MINNESOTA DEPARTMENT OF TRANSPORTATION
CONSTRUCTION PLAN FOR TRAFFIC CONTROL SIGNAL SYSTEMS, INTERCONNECT AND ADA IMPROVEMENTS
AT THE INTERSECTION OF T.H. 156 AT C.S.A.H. 14 (GRAND AVE.), SOUTH ST. PAUL MN, DAKOTA COUNTY

STATE PROJ. NO. XXXX-XXX
REF POINT XXXX-XXX

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STATE PROJ. NO. XXXX-XXX
REF POINT XXXX-XXX

INDEX MAP
SCALE IN FEET

PROJECT LOCATION
CAYOTA COUNTY
METRO DISTRICT

SOUTH ST. PAUL
2000 POP. 20,167

INDEX

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INTERSECTION LAYOUT
PDF LINE LAYOUT/INTERSECTION NOTES
FIELD WORKING DRAWINGS
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UTILITIES LAYOUT

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THIS PLAN CONTAINS 20 SHEETS

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DET
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STATEMENT OF ESTIMATED QUANTITIES

COST BREAKDOWN

DISTRICT #:  
IPLOT NAME:  
PATH & FILE NAME:  

STATEMENT OF ESTIMATED QUANTITIES

OLD SYSTEM ID:  
T.E. XXXX  
METER ADDRESS: 9999 GRAND AVE.  
T.H. 156 AT C.S.A.H. 14 (GRAND AVE.)  
IN SOUTH ST. PAUL, DAKOTA COUNTY  

STATE PROJ.NO. XXXX-XX (T.H.156) SHEET NO. 2 OF 20 SHEETS
This is a general detail intended to show the requirements of APS Push Button location. For project-specific information regarding pedestrian ramp layout and push button locations, see the plan.

**Supplemental Guidance for Constructing Compliant APS Push Buttons**

1. The face of the button shall be parallel with the outside edge of crosswalk.
2. A minimum 4 ft x 4 ft landing area shall be provided adjacent to each button, with a 2 percent maximum slope in all directions.
3. Buttons shall be within 5 ft of the outside edge of the crosswalk.
4. Buttons shall be between 1.5 ft and 10 ft from the back of curb or edge of roadway, measured in the direction of travel. Standalone push button stations should be at least 4 ft from the back of curb to avoid knocking down.
5. Buttons within 10 ft apart.
6. Provide a maintenance access route (MAR) wherever possible for snow removal purposes. A MAR requires a 6 ft minimum clear distance between a push button and any obstruction, including buildings, p-curb, electrical foundations, signal cabinets, or another push button.
7. Buttons should be 2 ft minimum from ramp grade break and back of walk.

**Notes:**
- Placement and orientation of the push button station is critical to mount the button so that the face is parallel with the associated crosswalk. Screws in shaft to top center position before mounting accessible push button unit to the walk.
- Provide access opening on the roadway pedestal directly below the push button.
- Mount the push button station with leveling screws in accordance with standard plate kits.
- Install Bell threaded inserts using manufacturer's specific insertion tool.
- Use zinc plated steel 1/4-20 UNC Bell threaded inserts suitable for mounting on surface wall spaces of 3.25 mm. Approved Bell inserts are listed on MNDOT's approved-quality products list to eliminate many driving screws. As required at the end of the pipe.
- Use APS 1/4-20 stainless steel mounting bolts. Apply 3M onto Bell size compound to bolts prior to assembling.
- Use a bead of 3M silicone sealant along the top of the push button unit where it comes in contact with the 4" shaft.
- Use white reflective sheathing at intersection corners and yellow reflective sheathing in center median. Approved rubberized tube cover sheathing is listed on MNDOT's approved-quality products list to eliminate many driving screws.
- Provide a 1/4" x 1/2" hole for Bell inserts using Bell's specific installation tool.
- The push button station foundation is non-moving placed at one time with the crosswalk, providing a 1/4" clearance. The foundation is extended up to the top of the concrete and foundation is extended up to the top of the concrete and foundation is extended up to the top of the concrete and foundation is extended up to the top of the concrete.
- Ensure concrete control joints and edge of concrete walk are a minimum 4" from the center of the push button foundation.

**Typical APS Pedestrian Push Button Location**

**Option 1**

- Push button station foundation is non-moving placed at one time with the crosswalk, providing a 1/4" clearance. The foundation is extended up to the top of the concrete and foundation is extended up to the top of the concrete.
- Ensure concrete control joints and edge of concrete walk are a minimum 4" from the center of the push button foundation.

