**CORROSION PROTECTION FOR FLEXIBLE METALLIC COUPLINGS ON PLASTIC PIPE**  
**13943**

Number: 19\_0215\_06010\_017  
 Drawing: CATHODIC DETAILS.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\11119.00 MT. RUSHMORE RD. UTILITIES RECONSTRUCTION\DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY)

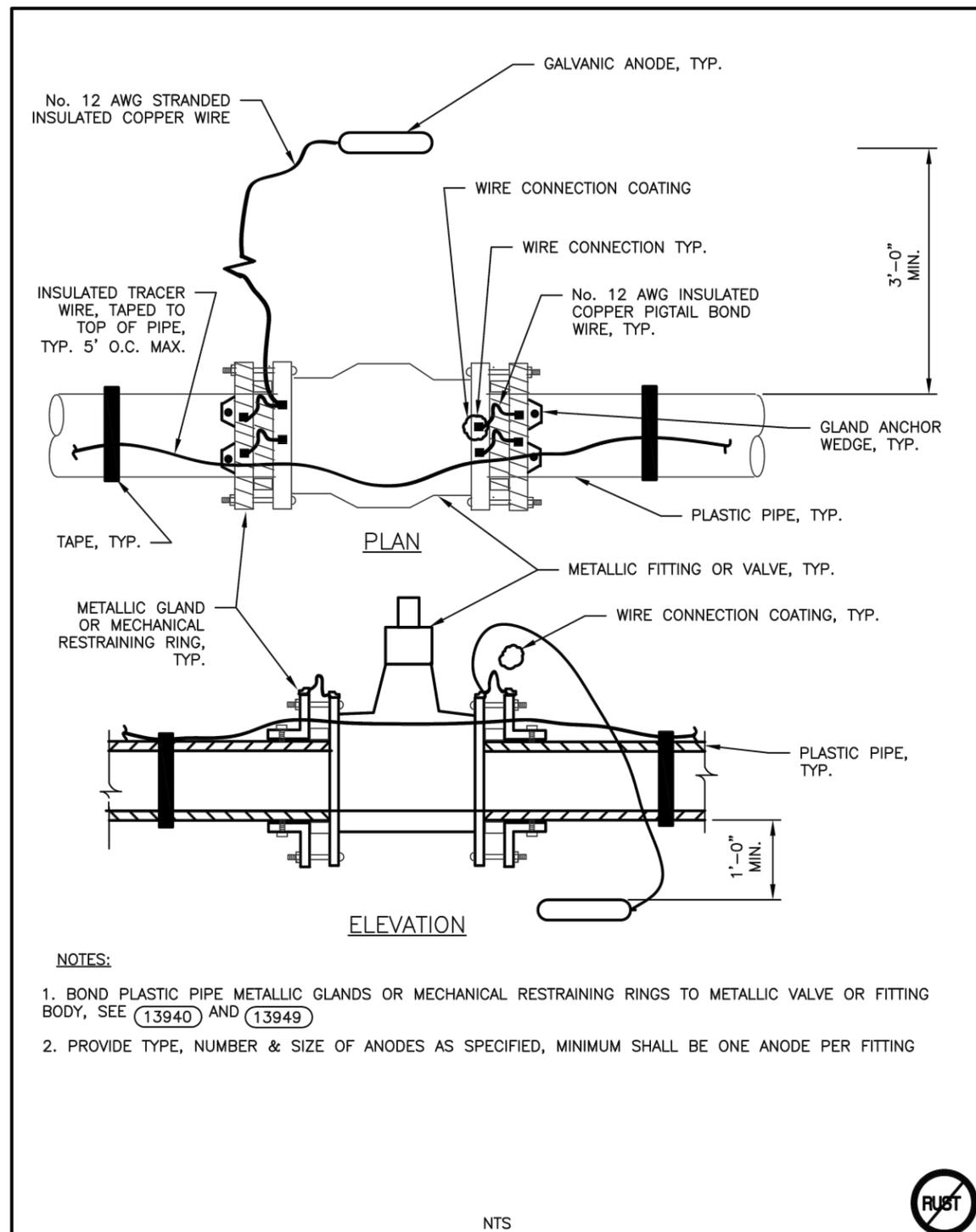


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| Designed By:      | RM                              |
| Drawn By:         | MS                              |
| Design Date:      | 07.2015                         |
| Print Date:       | 12.01.2015                      |
| Internal Job No.: | 11119.06                        |
| Surveyed By:      | SDDOT                           |
| Survey Date:      | 2012                            |
| Project Number:   | 13-2139, CIP NO.50950, PCN X03L |

FOR BIDDING PURPOSES ONLY

MOUNT RUSHMORE ROAD  
UTILITY RECONSTRUCTION

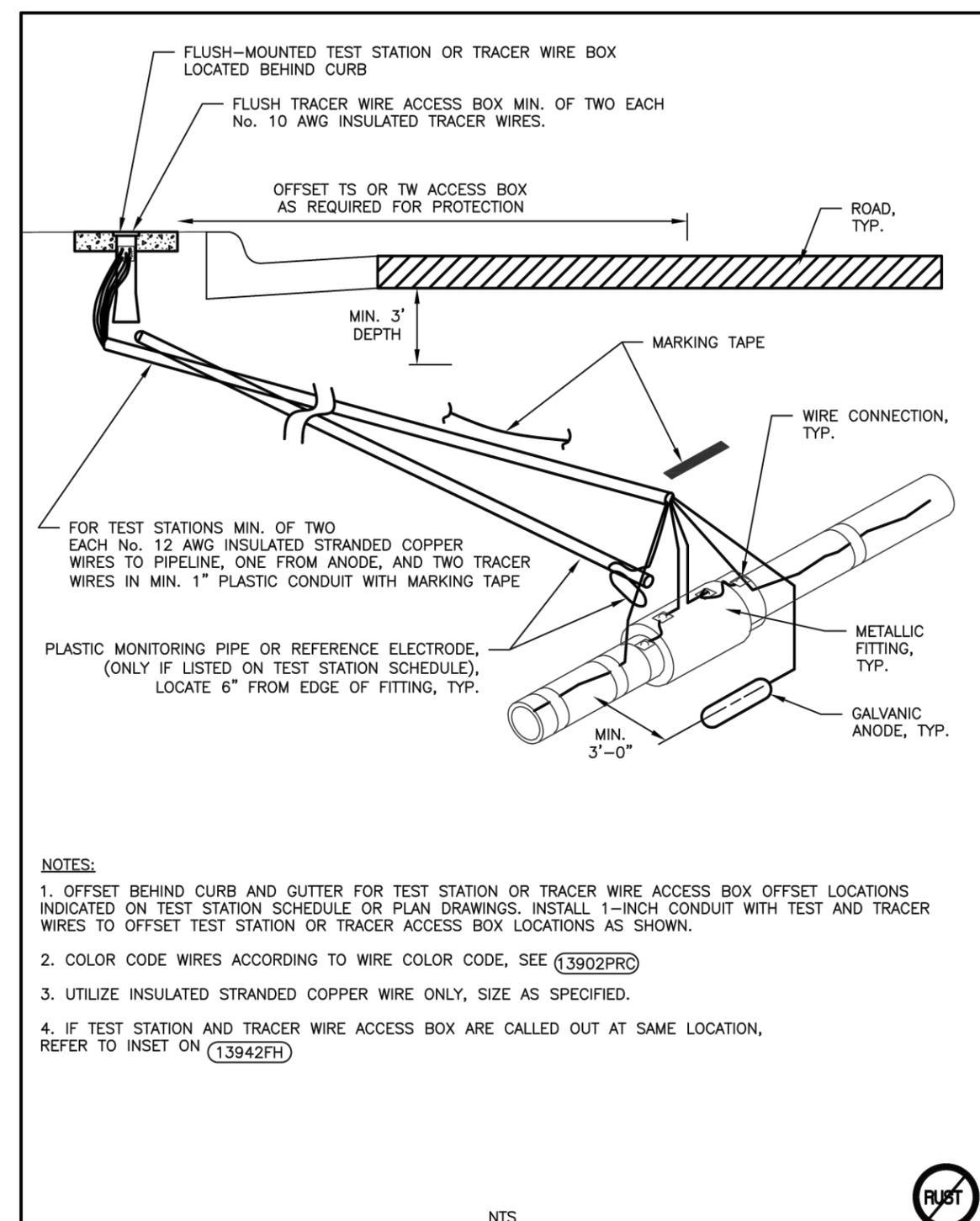
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|--------------|-----------------------------|------------|------------|
| Sheet Title: | CATHODIC PROTECTION DETAILS | Sheet No.: | G82 of G90 |
|--------------|-----------------------------|------------|------------|



- NOTES:
- BOND PLASTIC PIPE METALLIC GLANDS OR MECHANICAL RESTRAINING RINGS TO METALLIC VALVE OR FITTING BODY, SEE (13940) AND (13949)
  - PROVIDE TYPE, NUMBER & SIZE OF ANODES AS SPECIFIED, MINIMUM SHALL BE ONE ANODE PER FITTING



CITY OF RAPID CITY PUBLIC WORKS DEPARTMENT  
**CORROSION PROTECTION FOR METALLIC VALVES OR FITTINGS ON PLASTIC PIPE**  
 DATE: 2-19-13  
 (13943DIP)

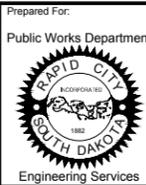


- NOTES:
- OFFSET BEHIND CURB AND GUTTER FOR TEST STATION OR TRACER WIRE ACCESS BOX OFFSET LOCATIONS INDICATED ON TEST STATION SCHEDULE OR PLAN DRAWINGS. INSTALL 1-INCH CONDUIT WITH TEST AND TRACER WIRES TO OFFSET TEST STATION OR TRACER ACCESS BOX LOCATIONS AS SHOWN.
  - COLOR CODE WIRES ACCORDING TO WIRE COLOR CODE, SEE (13902PRC)
  - UTILIZE INSULATED STRANDED COPPER WIRE ONLY, SIZE AS SPECIFIED.
  - IF TEST STATION AND TRACER WIRE ACCESS BOX ARE CALLED OUT AT SAME LOCATION, REFER TO INSET ON (13942FH)



CITY OF RAPID CITY PUBLIC WORKS DEPARTMENT  
**FLUSH TEST STATION OR TRACER WIRE ACCESS BOX OFFSET LOCATIONS**  
 DATE: 2-19-13  
 (13944FO)

Number: 19\_0215\_06010\_01.mxd  
 Drawing: CATHODIC DETAILS.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\11119.00 MT. RUSHMORE RD. UTILITIES RECONSTRUCTION\DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY)

