

MINNESOTA DEPT. OF TRANSPORTATION

CITY OF ST. PAUL  
Department of Public Works  
CONSTRUCTION PLAN



for  
GRADING, CURB AND GUTTER, BITUMINOUS PAVING,  
STREET LIGHTING, STORM SEWER, STRIPING AND SIGNING

on *Michael Van Bensekom (2015)*

RAYMOND AVENUE

from  
HAMPDEN AVENUE TO ENERGY PARK DRIVE

S.P. NO. 164-020-133

ENERGY PARK DRIVE

from  
EVERETT COURT TO 200' WEST OF RAYMOND

CITY PROJECT NO. 15-P-1393

|                   |              |             |
|-------------------|--------------|-------------|
| GROSS LENGTH      | 2201.30 FEET | 0.417 MILES |
| BRIDGES LENGTH    | 0.00 FEET    | 0.000 MILES |
| EXCEPTIONS LENGTH | 0.00 FEET    | 0.000 MILES |
| NET LENGTH        | 2201.30 FEET | 0.417 MILES |

|                                   | RAYMOND AVENUE<br>DESIGN DESIGNATION          | ENERGY PARK DRIVE<br>DESIGN DESIGNATION |
|-----------------------------------|---|---|
| PRESENT ADT (2015)                | 6,500   | 14,575                                  |
| PROJECTED ADT (2035)              | 9,000   | 16,000                                  |
| FUNCTIONAL CLASSIFICATION:        | Arterial                                      | Arterial                                |
| NO. OF TRAFFIC LANES              | 2   | 3                                       |
| NO. OF PARKING LANES              | 1   | 0                                       |
| R VALUE                           | 15  | 15                                      |
| ΣN18 FACTOR                       | 1,819,372                                     | 3,259,619                               |
| DESIGN LOAD (TON)                 | 10  | 10                                      |
| DESIGN SPEED (MPH)                | 30  | 35                                      |
| STOPPING SIGHT DISTANCE BASED ON: | 3.5' HEIGHT OF EYE &<br>2.0' HEIGHT OF OBJECT | 2.0' HEIGHT OF OBJECT                   |

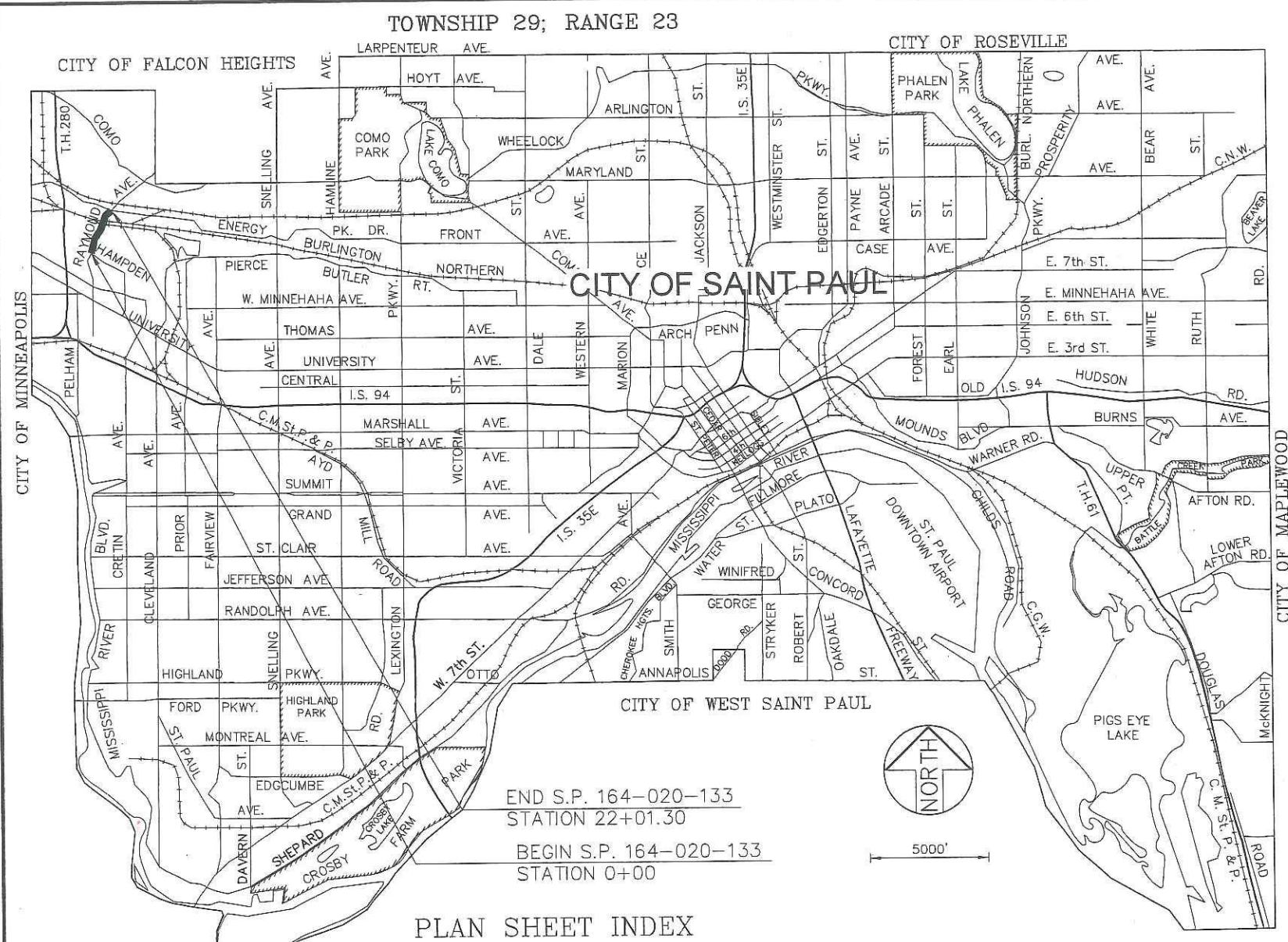
APPROVED: *Daniel A. Haak* DATE: 5/12/15  
City of St. Paul Manager Street Engineering/Construction Division

APPROVED: *John P. Muff* DATE: 5/12/15  
Saint Paul City Engineer

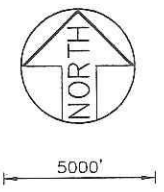
APPROVED: *[Signature]* DATE: 5/19/2015  
Ramsey County Engineer

RECOMMENDED FOR APPROVAL: *Elisa Battas* DATE: 5-19-2015  
District State Aid Engineer: Reviewed for Compliance with State Aid and/or Federal Aid Rules/Policy

RECOMMENDED FOR APPROVAL: *Elisa Battas* DATE: 5-19-2015  
Approved for State Aid and/or Federal Aid Funding: State Aid Engineer



END S.P. 164-020-133  
STATION 22+01.30  
BEGIN S.P. 164-020-133  
STATION 0+00



PLAN SHEET INDEX

1. TITLE SHEET
2. LEGEND, LOCATION MAP & CONSTRUCTION NOTES
3. STATEMENT OF ESTIMATED QUANTITIES
4. SEWER CHARTS
- 5.-11. TYPICAL SECTIONS
- 12.-18. STANDARD DETAIL PLATES, TABS & DETAILS
19. EROSION CONTROL PLAN
- 20.-24. EXISTING/REMOVAL & CONSTRUCTION PLANS
25. TREE PLANTING PLANS
- L1.-L9. LIGHTING PLANS
- SS1.-SS8. TRAFFIC SIGNAL PLANS
- ST1.-ST10. STRIPING AND SIGNING PLANS
- X1.-X6. CROSS SECTIONS

SPECIFICATIONS

THE 2014 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" AND THE 2014 EDITION OF THE "MATERIALS LAB SUPPLEMENTAL SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.  
ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM TO THE LATEST EDITION OF THE MMUTCD, INCLUDING THE LATEST "FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS"

THIS PLAN CONTAINS 59 SHEETS

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02 ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."



|          |     |   |
|----------|-----|---|
| DESIGNED | BRM | I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA |
| DRAWN    | ATT |   |
| APPROVED | BRM |   |

Signature: *Barbara R. Mundahl* Date: 5/12/15 Lic. No. 43099

PREPARED BY STREET ENGINEERING DIVISION FOR THE CITY OF ST. PAUL, DEPARTMENT OF PUBLIC WORKS  
**RAYMOND AVENUE-PHASE II**

|                    |  |
|--------------------|--|
| PROJECT: 15-P-1393 | STATE AID PROJECT NUMBER: 164-020-133, 062-646-025 |
| DRAWER: 12         | CAD NAME: PROJECTS/CURRENT/RAYMOND2/DWG-TITLE      |
| DWG. NO. 1580      | DATE: 5/12/15 SHEET NO. 1 OF 25 SHEETS             |

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EXISTING & REMOVAL LEGEND

- |  |   |  |                |
|--|---|--|----------------|
|  | EXISTING CURB & GUTTER  |  | ASPHALT DRIVE  |
|  | EXISTING CURB   |  | CONCRETE DRIVE |
|  | EXISTING WALK   |  | DIRT DRIVE     |
|  | HYDRANT   |  | GRAVEL DRIVE   |
|  | UTILITY POLE  |  | BRICK DRIVE    |
|  | LIGHT STANDARD  |  |                |
|  | TRAFFIC SIGNAL  |  |                |
|  | PULLBOX   |  |                |
|  | UTILITY MANHOLE   |  |                |
|  | EXISTING SURVEY MONUMENT  |  |                |
|  | EXISTING MANHOLE (NO. REFERS TO EXISTING SEWER CHART)   |  |                |
|  | EXISTING CATCH BASIN (NO. REFERS TO EXISTING SEWER CHART)                                     |  |                |
|  | EXISTING SIDE INLET   |  |                |
|  | EXISTING SEWER  |  |                |
|  | EXISTING PIPE OR C.B. LEAD, CONSTR. 8" BRICK BULKHEAD   |  |                |
|  | EXISTING UTILITY GATE VALVE   |  |                |
|  | EXISTING WATER VALVE  |  |                |
|  | EXISTING WATER MAIN   |  |                |
|  | EXISTING GAS MAIN   |  |                |
|  | EXISTING CONDUIT (L=LIGHTING, T=TELEPHONE, E=ELECTRIC, T.S.=TRAFFIC SIGNAL, F.O.=FIBER OPTIC) |  |                |
|  | EXISTING TREE (NO. REFERS TO SIZE)  |  |                |
|  | REMOVE CONCRETE CURB AND GUTTER   |  |                |
|  | REMOVE CONCRETE CURB  |  |                |
|  | REMOVE CONCRETE WALK  |  |                |
|  | REMOVE CONCRETE DRIVE   |  |                |
|  | REMOVE TREE (NO. REFERS TO SIZE)  |  |                |
|  | REMOVE STUMP  |  |                |
|  | REMOVE TRENCH PAVEMENT  |  |                |
|  | REMOVE CONCRETE STEPS   |  |                |

CONSTRUCTION LEGEND

- |  |   |
|--|---|
|  | CONSTRUCT PAVEMENT (SEE TYPICAL SECTIONS)   |
|  | CONSTRUCT TRENCH PAVEMENT   |
|  | CONSTRUCT CURB (SEE TYPICAL SECTION FOR TYPE)   |
|  | CONSTRUCT CURB & GUTTER (SEE TYPICAL SECTION FOR TYPE)  |
|  | ADJUST MANHOLE (NO. REFERS TO EXISTING SEWER CHART)   |
|  | ADJUST UTILITY MANHOLE  |
|  | CONSTRUCT CONCRETE WALK (4" THICK MAINLINE WALK AND OUTWALKS) (6" THICK IN PEDESTRIAN RAMP AREAS) |
|  | CONSTRUCT CONCRETE DRIVEWAY PAVEMENT (TYPE 6) 6" THICK UNLESS OTHERWISE NOTED.                    |
|  | ADJUST WATER GATE VALVE HOUSING   |
|  | PEDESTRIAN CURB RAMP - R INDICATES TRUNCATED DOMES  |
|  | CONSTRUCT CATCH BASIN (NO. REFERS TO SEWER CONST. CHART)  |
|  | CONSTRUCT CATCH BASIN LEAD (12" DIA. UNLESS OTHERWISE NOTED)                                      |
|  | NEW MANHOLE- TYPE AS NOTED (NO. REFERS TO SEWER CONST. CHART)                                     |
|  | NEW TYPE IV OR IV-A MANHOLE MANHOLE (NO. REFERS TO SEWER CONST. CHART)                            |
|  | CONSTRUCT POSSIBLE SANITARY SERVICE RECONNECTION  |
|  | LEAD WATER SERVICE  |
|  | WATER MAIN REDUCER  |

NOTES

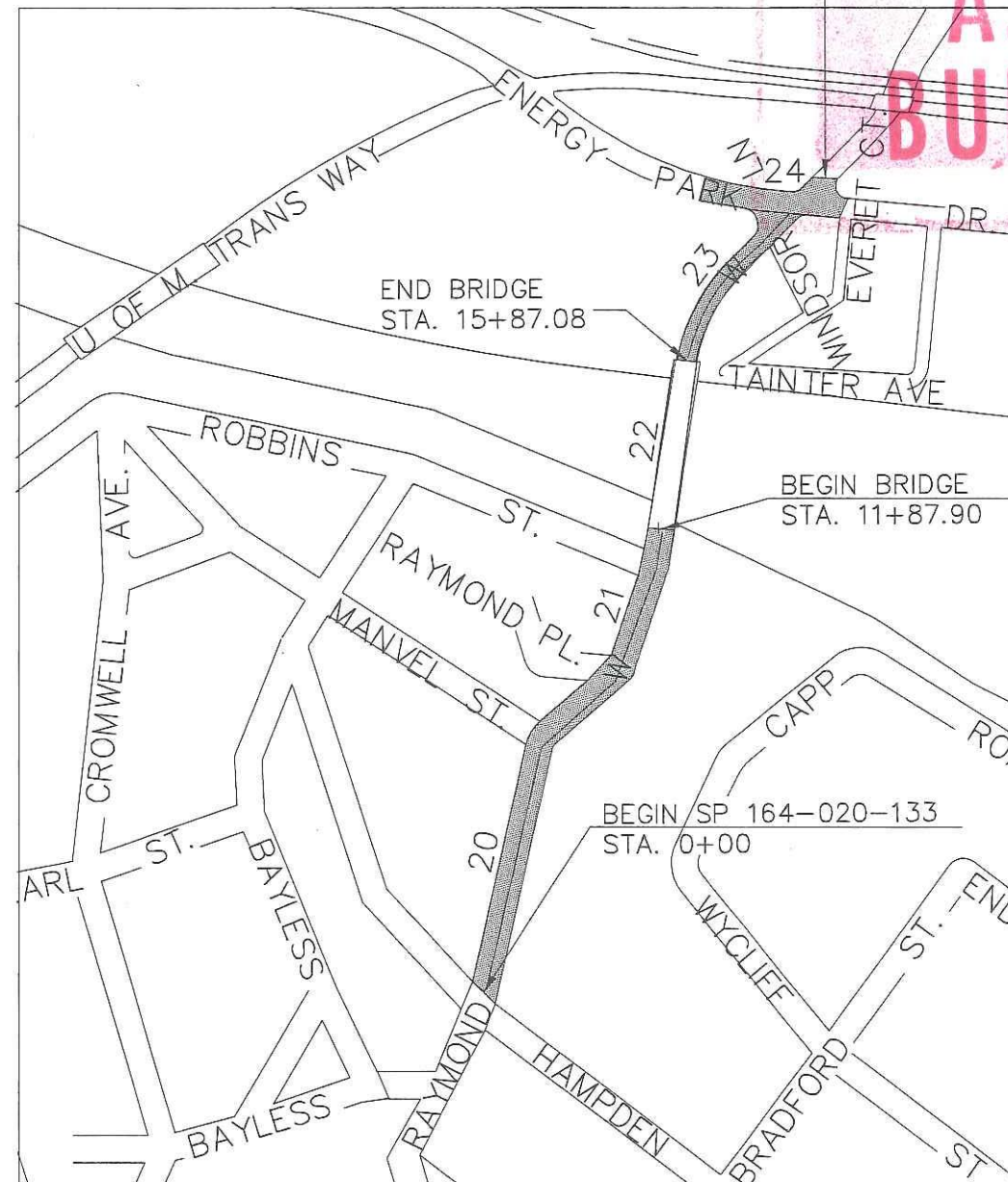
1. WATER, GAS, ELECTRIC, TELEPHONE COMMUNICATION, SEWER AND T.V. CABLE LINES SHOWN ON THE DRAWINGS AND CROSS-SECTIONS ARE PLOTTED FROM THE BEST INFORMATION AVAILABLE AT THE TIME OF PLAN PREPARATION, BUT MAY NOT REFLECT ACTUAL LOCATIONS OR ELEVATIONS, THE CONTRACTOR SHALL VERIFY LOCATIONS OF ALL UTILITIES BEFORE BEGINNING CONSTRUCTION WHICH MAY BE AFFECTED BY A UTILITY CONFLICT. THE CONTRACTOR SHALL GIVE 48 HOURS NOTICE TO THE OWNERS OF ALL KNOWN UTILITIES BEFORE STARTING ANY OPERATIONS AFFECTING THOSE PROPERTIES, OR BEGINNING EXCAVATION IN THE VICINITY OF THOSE PROPERTIES. THE CONTRACTOR'S ATTENTION IS DIRECTED TO SECTION 1507 IN THE STANDARD SPECIFICATIONS.
2. ALL CURB RADII 20 FEET UNLESS OTHERWISE NOTED.
3. CONSTRUCT A 3 FOOT CONCRETE OUTWALK AT EACH RESIDENCE OR AS DIRECTED BY THE ENGINEER.
4. WHERE EXISTING UTILITIES ARE IN CONFLICT WITH SEWER CONSTRUCTION, THE UTILITY COMPANY WILL RELOCATE, OFFSET OR SUPPORT THE UTILITY UNLESS OTHERWISE INDICATED ON THE PLAN SHEET OR STATED IN THE SPECIAL PROVISIONS.
5. WHERE EXISTING FIRE HYDRANTS AND/OR LIGHT STANDARDS CONFLICT WITH SEWER CONSTRUCTION, THEY WILL BE RELOCATED BY OTHERS.
6. GAS MAINS SHOWN ON THE PLAN SHEETS ARE EXISTING MAINS, IN CONJUNCTION WITH THIS SEWER AND PAVING PROJECT, XCEL ENERGY MAY ABANDON SOME OF THE GAS MAINS IN THE AREA AND CONSTRUCT NEW MAINS IN THE SIDEWALK AREA.
7. SOIL CLASSIFICATION SHOWN ON SOIL BORINGS IS ACCORDING TO A.S.T.M. DESIGNATION D2487 "STANDARD TEST METHOD FOR CLASSIFICATION OF SOILS FOR ENGINEERING PURPOSES".
8. ALL CONCRETE WALK IN QUADRANT AREAS AT THE CORNERS OF INTERSECTIONS SHALL BE 6" THICK.
9. RECORDS INDICATE THERE ARE PROPERTY IRONS AT THE BLOCK CORNERS IN THE PROJECT AREA. DO NOT DISTURB THESE IRONS WHEN REMOVING CONCRETE PANELS. IF REMOVED, REPLACEMENT BY A LICENSED SURVEYOR, AT THE CONTRACTOR'S EXPENSE
10. CONTRACTOR SHALL PROVIDE OSHA COMPLIANT TRENCH BOXES FOR ALL SPRWS TRENCH EXCAVATION. CONTRACTOR SHALL PROVIDE REQUIRED TRENCH BOX SIZES AS LISTED IN SPECIFICATION 2504. NO COMPENSATION WILL BE PROVIDED FOR WORK STOPPAGES CAUSED BY FAILURE TO PROVIDE APPROPRIATE OSHA APPROVED TRENCH BOX REQUIREMENTS.

NOTE -  
CONTRACTOR MAY BE ASKED TO EXCAVATE FOR LEAD WATER SERVICE REPLACEMENTS. PAY AS BID ITEM 2504.603, "WATER SERVICE TRENCH EXCAVATION". LOCATIONS FOR WATER DISTRIBUTION SYSTEM BID ITEMS UNDER 2504.602, 2504.603, AND 2504.604 ARE NOT COMPLETELY SHOWN ON PLANS - WORK SHALL BE DIRECTED IN THE FIELD BY SAINT PAUL REGIONAL WATER SERVICES WITH PAYMENT MADE AT THE CONTRACT BID PRICE FOR THE APPROPRIATE BID ITEM.

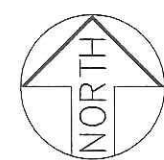
The subsurface utility information in this plan is utility level D. This quality level was determined according to the guidelines of CI/ASCE 38-02 entitled "Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data."

UTILITIES WHICH ARE SHOWN HAVE BEEN LOCATED ON THE PLANS AS ACCURATELY AS POSSIBLE; HOWEVER, THE CITY DOES NOT GUARANTEE THAT ALL UTILITIES ARE SHOWN, OR IF SHOWN, ARE IN THE EXACT LOCATIONS INDICATED ON THE PLANS. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY GOPHER STATE ONE CALL, 651-454-0002, BEFORE STARTING CONSTRUCTION IN A GIVEN AREA WHICH MAY BE AFFECTED BY CONSTRUCTION, REQUESTING UTILITY LOCATIONS IN THE FIELD. THE CONTRACTOR SHALL PROVIDE FOR A CONTINUANCE OF FLOW OF EXISTING SEWERS AND OTHER FACILITIES INTERRUPTED BY OR ON ACCOUNT OF THE WORK.

END SP 164-020-133  
STA. 22+01.30



AS BUILT



15 PLAN SHEET NUMBER  
 STREET PAVING  
 STREET PAVING & WATER MAIN REPLACEMENT

LEGEND  
STANDARD DETAILS  
LOCATION AREA MAP

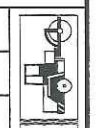
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|          |     |   |
|----------|-----|---|
| DESIGNED | BRM | I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA<br><br>Signature: <i>Barbara R. MundaHL</i> Date: 5/12/15<br>BARBARA R. MUNDAHL Lic. No. 43099 |
| DRAWN    | ATT |   |
| APPROVED | BRM |   |

PREPARED BY STREET ENGINEERING DIVISION FOR THE CITY OF ST. PAUL, DEPARTMENT OF PUBLIC WORKS

RAYMOND AVENUE-PHASE II

|                    |  |
|--------------------|--|
| PROJECT: 13-T-1319 | STATE AID PROJECT NUMBER: 164-020-133, 062-646-025 |
| DRAWER: 12         | CAD NAME: PROJECTS/CURRENT/RAYMOND/Raymond-legend  |
| DWG. NO. 1580      | DATE: 5/12/15 SHEET NO. 2 OF 25 SHEETS             |



AS  
BUILT

| RAYMOND AVENUE S.P. 164-020-133, CITY PROJECT NO. 15-P-1393<br>STATEMENT OF ESTIMATED QUANTITIES |   |          |                                 |                                     |                                 |                         |                         |                  |
|--|---|----------|---------------------------------|-------------------------------------|---------------------------------|-------------------------|-------------------------|------------------|
| ITEM NO.   | ITEM  | UNIT     | FEDERAL PARTICIPATING           |                                     |                                 | Non-Participating LOCAL | Non-Participating LOCAL | TOTAL QUANTITIES |
|  |   |          | SP 164-020-133 ROADWAY QUANTITY | SP 164-020-133 STORM SEWER QUANTITY | SP 062-646-025 ROADWAY QUANTITY | SANITARY SEWER QUANTITY | WATER QUANTITY          |                  |
| 2021.501   | MOBILIZATION  | LUMP SUM | 0.290                           | 0.008                               | 0.635                           | 0.025                   | 0.042                   | 1.000            |
| 2041.610   | TRAINEES  | HOUR     | 400                             |                                     |                                 |                         |                         | 400              |
| 2101.502   | CLEARING  | TREE     |                                 |                                     | 4                               |                         |                         | 4                |
| 2101.507   | GRUBBING  | TREE     |                                 |                                     | 8                               |                         |                         | 8                |
| 2101.507   | TREE ROOT REMOVAL   | TREE     |                                 |                                     | 20                              |                         |                         | 20               |
| 2101.507   | WOOD CHIP DISPOSAL  | TREE     | 4                               |                                     |                                 |                         |                         | 4                |
| 2102.502   | PAVEMENT MARKING REMOVAL  | LIN. FT. |                                 |                                     | 3,400                           |                         |                         | 3,400            |
| 2102.501   | PAVEMENT MARKING REMOVAL  | SQ. FT.  |                                 |                                     | 100                             |                         |                         | 100              |
| 2104.501   | REMOVE CONCRETE CURB OR CURB & GUTTER                             | LIN. FT. |                                 |                                     | 4,106                           |                         |                         | 4,106            |
| 2104.501   | REMOVE LIGHTING CONDUCTOR   | LIN. FT. | 3,504                           |                                     |                                 |                         |                         | 3,504            |
| 2104.501   | REMOVE WATER MAIN   | LIN. FT. |                                 |                                     |                                 |                         | 473                     | 473              |
| 2104.502   | REMOVE CONCRETE WALK  | SQ. FT.  |                                 |                                     | 13,508                          |                         | 100                     | 13,608           |
| 2104.505   | REMOVE CONCRETE DRIVEWAY PAVEMENT                                 | SQ. YD.  |                                 |                                     | 142                             |                         |                         | 142              |
| 2104.505   | REMOVE PAVEMENT   | SQ. YD.  |                                 |                                     | 11,086                          |                         |                         | 11,086           |
| 2104.509   | REMOVE CATCH BASIN OR MAN-HOLE                                    | EACH     |                                 |                                     | 18                              |                         |                         | 18               |
| 2104.509   | REMOVE LIGHT BASE FOUNDATION                                      | EACH     | 18                              |                                     |                                 |                         |                         | 18               |
| 2104.509   | REMOVE LIGHT LINT   | EACH     | 18                              |                                     |                                 |                         |                         | 18               |
| 2104.509   | REMOVE SERVICE CABINET  | EACH     |                                 |                                     | 1                               |                         |                         | 1                |
| 2104.509   | REMOVE HAND-HOLE  | EACH     | 2                               |                                     |                                 |                         |                         | 2                |
| 2104.509   | REMOVE SIGN PANEL TYPE C  | EACH     |                                 |                                     | 34                              |                         |                         | 34               |
| 2104.509   | REMOVE SIGNAL TYPE C  | EACH     |                                 |                                     | 24                              |                         |                         | 24               |
| 2104.509   | REMOVE SIGNAL SYSTEM  | EACH     |                                 |                                     | 1                               |                         |                         | 1                |
| 2104.513   | SAWING PAVEMENT   | LIN. FT. | 314                             |                                     |                                 |                         |                         | 314              |
| 2105.501   | COMMON EXCAVATION (PI)  | CU. YD.  | 689                             |                                     | 3,640                           |                         |                         | 4,339            |
| 2105.507   | SUBGRADE EXCAVATION   | CU. YD.  | 653                             |                                     | 3185                            |                         |                         | 3,838            |
| 2105.509   | GRANULAR BORROW   | TON      | 1,175                           |                                     | 5733                            |                         |                         | 6,908            |
| 2118.501   | AGGREGATE SURFACING, CLASS 5                                      | TON      | 50                              |                                     |                                 |                         |                         | 50               |
| 2123.510   | STREET SWEEPER (WITH PICK UP BROOM)                               | HOUR     | 117                             | 3                                   | 253                             | 10                      | 17                      | 400              |
| 2130.501   | WATER   | M GALLON | 77                              | 2                                   | 169                             | 7                       | 11                      | 266              |
| 2211.503   | AGGREGATE BASE PLACED (C.V.) CLASS 5 (PI)                         | CU. YD.  | 1,250                           |                                     | 4,353                           | 0                       | 0                       | 5,603            |
| 2257.502   | BITUMINOUS MATERIAL FOR TACK COAT                                 | GALLON   | 177                             |                                     | 834                             |                         |                         | 1,011            |
| 2380.501   | TYPE SPWEA340F WEARING COURSE MIXTURE                             | TON      | 380                             |                                     | 1,855                           |                         |                         | 2,235            |
| 2380.501   | TYPE SPWEA330B WEARING COURSE MIXTURE                             | TON      | 295                             |                                     | 1,388                           |                         |                         | 1,674            |
| 2380.503   | TYPE SPWEA330B WEARING COURSE MIXTURE, 3" THICK                   | SQ. YD.  | 70                              |                                     |                                 |                         |                         | 70               |
| 2481.518   | WATERPROOF LINER  | SQ. FT.  | 1,292                           |                                     |                                 |                         |                         | 1,292            |
| 2503.511   | 8" P.V.C. C-900   | LIN. FT. |                                 |                                     |                                 | 172                     |                         | 172              |
| 2503.541   | 15" R.C. PIPE SEWER DESIGN 3006, CLASS V                          | LIN. FT. | 730                             |                                     |                                 |                         |                         | 730              |
| 2503.602   | CONNECT TO EXISTING STRUCTURE                                     | EACH     | 11                              |                                     |                                 |                         |                         | 11               |
| 2503.602   | SANITARY SEWER SERVICE REPAIR EXCAVATION 14' OR LESS AT MAIN      | EACH     |                                 |                                     |                                 | 1                       |                         | 1                |
| 2503.602   | SANITARY SEWER SERVICE REPAIR EXCAVATION GREATER THAN 14' AT MAIN | EACH     |                                 |                                     |                                 | 1                       |                         | 1                |
| 2503.603   | SANITARY SEWER SERVICE REPAIR 14' OR LESS AT MAIN                 | LIN. FT. |                                 |                                     |                                 | 30                      |                         | 30               |
| 2503.603   | SANITARY SEWER SERVICE REPAIR GREATER THAN 14' AT MAIN            | LIN. FT. |                                 |                                     |                                 | 30                      |                         | 30               |
| 2503.603   | TELEVIEW PROJECT SANITARY SEWER                                   | LIN. FT. |                                 |                                     |                                 | 1700                    |                         | 1,700            |
| 2504.601   | PIPE BURSTING   | LUMP SUM |                                 |                                     |                                 |                         |                         | 1                |
| 2504.602   | REPAIR VALVE BOX  | EACH     |                                 |                                     |                                 |                         | 1                       | 1                |
| 2504.602   | REPLACE VALVE BOX   | EACH     |                                 |                                     |                                 |                         | 1                       | 1                |
| 2504.602   | ADJUST SERVICE STOP BOX   | EACH     |                                 |                                     |                                 |                         | 2                       | 2                |
| 2504.602   | SERVICE STOP BOX  | EACH     |                                 |                                     |                                 |                         | 2                       | 2                |
| 2504.602   | WATER UTILITY HOLE  | EACH     |                                 |                                     |                                 |                         | 3                       | 3                |
| 2504.602   | EXCAVATION FOR WATER MAIN OFFSET TRENCH/ REPLACEMENT TRENCH       | EACH     |                                 |                                     |                                 |                         | 1                       | 1                |
| 2504.603   | WATER MAIN TRENCH   | LIN. FT. |                                 |                                     |                                 |                         | 1,700                   | 1,700            |
| 2504.603   | WATER SERVICE EXCAVATION  | LIN. FT. |                                 |                                     |                                 |                         | 60                      | 60               |
| 2504.604   | 2" INSULATION   | SQ. YD.  |                                 |                                     |                                 |                         | 14                      | 14               |
| 2506.503   | RECONSTRUCT BRICK MAN-HOLE - 6' DEPTH                             | EACH     |                                 |                                     |                                 | 2                       |                         | 2                |
| 2506.516   | CASTING ASSEMBLY  | EACH     |                                 | 25                                  |                                 |                         |                         | 25               |
| 2506.602   | ADJUST MAN-HOLE CASTING ASSEMBLY, 6" TO 6"                        | EACH     | 13                              |                                     |                                 |                         |                         | 13               |
| 2506.602   | ADJUST MAN-HOLE CASTING ASSEMBLY, 7" TO 17"                       | EACH     | 10                              |                                     |                                 |                         |                         | 10               |
| 2508.602   | CONSTRUCT MAN-HOLE, DESIGN TYPE IV                                | EACH     |                                 | 1                                   |                                 |                         |                         | 1                |
| 2508.602   | CONSTRUCT CATCH BASIN, DESIGN TYPE 7B                             | EACH     |                                 |                                     | 20                              |                         |                         | 20               |
| 2521.501   | 4" CONCRETE WALK  | SQ. FT.  | 4,587                           |                                     | 4,588                           |                         | 100                     | 9,275            |
| 2521.501   | 6" CONCRETE WALK  | SQ. FT.  | 1,552                           |                                     | 1,551                           |                         |                         | 3,103            |
| 2531.501   | CONCRETE CURB & GUTTER DESIGN B-624                               | LIN. FT. |                                 |                                     | 787                             |                         |                         | 787              |
| 2531.501   | CONCRETE CURB & GUTTER DESIGN B-612                               | LIN. FT. |                                 |                                     | 3,615                           |                         |                         | 3,615            |
| 2531.501   | CONCRETE CURB & GUTTER DESIGN B-612-Modified                      | LIN. FT. |                                 |                                     | 323                             |                         |                         | 323              |
| 2531.507   | 8" CONCRETE DRIVEWAY PAVEMENT                                     | SQ. YD.  |                                 |                                     | 154                             |                         |                         | 154              |
| 2531.602   | HAND FORM CONCRETE CURB   | LIN. FT. | 100                             |                                     |                                 |                         |                         | 100              |