**Option 2**

- Push button station foundation is non-moving placed at one time with the crosswalk, providing a 1/4" clearance. The foundation is extended up to the top of the concrete and foundation is extended up to the top of the concrete.
- Ensure concrete control joints and edge of concrete walk are a minimum 4" from the center of the push button foundation.

**Accessories**

- **Silicone Sealant**
- **Reflective Sheeting**
- **Bell Threaded Inserts**
- **Zinc Plated Steel Bolts**
- **Stainless Steel Mounting Bolts**

---

**System 10: XXXX**

**Pedestrian Push Button Station**

Typical APS push button location detail

**License No.:**

**Certified By:**

**State Proj. No.:**

**Sheet No.: 4 of 20 Sheets**
WIRING CONNECTOR DETAIL

4-POSITION CONNECTOR
BACK VIEW
4-POSITION PLUS
PART # 0462-209-16141
4-POSITION RECEPTACLE
PART # 0462-209-16141

4 Position DT Connector
(3 Section Head/OBK/MLK)

6 Position DT Connector
(4 and 5 Section Model)

WIRE COLOR CODE KEY

4 Position DT Connectors
Use Two Connectors for 3 Section FYA Cluster Heads

WIRE SPECIFICATION CHART

NOTES:
1. TERMINATE THE DT04-4 CONNECTOR TO THE WIRING HARNESS RUNNING FROM THE BASE/JUNCTION BOX TO THE SIGNAL INDICATIONS.
2. TERMINATE THE DT04-5 CONNECTOR TO THE CABLES RUNNING FROM THE TRAFFIC SIGNAL CERAINS TO THE BASE/JUNCTION BOX OF THE POLES.
3. LEAVE 24 INCHES OF SLACK ON EACH CABLE IN EACH POLE BASE/JUNCTION BOX.
4. STRIP 1/4 IN. OF INSULATION FROM EACH INDIVIDUAL CONDUCTOR IN EACH POLE.
5. CRIMP PINS OR SOCKETS USING RATCHETING TYPE CRIMPING TOOL HDT-48-00.
6. NO OTHER CRIMPING TOOL WILL BE ALLOWED.
7. TERMINATE CABLES AND CONNECTORS AS SHOWN ON PLANS.
8. INSERT SEALING PLUGS (PART 114017) IN UNUSED PLUG AND RECEPTACLE PINS.
9. LABEL EACH HALF OF THE CONNECTOR (PLUG AND RECEPTACLE) WITH THE DEVICE DESIGNATION AS SHOWN ON THE WIRING DIAGRAM USING A PERMANENT BLACK MARKER.
10. CERTIFIED BY

DESIGNATION AS SHOWN ON THE WIRING DIAGRAM USING A PERMANENT BLACK MARKER.

REVISIONS

TRAFFIC SIGNAL POLE
WIRING CONNECTOR DETAIL

SHEET NO. 6 OF 20 SHEETS

LIC. NO.   CKD BY:

CERTIFIED BY

STATE PROJECT NO. XXXX-XX (T,H,156) SHEET NO. 6 OF 20 SHEETS
① SEE TMS PLAN FOR DETAILS ON CONNECTING, TESTING AND SPLICING.
PEDESTRIAN CURB RAMP DETAILS

NOTES:

LANDINGS SHALL BE LOCATED ANYWHERE THE PEDESTRIAN ACCESS ROUTE (PATH) CHANGES DIRECTION AT THE TOP OF RAMPS THAT HAVE RUNNING SLOPES GREATER THAN 5.0%, AND THE APPROACHING WALK IS A VERTICAL GRADE GREATER THAN 5.0%.

INITIAL CURB RAMP LANDINGS SHALL BE CONSTRUCTED WITHIN 1' OF CURB WIDTH FROM THE BACK OF CURB. THE BACK OF CURB IS THE PROPOSED ADJACENT WALK GRADE. LANDING ONLY APPLICABLE WHEN THE INITIAL RAMP RUNNING SLOPE IS IN VECD WALK.

SECONDARY CURB RAMP LANDINGS ARE REQUIRED FOR EVERY 30'-0" OF VERTICAL RISE WHEN THE LONGITUDINAL RUNNING SLOPE IS GREATER THAN 5.0%.