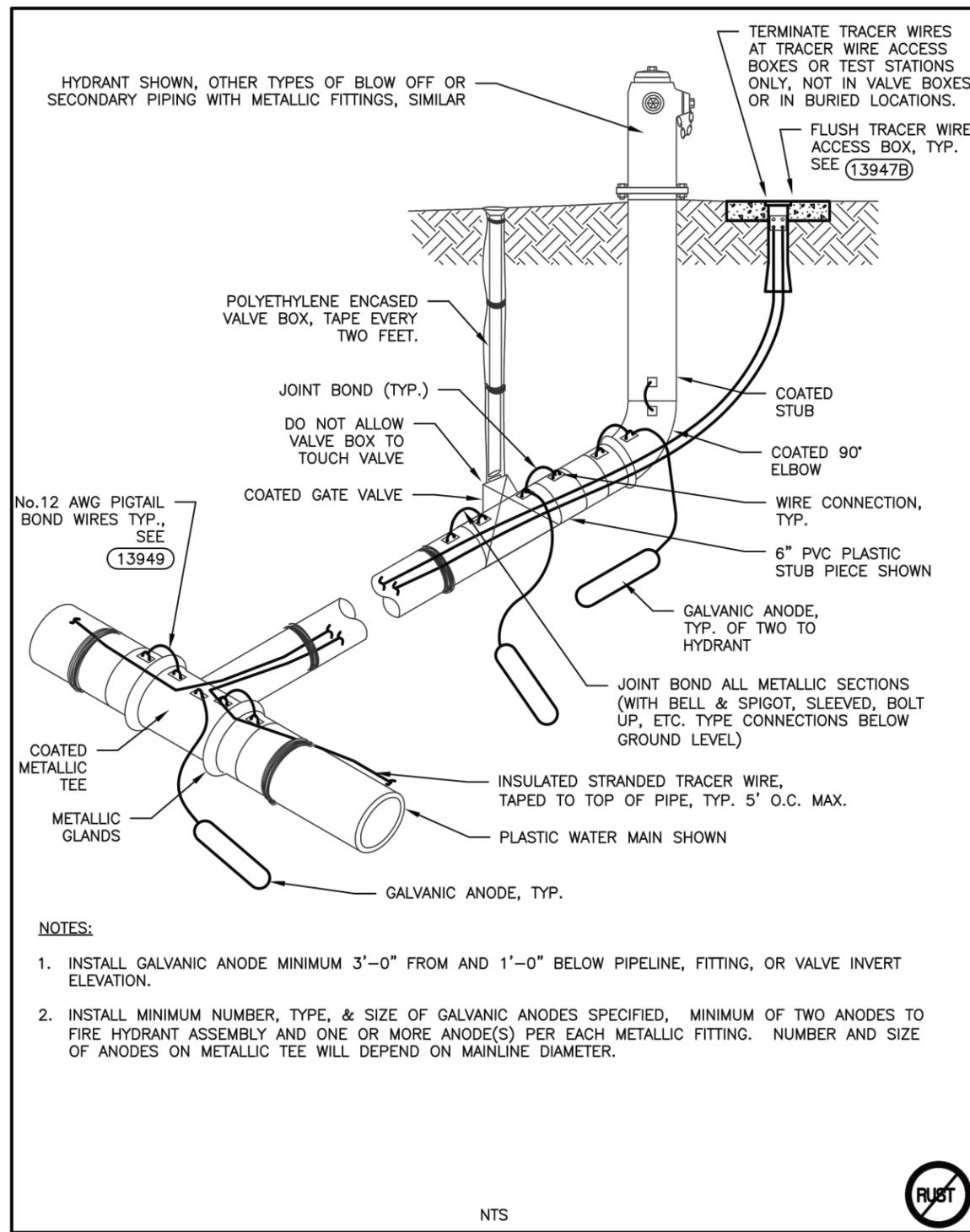


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| Scale:            | AS NOTED                        |
| Designed By:      | RM                              |
| Drawn By:         | MS                              |
| Design Date:      | 07.2015                         |
| Print Date:       | 12.01.2015                      |
| Internal Job No.: | 11119.06                        |
| Surveyed By:      | SDDOT                           |
| Survey Date:      | 2012                            |
| Project Number:   | 13-2139, CIP NO.50950, PCN X03L |

**FOR BIDDING PURPOSES ONLY**

## MOUNT RUSHMORE ROAD UTILITY RECONSTRUCTION

|              |                             |            |            |
|--------------|-----------------------------|------------|------------|
| Sheet Title: | CATHODIC PROTECTION DETAILS | Sheet No.: | G83 of G90 |
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**NOTES:**

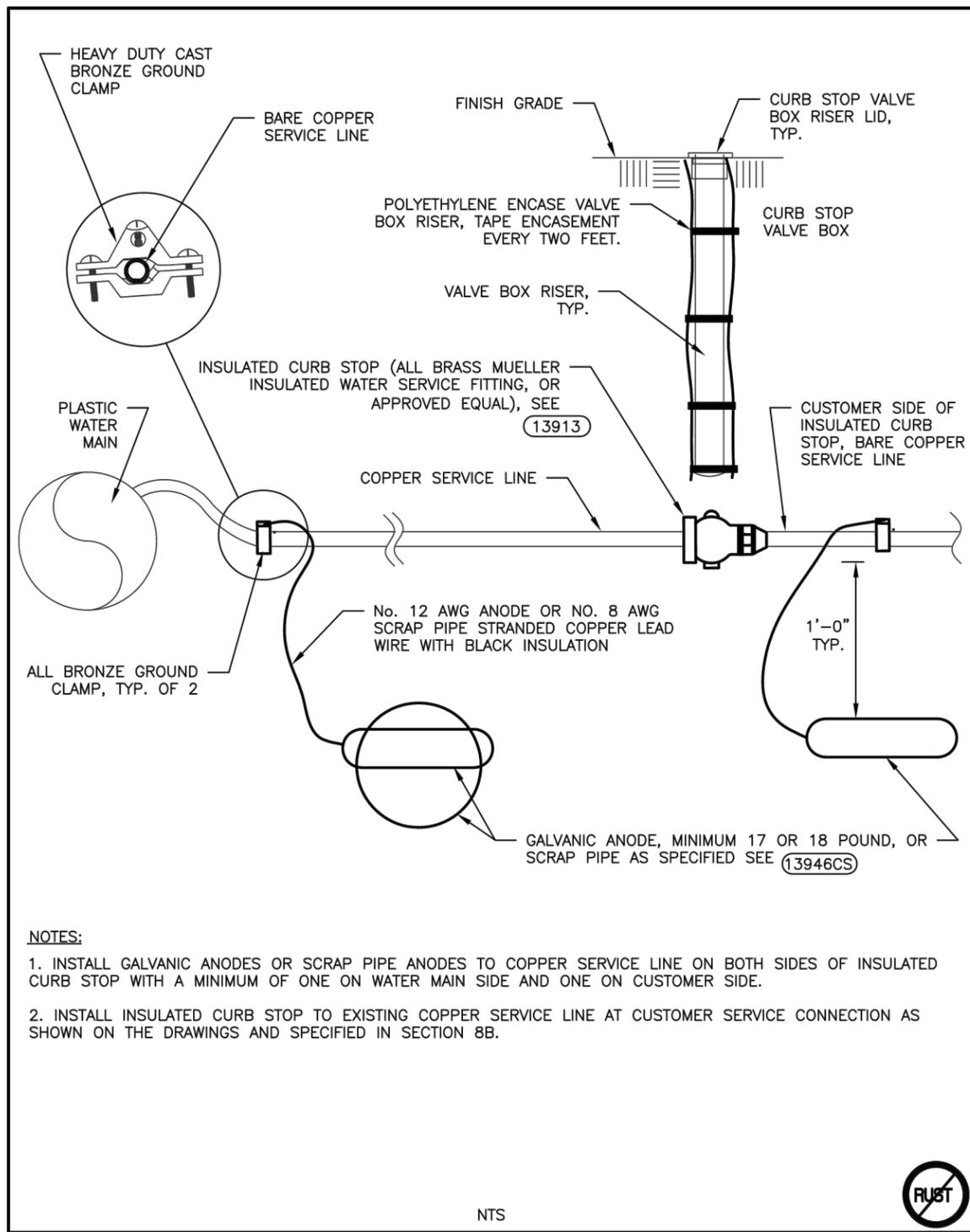
1. INSTALL GALVANIC ANODE MINIMUM 3'-0" FROM AND 1'-0" BELOW PIPELINE, FITTING, OR VALVE INVERT ELEVATION.
2. INSTALL MINIMUM NUMBER, TYPE, & SIZE OF GALVANIC ANODES SPECIFIED, MINIMUM OF TWO ANODES TO FIRE HYDRANT ASSEMBLY AND ONE OR MORE ANODE(S) PER EACH METALLIC FITTING. NUMBER AND SIZE OF ANODES ON METALLIC TEE WILL DEPEND ON MAINLINE DIAMETER.



CITY OF RAPID CITY PUBLIC WORKS DEPARTMENT

### GALVANIC ANODE INSTALLATION AT HYDRANT ASSEMBLIES W/ PLASTIC STUB

DATE: 2-19-13  
**(13944T)**



**NOTES:**

1. INSTALL GALVANIC ANODES OR SCRAP PIPE ANODES TO COPPER SERVICE LINE ON BOTH SIDES OF INSULATED CURB STOP WITH A MINIMUM OF ONE ON WATER MAIN SIDE AND ONE ON CUSTOMER SIDE.
2. INSTALL INSULATED CURB STOP TO EXISTING COPPER SERVICE LINE AT CUSTOMER SERVICE CONNECTION AS SHOWN ON THE DRAWINGS AND SPECIFIED IN SECTION 8B.

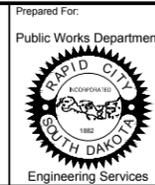


CITY OF RAPID CITY PUBLIC WORKS DEPARTMENT

### INSULATOR AND WIRE CONNECTIONS TO CUSTOMER COPPER SERVICE LINES

DATE: 2-19-13  
**(13945CS)**

Number: 19\_0215\_05010\_001 (SCHILLE) (P) PROJECTS & PROPOSALS \11119.00 MT. RUSHMORE RD. UTILITIES RECONSTRUCTION (DRAWINGS) SHEETS PHASE 3 - SAINT JAMES TO KANSAS CITY