| RAYMOND AVENUE S.P. 164-020-133, CITY PROJECT NO. 15-P-1393<br>STATEMENT OF ESTIMATED QUANTITIES |  |          |                                 |                                     |                                 |                         |                         |                  |
|--|--|----------|---------------------------------|-------------------------------------|---------------------------------|-------------------------|-------------------------|------------------|
| ITEM NO.   | ITEM   | UNIT     | FEDERAL PARTICIPATING           |                                     |                                 | Non-Participating LOCAL | Non-Participating LOCAL | TOTAL QUANTITIES |
|  |  |          | SP 164-020-133 ROADWAY QUANTITY | SP 164-020-133 STORM SEWER QUANTITY | SP 062-646-025 ROADWAY QUANTITY | SANITARY SEWER QUANTITY | WATER QUANTITY          |                  |
| 2531.603   | HAND FORM CONCRETE CURB, DESIGN V                            | LIN. FT. | 50                              |                                     | 50                              |                         |                         | 100              |
| 2531.618   | TRUNCATED DOME   | SQ. FT.  | 150                             |                                     | 150                             |                         |                         | 300              |
| 2540.602   | CONSTRUCT SURVEY MONUMENT                                    | EACH     |                                 |                                     | 10                              |                         |                         | 10               |
| 2545.511   | LIGHTING UNIT TYPE L10, LED EQ                               | EACH     | 17                              |                                     |                                 |                         |                         | 17               |
| 2545.513   | LUMINAIRE TYPE R100  | EACH     | 17                              |                                     |                                 |                         |                         | 17               |
| 2545.515   | LIGHT BASE FOUNDATION TYPE STANDARD                          | EACH     | 17                              |                                     |                                 |                         |                         | 17               |
| 2545.523   | 1-1/2" NMC   | LIN. FT. | 4,121                           |                                     |                                 |                         |                         | 4,121            |
| 2545.531   | 1C #4 AWG  | LIN. FT. | 12,363                          |                                     |                                 |                         |                         | 12,363           |
| 2545.531   | 1C #8 AWG INSULATED  | LIN. FT. | 4,121                           |                                     |                                 |                         |                         | 4,121            |
| 2545.541   | METERED LIGHTING SERVICE -POLE MOUNTED                       | EACH     | 1                               |                                     |                                 |                         |                         | 1                |
| 2545.553   | HAND-HOLE TYPE L   | EACH     | 6                               |                                     |                                 |                         |                         | 6                |
| 2563.601   | TRAFFIC CONTROL  | LUMP SUM | 0.290                           | 0.008                               | 0.635                           | 0.025                   | 0.042                   | 1.000            |
| 2563.601   | TEMPORARY PEDESTRIAN ACCESS ROUTE                            | LUMP SUM | 0.290                           | 0.008                               | 0.635                           | 0.025                   | 0.042                   | 1.000            |
| 2563.602   | CHANGEABLE MESSAGE SIGN                                      | EACH     | 1                               |                                     | 1                               |                         |                         | 2                |
| 2564.531   | SIGN PANELS TYPE D   | SQ.FT.   |                                 |                                     | 55                              |                         |                         | 55               |
| 2564.533   | F&I SIGN PANEL TYPE C  | SQ.FT.   |                                 |                                     | 191                             |                         |                         | 191              |
| 2564.602   | INSTALL SIGN COLLAR  | EACH     |                                 |                                     | 7                               |                         |                         | 7                |
| 2564.602   | F&I SIGN POST  | EACH     |                                 |                                     | 24                              |                         |                         | 24               |
| 2564.602   | F&I SIGN POST-SPECIAL-ROUND                                  | EACH     |                                 |                                     | 3                               |                         |                         | 3                |
| 2565.511   | TRAFFIC CONTROL SIGNAL SYSTEM                                | SIG SYS  |                                 |                                     | 1                               |                         |                         | 1                |
| 2565.601   | TRAFFIC CONTROL INTERCONNECTION                              | LS       |                                 |                                     | 1                               |                         |                         | 1                |
| 2565.616   | TEMPORARY SIGNAL SYSTEM                                      | SYS      |                                 |                                     | 1                               |                         |                         | 1                |
| 2571.502   | DECIDUOUS TREE 2.5" CAL B&B                                  | TREE     | 27                              |                                     |                                 |                         |                         | 27               |
| 2573.530   | STORM DRAIN INLET PROTECTION                                 | EACH     | 12                              |                                     | 26                              | 1                       |                         | 41               |
| 2573.602   | INTERIM SEDIMENT CONTROL FOR CATCH BASINS                    | EACH     | 7                               |                                     | 15                              |                         | 1                       | 23               |
| 2574.525   | TOPSOIL BORROW (L.V.)  | CU. YD.  |                                 |                                     | 391                             |                         |                         | 391              |
| 2575.505   | SODDING, TYPE LAWN   | SQ. YD.  |                                 |                                     | 2,515                           |                         | 4                       | 2,519            |
| 2575.513   | HARDWOOD MULCH, TYPE 6 - DOUBLE SHREDDED                     | CU. YD.  | 20                              |                                     |                                 |                         |                         | 20               |
| 2575.607   | SELECT TOPSOIL BORROW (SOIL FOR MEDIAN)                      | CU. YD.  | 230                             |                                     |                                 |                         |                         | 230              |
| 2582.501   | PAVEMENT MESSAGE (LEFT ARROW) - POLY PREFORM-INLAY           | EACH     |                                 |                                     | 7                               |                         |                         | 7                |
| 2582.501   | PAVEMENT MESSAGE (LEFT ARROW) - POLY PREFORM-GROUND IN       | EACH     |                                 |                                     | 1                               |                         |                         | 1                |
| 2582.501   | PAVEMENT MESSAGE (TRANSITION ARROW)-PAINT                    | EACH     |                                 |                                     | 2                               |                         |                         | 2                |
| 2582.501   | PAVEMENT MESSAGE (BIKE LANE ARROW) - POLY PREFORM - INLAY    | EACH     |                                 |                                     | 21                              |                         |                         | 21               |
| 2582.501   | PAVEMENT MESSAGE (BIKE LANE ARROW) - POLY PREFORM -GROUND IN | EACH     |                                 |                                     | 3                               |                         |                         | 3                |
| 2582.502   | 4" SOLID LINE WHITE - POLY PREFORM (INLAY)                   | LIN. FT. |                                 |                                     | 4,200                           |                         |                         | 4,200            |
| 2582.502   | 4" DOUBLE SOLID LINE YELLOW - POLY PREFORM (INLAY)           | LIN. FT. |                                 |                                     | 2,600                           |                         |                         | 2,600            |
| 2582.502   | 4" DOTTED LINE WHITE-POLY PREFORM (INLAY)                    | LIN. FT. |                                 |                                     | 300                             |                         |                         | 300              |
| 2582.502   | 8" SOLID LINE WHITE - POLY PREFORM (INLAY)                   | LIN. FT. |                                 |                                     | 30                              |                         |                         | 30               |
| 2582.502   | 8" SOLID LINE YELLOW - POLY PREFORM (INLAY)                  | LIN. FT. |                                 |                                     | 240                             |                         |                         | 240              |
| 2582.502   | 12" SOLID LINE WHITE - POLY PREFORM (INLAY)                  | LIN. FT. | 312                             |                                     | 313                             |                         |                         | 625              |
| 2582.502   | 4" SOLID LINE WHITE - POLY PREFORM (GROUND IN)               | LIN. FT. |                                 |                                     | 2,100                           |                         |                         | 2,100            |
| 2582.502   | 4" DOUBLE SOLID LINE YELLOW - POLY PERFORM (GROUND IN)       | LIN. FT. |                                 |                                     | 500                             |                         |                         | 500              |
| 2582.502   | 4" DOTTED LINE WHITE-POLY PREFORM (GROUND IN)                | LIN. FT. |                                 |                                     | 60                              |                         |                         | 60               |
| 2582.502   | 8" SOLID LINE WHITE - POLY PREFORM (GROUND IN)               | LIN. FT. |                                 |                                     | 30                              |                         |                         | 30               |
| 2582.502   | 8" SOLID LINE YELLOW - POLY PREFORM (GROUND IN)              | LIN. FT. |                                 |                                     | 10                              |                         |                         | 10               |
| 2582.502   | 4" SOLID LINE WHITE-PAINT                                    | LIN. FT. |                                 |                                     | 80                              |                         |                         | 80               |
| 2582.502   | 4" DOUBLE SOLID LINE YELLOW-PAINT                            | LIN. FT. |                                 |                                     | 700                             |                         |                         | 700              |
| 2582.502   | PAVEMENT MESSAGE (SOLID GREEN)-PERFORMED THERMOPLASTIC       | SQ.FT.   | 900                             |                                     |                                 |                         |                         | 900              |

REVISED 6/15/15

STATEMENT OF ESTIMATED QUANTITIES

Z:\streets\projects\current\Raymond\DWG\03\_RAYMOND-estimate.dwg Jun 25, 2015 - 2:22pm

|  |          |     |   |  |          |           |                           |   |
|--|----------|-----|---|--|----------|-----------|---------------------------|---|
|  | DESIGNED | BRM | I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA<br><br>Signature: <i>Barbara R. Mundaal</i> Date: 5/20/15<br>BARBARA R. MUNDAAL Lic. No. 43099 | PREPARED BY STREET ENGINEERING DIVISION FOR THE CITY OF ST. PAUL, DEPARTMENT OF PUBLIC WORKS<br><br><h2 style="text-align: center;">RAYMOND AVENUE-PHASE II</h2> | PROJECT: | 15-P-1393 | STATE AID PROJECT NUMBER: | 164-020-133, 062-646-025                  |
|  | DRAWN    | ATT |   |  | DRAWER:  | 12        | CAD NAME:                 | PROJECTS/CURRENT/RAYMOND/Raymond-estimate |
|  | APPROVED | BRM |   |  | DWG. NO. | 1580      | DATE:                     | 5/20/15                                   |

EXISTING STORM AND SANITARY SEWER STRUCTURES

| STR NO.                      | STATION  | LT.   | CENTER | RT.   | REM CB | ADJ MH<br>0-6" | ADJ MH<br>7"-17" | RECONSTRUCT<br>MH |
|------------------------------|----------|-------|--------|-------|--------|----------------|------------------|-------------------|
| <b>Raymond (SHEET 20)</b>    |          |       |        |       |        |                |                  |                   |
| 1                            | 0+0.55   | 58.95 |        |       |        | X              |                  |                   |
| 2                            | 0+47.94  | 26.77 |        |       | X      |                |                  |                   |
| 3                            | 0+61.60  | 26.65 |        |       | X      |                |                  |                   |
| 4                            | 1+26.10  |       |        | 4.26  |        | X              |                  |                   |
| 5                            | 3+29.13  |       | X      |       |        | X              |                  |                   |
| 6                            | 3+68.63  | 20.24 |        |       | X      |                |                  |                   |
| 7                            | 3+70.80  |       |        | 27.28 |        |                | X                |                   |
| 8                            | 3+99.27  |       |        | 20.31 | X      |                |                  |                   |
| 9                            | 4+54.96  |       |        | 26.63 |        |                | X                |                   |
| 10                           | 4+86.93  | 0.95  |        |       |        |                | X                |                   |
| 11                           | 5+20.42  |       |        | 26.71 |        | X              |                  |                   |
| 12                           | 5+94.51  |       |        | 27.05 |        | X              |                  |                   |
| 13                           | 6+05.41  | 11.22 |        |       |        | X              |                  |                   |
| 14                           | 6+12.18  | 40.7  |        |       | X      |                |                  |                   |
| 15                           | 6+36.67  |       | X      |       |        | X              |                  |                   |
| <b>Raymond (SHEET 21)</b>    |          |       |        |       |        |                |                  |                   |
| 16                           | 6+42.90  | 36.2  |        |       | X      |                |                  |                   |
| 17                           | 7+46.98  |       |        | 26.84 |        |                | X                |                   |
| 18                           | 7+49.61  | 19.49 |        |       | X      |                |                  |                   |
| 19                           | 7+55.78  |       |        | 1.44  |        | X              |                  |                   |
| 20                           | 7+64.60  | 34.19 |        |       | X      |                |                  |                   |
| 21                           | 8+11.29  | 36    |        |       | X      |                |                  |                   |
| 22                           | 8+25.17  |       |        | 21.59 | X      |                |                  |                   |
| 23                           | 8+25.66  |       |        | 28.32 |        |                | X                |                   |
| 24                           | 8+95.56  |       |        | 6.33  |        |                | X                |                   |
| 43                           | 9+20.58  |       |        | 27.09 |        | X              |                  |                   |
| 25                           | 10+78.40 | 39.99 |        |       |        |                | X                |                   |
| 26                           | 11+42.84 | 22.61 |        |       | X      |                |                  |                   |
| 27                           | 11+41.88 |       |        | 22.76 | X      |                |                  |                   |
| <b>Raymond (SHEET 22)</b>    |          |       |        |       |        |                |                  |                   |
| 28                           | 17+15.45 | 19.08 |        |       |        |                | X                |                   |
| 29                           | 17+54.86 |       |        | 23.23 | X      |                |                  |                   |
| 30                           | 17+60.41 | 20.61 |        |       | X      |                |                  |                   |
| 31                           | 17+87.00 | 2.36  |        |       |        |                |                  | X                 |
| 32                           | 17+92.93 |       |        | 5.2   |        |                | X                |                   |
| <b>Raymond (SHEET 23)</b>    |          |       |        |       |        |                |                  |                   |
| 33                           | 19+26.61 | 21.63 |        |       | X      |                |                  |                   |
| 34                           | 19+58.06 | 4.46  |        |       |        |                |                  | X                 |
| 35                           | 19+60.67 |       |        | 8.11  |        | X              |                  |                   |
| 36                           | 19+63.91 |       |        | 22.58 | X      |                |                  |                   |
| 37                           | 19+81.76 |       |        | 20.09 |        | X              |                  |                   |
| <b>EnergyPark (SHEET 24)</b> |          |       |        |       |        |                |                  |                   |
| 38                           | 3+22.84  |       |        | 22.79 | X      |                |                  |                   |
| 39                           | 3+33.64  |       | X      |       |        |                | X                |                   |
| 40                           | 3+49.81  |       |        | 5.73  |        | X              |                  |                   |
| 41                           | 3+48.16  | 25.73 |        |       | X      |                |                  |                   |
| 42                           | 3+82.41  |       | X      |       |        | X              |                  |                   |

PROPOSED STORM SEWER STRUCTURES

| STR NO.                         | STATION | LT.  | RT.  | MH      | CB | 15" RCP            |
|---------------------------------|---------|------|------|---------|----|--------------------|
| <b>Raymond2 (SHEET 20)</b>      |         |      |      |         |    |                    |
| 100                             | 0+49.4  | 20.8 |      |         | 7B | <del>59</del> 52   |
| 101                             | 0+59.8  | 21.3 |      |         | 7B | <del>10</del> 13   |
| 102                             | 3+68.6  | 21.0 |      |         | 7B | <del>48.1</del> 46 |
| 103                             | 3+99.3  |      | 18.9 |         | 7B | <del>29.2</del> 2  |
| <b>Raymond2 (SHEET 21)</b> 68.6 |         |      |      |         |    |                    |
| 104                             | 6+14.2  | 42.5 |      |         | 7B | <del>72.5</del> 58 |
| 105                             | 6+40.0  | 39.8 |      |         | 7B | <del>35.6</del> 32 |
| 106                             | 7+12.4  | 21.0 |      |         | 7B | <del>42.4</del> 66 |
| 107                             | 7+77.4  |      | 19.3 |         | 7B | <del>13.7</del> 4  |
| 108                             | 7+64.3  | 44.7 |      |         | 7B | <del>28.8</del> 39 |
| 109                             | 7+88.5  | 37.4 |      |         | 7B | <del>74.7</del> 49 |
| 120                             | 7+92.9  |      | 12.5 | TYPE IV |    | 33.4               |
| 110                             | 8+16.1  | 11.0 |      |         | 7B | <del>28.9</del> 43 |
| 111                             | 8+16.3  |      | 19.0 |         | 7B | <del>10.2</del>    |
| <b>Raymond2 (SHEET 22)</b>      |         |      |      |         |    |                    |
| 112                             | 11+42.9 | 20.1 |      |         | 7B | <del>37.3</del> 43 |
| 113                             | 11+42.0 |      | 19.2 |         | 7B | ON EXISTING LEAD   |
| <b>Raymond2 (SHEET 23)</b>      |         |      |      |         |    |                    |
| 114                             | 17+60.4 | 20.3 |      |         | 7B | <del>38.8</del> 46 |
| 115                             | 17+55.2 |      | 20.2 |         | 7B | <del>39.5</del> 17 |
| 116                             | 19+26.5 | 20.0 |      |         | 7B | <del>53.4</del> 63 |
| 117                             | 19+63.1 |      | 22.2 |         | 7B | 15.7               |
| <b>EnergyPark (SHEET 24)</b>    |         |      |      |         |    |                    |
| 118                             | 3+23.0  |      | 14.8 |         | 7B | <del>31.9</del> 30 |
| 119                             | 3+48.2  | 24.3 |      |         | 7B | 27.1               |

AS BUILT

- C900 PIPE  
- ON EXISTING LEAD  
- ATTACHED TO EXISTING LEAD DUE TO UTILITIES.  
- TIED INTO EXISTING LEAD 17' DUE TO UTILITIES.

← REPLACED TOP 6' OF MH C900 172' → MH 34  
← FULL RECONSTRUCT C900 20' → MH 35

SEWER STRUCTURES CHART

Z:\streets\freets\projects\current\Raymond2\DWG\04\_RAYMOND2-sewercharts.dwg Apr 28, 2015 - 8:52am

|          |     |
|----------|-----|
| DESIGNED | BRM |
| DRAWN    | ATT |
| APPROVED | BRM |

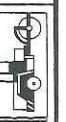
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

Signature: *Barbara R. MundaHL* Date: 4/28/15  
BARBARA R. MUNDAHL Lic. No. 43099

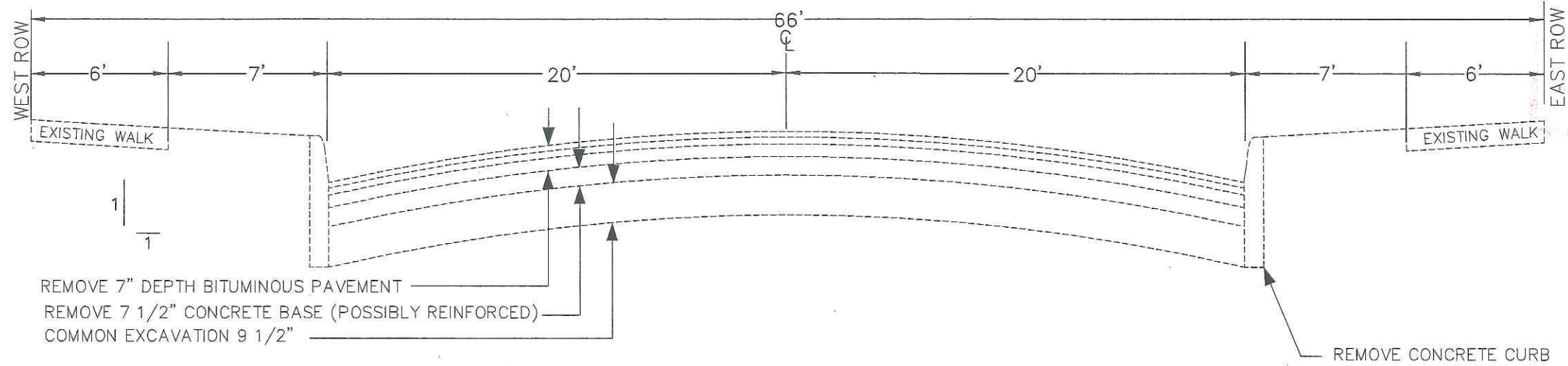
PREPARED BY STREET ENGINEERING DIVISION FOR THE CITY OF ST. PAUL, DEPARTMENT OF PUBLIC WORKS

RAYMOND AVENUE-PHASE II

|                    |  |
|--------------------|--|
| PROJECT: 15-P-1393 | STATE AID PROJECT NUMBER: 164-020-133, 062-646-025 |
| DRAWER: 12         | CAD NAME: PROJECTS/CURRENT/RAYMOND2/SEWER CHARTS   |
| DWG. NO. 1580      | DATE: 4/28/15 SHEET NO. 4 OF 25 SHEETS             |

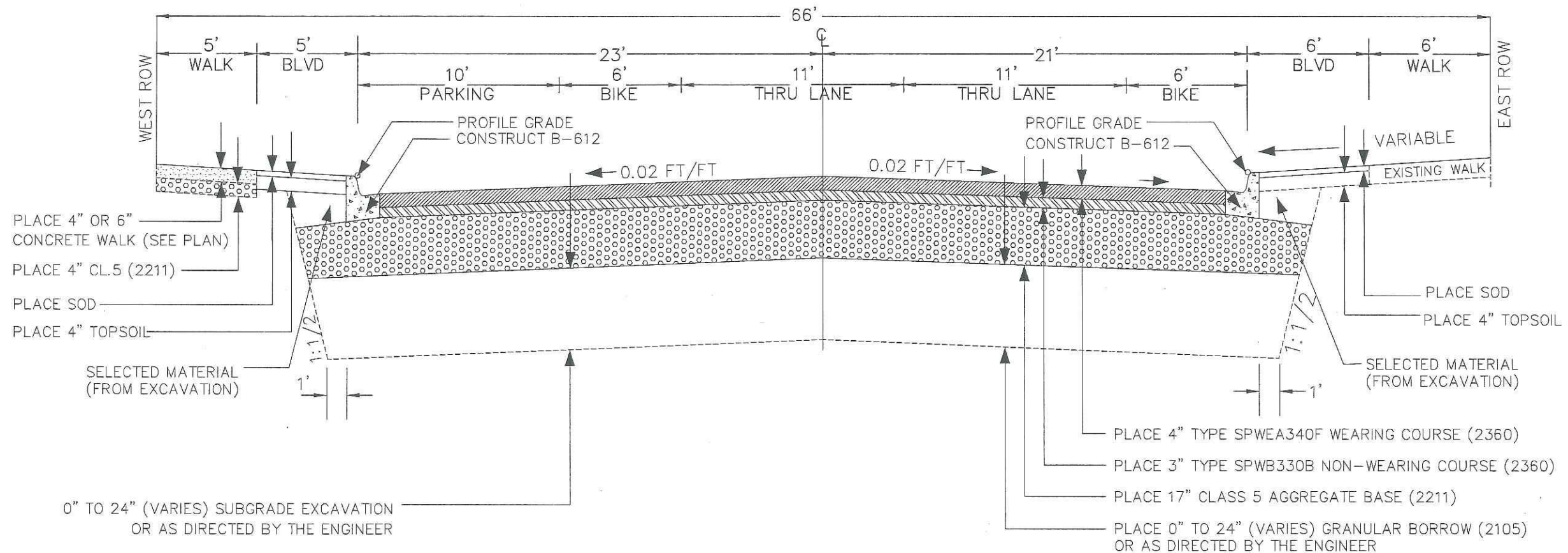


EXISTING TYPICAL SECTION  
 RAYMOND AVE - HAMPDEN TO RAYMOND PLACE  
 STA. 0+00 TO STA. 8+00.06



**AS  
BUILT**

PROPOSED TYPICAL SECTION  
 RAYMOND AVE - HAMPDEN TO RAYMOND PLACE  
 STA. 0+00 TO STA. 8+00.06



NOTE: 1. PLACE TACK COAT BETWEEN ALL BITUMINOUS LIFTS  
 2. WEARING COURSE TO BE PLACED IN TWO 2" LIFTS

RAYMOND TYPICAL SECTION  
 HAMPDEN TO RAYMOND PLACE

Z:\streets\projects\current\Raymond2\DWG\05\_06\_07\_08\_09\_10\_11--RAYMOND--typicals.dwg May 20, 2015 - 9:35am

|  |          |     |  |                |
|--|----------|-----|--|----------------|
|  | DESIGNED | BRM | I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA |                |
|  | DRAWN    | ATT | Signature: <i>Barbara R. Mundaahl</i>  | Date: 5/20/15  |
|  | APPROVED | BRM | BARBARA R. MUNDAHL   | Lic. No. 43099 |

PREPARED BY STREET ENGINEERING DIVISION FOR THE CITY OF ST. PAUL, DEPARTMENT OF PUBLIC WORKS

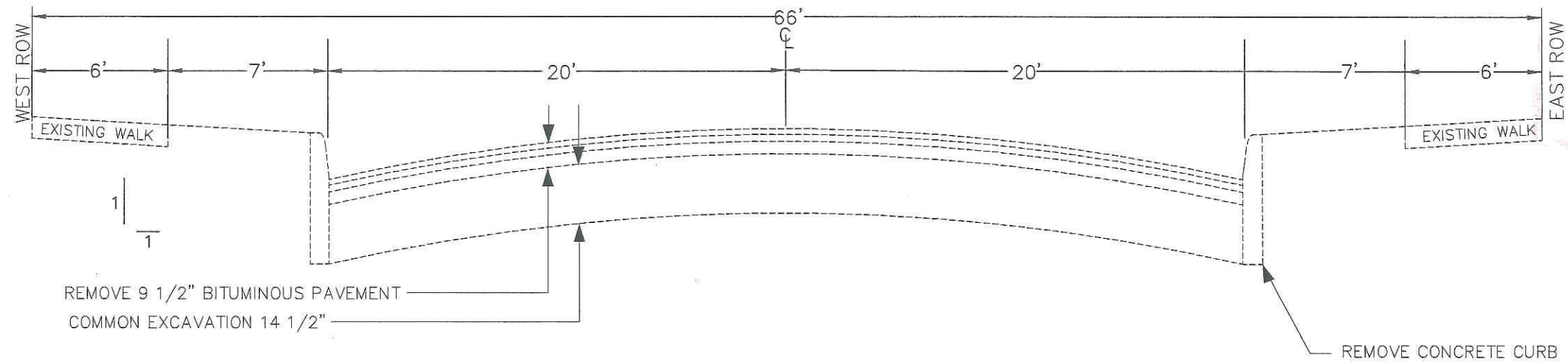
RAYMOND AVENUE-PHASE II

|                          |  |
|--------------------------|--|
| PROJECT: 15-P-1393       | STATE AID PROJECT NUMBER: 164-020-133, 062-646-025   |
| DRAWER: 12               | CAD NAME: PROJECTS/CURRENT/RAYMOND2/Raymond-typicals |
| DWG. NO. 1580            | DATE: 5/20/15  |
| SHEET NO. 5 OF 25 SHEETS |  |

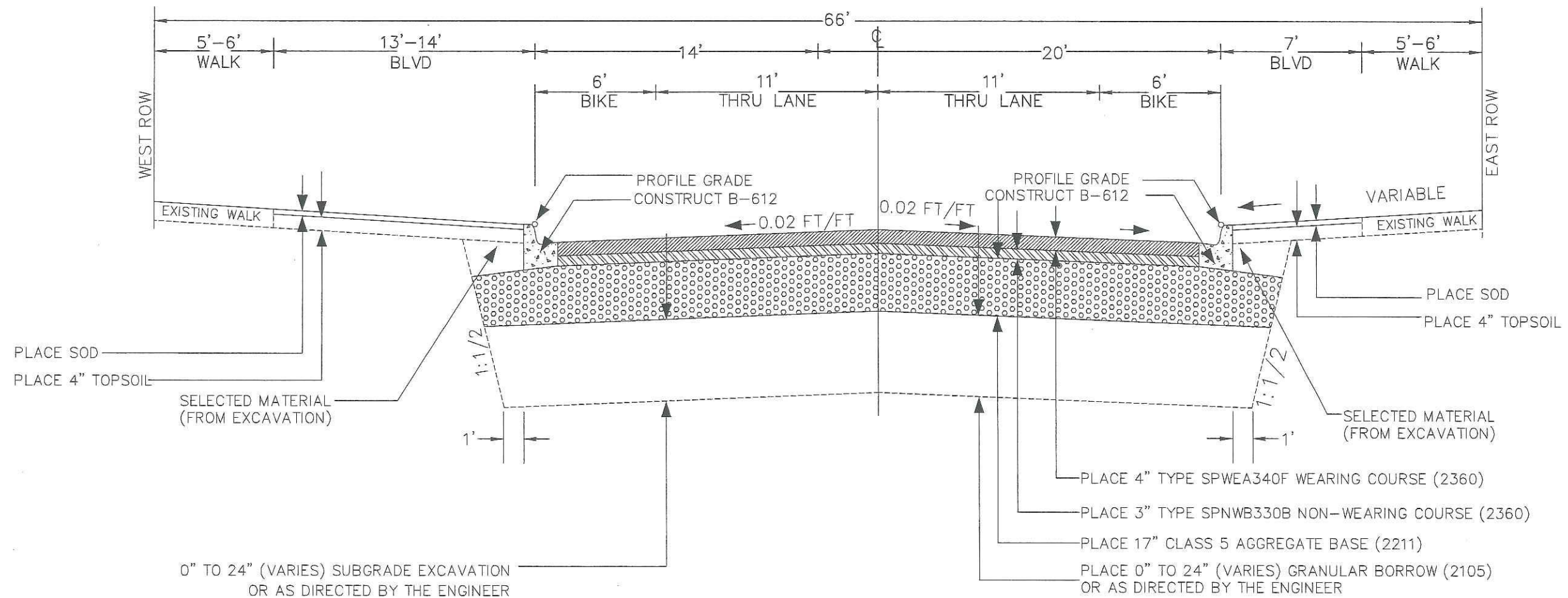


EXISTING TYPICAL SECTION  
 RAYMOND AVE - RAYMOND PLACE TO BRIDGE  
 STA. 8+00.06 TO STA. 11+87.90

**AS  
 BUILT**



PROPOSED TYPICAL SECTION  
 RAYMOND AVE - RAYMOND PLACE TO BRIDGE  
 STA. 8+00.06 TO STA. 11+87.90



NOTE: 1. PLACE TACK COAT BETWEEN ALL BITUMINOUS LIFTS  
 2. WEARING COURSE TO BE PLACED IN TWO 2" LIFTS

RAYMOND TYPICAL SECTION  
 RAYMOND PL TO BRIDGE STA. 11+87.90

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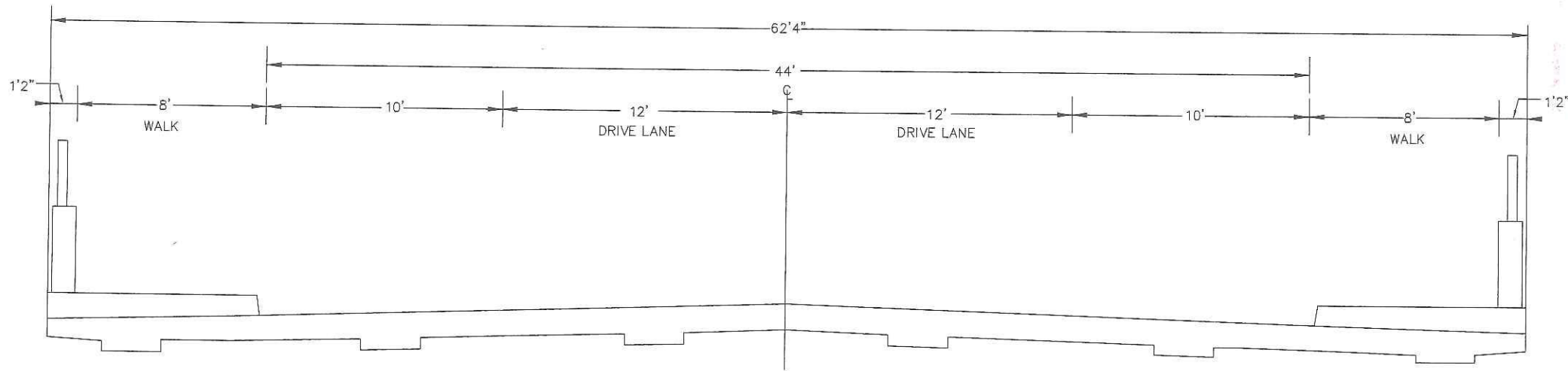
|          |     |   |
|----------|-----|---|
| DESIGNED | BRM | I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA<br>Signature: <i>Barbara R. MundaHL</i> Date: 5/20/15<br>BARBARA R. MUNDAHL Lic. No. 43099 |
| DRAWN    | ATT |   |
| APPROVED | BRM |   |

PREPARED BY STREET ENGINEERING DIVISION FOR THE CITY OF ST. PAUL, DEPARTMENT OF PUBLIC WORKS  
**RAYMOND AVENUE-PHASE II**

|          |           |                           |  |
|----------|-----------|---------------------------|--|
| PROJECT: | 15-P-1393 | STATE AID PROJECT NUMBER: | 164-020-133, 062-646-025                   |
| DRAWER:  | 12        | CAD NAME:                 | PROJECTS/CURRENT/RAYMOND2/Raymond-typicals |
| DWG. NO. | 1580      | DATE:                     | 5/20/15                                    |
|          |           | SHEET NO.                 | 6 OF 25 SHEETS                             |

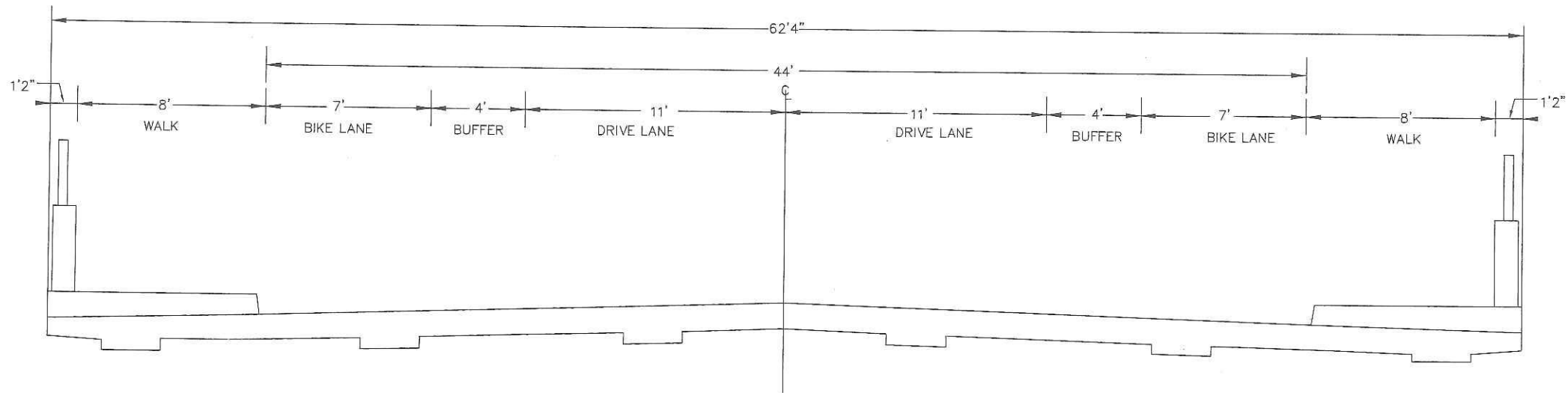
EXISTING BRIDGE TYPICAL SECTION  
 RAYMOND AVENUE BRIDGE #62546  
 STA. 11+87.90 TO STA. 15+87.08

AS  
 BUILT



1/1

PROPOSED BRIDGE TYPICAL SECTION  
 RAYMOND AVENUE BRIDGE #62546  
 STA. 11+87.90 TO STA. 15+87.08



1/1

NOTE: BRIDGE WILL NOT BE RECONSTRUCTED.  
 STRIPING TO BE ADDED FOR BUFFERED BIKE LANES  
 SEE STRIPING SHEET ST5

TYPICAL SECTION  
 RAYMOND BRIDGE  
 STA. 11+88 TO STA. 15+90

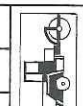
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|          |     |  |
|----------|-----|--|
| DESIGNED | BRM | I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.<br>Signature: <i>Barbara R. Munda</i><br>BARBARA R. MUNDAHL<br>Date: 4/23/15<br>Lic. No. 43099 |
| DRAWN    | ATT |  |
| APPROVED | BRM |  |

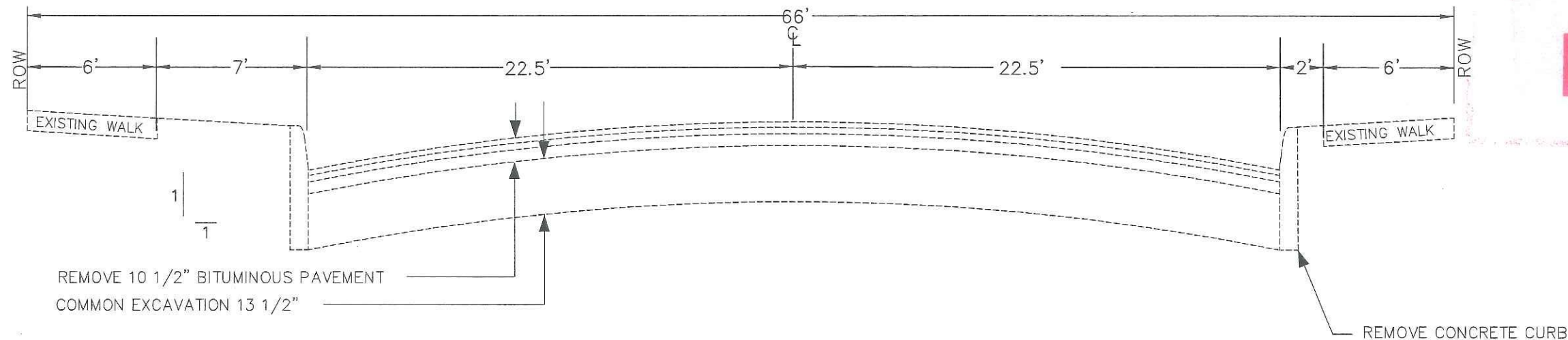
PREPARED BY STREET ENGINEERING DIVISION FOR THE CITY OF ST. PAUL, DEPARTMENT OF PUBLIC WORKS

RAYMOND AVENUE-PHASE II

|          |           |                           |   |
|----------|-----------|---------------------------|---|
| PROJECT: | 15-P-1393 | STATE AID PROJECT NUMBER: | 164-020-133, 062-646-025                  |
| DRAWER:  | 12        | CAD NAME:                 | PROJECTS/CURRENT/RAYMOND/Raymond-typicals |
| DWG NO.  | 1580      | DATE:                     | 4/23/15                                   |

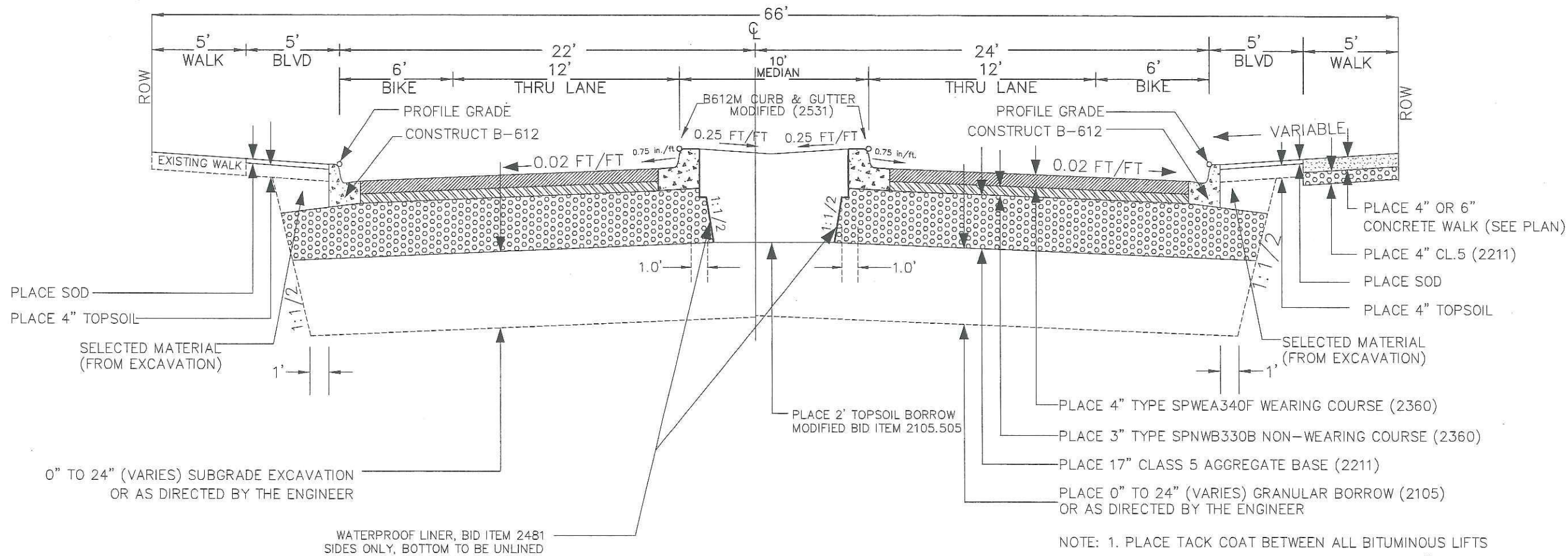


EXISTING TYPICAL SECTION  
RAYMOND AVE - RR BRIDGE (STA. 15+87.08) TO STA. 18+58.02



**AS  
BUILT**

PROPOSED TYPICAL SECTION  
RAYMOND AVE - RR BRIDGE (STA. 15+87.08) TO STA. 18+58.02



NOTE: 1. PLACE TACK COAT BETWEEN ALL BITUMINOUS LIFTS  
2. WEARING COURSE TO BE PLACED IN TWO 2" LIFTS

RAYMOND TYPICAL SECTION  
RR BRIDGE TO STA.18+50

Z:\streets\projects\current\Raymond2\DWG\05\_06\_07\_08\_09\_10\_11-RAYMOND-typicals.dwg May 20, 2015 - 9:46am

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| DESIGNED | BRM |
| DRAWN    | ATT |
| APPROVED | BRM |

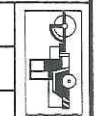
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

Signature: *Barbara R. MundaHL* Date: 5/20/15  
BARBARA R. MUNDAHL Lic. No. 43099

PREPARED BY STREET ENGINEERING DIVISION FOR THE CITY OF ST. PAUL, DEPARTMENT OF PUBLIC WORKS

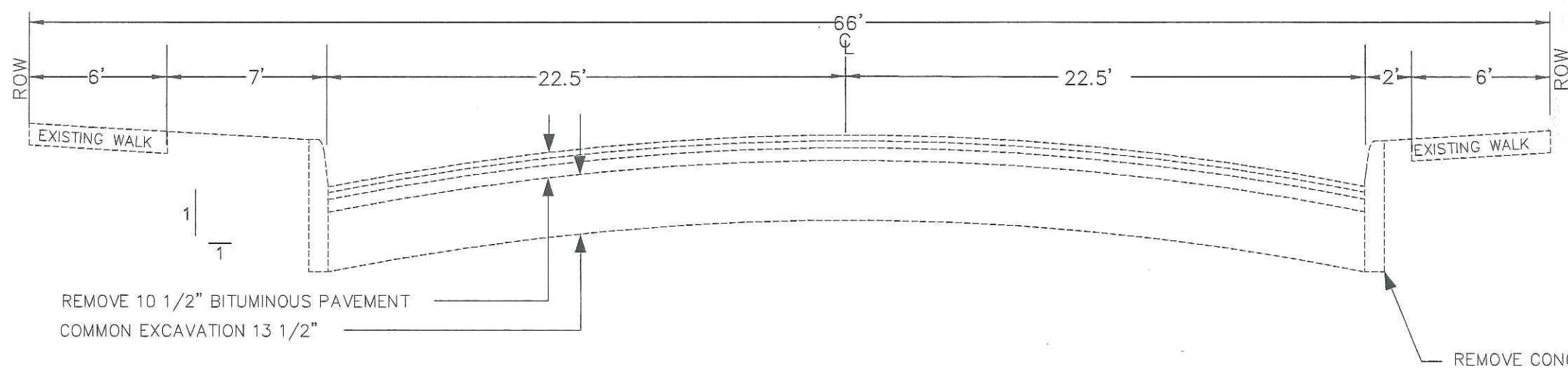
**RAYMOND AVENUE-PHASE II**

|          |           |                           |  |
|----------|-----------|---------------------------|--|
| PROJECT: | 15-P-1393 | STATE AID PROJECT NUMBER: | 164-020-133, 062-646-025                   |
| DRAWER:  | 12        | CAD NAME:                 | PROJECTS/CURRENT/RAYMOND2/Raymond-typicals |
| DWG. NO. | 1580      | DATE:                     | 5/20/15                                    |
|          |           | SHEET NO.                 | 8 OF 25 SHEETS                             |



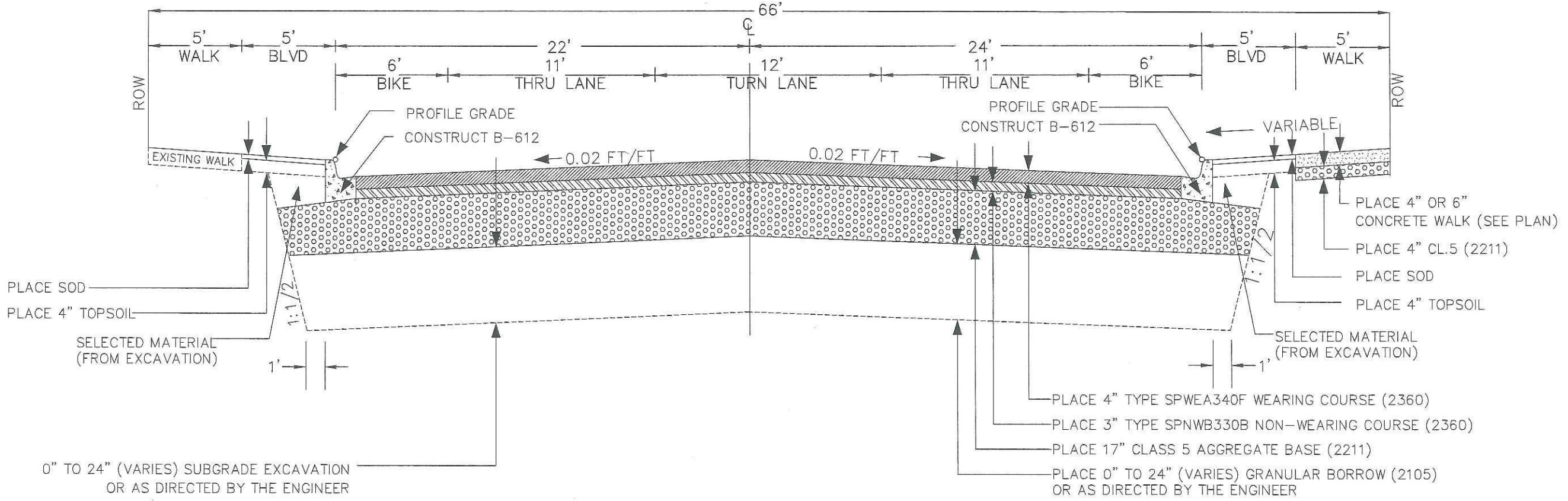


EXISTING TYPICAL SECTION  
RAYMOND AVE - STA. 18+58.02 TO STA. 22+01.03



**AS  
BUILT**

PROPOSED TYPICAL SECTION  
RAYMOND AVE - STA. 18+58.02 TO STA. 22+01.03



NOTE: 1. PLACE TACK COAT BETWEEN ALL BITUMINOUS LIFTS  
2. WEARING COURSE TO BE PLACED IN TWO 2" LIFTS

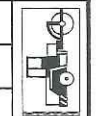
RAYMOND TYPICAL SECTION  
STA. 18+50 TO ENERGY PARK DRIVE

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|----------|-----|--|
| DESIGNED | BRM | I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.<br>Signature: <i>Barbara R. Mundahl</i> Date: 5/20/15<br>BARBARA R. MUNDAHL Lic. No. 43099 |
| DRAWN    | ATT |  |
| APPROVED | BRM |  |

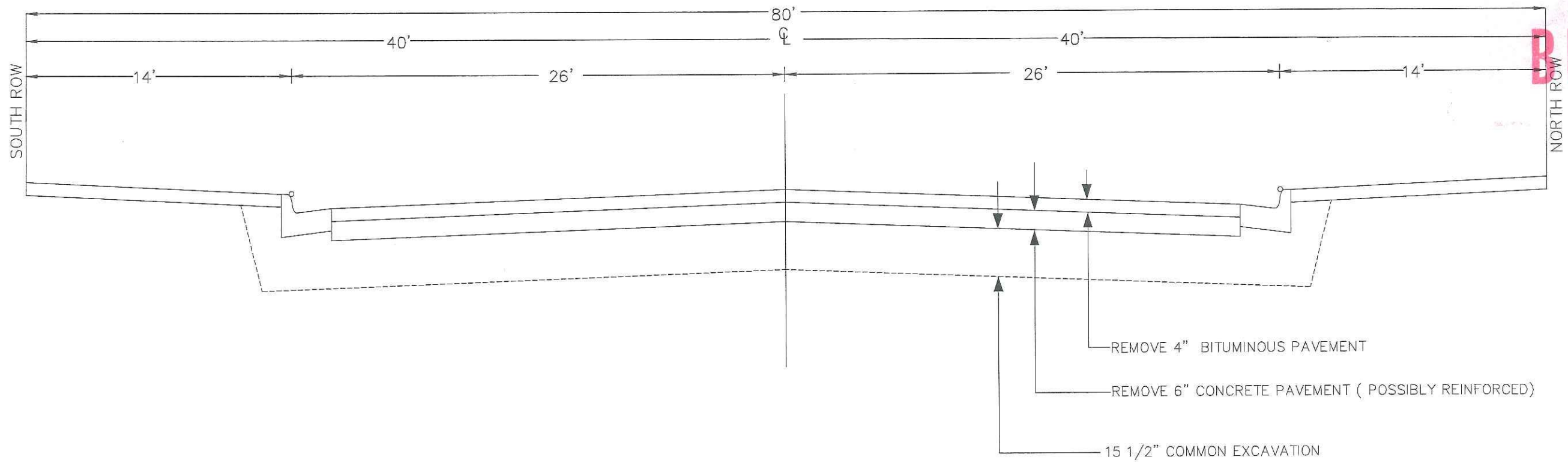
PREPARED BY STREET ENGINEERING DIVISION FOR THE CITY OF ST. PAUL, DEPARTMENT OF PUBLIC WORKS  
**RAYMOND AVENUE-PHASE II**

|          |           |                           |  |
|----------|-----------|---------------------------|--|
| PROJECT: | 15-P-1393 | STATE AID PROJECT NUMBER: | 164-020-133, 062-646-025                   |
| DRAWER:  | 12        | CAD NAME:                 | PROJECTS/CURRENT/RAYMOND2/Raymond-typicals |
| DWG. NO. | 1580      | DATE:                     | 5/20/15                                    |
|          |           | SHEET NO.                 | 9 OF 25 SHEETS                             |

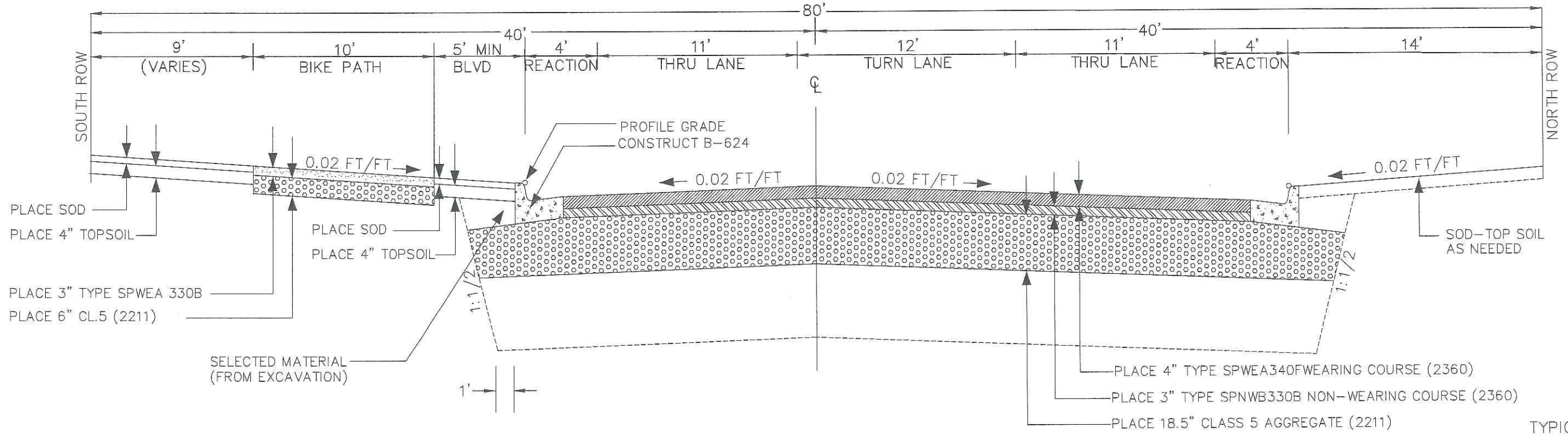


EXISTING TYPICAL SECTION  
ENERGY PARK DRIVE WEST OF RAYMOND AVE.