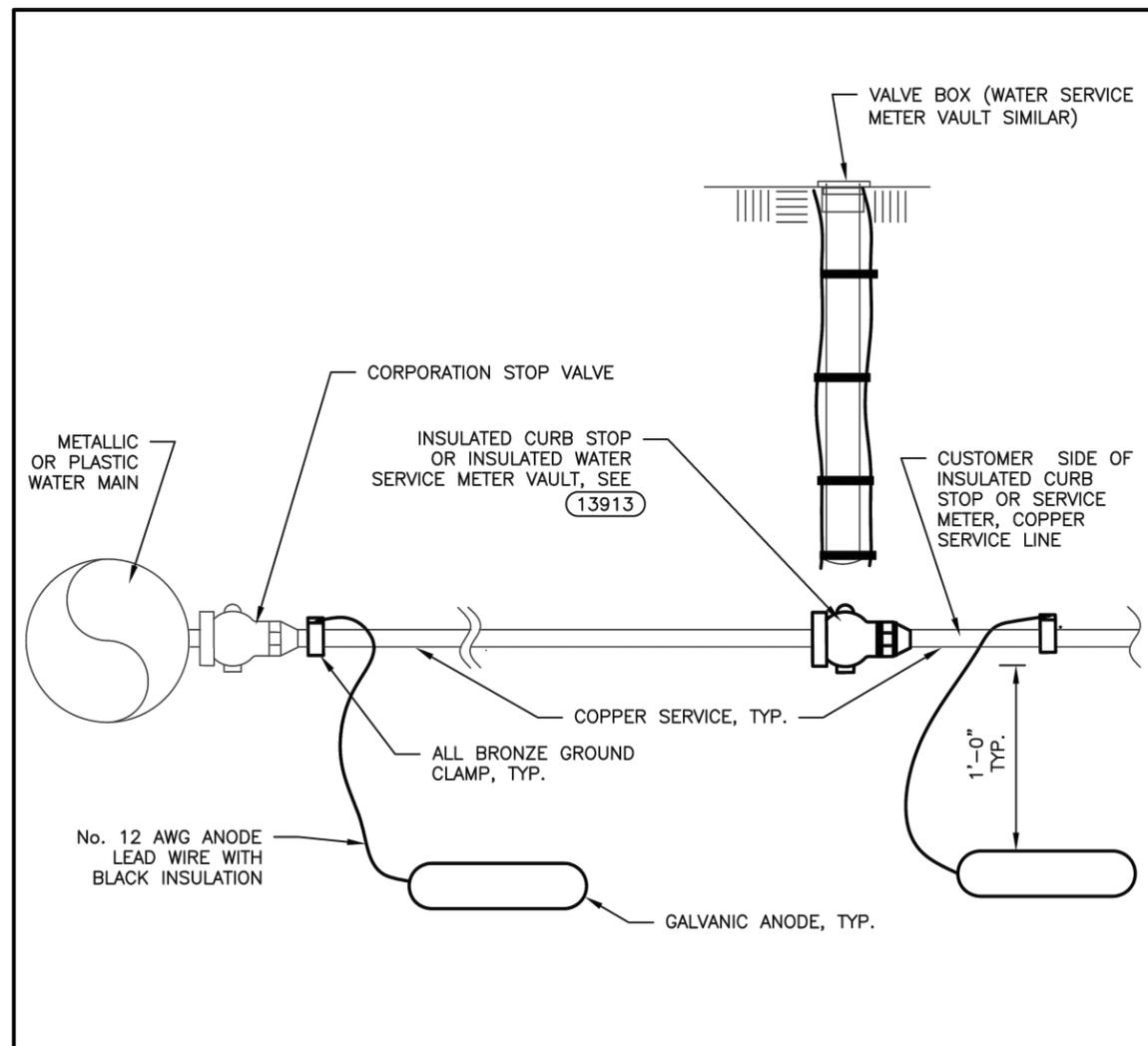


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| Designed By:      | RM                              |
| Drawn By:         | MS                              |
| Design Date:      | 07.2015                         |
| Print Date:       | 12.01.2015                      |
| Internal Job No.: | 11119.06                        |
| Surveyed By:      | SDDOT                           |
| Survey Date:      | 2012                            |
| Project Number:   | 13-2139, CIP NO.50950, PCN X03L |

**FOR BIDDING PURPOSES ONLY**

**MOUNT RUSHMORE ROAD  
UTILITY RECONSTRUCTION**

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|--------------|-----------------------------|------------|------------|
| Sheet Title: | CATHODIC PROTECTION DETAILS | Sheet No.: | G84 of G90 |
|--------------|-----------------------------|------------|------------|



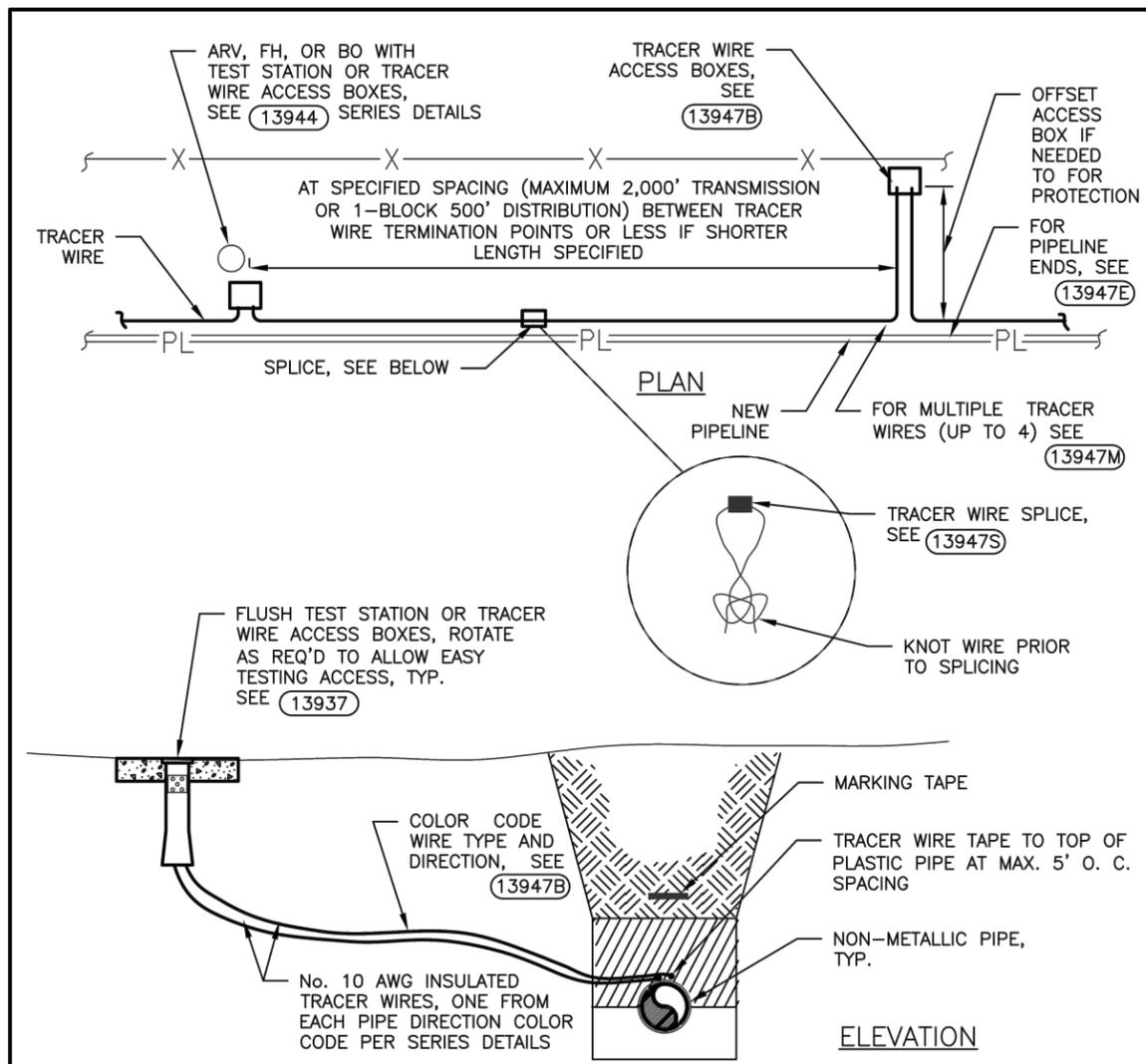
**NOTES:**

1. INSTALL ELECTRICAL INSULATORS AT CONNECTION TO METALLIC WATER MAIN AND AT CUSTOMER SERVICE CURB STOP OR WATER METER VAULT LOCATION, IF COPPER TYPE SERVICE ON CUSTOMER SIDE.
2. INSTALL GALVANIC ANODES TO COPPER SERVICE LINE ON BOTH SIDES OF INSULATED CORPORATION STOP OR SERVICE METER. MINIMUM ONE ANODE ON WATER MAIN SIDE AND ONE ANODE ON CUSTOMER SIDE COPPER SERVICE. MAINTAIN ELECTRICAL ISOLATION BETWEEN WATER MAIN AND CUSTOMER COPPER SERVICE LINES.



NTS

CITY OF RAPID CITY PUBLIC WORKS DEPARTMENT  
**PLASTIC MAIN WITH CUSTOMER COPPER SERVICE LINE INSULATORS AND ANODES**  
 DATE: 2-19-13  
**13946P**



**NOTES:**

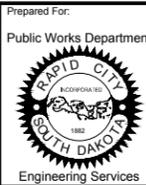
1. TERMINATE TRACER WIRE AT TEST STATIONS OR TRACER WIRE ACCESS BOXES LOCATED AT SPECIFIED DISTANCES, STRUCTURES AND END OF EACH PIPE RUN. TEST TRACER WIRE ELECTRICAL CONTINUITY AS SPECIFIED PRIOR TO PLACEMENT OF CURB AND GUTTER OR PAVING. DO NOT CONNECT TRACER WIRE DIRECTLY TO EXISTING OR NEW METALLIC PIPE OR FITTING. USE TRACER BOX OR TEST STATIONS.
2. LOCATE TRACER WIRE ACCESS BOXES OR TEST STATIONS IN PROTECTED LOCATIONS DIRECTLY OVER PIPE UNLESS OFFSET REQUIRED BY SPECS. OR FIELD CONDITIONS (IN ROAD, FIELD, ETC.). OFFSET TO BACK OF CURB AND GUTTER OR HYDRANT, IF NO PROTECTED LOCATION AVAILABLE OVER PIPELINE. COORDINATE LOCATIONS WITH ENGINEER.



NTS

CITY OF RAPID CITY PUBLIC WORKS DEPARTMENT  
**TRACER WIRE DETAIL**  
 DATE: 2-19-13  
**13947**

Number: 19\_0215\_06010\_01.dwg  
 Drawing: CATHODIC DETAILS.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\11119.00 MT. RUSHMORE RD. UTILITIES RECONSTRUCTION\DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY\

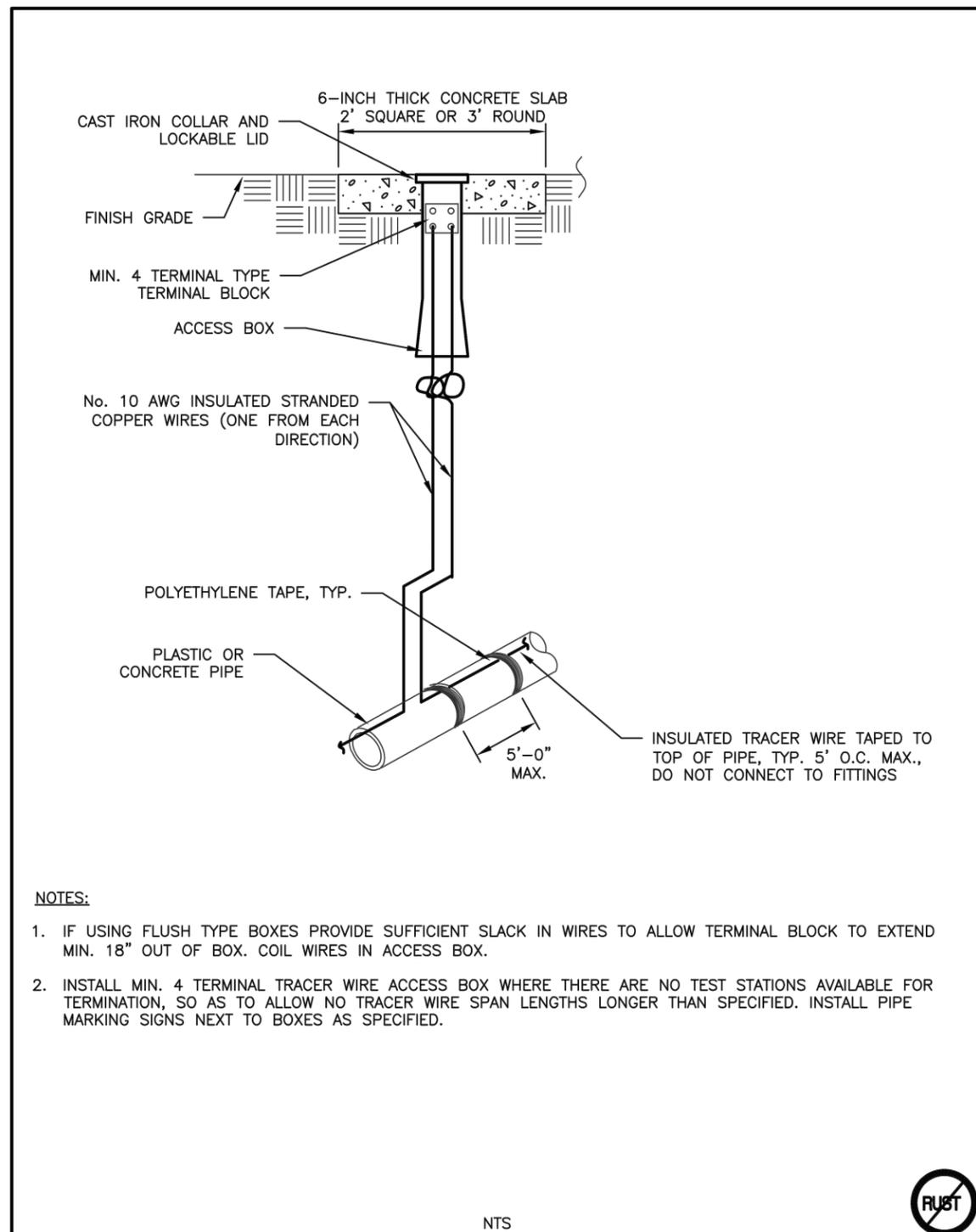


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| Scale:            | AS NOTED                        |
| Designed By:      | RM                              |
| Drawn By:         | MS                              |
| Design Date:      | 07.2015                         |
| Print Date:       | 12.01.2015                      |
| Internal Job No.: | 11119.06                        |
| Surveyed By:      | SDDOT                           |
| Survey Date:      | 2012                            |
| Project Number:   | 13-2139, CIP NO.50950, PCN X03L |