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PROPOSED TYPICAL SECTION  
ENERGY PARK DRIVE WEST OF RAYMOND AVE.



NOTE: 1. PLACE TACK COAT BETWEEN ALL BITUMINOUS LIFTS  
2. WEARING COURSE TO BE PLACED IN TWO 2" LIFTS

TYPICAL SECTION  
ENERGY PARK DRIVE  
WEST OF RAYMOND AVE.

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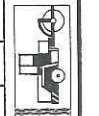
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Signature: *Barbara R. Munda*  
 Date: 5/15/15  
 Lic. No. 43099

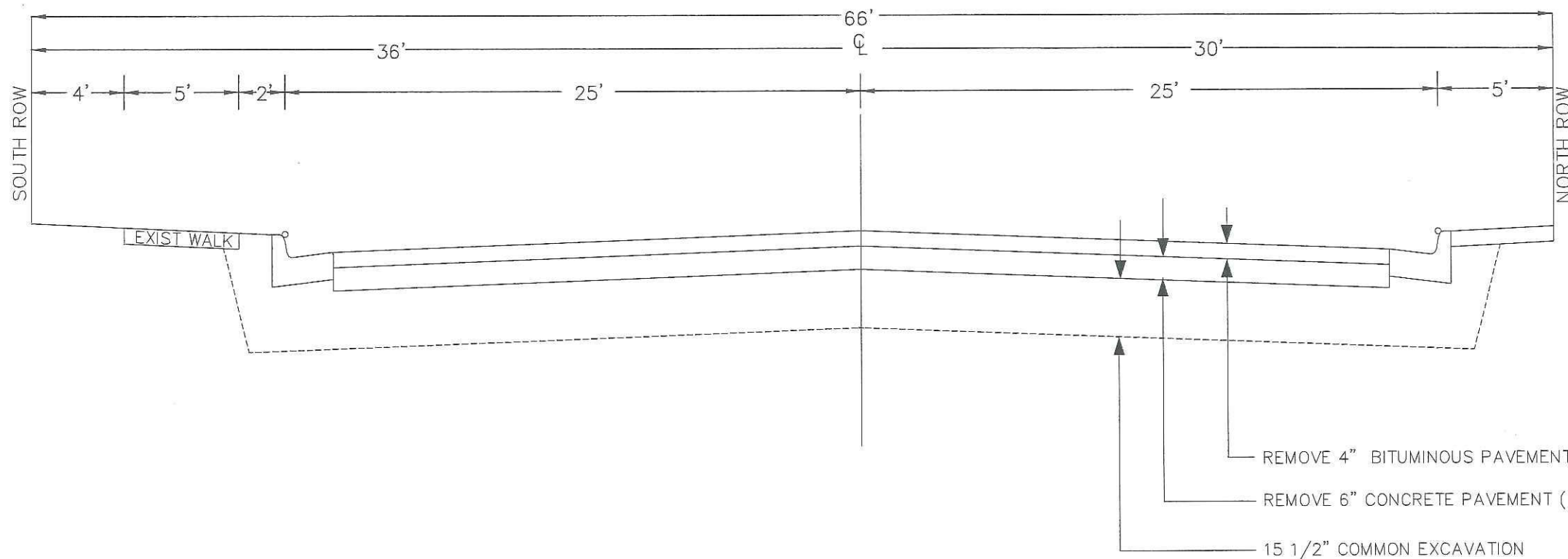
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RAYMOND AVENUE-PHASE II

|                           |   |
|---------------------------|---|
| PROJECT: 15-P-1393        | STATE AID PROJECT NUMBER: 164-020-133, 062-646-025  |
| DRAWER: 12                | CAD NAME: PROJECTS/CURRENT/RAYMOND/Raymond-typicals |
| DWG. NO. 1580             | DATE: 5/15/15                                       |
| SHEET NO. 10 OF 25 SHEETS |   |



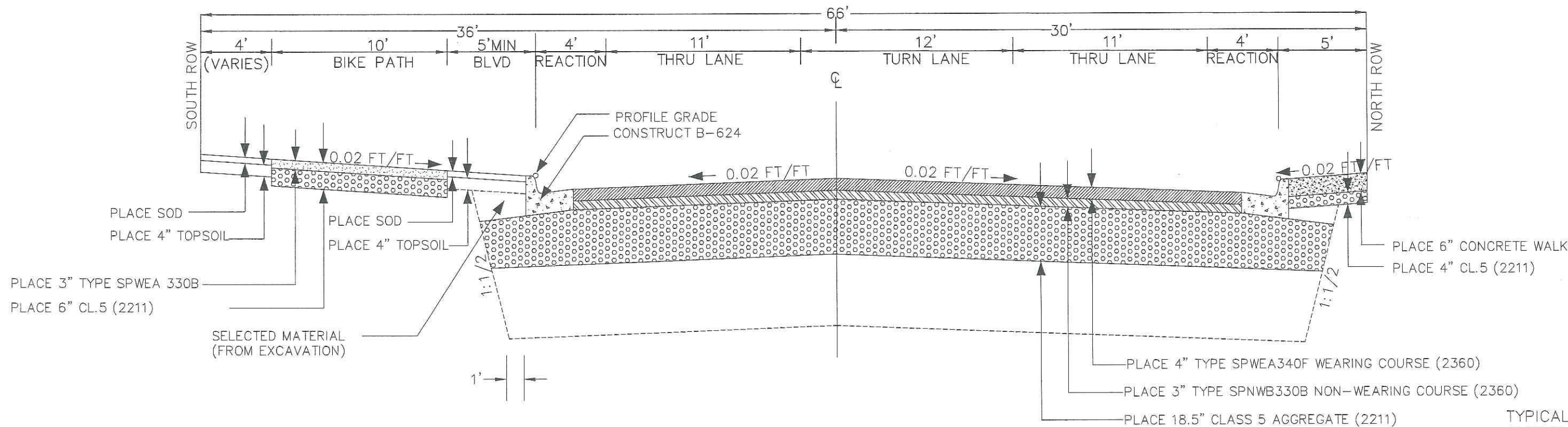
EXISTING TYPICAL SECTION  
ENERGY PARK DRIVE EAST OF RAYMOND AVE.



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PROPOSED TYPICAL SECTION  
ENERGY PARK DRIVE EAST OF RAYMOND AVE.



NOTE: 1. PLACE TACK COAT BETWEEN ALL BITUMINOUS LIFTS  
2. WEARING COURSE TO BE PLACED IN TWO 2" LIFTS

TYPICAL SECTION  
ENERGY PARK DRIVE  
EAST OF RAYMOND AVE

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| APPROVED | BRM |

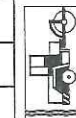
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Signature: *Barbara R. Mundahl* Date: 5/15/15  
BARBARA R. MUNDAHL Lic. No. 43099

PREPARED BY STREET ENGINEERING DIVISION FOR THE CITY OF ST. PAUL, DEPARTMENT OF PUBLIC WORKS

RAYMOND AVENUE-PHASE II

|                    |   |
|--------------------|---|
| PROJECT: 15-P-1393 | STATE AID PROJECT NUMBER: 164-020-133, 062-646-025  |
| DRAWER: 12         | CAD NAME: PROJECTS/CURRENT/RAYMOND/Raymond-typicals |
| DWG. NO. 1580      | DATE: 5/15/15 SHEET NO. 11 OF 25 SHEETS             |





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 APPROVED BY BRM

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

Signature: *Barbara R. Munda*  
 Date: 5/20/15  
 Lic. No. 43099  
 BARBARA R. MUNDAHL

| ST. PAUL DRG. NO. | STANDARD DETAIL                             |
|-------------------|---|
| 1206C             | CONCRETE DRIVEWAY, TYPE 6                   |
| 1304C             | SIGN COLLAR PLACEMENT                       |
| 2007E             | CATCH BASIN, DESIGN TYPE 3C                 |
| 2015G             | CATCH BASIN, DESIGN TYPE 7A                 |
| 2016              | CATCH BASIN, DESIGN TYPE 7B                 |
| 2101D             | MANHOLE, TYPE I                             |
| 2102D             | MANHOLE, TYPE II                            |
| 2103E             | MANHOLE, TYPE III & III-S                   |
| 2104E             | MANHOLE, TYPE IV                            |
| 2107C             | MANHOLE, TYPE VII                           |
| 2201E             | FRAME CASTING A                             |
| 2202D             | COVER CASTINGS B                            |
| 2203              | COVER CASTINGS D                            |
| 2207D             | MANHOLE ADAPTOR RINGS                       |
| 2211              | CATCH BASIN, DESIGN TYPE 7A CASTING DETAILS |
| 2212              | MODIFIED TYPE 7A                            |
| 2306E             | RECONNECTION OF HOUSE SERVICES              |
| 2309C             | CATCH BASIN CONNECTION                      |
| 2311B             | ANCHOR CLAMP DETAIL                         |
| 2317C             | TYPES OF TRENCH BEDDING                     |
| 2318C             | CONCRETE SADDLE FOR PIPE CROSSINGS          |
| 2319D             | SADDLE CONNECTIONS FOR HOUSE SERVICES       |
| 2321              | MANHOLE ADJUST                              |
| 2322B             | MANHOLE RECONSTRUCT                         |
| 3000B             | CONCRETE CURB                               |
| 3100C             | CONCRETE CURB AND GUTTER, DESIGN B          |
| 3102B             | CONC. CURB & GUTTER OPENING FOR DRIVEWAYS   |
| 4031B             | BARRICADE DESIGNS                           |
| 4032A             | BARRICADING FOR STREET CLOSURE              |
| 4035A             | WARNING LIGHTS AND CHANNELIZING DEVICES     |
| 4036              | BARRICADING FOR SIDEWALK REPLACEMENT        |
| 6200B             | RESET MONUMENT                              |

THESE STANDARD PLATES AS APPROVED BY THE FHWA SHALL APPLY  
 MNDOT STANDARD DETAIL PLATES  
 DRG. NO. STANDARD DETAIL

| CONCRETE TABULATIONS                                     |          | UNIT  | S.P. 164-020-133<br>Raymond Avenue<br>QUANTITIES |
|--|----------|-------|--|
| <b>REMOVE CURB &amp; GUTTER</b>                          |          |       |  |
| Sta. 0+00 to Sta. 6+50                                   | LIN. FT. | 1,141 |  |
| Sta. 6+50 to Sta. 12+00                                  | LIN. FT. | 1,054 |  |
| Sta. 12+00 to Sta. 18+50                                 | LIN. FT. | 519   |  |
| Sta. 18+50 to Sta. 21+69.57                              | LIN. FT. | 562   |  |
| Energy Park Dr.  | LIN. FT. | 630   |  |
| <b>REMOVE CONCRETE WALK</b>                              |          |       |  |
| Sta. 0+00 to Sta. 6+50                                   | SQ. FT.  | 3,153 |  |
| Sta. 6+50 to Sta. 12+00                                  | SQ. FT.  | 3,551 |  |
| Sta. 12+00 to Sta. 18+50                                 | SQ. FT.  | 2,173 |  |
| Sta. 18+50 to Sta. 21+69.57                              | SQ. FT.  | 1,113 |  |
| Energy Park Dr.  | SQ. FT.  | 3,518 |  |
| <b>REMOVE CONCRETE DRIVEWAY PAVEMENT</b>                 |          |       |  |
| Sta. 0+00 to Sta. 6+50                                   | SQ. YD.  | 36    |  |
| Sta. 6+50 to Sta. 12+00                                  | SQ. YD.  | -     |  |
| Sta. 12+00 to Sta. 18+50                                 | SQ. YD.  | -     |  |
| Sta. 18+50 to Sta. 21+69.57                              | SQ. YD.  | 29    |  |
| Energy Park Dr.  | SQ. YD.  | 77    |  |
| <b>4" CONCRETE WALK</b>                                  |          |       |  |
| Sta. 0+00 to Sta. 6+50                                   | SQ. FT.  | 2,388 |  |
| Sta. 6+50 to Sta. 12+00                                  | SQ. FT.  | 3,059 |  |
| Sta. 12+00 to Sta. 18+50                                 | SQ. FT.  | 2,355 |  |
| Sta. 18+50 to Sta. 21+69.57                              | SQ. FT.  | 483   |  |
| Energy Park Dr.  | SQ. FT.  | 890   |  |
| <b>6" CONCRETE WALK</b>                                  |          |       |  |
| Sta. 0+00 to Sta. 6+50                                   | SQ. FT.  | 705   |  |
| Sta. 6+50 to Sta. 12+00                                  | SQ. FT.  | 1,082 |  |
| Sta. 12+00 to Sta. 18+50                                 | SQ. FT.  | -     |  |
| Sta. 18+50 to Sta. 21+69.57                              | SQ. FT.  | 1,316 |  |
| Energy Park Dr.  | SQ. FT.  | -     |  |
| <b>TRUNCATED DOME</b>                                    |          |       |  |
| Sta. 0+00 to Sta. 6+50                                   | SQ. FT.  | 40    |  |
| Sta. 6+50 to Sta. 12+00                                  | SQ. FT.  | 136   |  |
| Sta. 12+00 to Sta. 18+50                                 | SQ. FT.  | -     |  |
| Sta. 18+50 to Sta. 21+69.57                              | SQ. FT.  | 124   |  |
| Energy Park Dr.  | SQ. FT.  | -     |  |
| <b>CONCRETE CURB &amp; GUTTER, DESIGN B612</b>           |          |       |  |
| Sta. 0+00 to Sta. 6+50                                   | LIN. FT. | 1,161 |  |
| Sta. 6+50 to Sta. 12+00                                  | LIN. FT. | 1,191 |  |
| Sta. 12+00 to Sta. 18+50                                 | LIN. FT. | 525   |  |
| Sta. 18+50 to Sta. 21+69.57                              | LIN. FT. | 738   |  |
| Energy Park Dr.  | LIN. FT. | -     |  |
| <b>CONCRETE CURB &amp; GUTTER, DESIGN B612(MODIFIED)</b> |          |       |  |
| Sta. 12+00 to Sta. 18+50                                 | LIN. FT. | 323   |  |
| <b>CONCRETE CURB &amp; GUTTER, DESIGN B624</b>           |          |       |  |
| Sta. 0+00 to Sta. 6+50                                   | LIN. FT. | -     |  |
| Sta. 6+50 to Sta. 12+00                                  | LIN. FT. | -     |  |
| Sta. 12+00 to Sta. 18+50                                 | LIN. FT. | -     |  |
| Sta. 18+50 to Sta. 21+69.57                              | LIN. FT. | -     |  |
| Energy Park Dr.  | LIN. FT. | 787   |  |
| <b>6" CONCRETE DRIVEWAY PAVEMENT</b>                     |          |       |  |
| Sta. 0+00 to Sta. 6+50                                   | SQ. YD.  | -     |  |
| Sta. 6+50 to Sta. 12+00                                  | SQ. YD.  | -     |  |
| Sta. 12+00 to Sta. 18+50                                 | SQ. YD.  | -     |  |
| Sta. 18+50 to Sta. 21+69.57                              | SQ. YD.  | -     |  |
| Energy Park Dr.  | SQ. YD.  | -     |  |
| <b>8" CONCRETE DRIVEWAY PAVEMENT</b>                     |          |       |  |
| Sta. 0+00 to Sta. 6+50                                   | SQ. YD.  | 83    |  |
| Sta. 6+50 to Sta. 12+00                                  | SQ. YD.  | -     |  |
| Sta. 12+00 to Sta. 18+50                                 | SQ. YD.  | -     |  |
| Sta. 18+50 to Sta. 21+69.57                              | SQ. YD.  | 36    |  |
| Energy Park Dr.  | SQ. YD.  | 35    |  |

| AGGREGATE AND BITUMINOUS TABULATIONS             |         | UNIT  | S.P. 164-020-133<br>Raymond Avenue<br>QUANTITIES |
|--|---------|-------|--|
| <b>REMOVE PAVEMENT</b>                           |         |       |  |
| Sta. 0+00 to Sta. 6+50                           | SQ. YD. | 2,700 |  |
| Sta. 6+50 to Sta. 12+00                          | SQ. YD. | 2,482 |  |
| Sta. 12+00 to Sta. 18+50                         | SQ. YD. | 1,183 |  |
| Sta. 18+50 to Sta. 21+69.57                      | SQ. YD. | 1,841 |  |
| Energy Park Dr.                                  | SQ. YD. | 2,513 |  |
| <b>AGGREGATE BASE PLACED (C.V.), CLASS 5 (P)</b> |         |       |  |
| Sta. 0+00 to Sta. 6+50                           | CU YD.  | 1,273 |  |
| Sta. 6+50 to Sta. 12+00                          | CU YD.  | 1,291 |  |
| Sta. 12+00 to Sta. 18+50                         | CU YD.  | 644   |  |
| Sta. 18+50 to Sta. 21+69.57                      | CU YD.  | 1,120 |  |
| Energy Park Dr.                                  | CU YD.  | 999   |  |
| Bituminous off-road trail                        | CU YD.  | 276   |  |
| <b>TYPE SPWEA330B WEARING COURSE MIXTURE</b>     |         |       |  |
| Bituminous off-road trail                        | TON     | 50    |  |
| <b>TYPE SPWEA340F WEARING COURSE MIXTURE</b>     |         |       |  |
| Sta. 0+00 to Sta. 6+50                           | TON     | 547   |  |
| Sta. 6+50 to Sta. 12+00                          | TON     | 539   |  |
| Sta. 12+00 to Sta. 18+50                         | TON     | 263   |  |
| Sta. 18+50 to Sta. 21+69.57                      | TON     | 431   |  |
| Energy Park Dr.                                  | TON     | 455   |  |
| <b>TYPE SPNWB330B NON-WEARING COURSE MIXTURE</b> |         |       |  |
| Sta. 0+00 to Sta. 6+50                           | TON     | 410   |  |
| Sta. 6+50 to Sta. 12+00                          | TON     | 404   |  |
| Sta. 12+00 to Sta. 18+50                         | TON     | 196   |  |
| Sta. 18+50 to Sta. 21+69.57                      | TON     | 323   |  |
| Energy Park Dr.                                  | TON     | 341   |  |

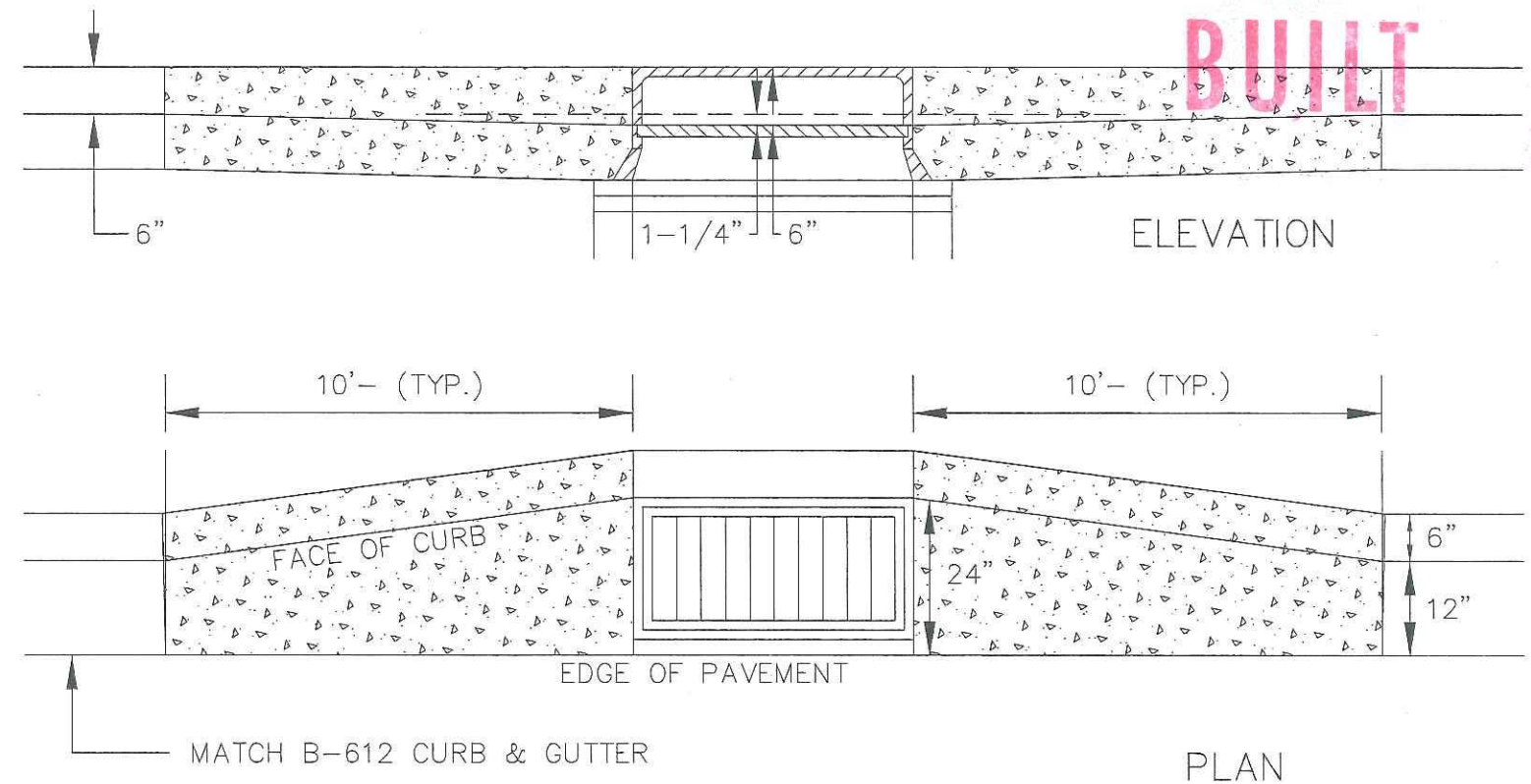
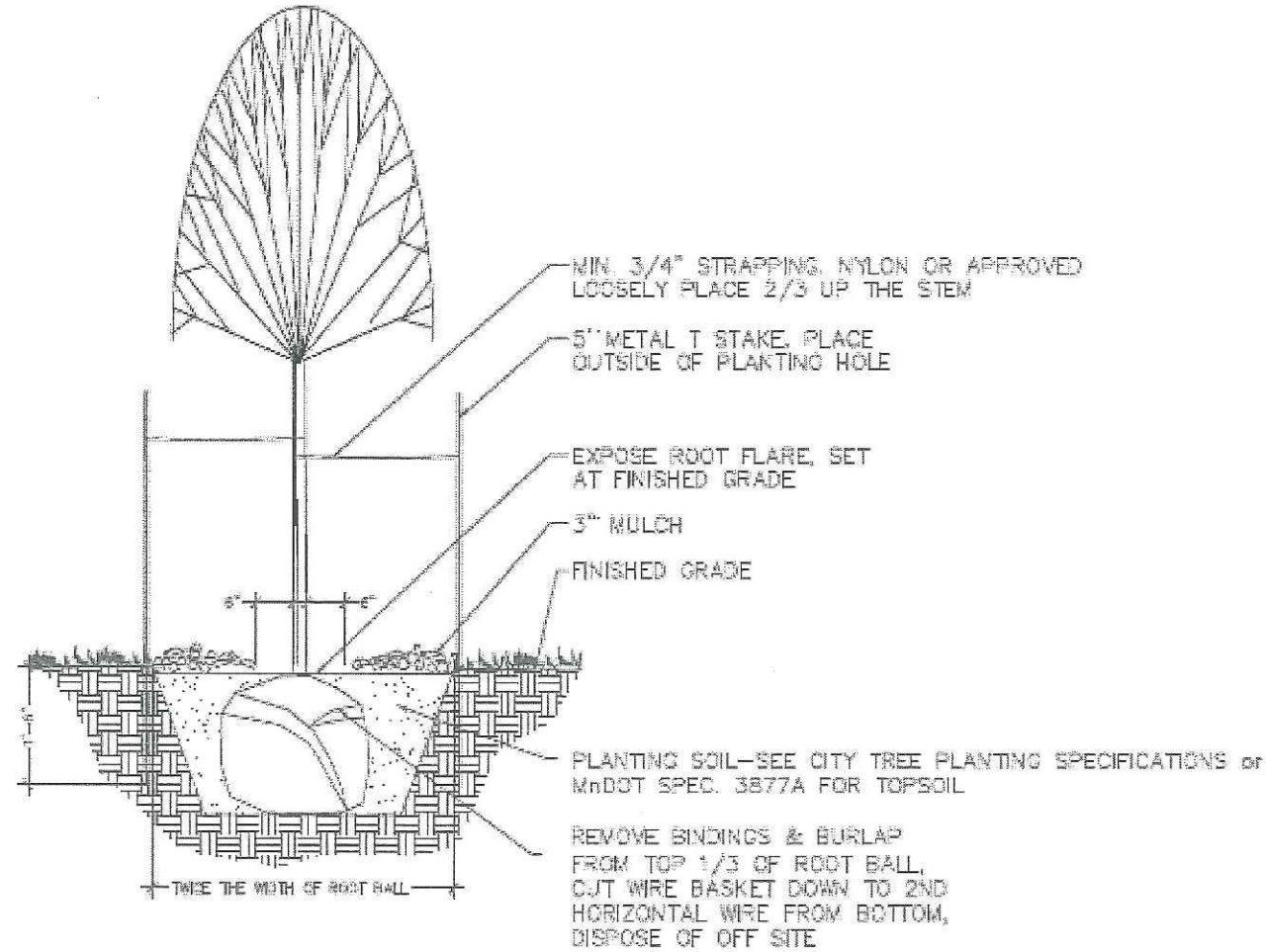
BASIS OF ESTIMATE FOR BITUMINOUS QUANTITIES = 110 lbs/sy/inch  
 (P) PLAN QUANTITY

STANDARD DETAIL PLATES  
 CONCRETE & PAVEMENT TABULATIONS

PREPARED BY STREET ENGINEERING DIVISION FOR THE CITY OF ST. PAUL, DEPARTMENT OF PUBLIC WORKS  
**RAYMOND AVENUE - PHASE II**

PROJECT: 15-P-1393  
 DRAWER: 12  
 DATE: 5/20/15  
 SHEET NO. 12 OF 25 SHEETS

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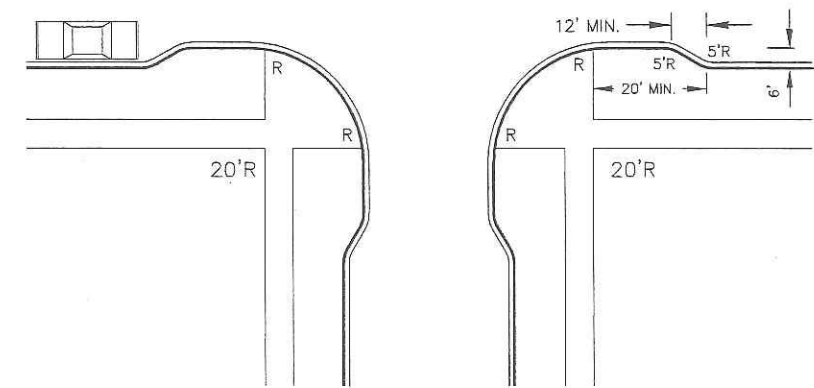


NOTE: USE AT ALL CATCH BASINS ON RAYMOND AVENUE  
 B612 CURB & GUTTER AT 7B CATCH BASIN

NOTES:

- WATER PLANT THOROUGHLY WITHIN 2 HOURS OF PLANTING
- PRUNE DEAD, DAMAGED, OR RUBBING BRANCHES AT THE TIME OF PLANTING. PRUNE THOSE THAT INTERFERE WITH SIDEWALK OR STREET AS SPECIFIED.
- ON 2:1 SLOPES OR GREATER DO NOT FORM THE UPHILL SAUZER
- SCARIFY SIDES AND BOTTOM OF HOLE
- SET PLANT PLUMB ON UNDISTURBED SOIL OR WELL COMPACTED BACKFILL SOIL
- PLACE 3" DEPTH OF SHREDDED HARDWOOD MULCH IN A CONTINUOUS LAYER. NO MULCH TO BE WITHIN 6" OF THE STEM.
- STAKING IS OPTIONAL UNLESS REQUIRED BY CITY STAFF. CONTRACTOR RESPONSIBLE TO MAINTAIN TREES IN A PLUMB POSITION THROUGH THE EXTENDED MAINTENANCE PERIOD.
- WHEN PLANTING IN GRATES, PAVERS, OR OTHER RESTRICTED AREAS, TREES SHALL BE CENTERED IN OPENING.

TREE PLANTING DETAIL



CURB BUMP-OUT

CONSTRUCTION DETAILS  
 TREE PLANTING DETAIL

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| DESIGNED | BRM |
| DRAWN    | ATT |
| APPROVED | BRM |

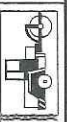
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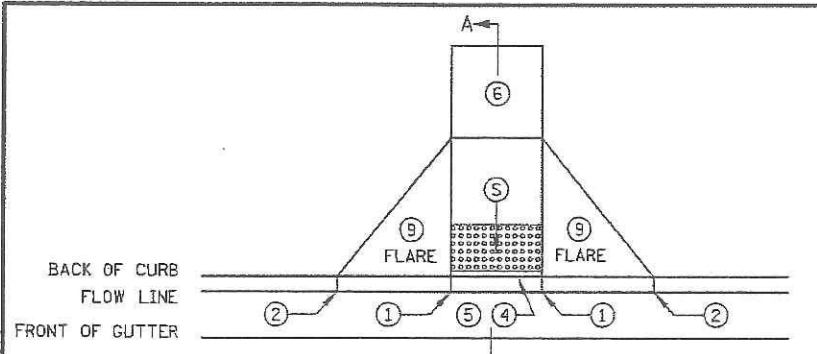
Signature: *Barbara R. MundaHL* Date: 5/20/15  
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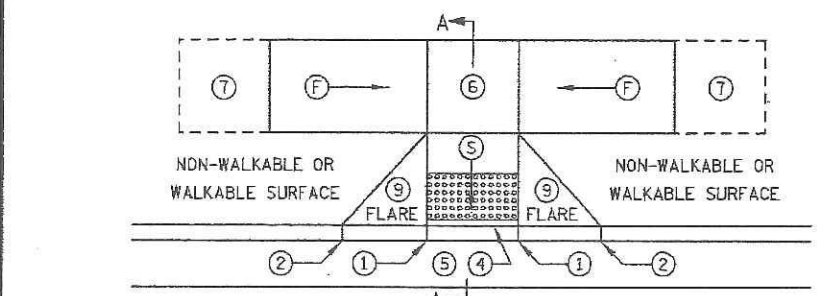
RAYMOND AVENUE-PHASE II

|                    |  |
|--------------------|--|
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| DRAWER: 12         | CAD NAME: PROJECTS/CURRENT/RAYMOND2/               |
| DWG. NO. 1580      | DATE: 5/20/15 SHEET NO. 13 OF 25 SHEETS            |

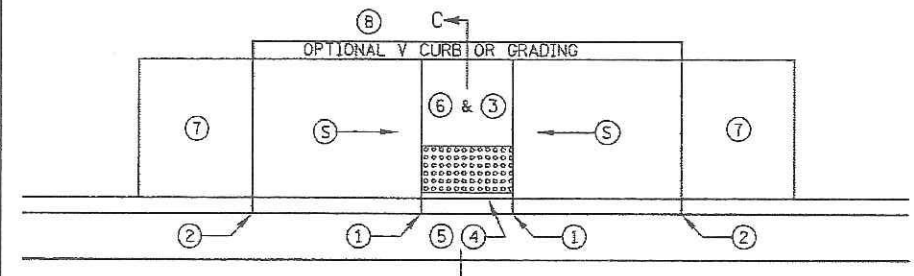




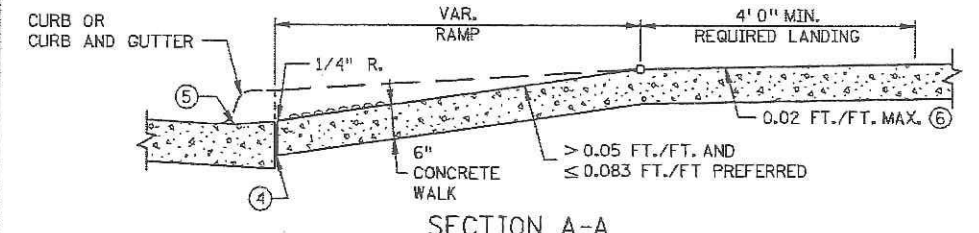
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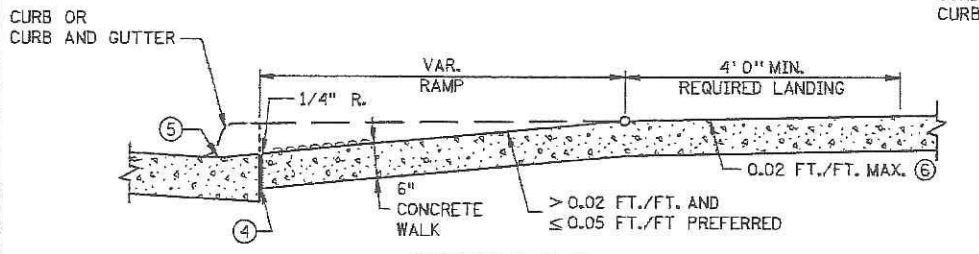
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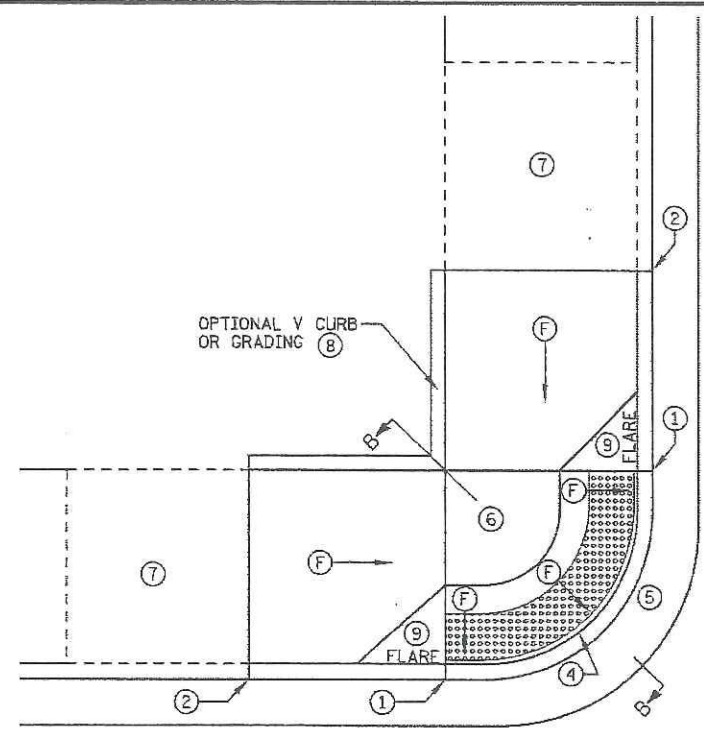
PARALLEL



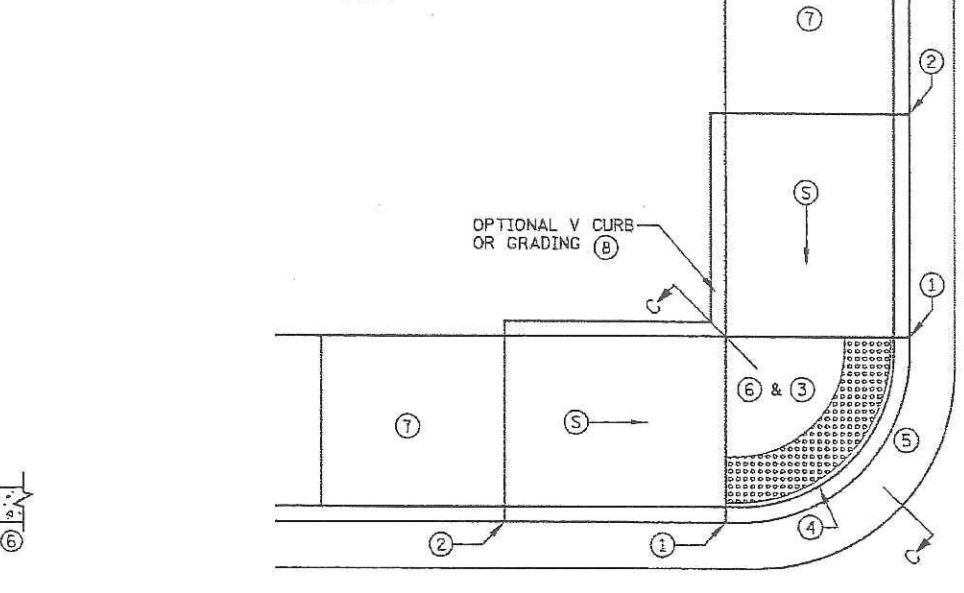
SECTION A-A  
PERPENDICULAR/TIERED/DIAGONAL



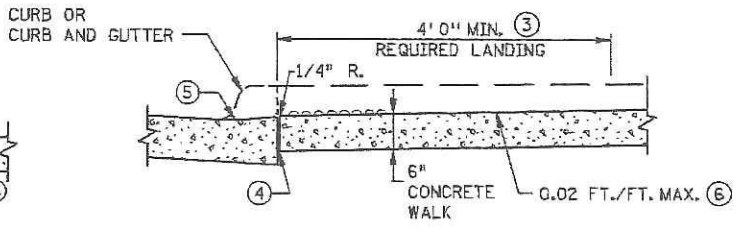
SECTION B-B  
FAN



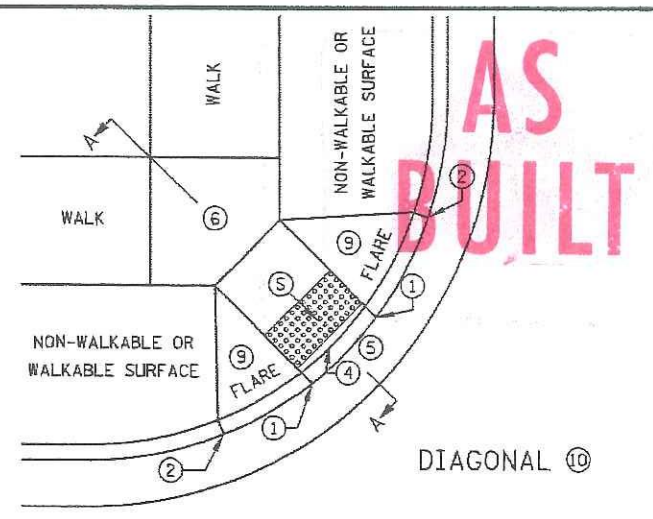
FAN



DEPRESSED CORNER



SECTION C-C  
PARALLEL/DEPRESSED CORNER



DIAGONAL 10

**AS BUILT**

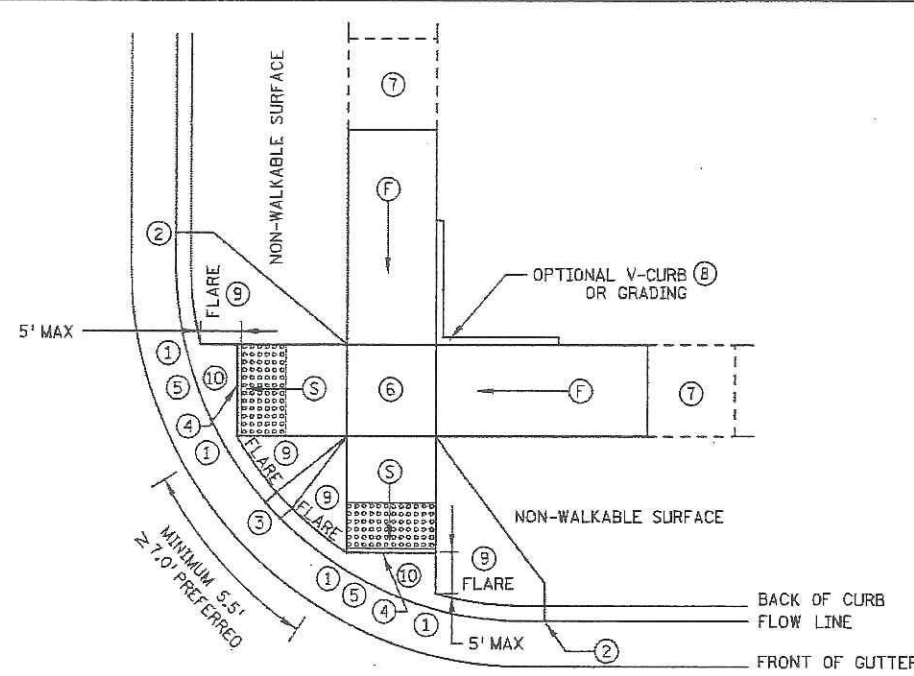
- NOTES:
- LANDINGS SHALL BE LOCATED ANYWHERE THE PEDESTRIAN ACCESS ROUTE CHANGES DIRECTION, AT THE TOP OF RAMPS THAT HAVE RUNNING SLOPES GREATER THAN 5.0%, AND IF THE APPROACHING WALK IS INVERSE GRADE.
  - INITIAL CURB RAMP LANDINGS SHALL BE CONSTRUCTED WITHIN 15' FROM THE BACK OF CURB, WITH 6' FROM THE BACK OF CURB BEING THE PREFERRED DISTANCE.
  - SECONDARY CURB RAMP LANDINGS ARE REQUIRED FOR EVERY 30" OF VERTICAL RISE WHEN THE LONGITUDINAL SLOPE IS GREATER THAN 5.0%.
  - CONTRACTION JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS.
  - ALL GRADE BREAKS WITHIN THE PAR SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL.
  - TO ENSURE RAMPS AND LANDINGS ARE PROPERLY CONSTRUCTED, LANDINGS MAY BE CAST SEPARATELY. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON SHEET 5 WHEN LANDINGS ARE CAST SEPARATELY.
  - ALL SLOPES ARE ABSOLUTE, RATHER THAN RELATIVE TO SIDEWALK/ROADWAY GRADES.
  - TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.
  - 4' MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. DETECTABLE WARNINGS SHALL CONTINUOUSLY EXTEND FOR A MINIMUM OF 24" IN THE PATH OF TRAVEL. SHARED USE PATHS SHALL HAVE DETECTABLE WARNING ACROSS THE ENTIRE WIDTH OF PATH WHEN THE PATH CROSSES A ROAD.
  - SEE STANDARD PLATE 703B AND SHEET 4 OF 5 FOR ADDITIONAL DETAILS ON DETECTABLE WARNING.
  - 1 0" CURB HEIGHT.
  - 2 FULL CURB HEIGHT.
  - 3 DETECTABLE WARNINGS MAY BE PART OF 4' X 4' LANDING AREA IF IT IS NOT FEASIBLE TO CONSTRUCT THE LANDING OUTSIDE OF THE DETECTABLE WARNING AREA.
  - 4 1/2" PREFORMED JOINT FILLER MATERIAL AASHTO M 213. JOINT FILLER SHALL BE PLACED FLUSH WITH THE BACK OF CURB AND ADJACENT SIDEWALK. JOINT SHALL BE FREE OF DEBRIS. RECTANGULAR DETECTABLE WARNINGS SHALL BE SETBACK 3" FROM THE BACK OF CURB. RADIAL DETECTABLE WARNINGS SHALL BE SETBACK 3" MINIMUM TO 6" MAXIMUM FROM THE BACK OF CURB.
  - 5 SEE PEDESTRIAN ACCESS ROUTE CURB AND GUTTER DETAIL FOR INFORMATION ON CONSTRUCTING CURB AND GUTTER AT CURB OPENINGS. SEE SHEET NO. 3 OF 5.
  - 6 4' BY 4' MIN. LANDING WITH MAX. 2.0% SLOPE IN ALL DIRECTIONS.
  - 7 IF LONGITUDINAL SLOPE IS GREATER THAN 5.0%, 4' X 4' MIN. LANDING WITH MAX 2.0% SLOPE IN ALL DIRECTIONS REQUIRED.
  - 8 V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS. SEE SHEET 5 OF 5.
  - 9 SEE SHEET 4 OF 5, TYPICAL SIDE TREATMENT OPTIONS, FOR DETAILS ON FLARES AND RETURNED CURBS.
  - 10 DIAGONAL RAMPS SHOULD ONLY BE USED AFTER ALL OTHER CURB RAMP TYPES HAVE BEEN EVALUATED AND DEEMED IMPRACTICAL.

| LEGEND |   |
|--------|---|
| (S)    | INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0% |
| (F)    | INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%      |

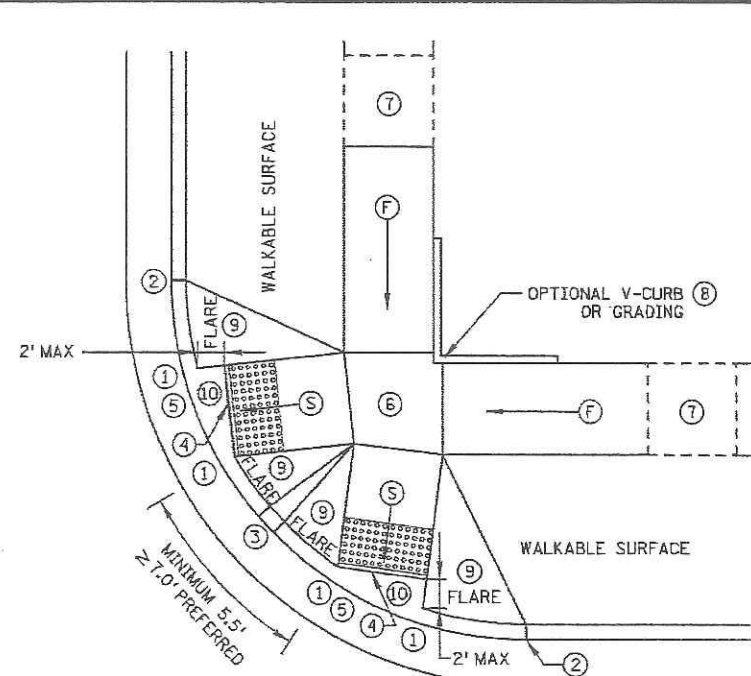
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APPROVED: 8-6-2014  
*[Signature]*  
OPERATIONS ENGINEER

REVISOR:  
*[Signature]*  
STATE DESIGN ENGINEER  
APPROVED: 8-6-2014

# AS BUILT

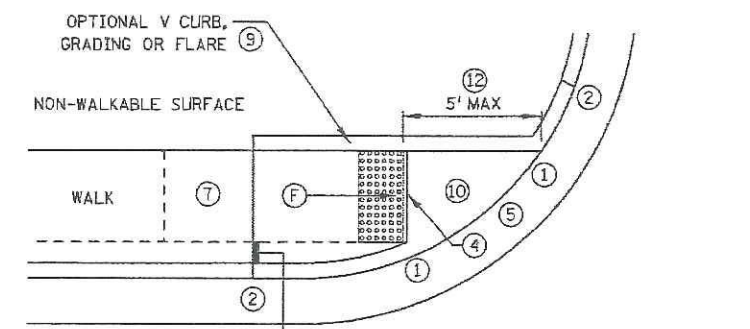


ADJACENT TO NON-WALKABLE SURFACE



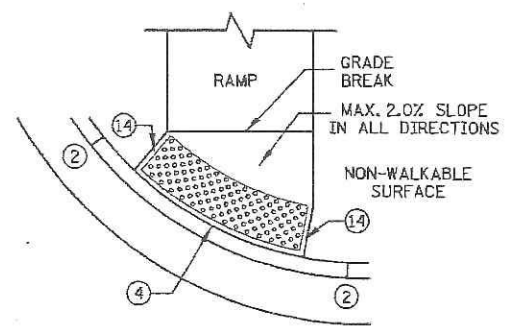
ADJACENT TO WALKABLE SURFACE

COMBINED DIRECTIONAL 15

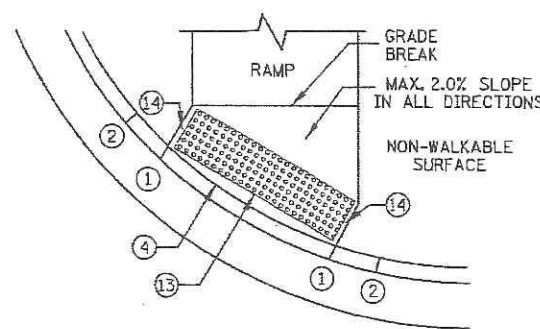


ONE-WAY DIRECTIONAL

IF NON-CONCRETE BLVD. IS CONSTRUCTED AND IS LESS THAN 2' IN WIDTH AT TOP OF CURB TRANSITION, PAVE CONCRETE RAMP WIDTH TO ADJACENT BACK OF CURB.



DETECTABLE WARNING PLACEMENT WHEN SETBACK CRITERIA IS EXCEEDED

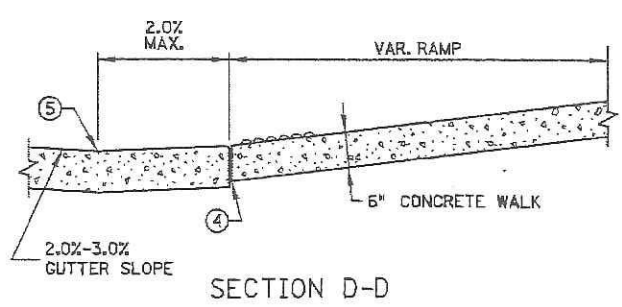
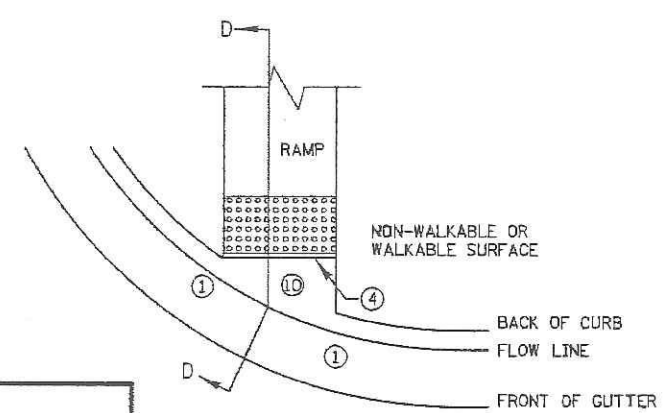


NOTES:

- LANDINGS SHALL BE LOCATED ANYWHERE THE PEDESTRIAN ACCESS ROUTE CHANGES DIRECTION, AT THE TOP OF RAMPS THAT HAVE RUNNING SLOPES GREATER THAN 5.0%, AND IF THE APPROACHING WALK IS INVERSE GRADE.
- INITIAL CURB RAMP LANDINGS SHALL BE CONSTRUCTED WITHIN 15' FROM THE BACK OF CURB, WITH 6' FROM THE BACK OF CURB BEING THE PREFERRED DISTANCE.
- SECONDARY CURB RAMP LANDINGS ARE REQUIRED FOR EVERY 30' OF VERTICAL RISE WHEN THE LONGITUDINAL SLOPE IS GREATER THAN 5.0%.
- CONTRACTION JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS.
- ALL GRADE BREAKS WITHIN THE PAR SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL.
- TO ENSURE RAMPS AND LANDINGS ARE PROPERLY CONSTRUCTED, LANDINGS MAY BE CAST SEPARATELY. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON SHEET 5 WHEN LANDINGS ARE CAST SEPARATELY.
- ALL SLOPES ARE ABSOLUTE, RATHER THAN RELATIVE TO SIDEWALK/ROADWAY GRADES.
- TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.
- 4' MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. DETECTABLE WARNINGS SHALL CONTINUOUSLY EXTEND FOR A MINIMUM OF 24" IN THE PATH OF TRAVEL. SHARED USE PATHS SHALL HAVE DETECTABLE WARNING ACROSS THE ENTIRE WIDTH OF PATH WHEN THE PATH CROSSES A ROAD.
- SEE STANDARD PLATE 7038 AND SHEET 4 OF 5 FOR ADDITIONAL DETAILS ON DETECTABLE WARNING.

- 1 0" CURB HEIGHT.
- 2 FULL CURB HEIGHT.
- 3 3" MINIMUM CURB HEIGHT, 4" PREFERRED.
- 4 1/2" PREFORMED JOINT FILLER MATERIAL AASHTO M 213. JOINT FILLER SHALL BE PLACED FLUSH WITH THE BACK OF CURB AND ADJACENT SIDEWALK. JOINT SHALL BE FREE OF DEBRIS. RECTANGULAR DETECTABLE WARNINGS SHALL BE SETBACK 3" FROM THE BACK OF CURB. RADIAL DETECTABLE WARNINGS SHALL BE SETBACK 3" MIN. TO 6" MAX. FROM THE BACK OF CURB.
- 5 SEE PEDESTRIAN ACCESS ROUTE CURB AND GUTTER DETAIL FOR INFORMATION ON CONSTRUCTING CURB AND GUTTER AT CURB OPENINGS. SEE SHEET NO. 3 OF 5.
- 6 4' BY 4' MIN. LANDING WITH MAX. 2.0% SLOPE IN ALL DIRECTIONS.
- 7 IF LONGITUDINAL SLOPE IS GREATER THAN 5.0%, 4' X 4' MIN. LANDING WITH MAX. 2.0% SLOPE IN ALL DIRECTIONS REQUIRED.
- 8 V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS.
- 9 SEE SHEET 4 OF 5, TYPICAL SIDE TREATMENT OPTIONS, FOR DETAILS ON FLARES AND RETURNED CURBS.
- 10 MAX. 2.0% SLOPE IN ALL DIRECTIONS IN FRONT OF GRADE BREAK AND DRAIN TO FLOW LINE. SHALL BE CONSTRUCTED INTEGRAL WITH CURB AND GUTTER.
- 11 TO BE USED FOR ALL DIRECTIONAL RAMPS.
- 12 PLACE DOMES AT THE BACK OF CURB WHEN ALLOWABLE SETBACK CRITERIA IS EXCEEDED.
- 13 RECTANGULAR DETECTABLE WARNINGS MAY BE SETBACK 9" FROM THE BACK OF CURB WITH CORNERS SET 3" FROM BACK OF CURB. IF 9" SETBACK IS EXCEEDED USE RADIAL DETECTABLE WARNINGS.
- 14 WHEN NO CONCRETE FLARES ARE PROPOSED, THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE BACK OF CURB. MAINTAIN 3" BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.
- 15 FRONT EDGE OF DETECTABLE WARNING SHALL BE SET BACK 2' MAXIMUM WHEN ADJACENT TO WALKABLE SURFACE, AND 5' MAXIMUM WHEN ADJACENT TO NON-WALKABLE SURFACE WITH ONE CORNER SET 3" FROM BACK OF CURB. WHETHER A SURFACE IS WALKABLE OR NOT SHALL BE DETERMINED BY THE ENGINEER.

| LEGEND  |   |
|---|---|
| THESE LONGITUDINAL SLOPE RANGES SHALL BE THE STARTING POINT. IF SITE CONDITIONS WARRANT, LONGITUDINAL SLOPES UP TO 8.3% OR FLATTER ARE ALLOWED. |   |
| (S)   | INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0% |
| (F)   | INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%      |



SECTION D-D

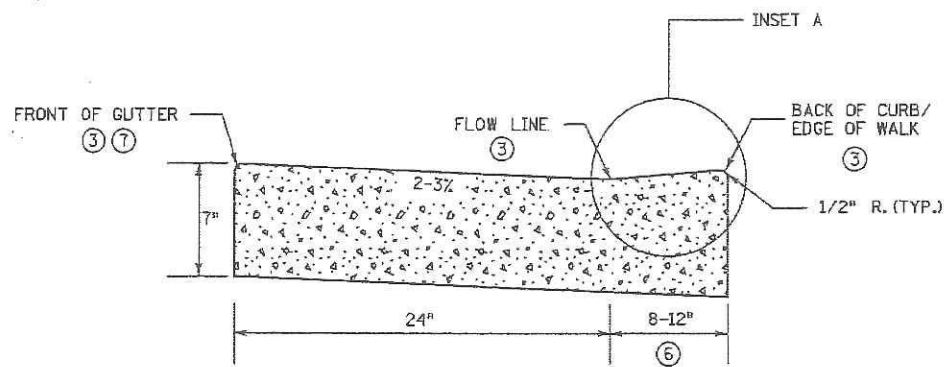
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CURB FOR DIRECTIONAL RAMPS 11

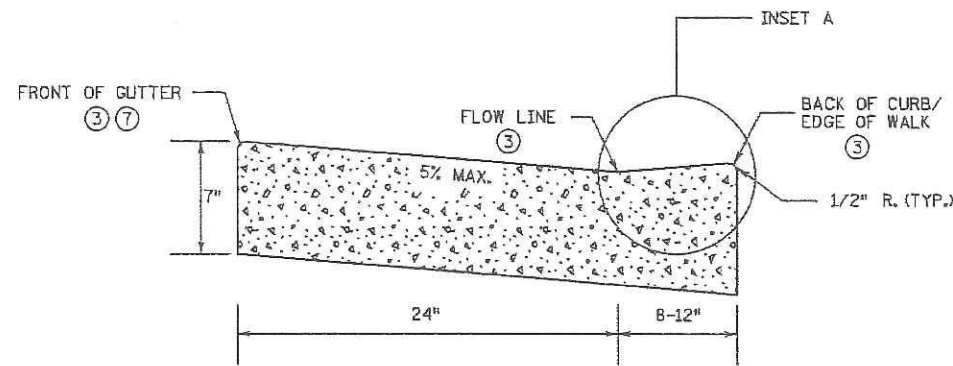
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PEDESTRIAN CURB RAMP DETAILS  
 STANDARD PLAN 5-297.250 15 OF 25