**FOR BIDDING PURPOSES ONLY**

**MOUNT RUSHMORE ROAD  
UTILITY RECONSTRUCTION**

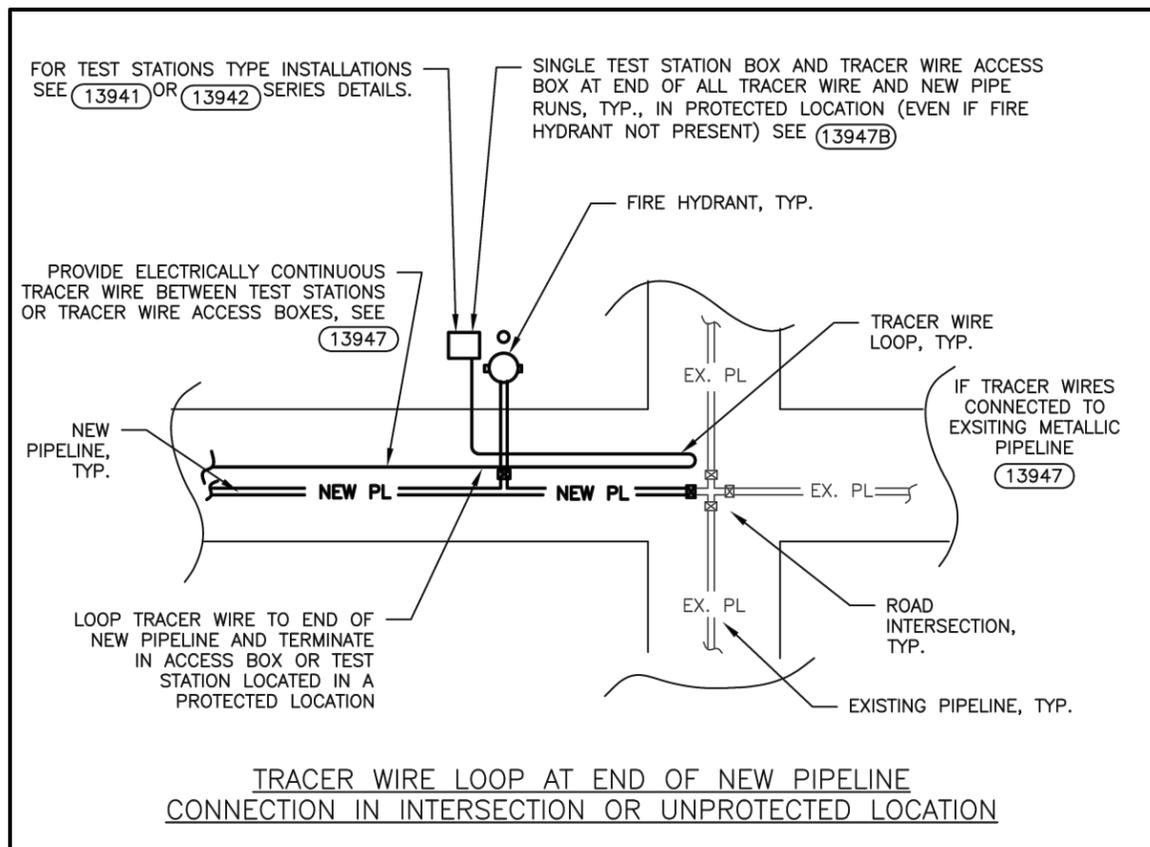
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| Sheet Title: | CATHODIC PROTECTION DETAILS | Sheet No.: | G85 of G90 |
|--------------|-----------------------------|------------|------------|



- NOTES:**
1. IF USING FLUSH TYPE BOXES PROVIDE SUFFICIENT SLACK IN WIRES TO ALLOW TERMINAL BLOCK TO EXTEND MIN. 18" OUT OF BOX. COIL WIRES IN ACCESS BOX.
  2. INSTALL MIN. 4 TERMINAL TRACER WIRE ACCESS BOX WHERE THERE ARE NO TEST STATIONS AVAILABLE FOR TERMINATION, SO AS TO ALLOW NO TRACER WIRE SPAN LENGTHS LONGER THAN SPECIFIED. INSTALL PIPE MARKING SIGNS NEXT TO BOXES AS SPECIFIED.



CITY OF RAPID CITY PUBLIC WORKS DEPARTMENT  
**TRACER WIRE ACCESS BOXES  
 IN UNPROTECTED LOCATION**  
 DATE: 2-19-13  
**13947B**

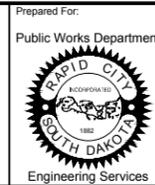


- NOTES**
1. TERMINATE TRACER WIRES ABOVEGRADE AT POST TYPE TEST STATIONS OR TRACER WIRE ACCESS BOXES LOCATED IN A PROTECTED LOCATION AT ABOVEGRADE STRUCTURES OR IN A FLUSH TYPE TEST STATION OR ACCESS BOX LOCATED TO SIDE OF ROAD. COORDINATE LOCATION AND TYPE WITH ENGINEER. DO NOT TERMINATE WIRE ENDS BELOW GRADE OR IN VALVE BOXES.
  2. LOOP TRACER WIRE PAST TEST STATION OR ACCESS BOX TO END OF NEW PIPELINE RUN AND TERMINATE IN BOX.
  3. SINGLE PIPE SHOWN, SIMILAR FOR MULTIPLE NEW PIPELINES.
  4. DO NOT TERMINATE TRACER WIRE ENDS BELOW GRADE OR IN VALVE BOXES.
  5. TEST TRACER WIRE ELECTRICAL CONTINUITY PRIOR TO PLACEMENT OF CURB AND GUTTER AND BEFORE PAVING.



CITY OF RAPID CITY PUBLIC WORKS DEPARTMENT  
**TRACER WIRE AT NEW PIPELINE ENDS**  
 DATE: 2-19-13  
**13947E**

Number: 19\_0215\_05010\_017  
 Drawing: CATHODIC DETAILS.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\11119.00 MT. RUSHMORE RD. UTILITIES RECONSTRUCTION\DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY\

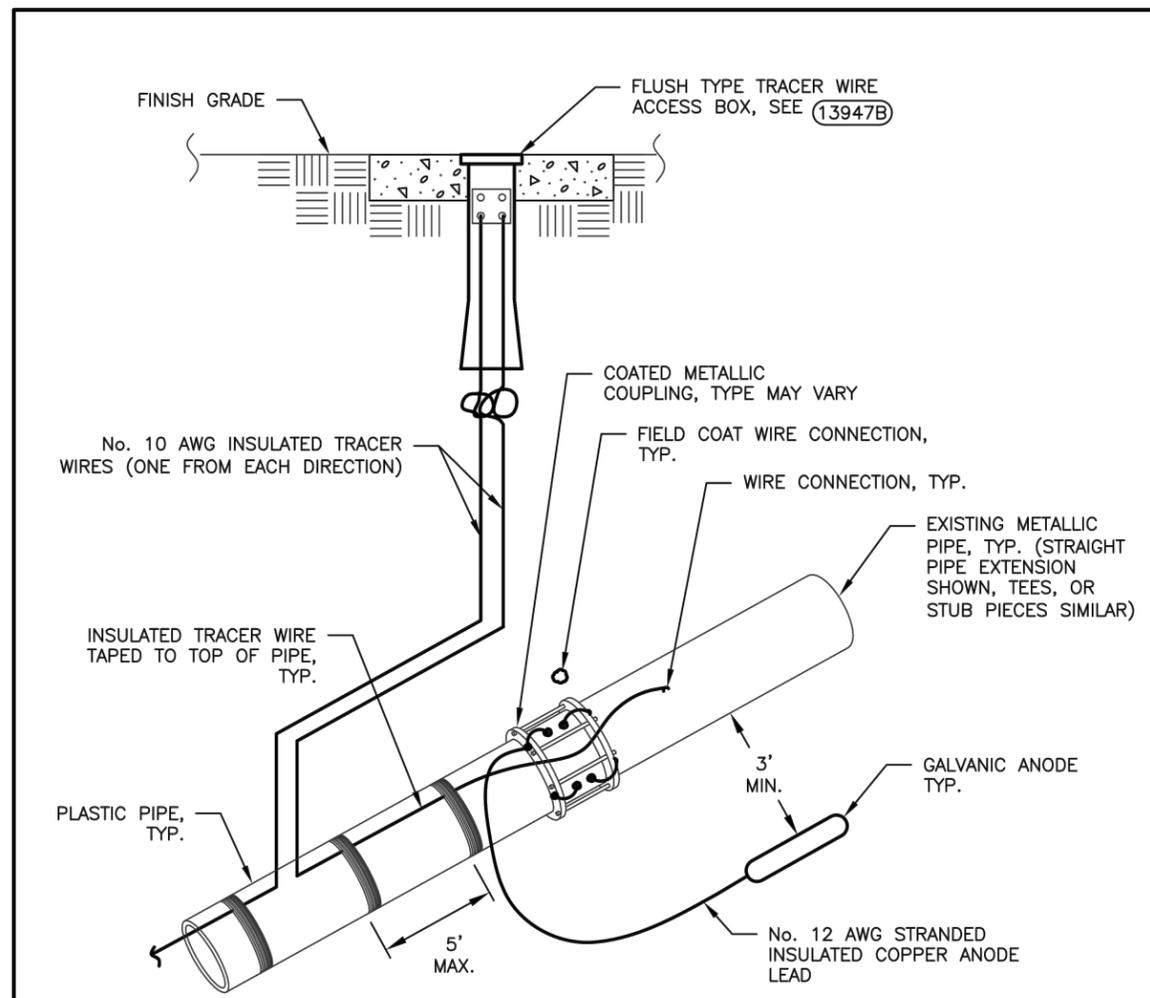


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| Scale:            | AS NOTED                        |
| Designed By:      | RM                              |
| Drawn By:         | MS                              |
| Design Date:      | 07.2015                         |
| Print Date:       | 12.01.2015                      |
| Internal Job No.: | 11119.06                        |
| Surveyed By:      | SDDOT                           |
| Survey Date:      | 2012                            |
| Project Number:   | 13-2139, CIP NO.50950, PCN X03L |