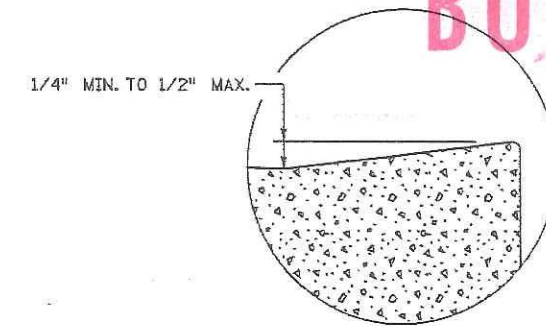
**AS BUILT**



NON PERPENDICULAR ①

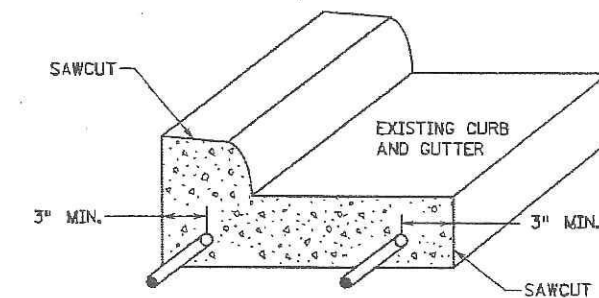
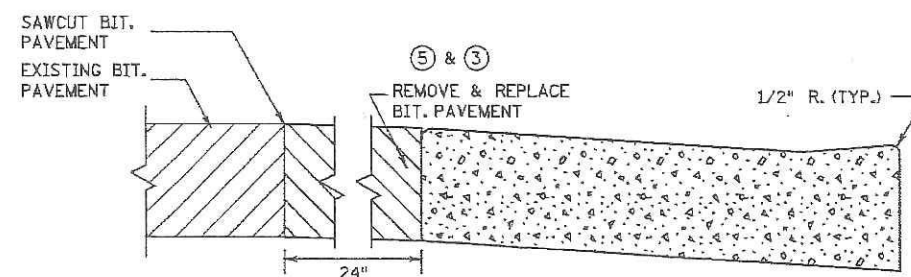
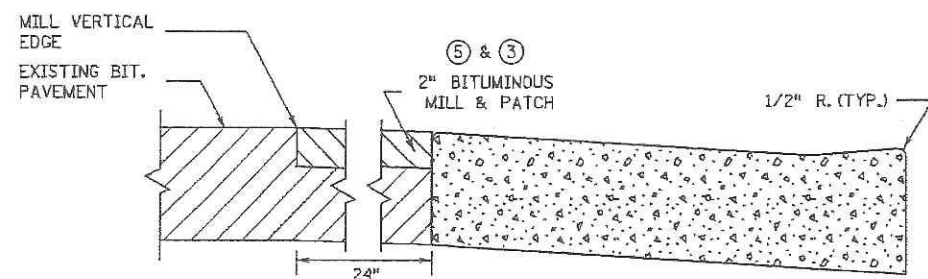


PERPENDICULAR ②

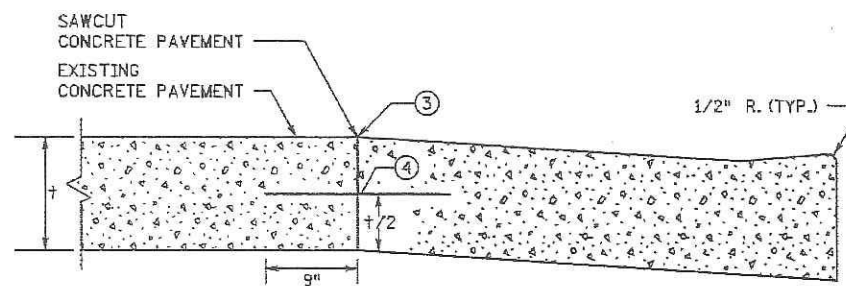
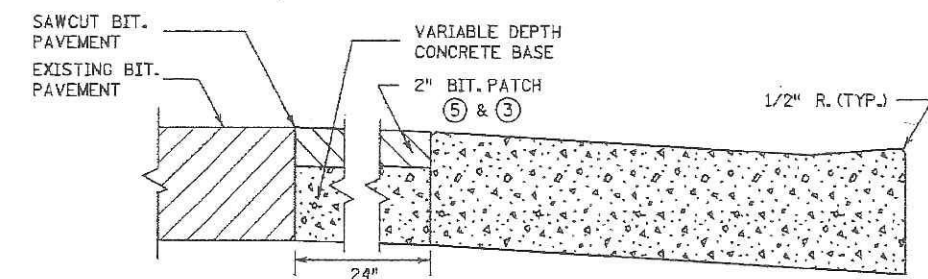


INSET A

PEDESTRIAN ACCESS ROUTE  
CURB & GUTTER DETAIL



CURB AND GUTTER  
REINFORCEMENT ⑧  
FOR USE ON CURB RAMP RETROFITS



PAVEMENT TREATMENT OPTIONS  
IN FRONT OF CURB & GUTTER  
FOR USE ON CURB RAMP RETROFITS

NOTES:

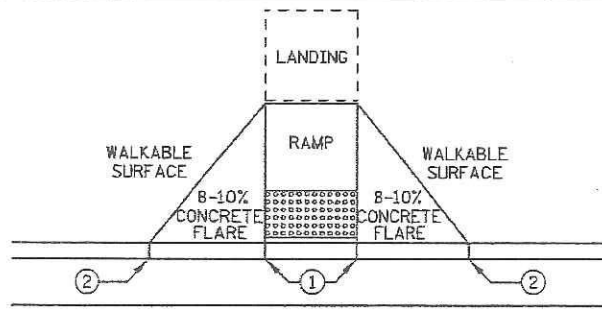
- POSITIVE FLOW LINE DRAINAGE SHALL BE MAINTAINED THROUGH THE PEDESTRIAN ACCESS ROUTE (PAR) AT A 2% MAXIMUM.
- NO PONDING SHALL BE PRESENT IN THE PAR.
- ANY VERTICAL LIP THAT OCCURS AT THE FLOW LINE SHALL NOT BE GREATER THAN 1/4 INCH.
- ① FOR USE AT CURB CUTS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED NON PERPENDICULAR TO THE GUTTER FLOW LINE. RAMP TYPES INCLUDE: FANS, DEPRESSED CORNERS, & ONE WAY AND COMBINED DIRECTIONALS.
- ② FOR USE AT CURB CUTS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED PERPENDICULAR TO THE GUTTER FLOW LINE. RAMP TYPES INCLUDE: PERPENDICULAR, TIERED PERPENDICULAR, PARALLEL, AND DIAGONAL RAMP.
- ③ THERE SHALL BE NO VERTICAL DISCONTINUITIES GREATER THAN 1/4".
- ④ DRILL AND GROUT NO. 4 EPOXY-COATED 18" LONG TIE BARS AT 30" CENTER TO CENTER INTO EXISTING CONCRETE PAVEMENT.
- ⑤ ELEVATION CHANGE TAKES PLACE FROM THE EXISTING TO NEW FRONT OF GUTTER. PATCH IS USED TO MATCH THE NEW GUTTER FACE INTO THE EXISTING ROADWAY.
- ⑥ VARIABLE WIDTH FOR DIRECTIONAL CURB APPLICATIONS.
- ⑦ TOP FRONT OF GUTTER SHALL BE CONSTRUCTED FLUSH WITH PROPOSED ADJACENT PAVEMENT ELEVATION. PAR GUTTER SHALL NOT BE OVERLAID.
- ⑧ WHERE PLAN SPECIFIES, DRILL AND GROUT 2 - NO. 4 X 12" LONG REINFORCEMENT BARS (EPOXY COATED).

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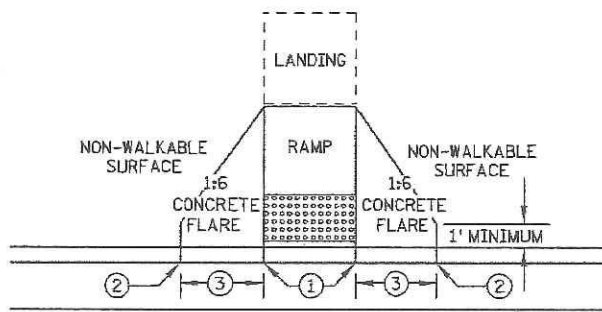
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*[Signature]*  
STATE DESIGN ENGINEER  
APPROVED:  
8-6-2014

PEDESTRIAN CURB RAMP DETAILS  
STANDARD PLAN 5-297.250 16 OF 25

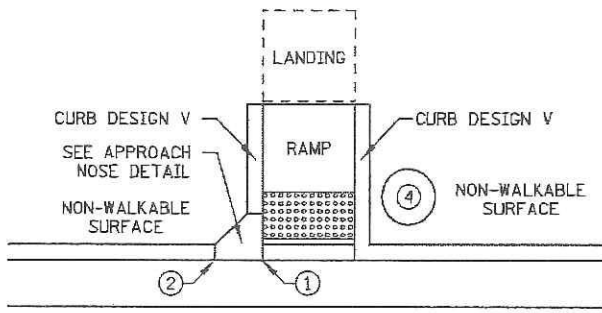




PAVED FLARES ADJACENT TO WALKABLE SURFACE

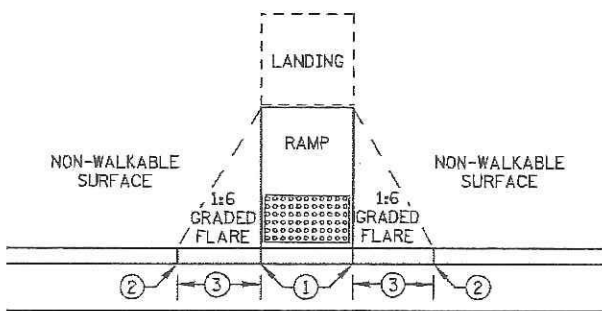


PAVED FLARES ADJACENT TO NON-WALKABLE SURFACE



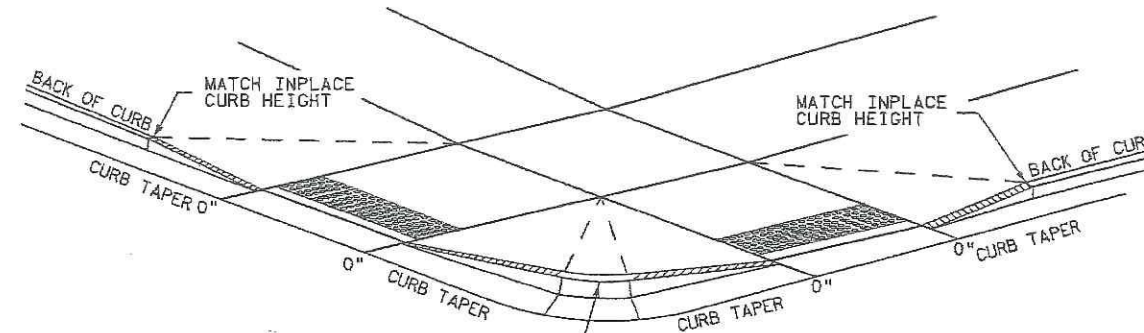
DIRECTION OF TRAFFIC

RETURNED CURB



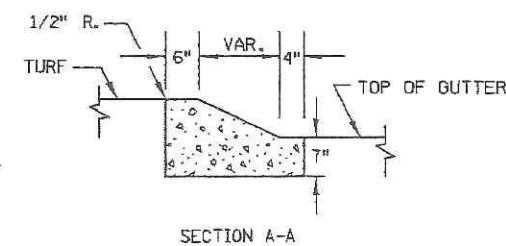
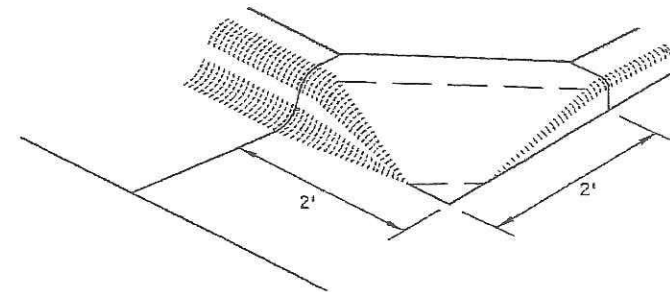
GRADED FLARES

TYPICAL SIDE TREATMENT OPTIONS ⑤

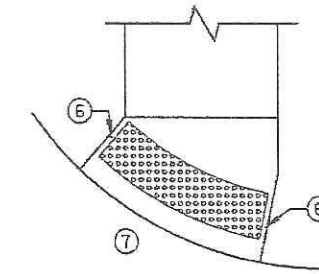


3" MINIMUM CURB HEIGHT, 4" PREFERRED (MEASURED AT FRONT FACE OF CURB) FOR A MIN. 6" LENGTH (MEASURED ALONG FLOW LINE)

DETECTABLE EDGE WITH CURB AND GUTTER ⑧

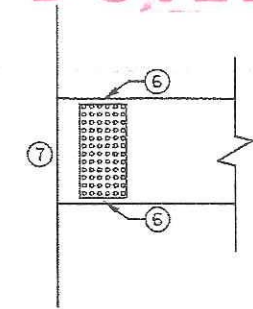


APPROACH NOSE DETAIL FOR DOWNSTREAM SIDE OF TRAFFIC



RADIAL DETECTABLE WARNING

AS BUILT



RECTANGULAR DETECTABLE WARNING

DETECTABLE EDGE WITHOUT CURB AND GUTTER

NOTES:

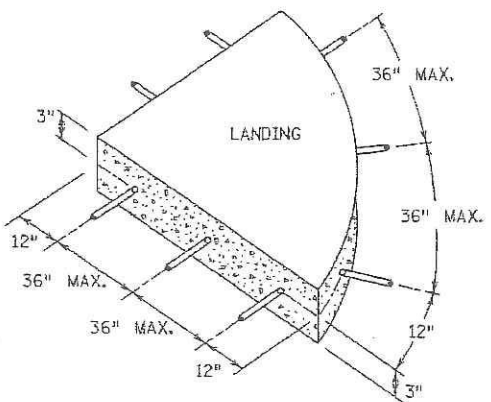
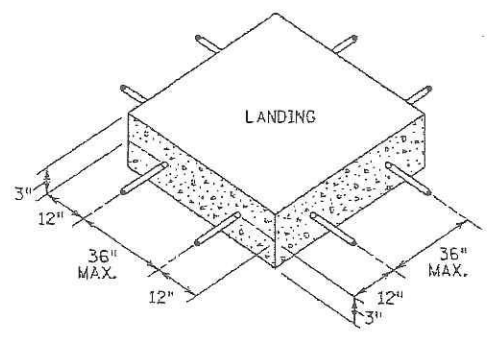
SEE STANDARD PLATE 703B AND THIS SHEET FOR ADDITIONAL DETAILS ON DETECTABLE WARNING. WHETHER A SURFACE IS WALKABLE OR NOT SHALL BE DETERMINED BY THE ENGINEER. CONCRETE FLARE LENGTHS ADJACENT TO NON-WALKABLE SURFACES SHOULD BE LESS THAN 8' LONG MEASURED ALONG THE RAMPS FROM THE BACK OF CURB.

- ① 0" CURB HEIGHT.
- ② FULL CURB HEIGHT.
- ③ 2' - 3' FLARE.
- ④ IMMOVABLE OBJECT OR OBSTRUCTION.
- ⑤ SIDE TREATMENTS ARE APPLICABLE TO ALL RAMP TYPES AND SHOULD BE IMPLEMENTED AS NEEDED ON ALL RAMPS AS FIELD CONDITIONS DICTATE. THE ENGINEER SHALL DETERMINE THE RAMP SIDE TREATMENTS BASED ON MAINTENANCE OF BOTH ROADWAY AND SIDEWALK, ADJACENT PROPERTY CONSIDERATIONS, AND MITIGATING CONSTRUCTION IMPACTS.
- ⑥ WHEN NO CONCRETE FLARES ARE PROPOSED, THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE EDGE OF ROADWAY. MAINTAIN 3" BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.
- ⑦ IF NO CURB AND GUTTER IS PLACED IN RURAL SECTIONS, DETECTABLE WARNINGS SHALL BE PLACED 1' FROM THE EDGE OF ROADWAY TO PROVIDE VISUAL CONTRAST.
- ⑧ ALL CONSTRUCTED CURBS MUST HAVE A CONTINUOUS DETECTABLE EDGE FOR THE VISUALLY IMPAIRED. THIS DETECTABLE EDGE REQUIRES DETECTABLE WARNINGS WHEREVER THERE IS ZERO-INCH HIGH CURB. CURB TAPERS ARE CONSIDERED A DETECTABLE EDGE WHEN THE TAPER STARTS WITHIN 3" OF THE EDGE OF THE DETECTABLE WARNINGS AND UNIFORMLY RISES TO A 3-INCH MINIMUM CURB HEIGHT. ANY CURB NOT PART OF A CURB TAPER AND LESS THAN 3 INCHES IN HEIGHT IS NOT CONSIDERED A DETECTABLE EDGE AND THEREFORE IS NOT COMPLIANT WITH ACCESSIBILITY STANDARDS.

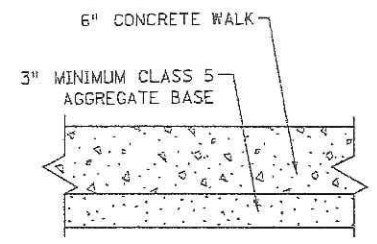
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APPROVED: 8-6-2014  
*[Signature]*  
OPERATIONS ENGINEER

MINNESOTA DEPARTMENT OF TRANSPORTATION  
REVISOR:  
*[Signature]*  
STATE DESIGN ENGINEER  
APPROVED: 8-6-2014

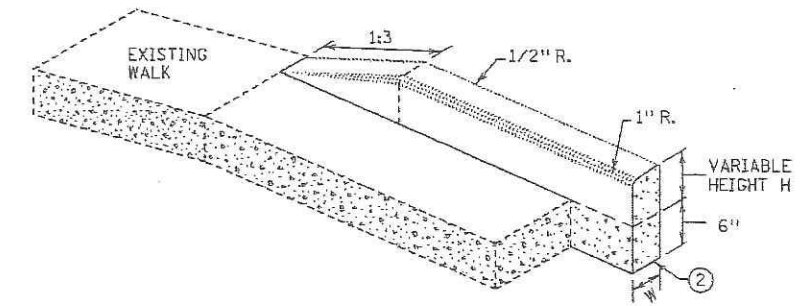
PEDESTRIAN CURB RAMP DETAILS  
STANDARD PLAN 5-297.250 17 OF 25



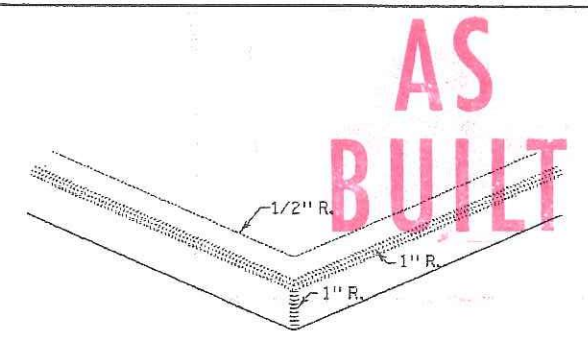
SIDEWALK REINFORCEMENT ⑥ ⑦



TYPICAL SIDEWALK SECTION WITHIN INTERSECTION CORNER

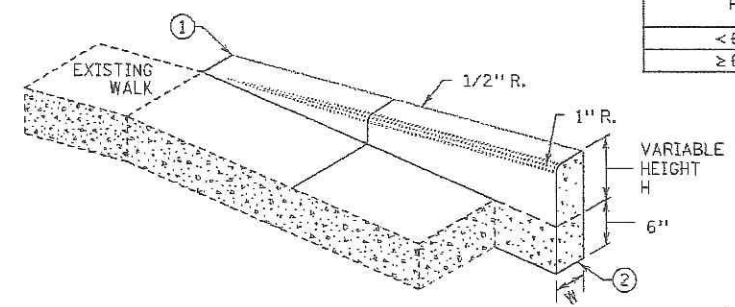


V CURB ADJACENT TO LANDSCAPE CURB WITHIN SIDEWALK LIMITS

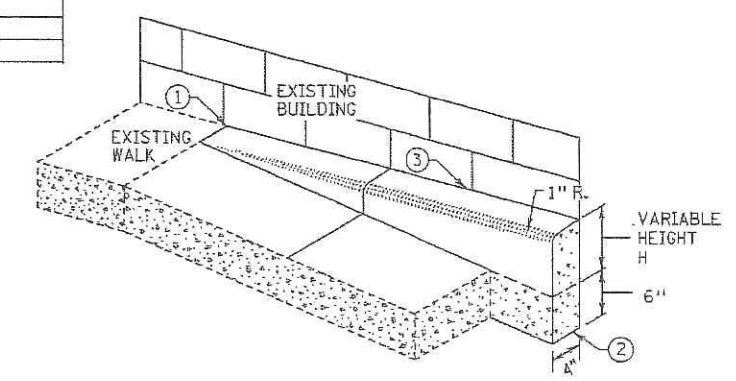


V CURB INTERSECTION

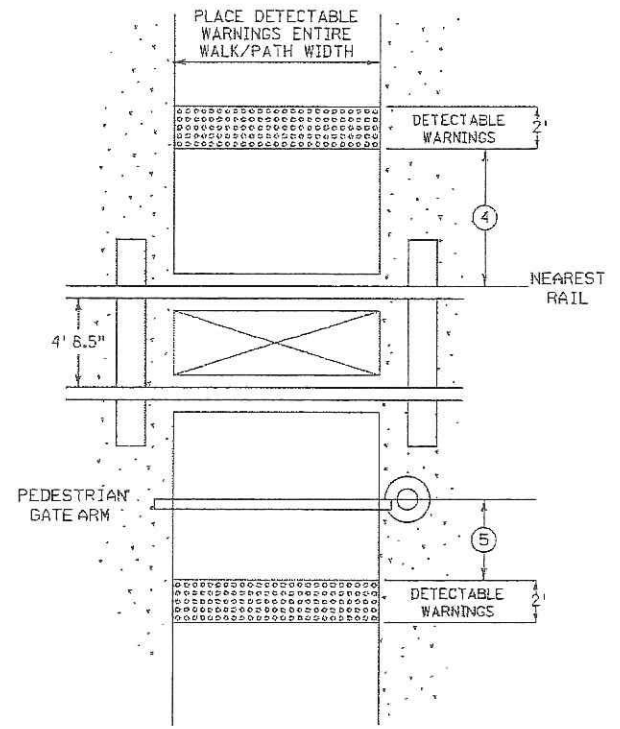
| CONCRETE CURB DESIGN V |              |
|------------------------|--------------|
| CURB HEIGHT H          | CURB WIDTH W |
| < 6"                   | 4"           |
| ≥ 6"                   | 6"           |



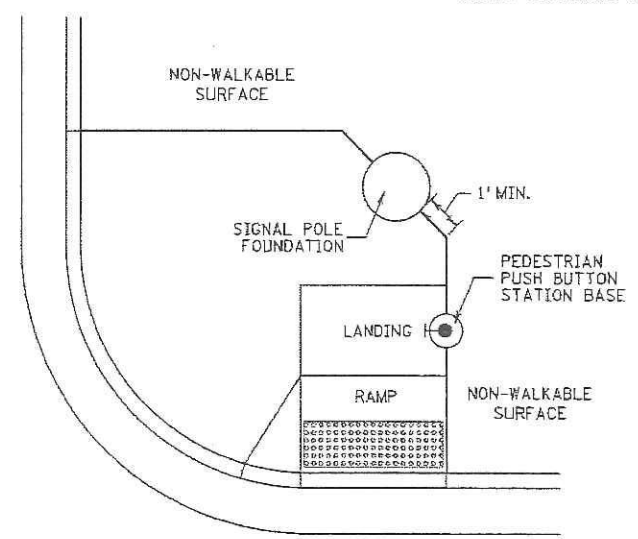
V CURB ADJACENT TO LANDSCAPE CURB OUTSIDE SIDEWALK LIMITS



V CURB ADJACENT TO BUILDING OR BARRIER



RAILROAD CROSSING PLAN VIEW



CONCRETE WALK EDGES ADJACENT TO CONCRETE STRUCTURES

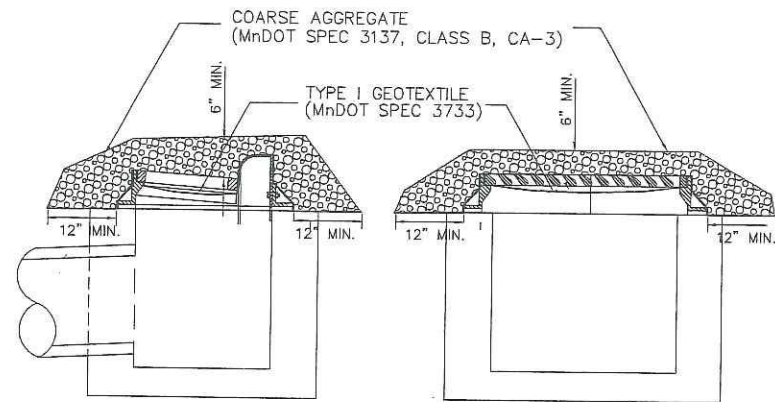
NOTES:

- ALL V CURB CONTRACTION JOINTS SHALL MATCH CONCRETE WALK JOINTS.
- WHERE RIGHT-OF-WAY ALLOWS, USE OF V CURB SHOULD BE MINIMIZED. GRADING ADJACENT TURF OR SLOPING ADJACENT PAVEMENT IS PREFERRED.
- V CURB SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS.
- V CURB NEXT TO BUILDING SHALL BE A 4" WIDTH AND SHALL MATCH PREVIOUS TOP OF SIDEWALK ELEVATIONS.
- ① END TAPERS AT TRANSITION SECTION SHALL MATCH INPLACE SIDEWALK GRADES.
- ② ALL V CURB SHALL MATCH BOTTOM OF ADJACENT WALK.
- ③ EDGE BETWEEN NEW V CURB AND INPLACE STRUCTURE SHALL BE SEALED AND BOND BREAKER SHALL BE USED BETWEEN EXISTING STRUCTURE AND PLACED V-CURB.
- ④ NEAREST EDGE OF DETECTABLE WARNING SURFACES SHALL BE PLACED 12' MINIMUM TO 15' MAXIMUM FROM THE NEAREST RAIL. FOR SKEWED RAILWAYS IN NO INSTANCE SHALL THE DETECTABLE WARNING BE CLOSER THAN 12' MEASURED PERPENDICULAR TO THE NEAREST RAIL.
- ⑤ WHEN PEDESTRIAN GATES ARE PROVIDED, DETECTABLE WARNING SURFACES SHALL BE PLACED ON THE SIDE OF THE GATES OPPOSITE THE RAIL, 2' FROM THE APPROACHING SIDE OF THE GATE ARM.
- ⑥ WHEN PLAN SPECIFIES, DRILL AND GROUT NO. 4 12" LONG REINFORCEMENT BARS AT 36" MAX. CENTER TO CENTER (EPOXY COATED).
- ⑦ TO ENSURE RAMP AND LANDINGS ARE PROPERLY CONSTRUCTED, LANDINGS MAY BE CAST SEPARATELY. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON THIS SHEET WHEN LANDINGS ARE CAST SEPARATELY.