**FOR BIDDING PURPOSES ONLY**

**MOUNT RUSHMORE ROAD  
UTILITY RECONSTRUCTION**

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|--------------|-----------------------------|------------|------------|
| Sheet Title: | CATHODIC PROTECTION DETAILS | Sheet No.: | G86 of G90 |
|--------------|-----------------------------|------------|------------|

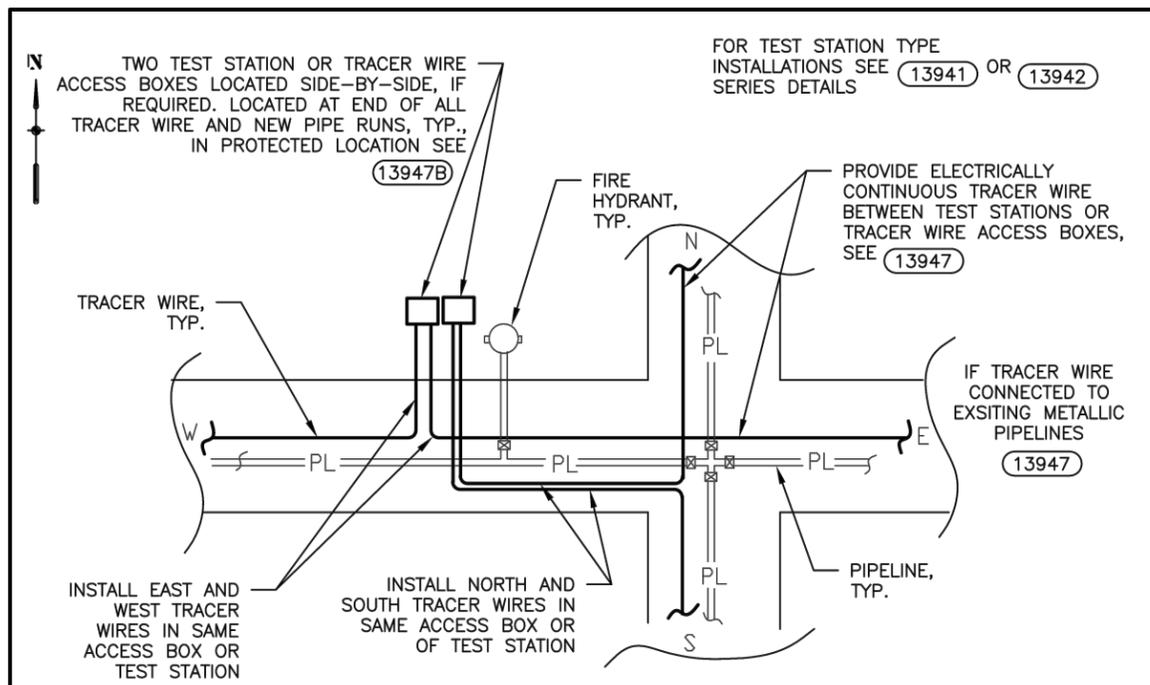


**NOTES:**

1. INSTALL GALVANIC ANODE TO METALLIC FITTING AT CONNECTION TO EXISTING METALLIC PIPELINE (IF METALLIC PIPE NOT ALREADY CATHODIC PROTECTED WITH AN IMPRESSED CURRENT TYPE CATHODIC PROTECTION SYSTEM).
2. IF TRACER WIRE CONNECTED TO EXISTING METALLIC PIPELINE, LOOP TRACER WIRES ABOVEGRADE AND TERMINATE IN TRACER WIRE OR TEST STATION BOX. SEE (13947) SERIES DETAILS.



CITY OF RAPID CITY PUBLIC WORKS DEPARTMENT  
**TRACER WIRE ACCESS BOXES  
AT CONNECTION TO EXISTING**  
 DATE: 2-19-13  
**(13947F)**



**TRACER WIRE DIRECTION COLOR CODE:**  
 NORTH WIRE - 1 STRIP OF PURPLE TAPE  
 SOUTH WIRE - 1 STRIP OF GRAY TAPE  
 WEST WIRE - 2 STRIPS OF PURPLE TAPE  
 EAST WIRE - 2 STRIPS OF GRAY TAPE

**TRACER WIRE AT THREE OR FOUR-WAY INTERSECTION**

**NOTES**

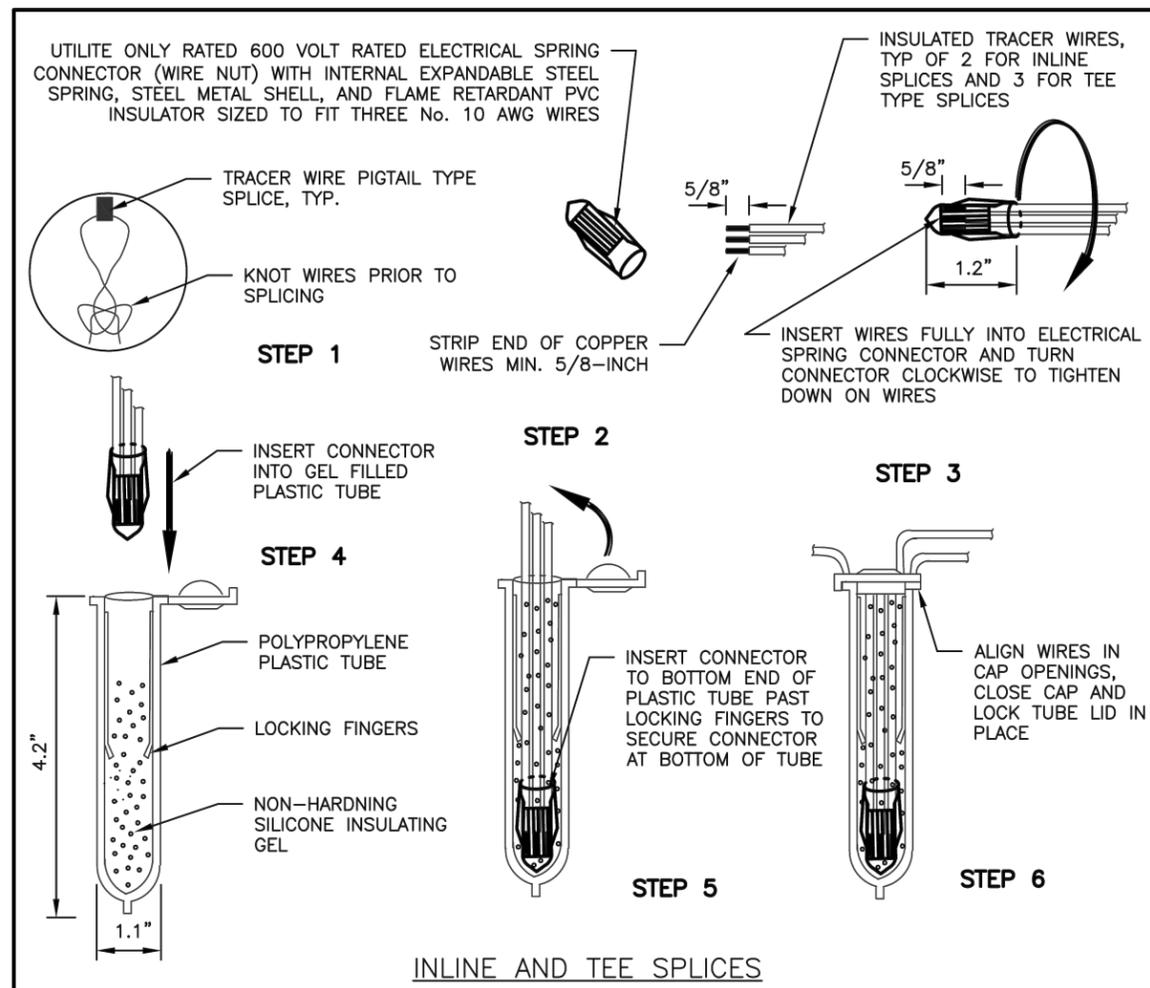
1. TERMINATE TRACER WIRES ABOVEGRADE AT TEST STATIONS OR TRACER WIRE ACCESS BOXES LOCATED AT ABOVEGRADE STRUCTURES WITH TRACER WIRE FROM EACH PIPE DIRECTION (UP TO 4 TRACER WIRES POSSIBLE). DO NOT TERMINATE WIRE ENDS BELOW GRADE OR IN VALVE BOXES.
2. IF 3 OR 4 TRACER WIRES, TERMINATE TRACER WIRES IN IN TWO TEST STATION, OR TWO TRACER WIRE ACCESS BOXES LOCATED NEXT TO EACH OTHER. TERMINATE NORTH AND SOUTH TRACER WIRES IN SAME BOX AND EAST AND WEST TRACER WIRES IN SAME BOX.
3. TEST TRACER WIRE ELECTRICAL CONTINUITY PRIOR TO PLACEMENT OF CURB AND GUTTER AND BEFORE PAVING.



CITY OF RAPID CITY PUBLIC WORKS DEPARTMENT  
**MULTIPLE TRACER WIRES**  
 DATE: 2-19-13  
**(13947M)**

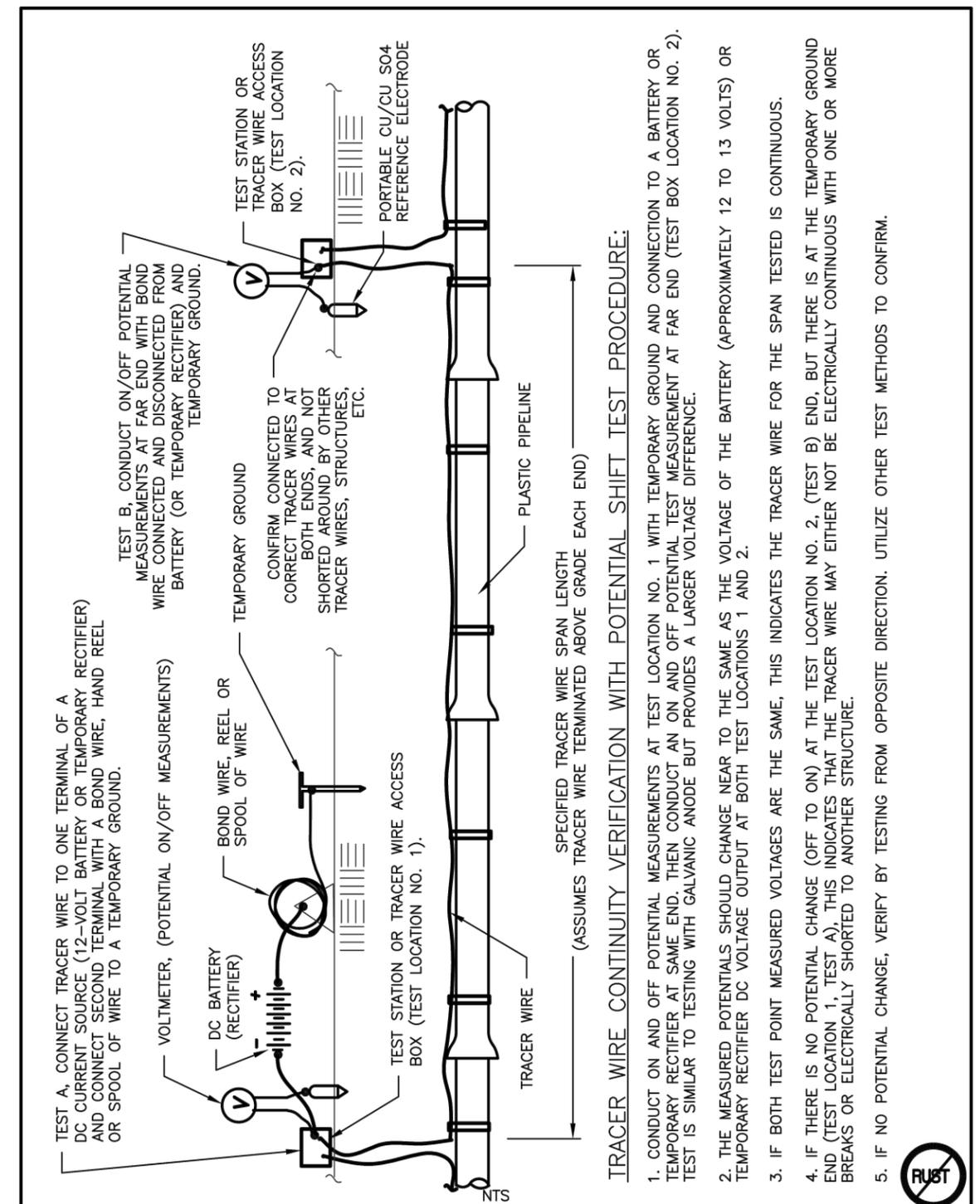
Number: 19\_0215\_05010\_017  
 Drawing: CATHODIC DETAILS.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\11119.00 MT. RUSHMORE RD. UTILITIES RECONSTRUCTION\DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY)