REVISION:  
 APPROVED: 2-9-2015  
 OPERATIONS ENGINEER

MINNEAPOLIS  
 DEPARTMENT OF TRANSPORTATION  
 STATE DESIGN ENGINEER  
 APPROVED: 2-9-2015

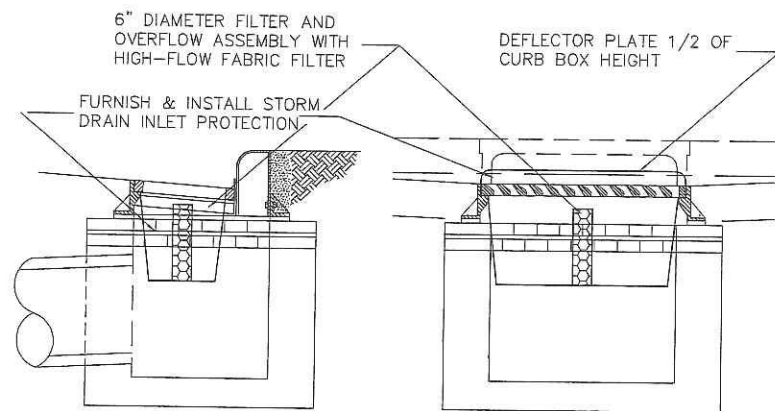
REVISOR:  
 PEDESTRIAN CURB RAMP DETAILS  
 STANDARD PLAN 5-297.250 18 OF 25



**INTERIM SEDIMENT CONTROL FOR CATCH BASINS**

**NOTES:**

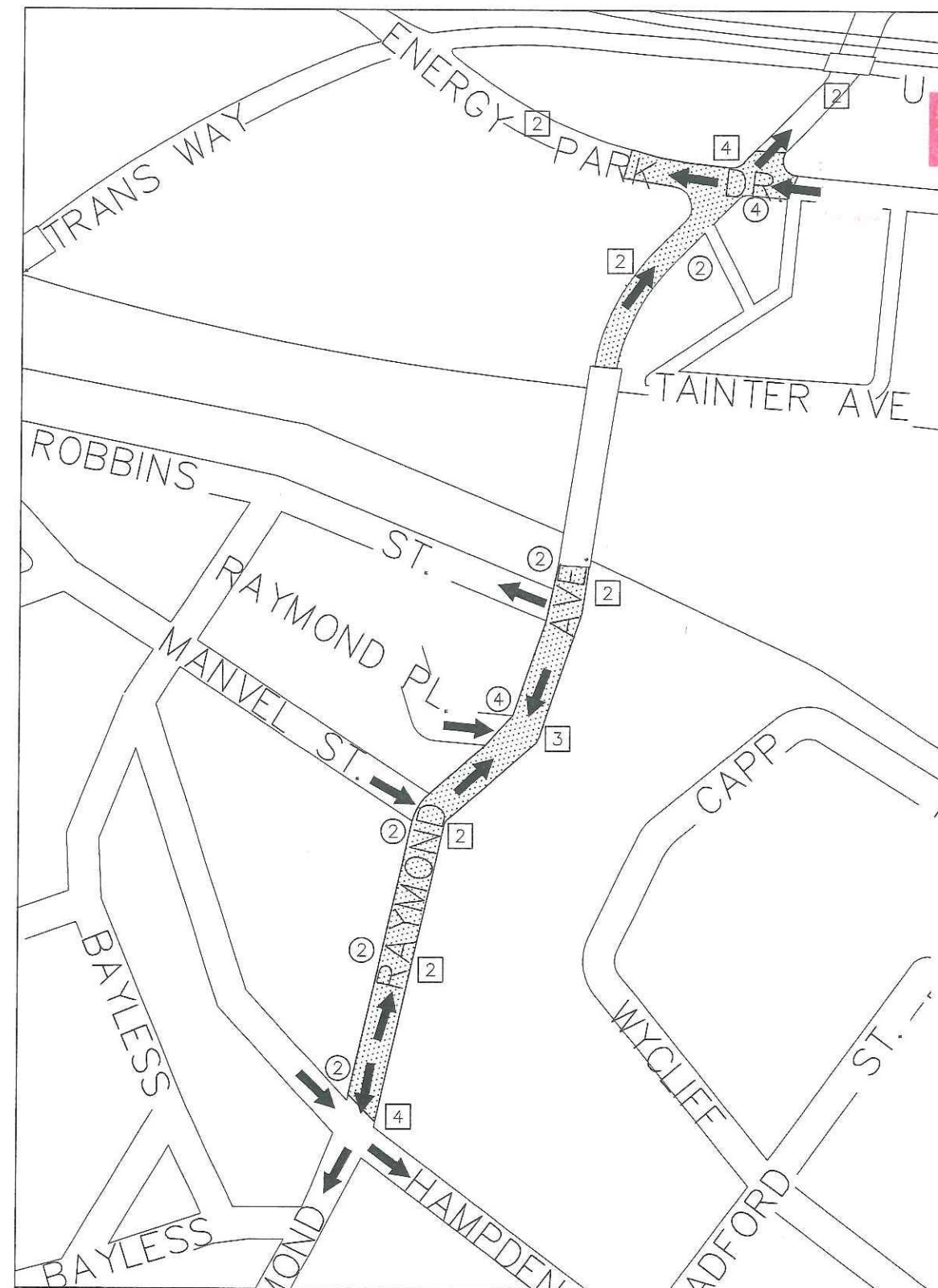
1. INTERIM SEDIMENT CONTROL REQUIRED FOR THE IDENTIFIED NEW CATCH BASINS PRIOR TO CURB AND GUTTER CONSTRUCTION. BID ITEM 2573.602.
2. CONTRACTOR TO INSPECT "INTERIM SEDIMENT CONTROL FOR CATCH BASINS" EVERY 7 DAYS AND WITHIN 24 HOURS AFTER EVERY RAIN EVENT. CONTRACTOR SHALL REPLACE COARSE AGGREGATE AND/OR GEOTEXTILE IF IT BECOMES NONFUNCTIONAL AS A SEDIMENT CONTROL.
3. CATCH BASIN SHALL BE KEPT FUNCTIONAL. CONTRACTOR SHALL CLEAN IF SEDIMENT IS WITHIN 12 INCHES OF OUTLET PIPE.



**STORM DRAIN INLET PROTECTION**

**NOTES:**

1. STORM DRAIN INLET PROTECTION REQUIRED FOR NEW CATCH BASINS AFTER CURB AND GUTTER CONSTRUCTION. BID ITEM 2573.530.
2. CONTRACTOR TO INSPECT "STORM DRAIN INLET PROTECTION" EVERY 7 DAYS AND WITHIN 24 HOURS AFTER EVERY RAIN EVENT. CONTRACTOR SHALL REPLACE OR CLEAN INSERT IF IT BECOMES NONFUNCTIONAL.
3. CATCHBASIN SHALL BE KEPT FUNCTIONAL. CONTRACTOR SHALL CLEAN IF SEDIMENT IS WITHIN 12 INCHES OF OUTLET PIPE.
4. EXISTING CATCH BASINS AS IDENTIFIED SHALL ALSO RECEIVE STORM DRAIN INLET PROTECTION FROM THE TIME UPSTREAM CONSTRUCTION ACTIVITIES BEGIN UNTIL CLASS V IS PLACED ON THE ROADWAY AND THE BOULEVARDS HAVE BEEN RESTORED.



**AS BUILT**

**LEGEND:**

- ➔ DIRECTION OF FLOW
- ② INTERIM SEDIMENT CONTROL AND STORM DRAIN INLET PROTECTION FOR NEW CATCH BASINS SEE DETAIL (NO. INDICATES CB'S REQUIRING CONTROL)
- ④ EXISTING CATCH BASINS REQUIRING STORM DRAIN INLET PROTECTION SEE DETAIL (NO. INDICATES CB'S REQUIRING CONTROL.)

NOTE: ALL PAVED SURFACES WITHIN AND ADJACENT TO THE PROJECT AREA SHALL BE SWEEPED FREE OF SEDIMENT WITHIN 24 HOURS OF DISCOVERY.

**EROSION AND SEDIMENT CONTROL**



|          |     |
|----------|-----|
| DESIGNED | BRM |
| DRAWN    | ATT |
| APPROVED | BRM |

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

Signature: *Barbara R. Mundahl* Date: 4/23/15  
 BARBARA R. MUNDAHL Lic. No. 43099

PREPARED BY STREET ENGINEERING DIVISION FOR THE CITY OF ST. PAUL, DEPARTMENT OF PUBLIC WORKS

**RAYMOND AVENUE—PHASE II**

PROJECT: 15-P-1393

DRAWER: 12

DWG NO. 1580

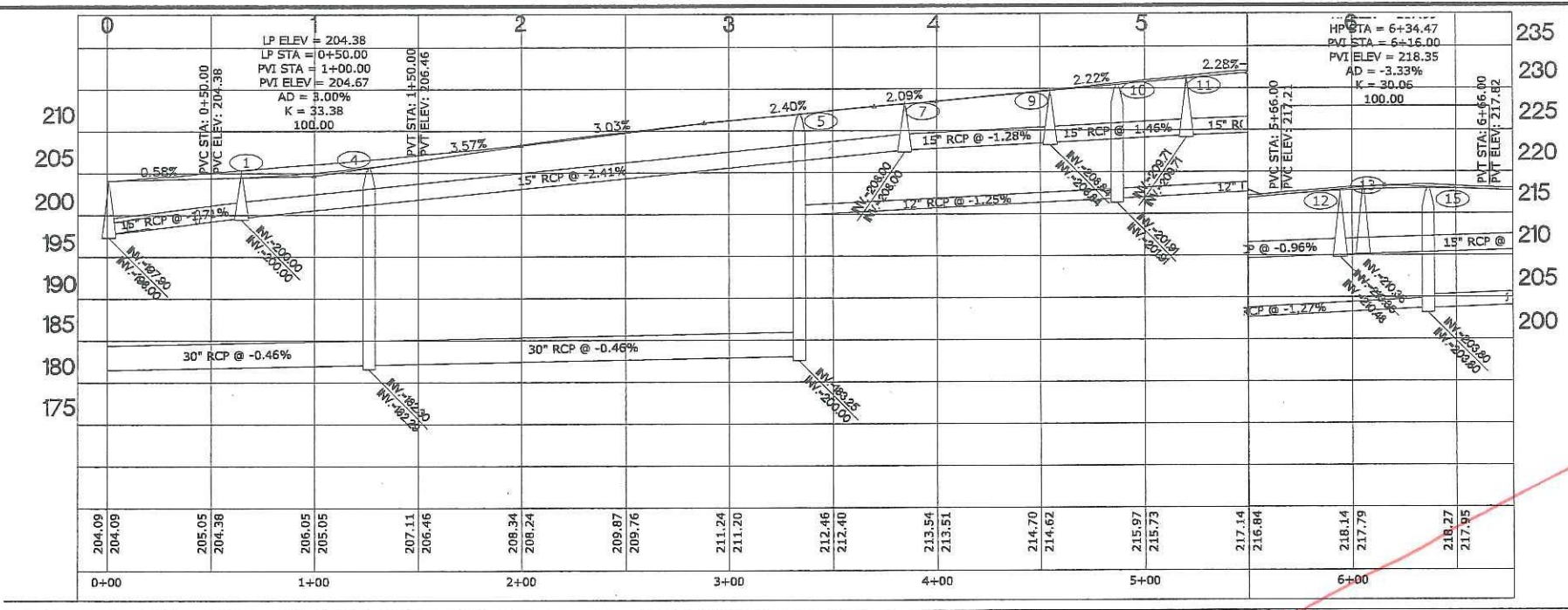
STATE AID PROJECT NUMBER: 164-020-133, 062-646-025

CAD NAME: PROJECTS/CURRENT/RAYMOND2/DWG-erosion

DATE: 4/23/15 SHEET NO. 10 OF 25 SHEETS



**AS BUILT**



MH5-A REPLACED BY SEWER DEPT. (SUMMER 2015)

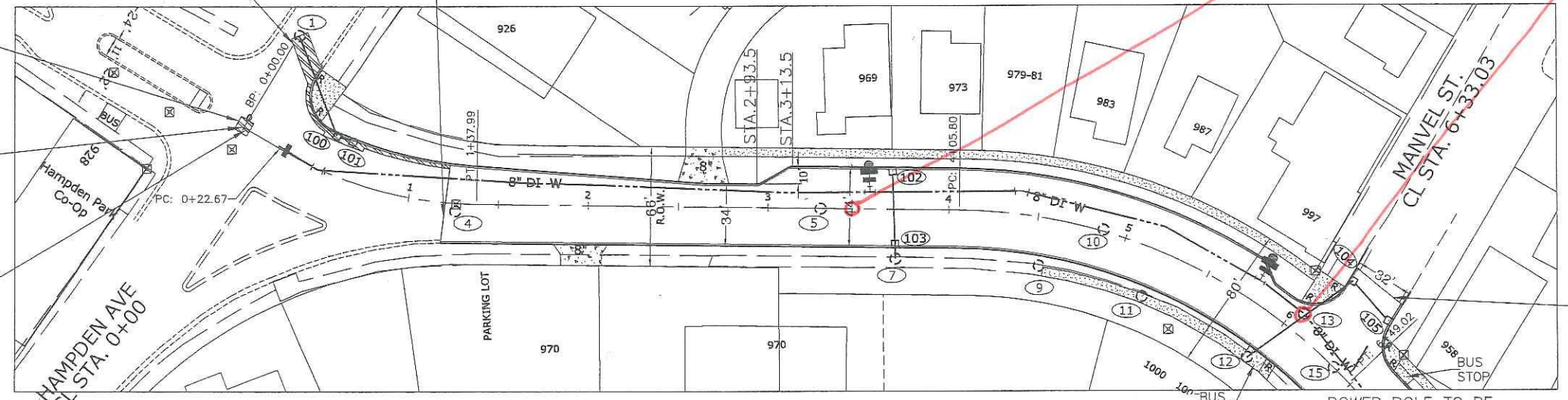
MH13 REMOVED DUE TO WATER

NOTE: REPLACE 1009' OF EXISTING 6" CI WATERMAIN WITH NEW 8" DI WATERMAIN IN RAYMOND AVE. FROM HAMPDEN AVE. TO ROBBINS ST. INSTALLATION BY SAINT PAUL REGIONAL WATER SERVICES. EXCAVATION BY CONTRACTOR - PAY AS BID ITEM 2504.603 "WATER MAIN TRENCH".

CURVE DATA

|      |          |
|------|----------|
| Δ    | 46.4505d |
| R    | 300'     |
| T    | 128.74   |
| L    | 243.21'  |
| P.C. | 4+05.80  |
| P.I. | 5+34.54  |
| P.T. | 6+49.02  |

CONSTRUCTION PLAN



NOTE: APPROXIMATELY 150' PIPE BURSTING BY SPRWS.

BEGIN S.P. 164-020-133 STA. 0+00

8'X8' PAVEMENT RESTORATION

CURVE DATA

|      |          |
|------|----------|
| Δ    | 30.0324d |
| R    | 220'     |
| T    | 59.02'   |
| L    | 115.32'  |
| P.C. | 0+22.67  |
| P.I. | 0+81.69  |
| P.T. | 1+37.99  |

SAWING PAVEMENT

RAYMOND AVE

POWER POLE TO BE RELOCATED BY OTHERS



SCALE IN FEET  
ELECTRONIC SURVEY

NOTE: EXCAVATION FOR PIPE BURSTING TO BE PAID UNDER BID ITEM 2504.601 "PIPE BURSTING"

POSSIBLE SURVEY MONUMENT RESETTING PAY AS BID ITEM 2540.602 "CONSTRUCT SURVEY MONUMENT"

POSSIBLE SURVEY MONUMENT RESETTING PAY AS BID ITEM 2540.602 "CONSTRUCT SURVEY MONUMENT"

POSSIBLE SURVEY MONUMENT RESETTING PAY AS BID ITEM 2540.602 "CONSTRUCT SURVEY MONUMENT"

REVISED 6/15/15

RAYMOND AVE

POSSIBLE V CURB BID ITEM 2531.603 "CONCRETE CURB DESIGN V"

POWER POLE TO BE RELOCATED BY OTHERS

RAYMOND AVENUE  
Hampden to Manvel

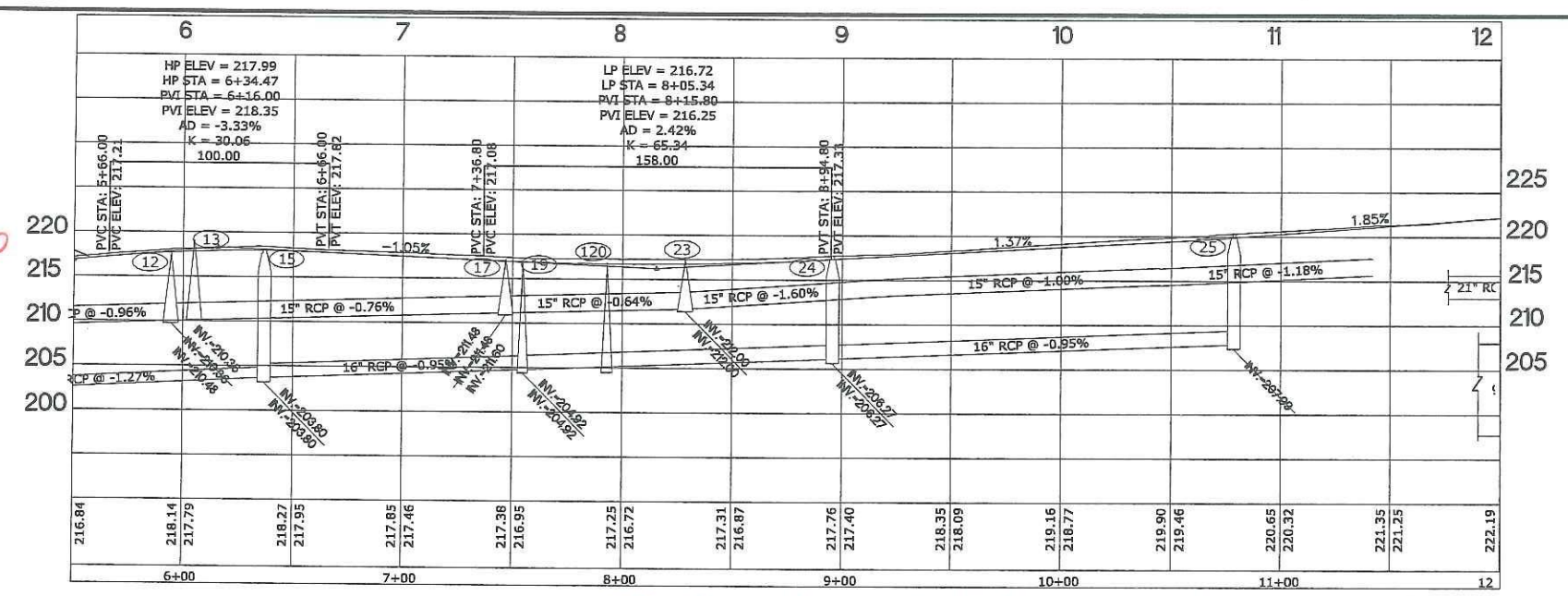
EXISTING AND REMOVAL PLAN

Z:\streets\projects\current\Raymond\Raymond\20-21-22-23-24-RAYMOND Base.dwg Jun 25, 2015 3:28pm

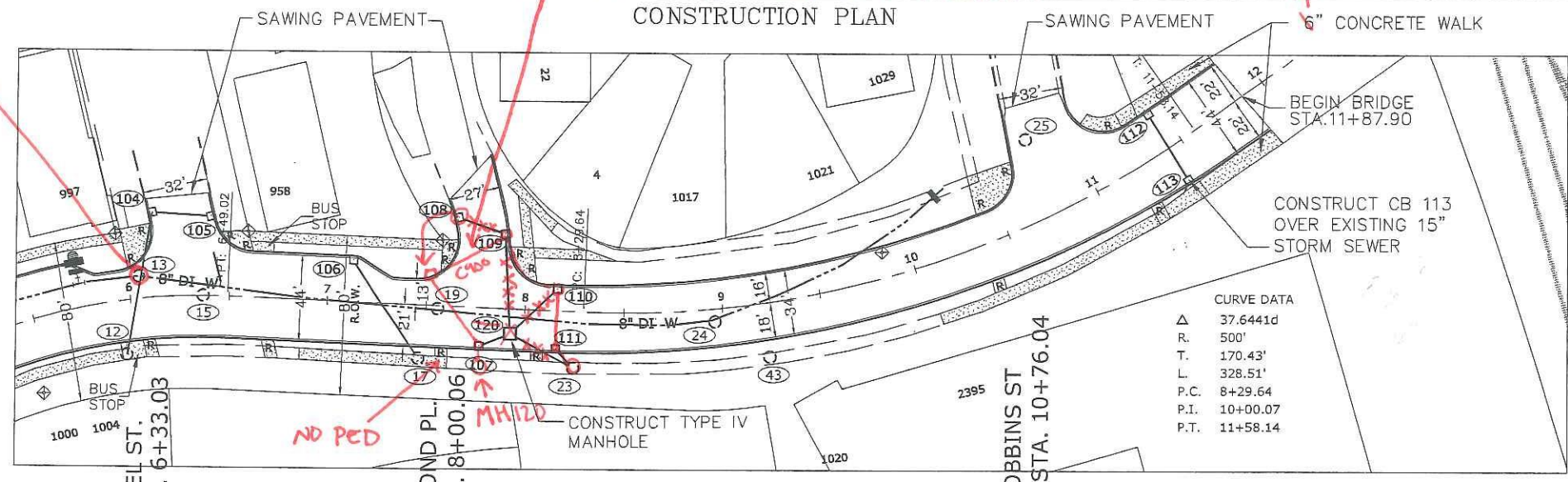
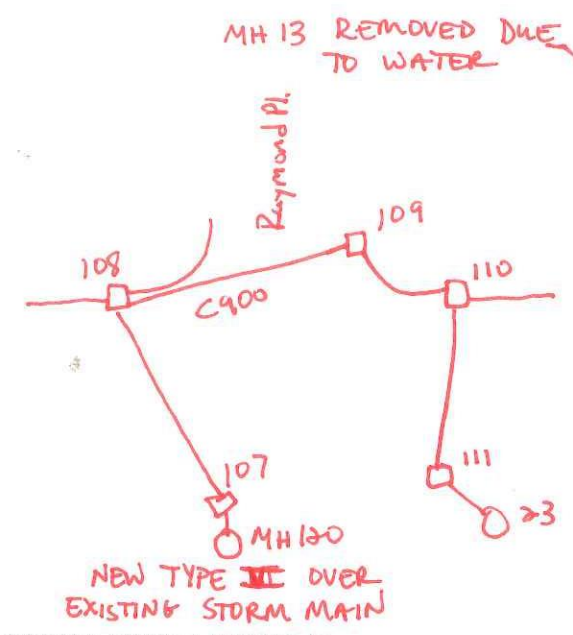
|  |          |     |   |  |  |          |           |                                      |                          |
|--|----------|-----|---|--|--|----------|-----------|--------------------------------------|--------------------------|
|  | DESIGNED | BRM | I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA<br><br>Signature: <i>Barbara R. Munda</i> Date: 4/23/15<br>BARBARA R. MUNDAHL Lic. No. 43099 | PREPARED BY  | STREET ENGINEERING'S DIVISION FOR THE CITY OF ST. PAUL, DEPARTMENT OF PUBLIC WORKS | PROJECT: | 15-P-1393 | STATE AID PROJECT NUMBER:            | 164-020-133, 062-646-025 |
|  | DRAWN    | ATT |   | <h2 style="text-align: center;">RAYMOND AVENUE-PHASE II</h2> | DRAWER:  | 12       | CAD NAME: | PROJECTS/CURRENT/Raymond/RaymondBase |                          |
|  | APPROVED | BRM |   |  | DWG. NO.   | 1580     | DATE:     | 4/23/15                              | SHEET NO.                |

**AS BUILT**

105 → 104 → MH12  
 109 → 108 → 107 → MH120  
 110 → 111 → MH23



10" C900 From CB109 → CB108

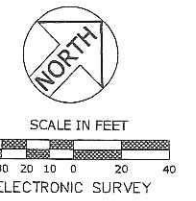


NOTE: REPLACE 1009' OF EXISTING 6" CI WATERMAIN WITH NEW 8" DI WATERMAIN IN RAYMOND AVE. FROM HAMPDEN AVE. TO ROBBINS ST. INSTALLATION BY SAINT PAUL REGIONAL WATER SERVICES. EXCAVATION BY CONTRACTOR - PAY AS BID ITEM 2504.603 'WATER MAIN TRENCH'.

RAYMOND AVE.

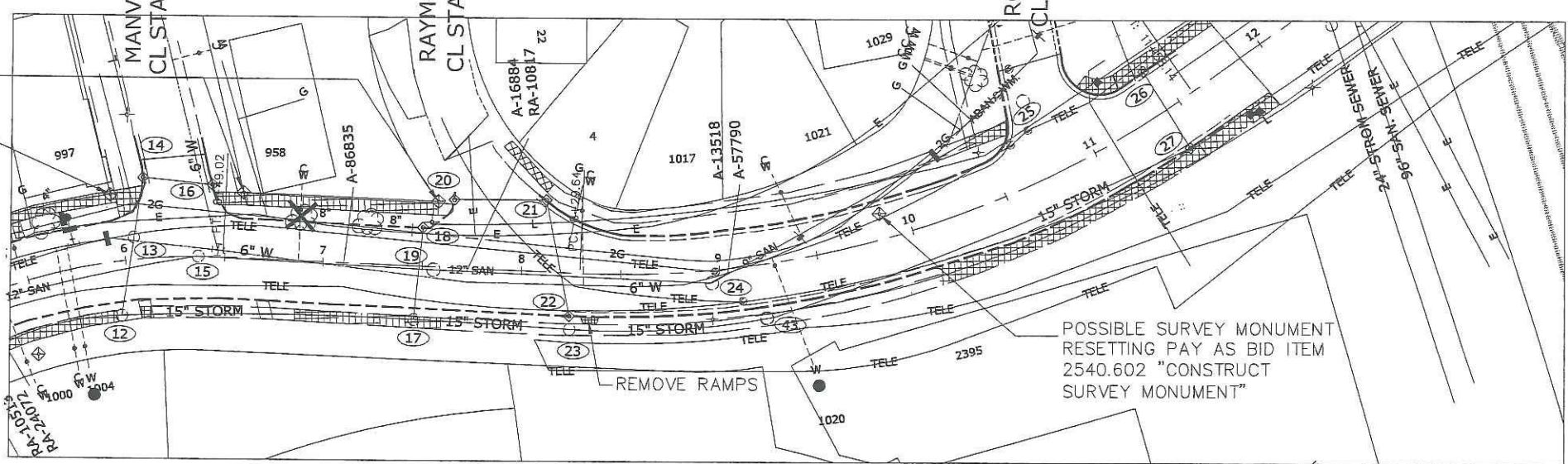
CURVE DATA

|      |          |
|------|----------|
| Δ    | 37.6441d |
| R    | 500'     |
| T    | 170.43'  |
| L    | 328.51'  |
| P.C. | 8+29.64  |
| P.I. | 10+00.07 |
| P.T. | 11+58.14 |



RAYMOND AVE.