## MOUNT RUSHMORE ROAD UTILITY RECONSTRUCTION



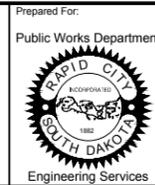
**NOTES:**

1. ALLOWED FOR TRACER WIRE TYPE SPLICES ONLY. TRACER WIRE ONLY REQUIRED FOR NON-METALLIC PIPE TYPE INSTALLATIONS. KNOT WIRES PRIOR TO MAKING SPLICE TO MINIMIZE STRESS ON SPLICE.
2. FOR COPPER WIRE SPLICES ONLY. STRIP WIRES AND MAKE WIRE SPLICE CONNECTION WITH ELECTRICAL SPRING (WIRE NUT) TYPE CONNECTORS. INSERT THE CONNECTOR INTO THE GEL FILLED TUBE TO THE END PAST THE LOCKING FINGERS TO HOLD THE CONNECTOR SECURELY IN PLACE, ALIGN WIRES AND THEN SHUT AND LOCK THE INSULATOR TUBE TOP LID COVER INTO PLACE. COMPLETE SPLICES AND INSULATE IN ACCORDANCE WITH CONNECTOR MANUFACTURER'S RECOMMENDATIONS.
3. COMPLETE ALL SPLICES ONLY IN THE PRESENCE OF THE ENGINEER.



November 19, 2015, 8:56:16 AM, MT, RUSHMORE RD, UTILITIES RECONSTRUCTION (DRAWINGS) SHEET'S PHASE 3 - SAINT JAMES TO KANSAS CITY  
 Drawing: CATHODIC DETAILS.DWG (SCHILLE) (P) PROJECTS & PROPOSALS\11119.00

Number: 19\_2015\_05016\_V01  
 Drawing: CATHODIC DETAILS.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\11119.00 MT. RUSHMORE RD. UTILITIES RECONSTRUCTION\DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY)

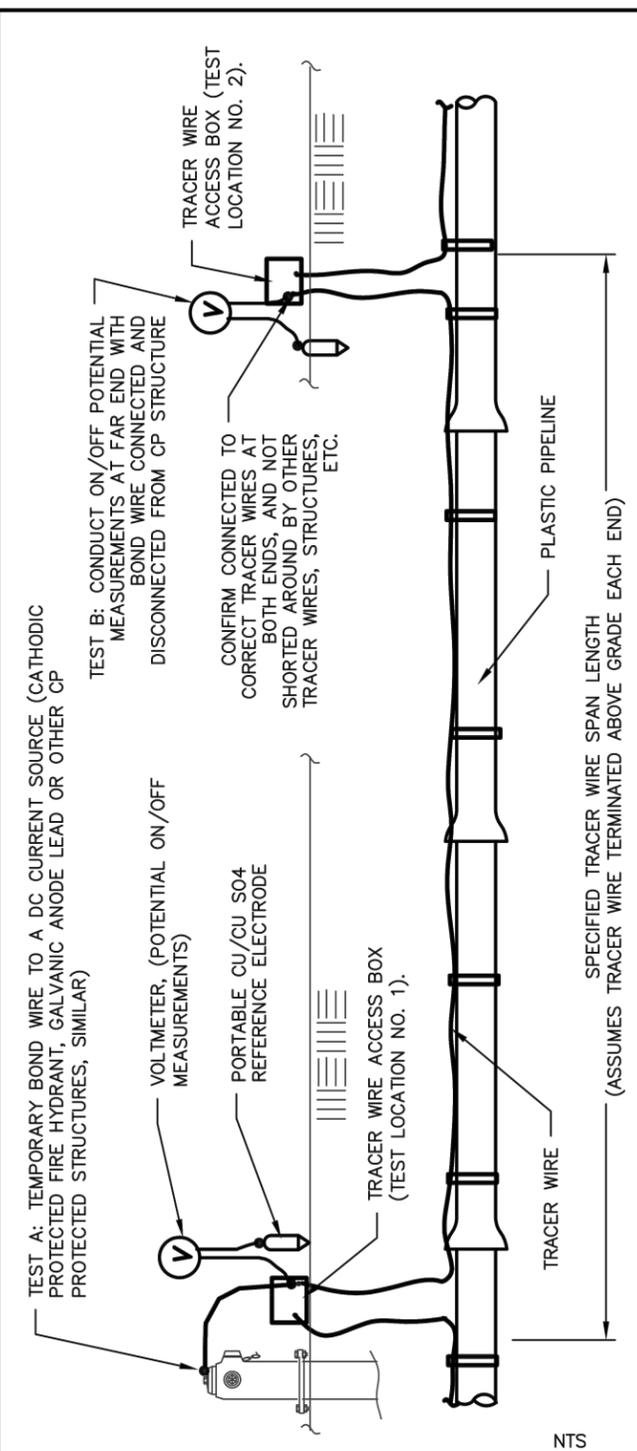


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| Scale:            | AS NOTED                        |
| Designed By:      | RM                              |
| Drawn By:         | MS                              |
| Design Date:      | 07.2015                         |
| Print Date:       | 12.01.2015                      |
| Internal Job No.: | 11119.06                        |
| Surveyed By:      | SDDOT                           |
| Survey Date:      | 2012                            |
| Project Number:   | 13-2139, CIP NO.50950, PCN X03L |

FOR BIDDING PURPOSES ONLY

## MOUNT RUSHMORE ROAD UTILITY RECONSTRUCTION

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| Sheet Title: | CATHODIC PROTECTION DETAILS | Sheet No.: | G88 of G90 |
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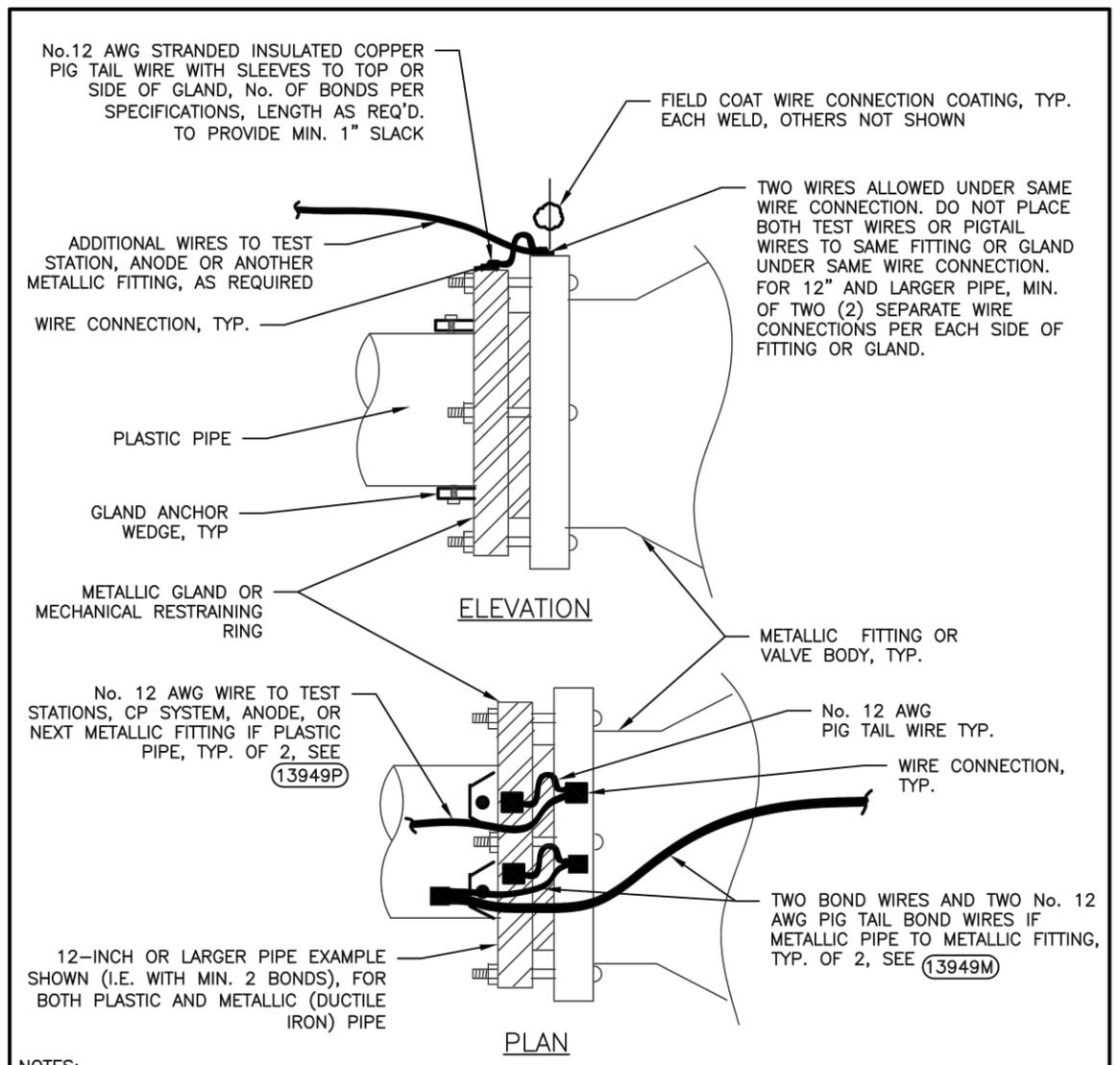


### TRACER WIRE CONTINUITY VERIFICATION WITH GALVANIC ANODE POTENTIAL SHIFT TEST PROCEDURE:

1. CONDUCT ON AND OFF POTENTIAL MEASUREMENTS AT TRACER WIRE ACCESS BOX NO. 1 WITH BOND WIRE TO CATHODIC PROTECTION SOURCE AT SAME END. THEN CONDUCT ON AND OFF POTENTIAL TESTS AT FAR END (TRACER BOX LOCATION NO. 2). POTENTIAL SHOULD SHIFT THE SAME AMOUNT AT FAR END (LOCATION NO. 2), WHEN TEMPORARILY CONNECTED AND DISCONNECTED FROM CATHODIC PROTECTION SOURCE AT TRACER WIRE BOX LOCATION NO. 1, IF TRACER WIRE IS CONTINUOUS AND NOT SHORTED TO OTHER STRUCTURES.
2. FOR EXAMPLE: IF THE OFF POTENTIAL OF THE TRACER WIRE IS -0.24 VOLTS AND THE ANODE OR CATHODICALLY PROTECTED FIRE HYDRANT POTENTIAL IS -1.1 VOLT, THEN WHEN THE TRACER WIRE IS TEMPORARILY CONNECTED TO THE CATHODICALLY PROTECTED STRUCTURE, THE TRACER WIRE POTENTIAL CHANGES TO -1.0 VOLTS AT TRACER WIRE ACCESS BOX LOCATION NO. 1 AND -0.95 AT TRACER WIRE ACCESS BOX LOCATION NO. 2, THAT INDICATES THAT THE TRACER WIRE BETWEEN LOCATIONS NO. 1 AND NO. 2 IS CONTINUOUS. IF THE ON POTENTIAL AT TEST LOCATION NO. 2 DOES NOT CHANGE IT INDICATES THE TRACER WIRE MAY NOT BE ELECTRICALLY CONTINUOUS WITH ONE OR MORE BREAKS. IF THERE IS ONLY A SLIGHT CHANGE, SAY FROM -0.200 TO -0.233 VOLTS, THAT INDICATES THAT EITHER THE TRACER WIRE MAY BE BROKE OR ELECTRICALLY SHORTED TO ANOTHER STRUCTURE. IF INSIGNIFICANT POTENTIAL CHANGE, VERIFY BY TESTING FROM OPPOSITE DIRECTION. UTILIZE OTHER TEST METHODS TO CONFIRM.



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| CITY OF RAPID CITY  | PUBLIC WORKS DEPARTMENT |
| TRACER WIRE CONTINUITY TEST PROCEDURES<br>GALVANIC ANODE POTENTIAL SHIFT METHOD |                         |
| DATE: 2-19-13   |                         |
| 13947T2   |                         |

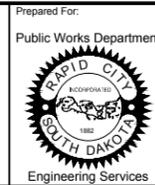


**NOTES:**

1. BOND METALLIC OR PLASTIC PIPE METALLIC GLANDS TO METALLIC FITTING BODY. COMPLETE PIGTAIL WIRE CONNECTIONS TO GLANDS BEFORE ASSEMBLY.
2. BOND METALLIC MECHANICAL RESTRAINT RINGS TO METALLIC FITTING BODY
3. MIN. TWO (2) BONDS EACH FOR 12" AND LARGER PIPE, MIN. ONE (1) FOR SMALLER PIPE. MINIMUM 2 NO. 12 AWG PIGTAIL WIRES EACH SIDE OF FITTING.



|   |                         |
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| CITY OF RAPID CITY  | PUBLIC WORKS DEPARTMENT |
| METALLIC FITTING GLANDS AND<br>MECHANICAL RESTRAINT RINGS BONDING |                         |
| DATE: 2-19-13   |                         |
| 13949   |                         |

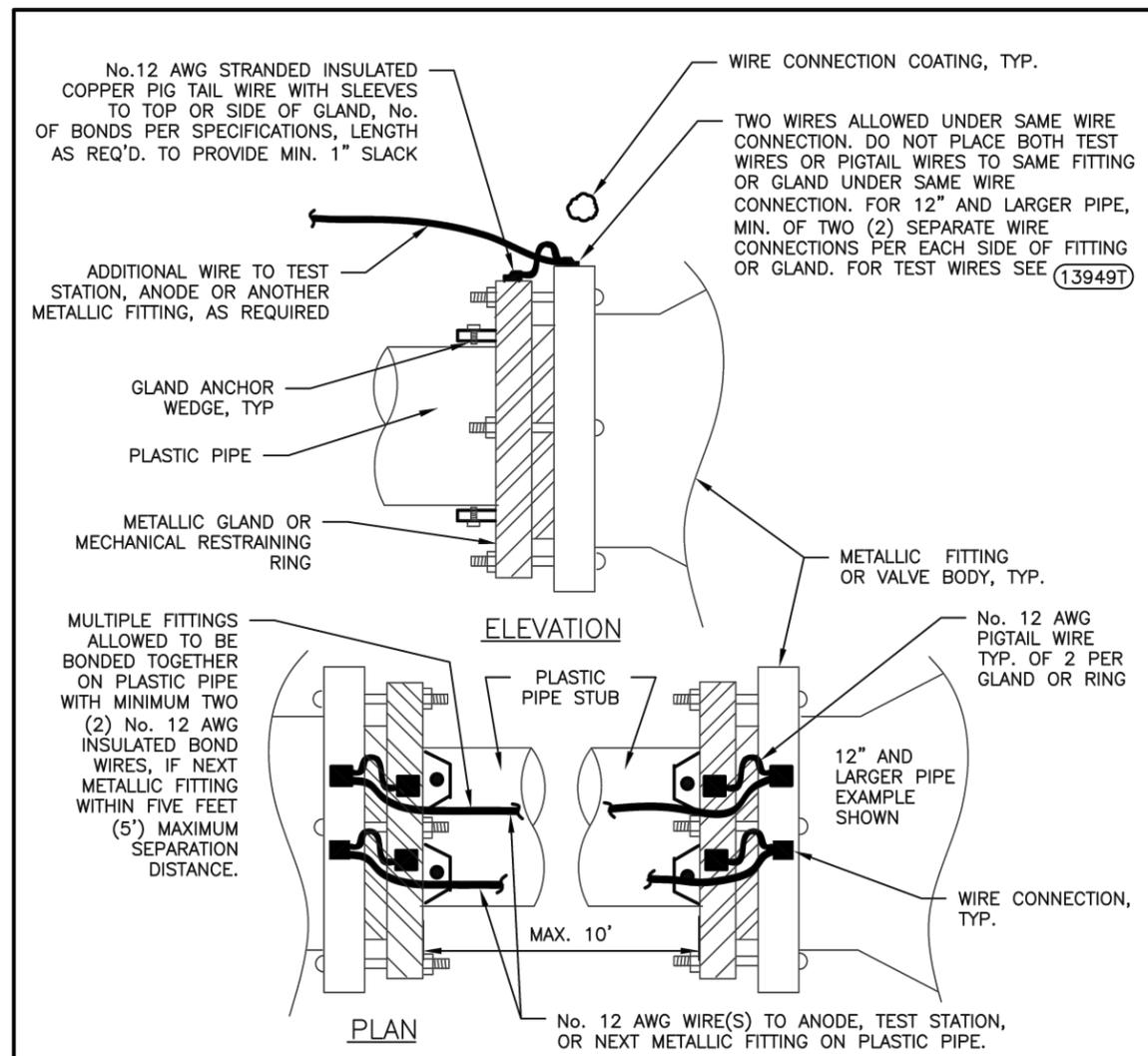


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| Print Date:       | 12.01.2015                      |
| Internal Job No.: | 11119.06                        |
| Surveyed By:      | SDDOT                           |
| Survey Date:      | 2012                            |
| Project Number:   | 13-2139, CIP NO.50950, PCN X03L |

FOR BIDDING PURPOSES ONLY

MOUNT RUSHMORE ROAD  
UTILITY RECONSTRUCTION

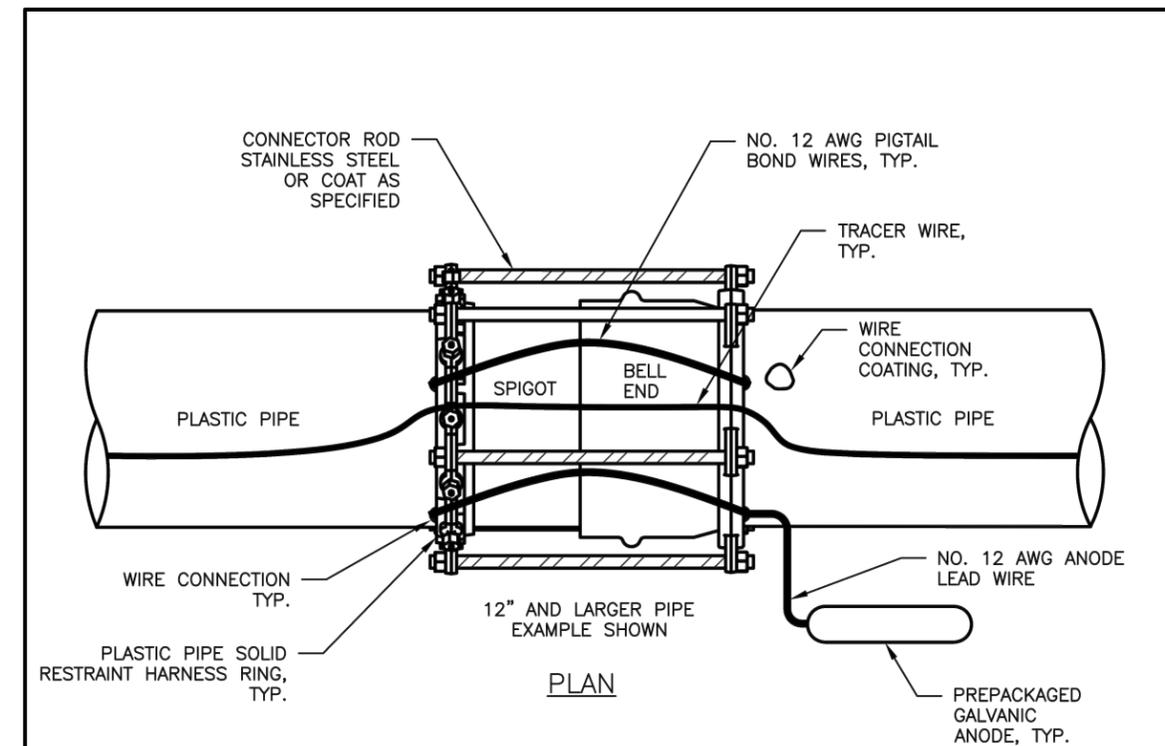
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| Sheet Title: | CATHODIC PROTECTION DETAILS | Sheet No.: | G89 of G90 |
|--------------|-----------------------------|------------|------------|



- NOTES:**
1. BOND PLASTIC PIPE METALLIC GLANDS TO METALLIC FITTING BODY. COMPLETE PIGTAIL WIRE CONNECTIONS TO GLANDS BEFORE ASSEMBLY.
  2. MINIMUM NO. 12 AWG PIGTAIL WIRES EACH SIDE OF FITTING, MIN. 2 PIGTAIL BONDS EACH FOR 12" & LARGER PIPE, MIN. 1 FOR SMALLER PIPE.
  3. NUMBER, SIZE AND TYPE OF GALVANIC ANODES REQUIRED FOR SINGLE OR MULTIPLE FITTINGS PER SPECIFICATIONS.