POSSIBLE SURVEY MONUMENT RESETTING PAY AS BID ITEM 2540.602 "CONSTRUCT SURVEY MONUMENT"



RAYMOND AVENUE  
 Manvel to Robbins

Z:\streets\retreads\current\Raymond2\DWG\20-21-22-23-24-RAYMOND Base.dwg Apr 23, 2015 - 9:12am

|          |     |
|----------|-----|
| DESIGNED | BRM |
| DRAWN    | ATT |
| APPROVED | BRM |

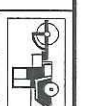
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

Signature: *Barbara R. Munn* Date: 4/23/15  
 BARBARA R. MUNN Lic. No. 43099

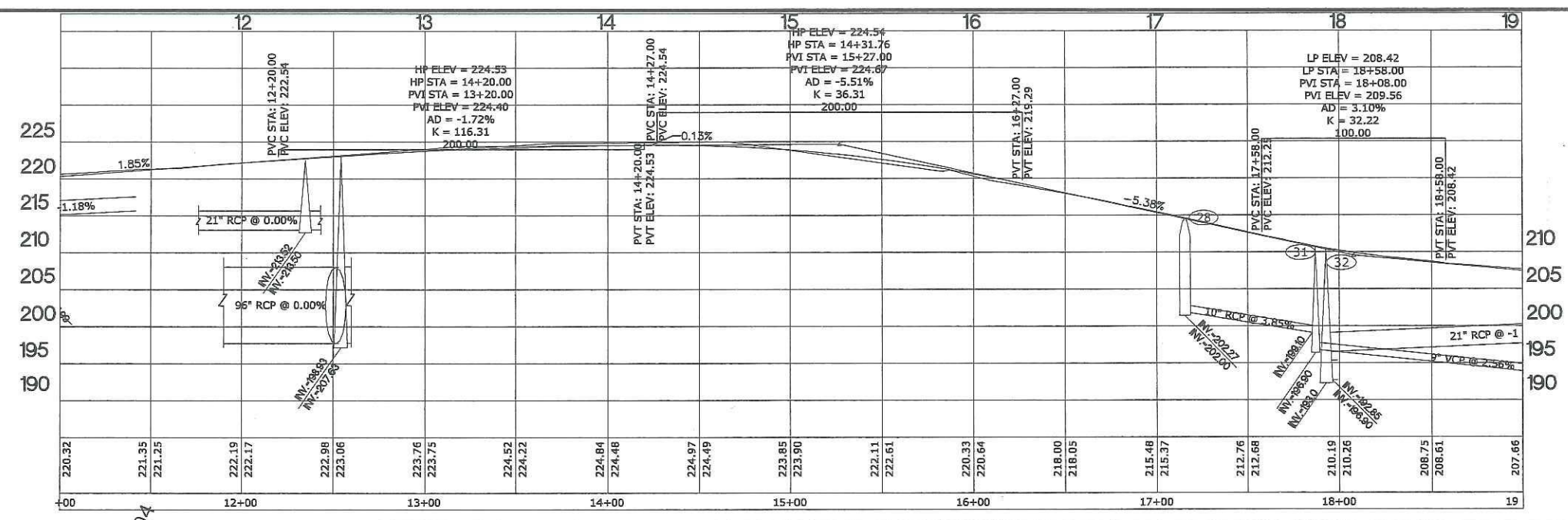
PREPARED BY STREET ENGINEERING DIVISION FOR THE CITY OF ST. PAUL, DEPARTMENT OF PUBLIC WORKS

**RAYMOND AVENUE - PHASE II**

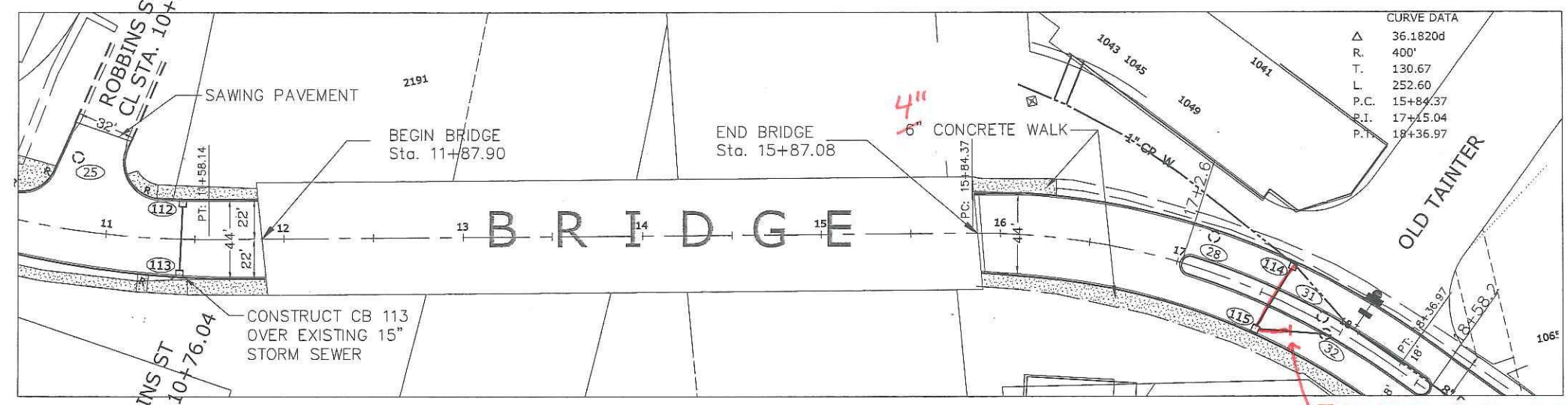
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|----------|-----------|---------------------------|--------------------------------------|
| PROJECT: | 15-P-1393 | STATE AID PROJECT NUMBER: | 164-020-133, 062-646-025             |
| DRAWER:  | 12        | CAD NAME:                 | PROJECTS/CURRENT/Raymond/RaymondBase |
| DWG NO:  | 1580      | DATE:                     | 4/23/15                              |
|          |           | SHEET NO:                 | 21 OF 25 SHEETS                      |



**AS  
BUILT**



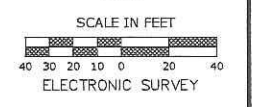
CONSTRUCTION PLAN



EXISTING AND REMOVAL PLAN

NOTE: REPLACE 566' OF EXISTING 6" CI WATERMAIN WITH NEW 8" DI WATERMAIN IN RAYMOND AVE. FROM TAINTER AVE TO ENERGY PARK DR. INSTALLATION BY SAINT PAUL REGIONAL WATER SERVICES. EXCAVATION BY CONTRACTOR - PAY AS BID ITEM 2504.603 "WATER MAIN TRENCH".

RAYMOND AVENUE



TIED TO EXISTING LEAD (17')  
From CB 115

RAYMOND AVENUE

RAYMOND AVENUE  
Raymond Pl to St.18+00

Z:\streets\projects\current\Raymond2\DWG\20-21-22-23-24-RAYMOND Base.dwg Apr 23, 2015 - 9:14am

|          |     |
|----------|-----|
| DESIGNED | BRM |
| DRAWN    | ATT |
| APPROVED | BRM |

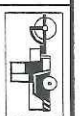
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

Signature: *Barbara D. Munnah* Date: 4/23/15  
 BARBARA D. MUNNAH Lic. No. 43099

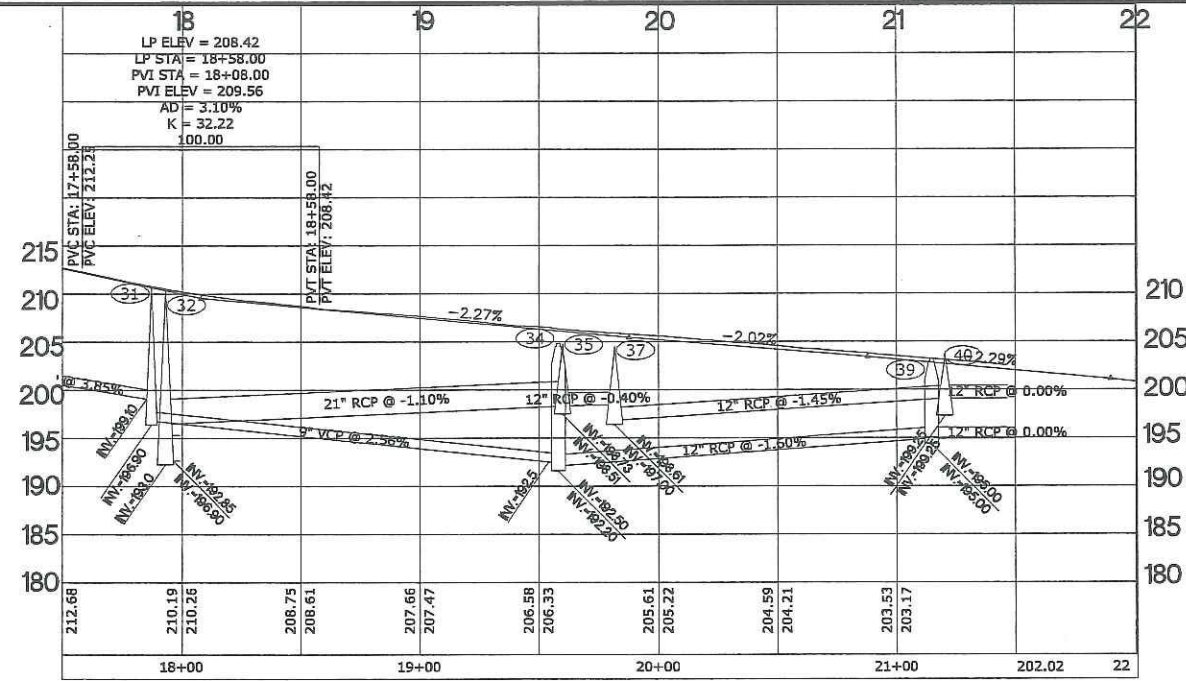
PREPARED BY STREET ENGINEERING DIVISION FOR THE CITY OF ST. PAUL, DEPARTMENT OF PUBLIC WORKS

**RAYMOND AVENUE-PHASE II**

|                    |  |
|--------------------|--|
| PROJECT: 15-P-1393 | STATE AID PROJECT NUMBER: 164-020-133, 062-646-025 |
| DRAWER: 12         | CAD NAME: PROJECTS/CURRENT/Raymond/RaymondBase     |
| DWG. NO. 1580      | DATE: 4/23/15 SHEET NO. 22 OF 25 SHEETS            |



# AS BUILT

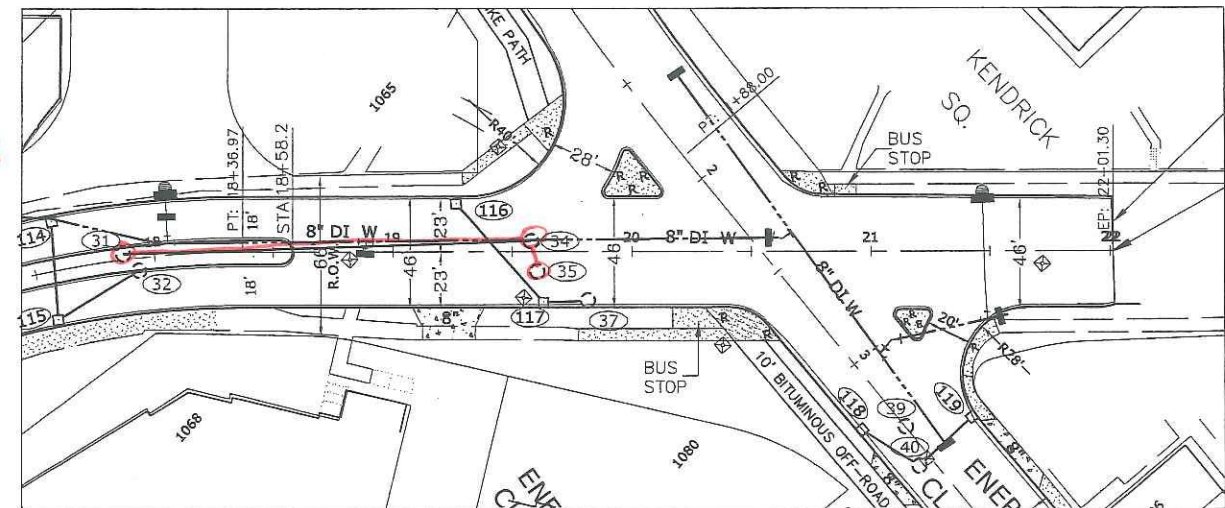


CONSTRUCTION PLAN

- MH 34 Full RECONSTRUCT  
 - MH 31 TOP 6' REPLACED  
 - 172' 8" C400 From MH 31 → MH 34

172 L.F. 8" P.V.C., C-900  
 MH 34 TO MH 31

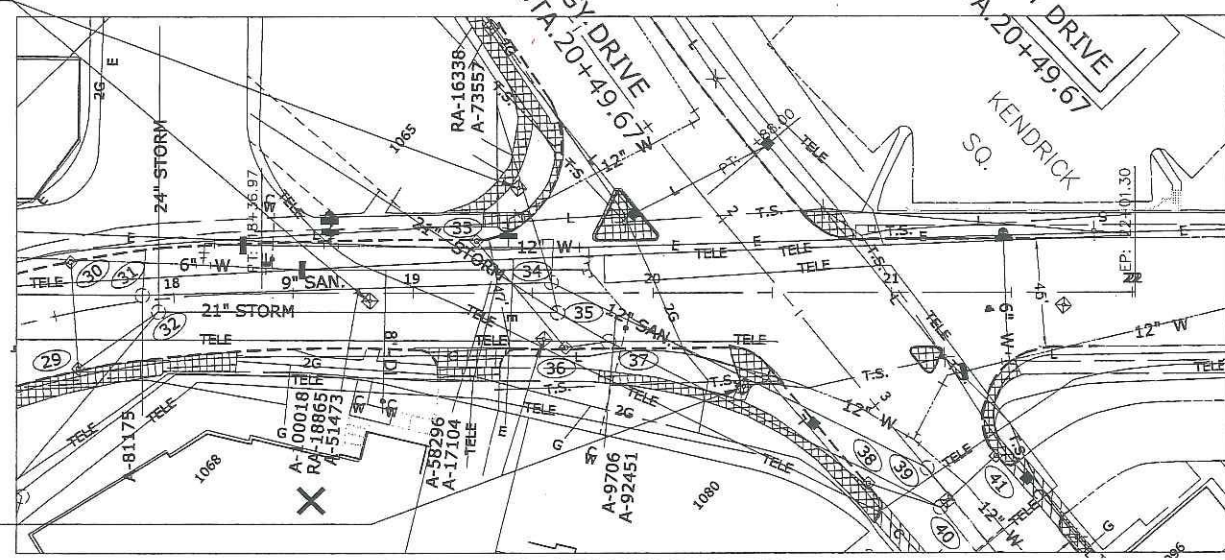
- 20' C900 8" C900  
 MH 34 → MH 35



SAWING PAVEMENT  
 END S.P. 164-020-133  
 STA. 22+01.30

RAYMOND AVE.

POSSIBLE SURVEY MONUMENT  
 RESETTING PAY AS BID ITEM  
 2540.602" CONSTRUCT  
 SURVEY MONUMENT

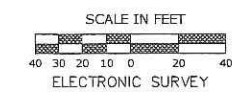


RAYMOND AVE.

POSSIBLE SURVEY MONUMENT  
 RESETTING PAY AS BID ITEM  
 2540.602" CONSTRUCT  
 SURVEY MONUMENT

EXISTING AND REMOVAL PLAN

NOTE: REPLACE 566' OF EXISTING 6" CI WATERMAIN WITH NEW 8" DI WATERMAIN IN RAYMOND AVE. FROM TANTER AVE TO ENERGY PARK DR. INSTALLATION BY SAINT PAUL REGIONAL WATER SERVICES. EXCAVATION BY CONTRACTOR - PAY AS BID ITEM 2504.603 "WATER MAIN TRENCH".



RAYMOND AVENUE  
 Sta. 18+00 to Energy Park

Z:\streets\projects\current\Raymond\20-21-22-23-24-RAYMOND Base.dwg Apr 24, 2015 - 8:47am

|          |     |
|----------|-----|
| DESIGNED | BRM |
| DRAWN    | ATT |
| APPROVED | BRM |

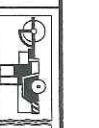
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

Signature: *Barbara R. Munda* Date: 4/23/15  
 BARBARA R. MUNDAHL Lic. No. 43099

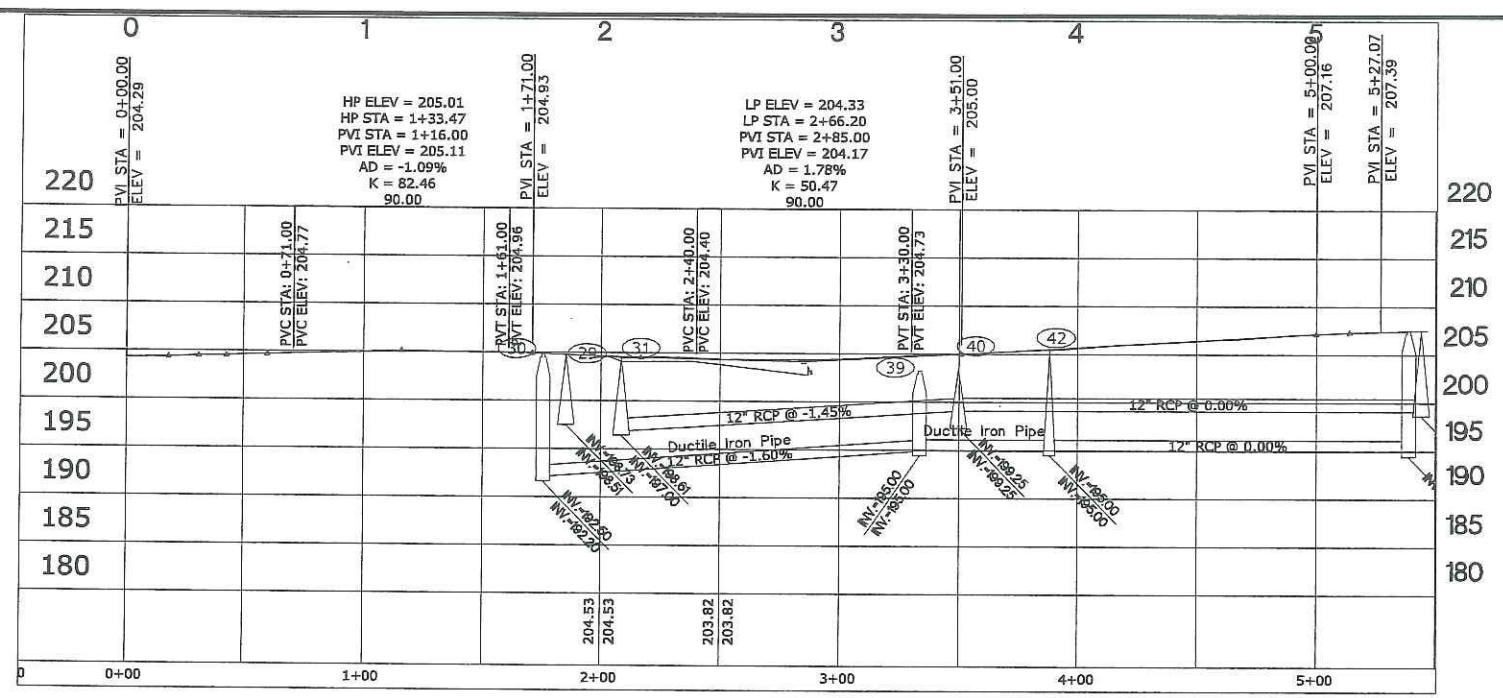
PREPARED BY STREET ENGINEERING DIVISION FOR THE CITY OF ST. PAUL, DEPARTMENT OF PUBLIC WORKS

## RAYMOND AVENUE—PHASE II

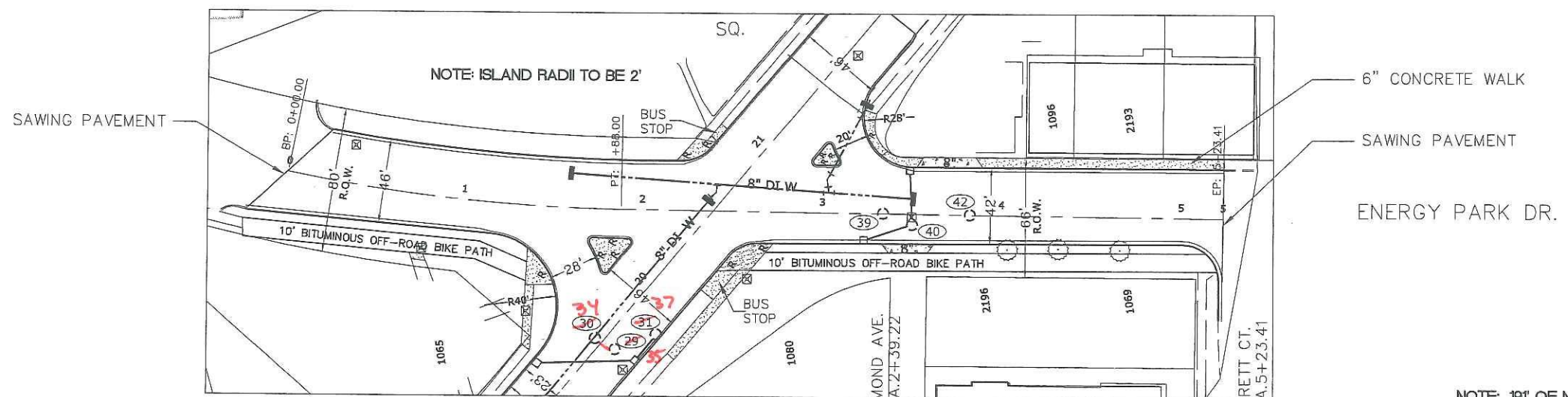
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| PROJECT: | 15-P-1393 | STATE AID PROJECT NUMBER: | 164-020-133, 062-646-025             |
| DRAWER:  | 12        | CAD NAME:                 | PROJECTS/CURRENT/Raymond/RaymondBase |
| DWG. NO. | 1580      | DATE:                     | 4/24/15                              |
|          |           | SHEET NO.                 | 23 OF 25 SHEETS                      |



AS  
BUILT



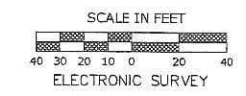
CONSTRUCTION PLAN



EXISTING AND REMOVAL PLAN

NOTE: 19' OF NEW 8" DI WATERMAIN IN ENERGY PARK DR. INSTALLATION BY SAINT PAUL REGIONAL WATER SERVICES. EXCAVATION BY CONTRACTOR - PAY AS BID ITEM 2504.603 "WATER MAIN TRENCH".

ENERGY PARK DR.



ENERGY PARK DRIVE.  
Sta.0+00 to Sta.5+23.41

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|          |     |
|----------|-----|
| DESIGNED | BRM |
| DRAWN    | ATT |
| APPROVED | BRM |

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

Signature: *Barbara R. Minnahan* Date: 4/23/15  
 Lic No. 43099

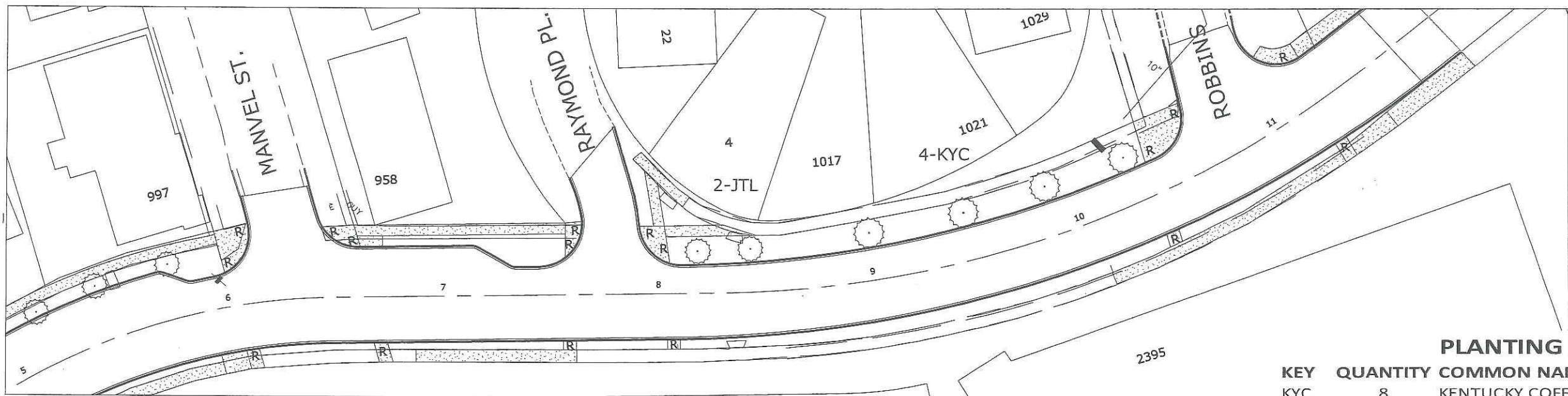
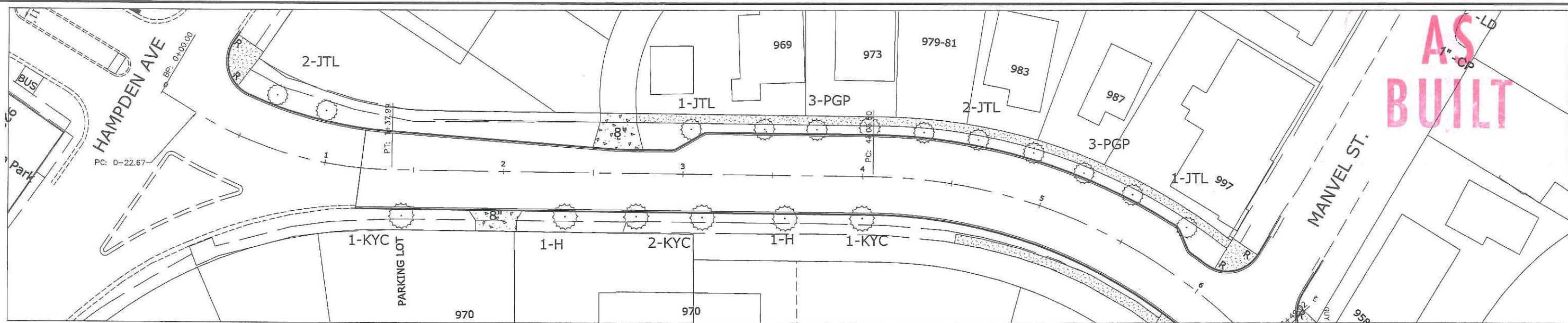
PREPARED BY STREET ENGINEERING DIVISION FOR THE CITY OF ST. PAUL, DEPARTMENT OF PUBLIC WORKS

**RAYMOND AVENUE-PHASE II**

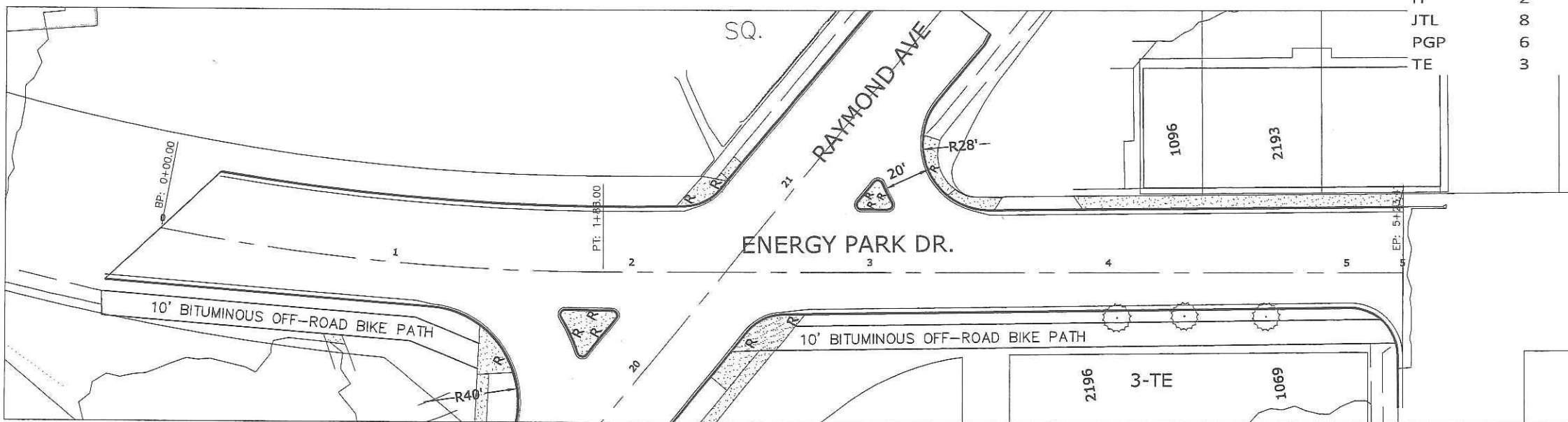
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| PROJECT: | 15-P-1393 | STATE AID PROJECT NUMBER: | 164-020-133, 062-646-025             |
| DRAWER:  | 12        | CAD NAME:                 | PROJECTS/CURRENT/Raymond/RaymondBase |
| DWG NO:  | 1580      | DATE:                     | 4/23/15                              |
|          |           | SHEET NO:                 | 24 OF 25 SHEETS                      |



AS BUILT



NOTE: NO PROPOSED TREES ON RAYMOND AVENUE NORTH OF THE BRIDGE.



**PLANTING SCHEDULE**

| KEY | QUANTITY | COMMON NAME         | SCIENTIFIC NAME            |
|-----|----------|---------------------|----------------------------|
| KYC | 8        | KENTUCKY COFFEETREE | GYMNOCLADUS DIOICUS        |
| H   | 2        | HACKBERRY           | CELTIS OCCIDENTALIS        |
| JTL | 8        | JAPANESE TREE LILAC | SYRINGA RETICULATA         |
| PGP | 6        | PRAIRIE GEM PEAR    | PYRUS USSURIENSIS (MORDAK) |
| TE  | 3        | TRIUMP ELM          | ULMUS "MORTON GLOSSY"      |

NOTE: EXACT LOCATIONS FOR TREES SHALL BE DETERMINED IN THE FIELD.

**TREE PLANTING PLAN**

Z:\streets\streets\projects\current\Raymond2\DWG\20-21-22-23-24-RAYMOND\_Base.dwg Apr 23, 2015 9:19am

|          |     |
|----------|-----|
| DESIGNED | BRM |
| DRAWN    | ATT |
| APPROVED | BRM |

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

Signature: *Felicia K. Mroczka* Date: 4/23/15 Lic. No. 43099

PREPARED BY STREET ENGINEERING DIVISION FOR THE CITY OF ST. PAUL, DEPARTMENT OF PUBLIC WORKS

**RAYMOND AVENUE—PHASE II**

|          |           |                           |                                      |
|----------|-----------|---------------------------|--------------------------------------|
| PROJECT: | 15-P-1393 | STATE AID PROJECT NUMBER: | 164-020-133, 062-646-025             |
| DRAWER:  | 12        | CAD NAME:                 | PROJECTS/CURRENT/Raymond/RaymondBase |
| DWG. NO. | 1580      | DATE:                     | 4/23/15                              |
|          |           | SHEET NO.                 | 25 OF 25 SHEETS                      |