CITY OF RAPID CITY PUBLIC WORKS DEPARTMENT  
DATE: 2-19-13  
PLASTIC PIPE METALLIC FITTING GLANDS AND MECHANICAL RESTRAINT RINGS BONDING  
**13949P**

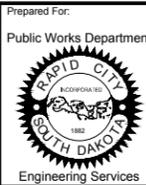


- NOTES:**
1. SOLID RING TYPE RESTRAINTS SHOWN WITH MINIMUM OF 2 PIGTAIL BOND WIRES FOR 12 INCH AND LARGER PIPE. SINGLE PIGTAIL BOND WIRE ALLOWED FOR PIPE 10 INCH AND SMALLER. SPLIT RING RESTRAINTS MAY ONLY BE USED IF APPROVED BY ENGINEER AND WILL REQUIRE ADDITIONAL PIGTAIL BOND WIRES, SEE 13949S
  2. NUMBER, SIZE AND TYPE OF GALVANIC ANODES REQUIRED FOR SINGLE FITTING PER SPECIFICATIONS. MINIMUM OF ONE 17 POUND GALVANIC ANODE PER FITTING.
  3. PRIOR TO ASSEMBLY, LOCATE WIRE CONNECTION FOR NO. 12 AWG BOND WIRES TO FLAT AREA ON SIDE OF COUPLING BOLT PATTERN RESTRAINT HARNESS RING.



CITY OF RAPID CITY PUBLIC WORKS DEPARTMENT  
DATE: 2-19-13  
PLASTIC PIPE BELL SOLID RING RESTRAINT HARNESS JOINT BONDING  
**13949R**

Number: 19\_0215\_05010\_001 Drawing: CATHODIC DETAILS.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\11119.00 MT. RUSHMORE RD. UTILITIES RECONSTRUCTION\DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY)

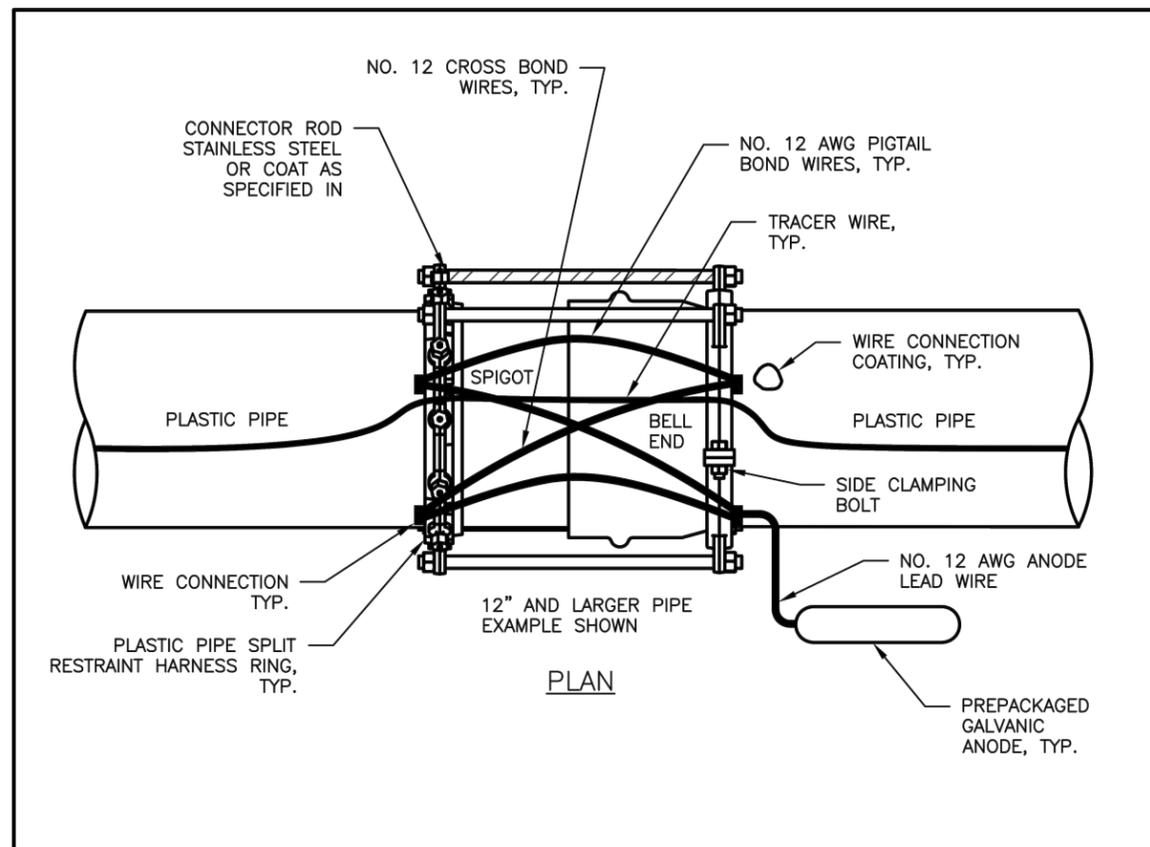


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| Drawn By:         | MS                              |
| Design Date:      | 07.2015                         |
| Print Date:       | 12.01.2015                      |
| Internal Job No.: | 11119.06                        |
| Surveyed By:      | SDDOT                           |
| Survey Date:      | 2012                            |
| Project Number:   | 13-2139, CIP NO.50950, PCN X03L |

FOR BIDDING PURPOSES ONLY

MOUNT RUSHMORE ROAD  
UTILITY RECONSTRUCTION

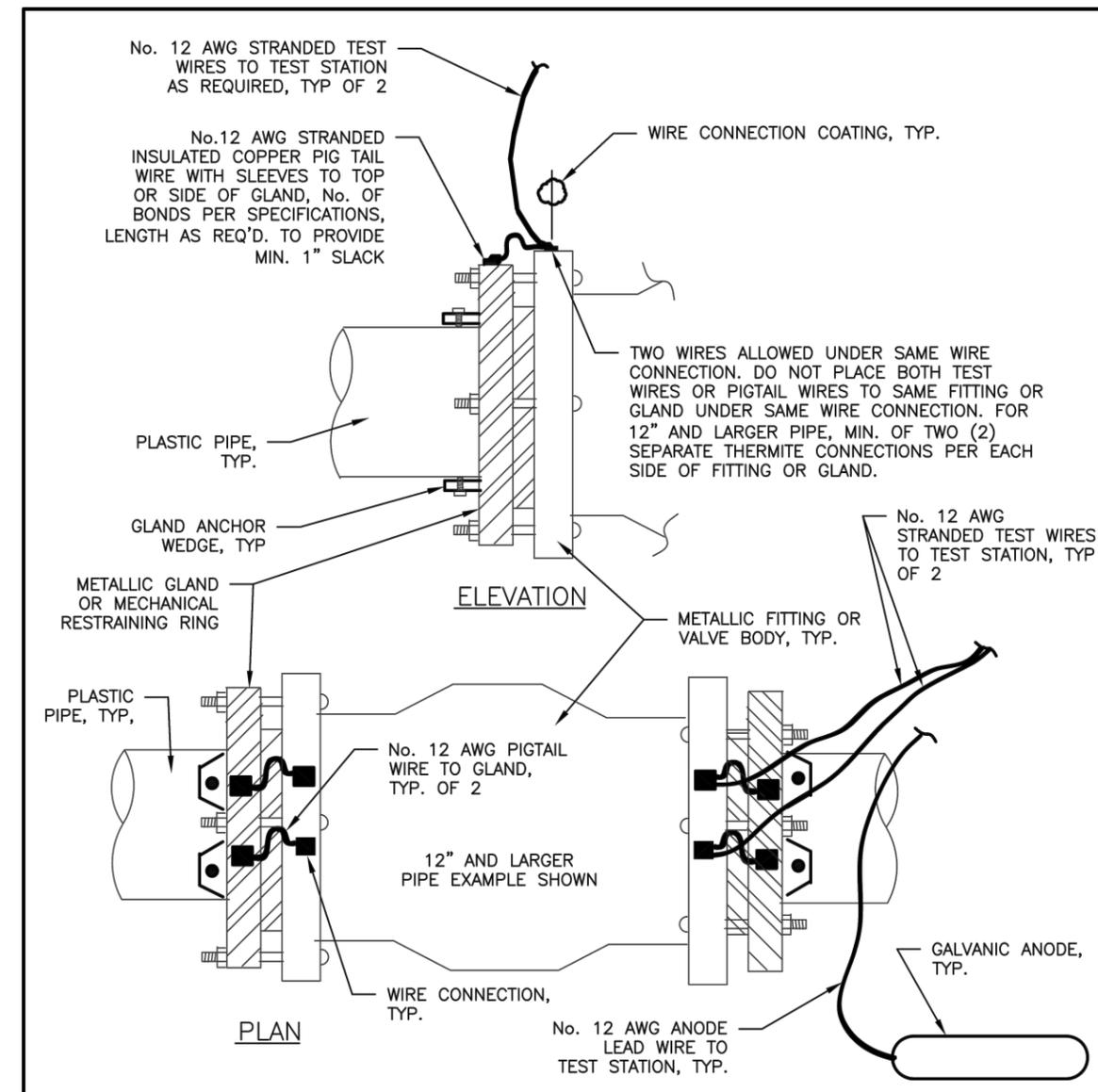
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|--------------|-----------------------------|------------|------------|
| Sheet Title: | CATHODIC PROTECTION DETAILS | Sheet No.: | G90 of G90 |
|--------------|-----------------------------|------------|------------|



- NOTES:
1. SPLIT RING TYPE RESTRAINTS SHOWN WITH MINIMUM OF FOUR (TWO PIGTAIL AND TWO CROSS BOND WIRES FOR 12-INCH AND LARGER PIPE. TWO PIGTAIL CROSS BOND PIGTAIL WIRES ALLOWED FOR 10-INCH AND SMALLER PIPE). SPLIT RING RESTRAINTS MAY ONLY BE USED IF APPROVED BY ENGINEER. FOR SOLID RING PIGTAIL BOND WIRES, SEE (13949R)
  2. NUMBER, SIZE AND TYPE OF GALVANIC ANODES REQUIRED FOR SINGLE FITTING PER SPECIFICATIONS. MINIMUM OF ONE 17 POUND GALVANIC ANODE PER FITTING.
  3. PRIOR TO ASSEMBLY, LOCATE THERMITE WELD OR PIN BRAZED TYPE WIRE CONNECTION FOR NO. 12 AWG BOND WIRES TO FLAT AREA ON SIDE OF COUPLING BOLT PATTERN RESTRAINT HARNESS RING.



CITY OF RAPID CITY PUBLIC WORKS DEPARTMENT  
**PLASTIC PIPE BELL SPLIT RING RESTRAINT HARNESS JOINT BONDING**  
 DATE: 2-19-13  
 (13949S)



- NOTES:
1. BOND METALLIC MECHANICAL RESTRAINT RINGS TO METALLIC FITTING BODY. COMPLETE PIGTAIL WIRE CONNECTIONS TO GLANDS BEFORE ASSEMBLY.
  2. MINIMUM NO. 12 AWG SIZED PIGTAIL BOND WIRES EACH SIDE OF FITTING, MIN. 2 PIGTAIL BONDS EACH FOR 12\"/>



CITY OF RAPID CITY PUBLIC WORKS DEPARTMENT  
**PLASTIC PIPE METALLIC GLANDS/RESTRAINT RINGS BONDING, ANODE AND TEST LEADS**  
 DATE: 2-19-13  
 (13949T)

Number: 19\_0215\_080616.dwg  
 Drawing: CATHODIC DETAILS.DWG (SCHILLE) (P:\PROJECTS & PROPOSALS\11119.00 MT. RUSHMORE RD. UTILITIES RECONSTRUCTION\DRAWINGS\SHEETS\PHASE 3 - SAINT JAMES TO KANSAS CITY)