CONTRACTION JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS WITHIN THE PAR, 1/4" DEEP GRADE BREAKS WITHIN THE PAR SHALL BE CONSTRUCTED TO THE PATH OF TRAVEL. THIS BIM THOUGHTS OF A SLOPED WALKING SURFACE MUST BE EQUAL LENGTH, EXCEPT AS STATED IN THIS SDC.

TO ENSURE INITIAL RAMPS AND INITIAL LANDINGS ARE PROPERLY CONSTRUCTED, LANDINGS SHALL BE CAST SEPARATELY. FOLLOW GENERAL REINFORCEMENT DETAILS ON SHEET 6 AND THE AASHTO PROVISIONS - PROTECTION OF WORK (AASHTO).

TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.

THE GRADE BREAK SHALL BE PERPENDICULAR TO THE BACK OF WALK. THIS WILL ENSURE THAT THE GRADE BREAK IS IN PERPENDICULAR TO THE DIRECTION OF TRAVEL. (TYPICAL FOR ALL PAR.

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COMBINED DIRECTIONAL

DIRECTIONAL RAMP WALKABLE FLARE

STANDARD ONE-WAY DIRECTIONAL

ONE-WAY DIRECTIONAL WITH DETECTABLE WARNING AT BACK OF CURB

SECTION D-D

TYPICAL SIDEWALK SECTION WITHIN INTERSECTION CORNER

PEDESTRIAN CURB RAMP DETAILS

LEGEND

NOTES:

1. Landscapes shall be located anywhere the pedestrian access route (PAR) changes direction. The top of ramps that have running slopes greater than 5%, and if the approaching walk is diverse grade.

2. Initial curb ramp landings shall be constructed within 10' from the back of curb per Figs. 4-19. As part of the project design, the retailer distance, only applicable when the initial ramp running slope is 8% or greater.

3. Secondary curb ramp landings are required for every 6' of vertical rise when the longitudinal slope is greater than 5%, and 2% and less than 5% in the direction shown.

4. Construction joints shall be constructed along all grade breaks within the PAR. Radial detectable warning shall be used at the top grade break of concrete flares adjacent to walkable surfaces. All grade breaks within the PAR shall be perpendicular to the path of travel. Both sides of a graded walking surface should be equal length.

5. To ensure integral joint and initial landings are properly constructed, landings shall be cast separately. Follow sideiordentment details on SHEET 6 and the high special provision properties on the PAR.

6. The top of curb shall be proposed adjacent walk grade, when the boulevard is a view for less, the top of curb shall reduce negative boulevard slopes from the top back of curb. The top of curb shall be minimum proposed adjacent walk grade, when the boulevard is a view for less, the top of curb shall reduce negative boulevard slopes from the top back of curb. The top of curb shall be minimum proposed adjacent walk grade, when the boulevard is a view for less, the top of curb shall reduce negative boulevard slopes from the top back of curb. The top of curb shall be minimum proposed adjacent walk grade, when the boulevard is a view for less, the top of curb shall reduce negative boulevard slopes from the top back of curb.
PEDESTRIAN CURB RAMP DETAILS

NOTES:
1. SEE STANDARD PLATE 7038 AND THIS SHEET FOR ADDITIONAL DETAILS ON DETECTABLE WARNING.
2. RAISED OBSTACLES THAT COULD MISTAKENLY BE TRAVERSED BY A USER WHO IS VISUALLY IMPAIRED.
3. A WALKABLE SURFACE IS DEFINED AS A PAVED SURFACE ADJACENT TO A CURB RAMP WITHOUT DETECTABLE WARNINGS.
4. SEE PEDESTRIAN APPROACH NOSE DETAIL (FOR RETURNED CURB SIDE TREATMENT)

VERTICAL DETECTABLE WARNING DETAIL

RETURNED CURB

TYPICAL SIDE TREATMENT OPTIONS

PEDESTRIAN APPROACH NOSE DETAIL

FOR RETURNED CURB SIDE TREATMENT

CURB & GUTTER

PEDESTRIAN CURB RAMP DETAILS

STANDARD PLAN 5-297.250  4 OF 6

STATE PROJ. NO. XXXX-XX  (T.H.156)

SHEET NO. 12 OF 20 SHEETS

APPROVED JANUARY 23, 2017

STATE DESIGN ENGINEER

OPERATIONS ENGINEER

APPROVED: JANUARY 23, 2017

REVISION: 1-23-2017

SEE PEDESTRIAN APPROACH NOSE DETAIL

RETURNED CURB

TYPICAL SIDE TREATMENT OPTIONS

PEDESTRIAN APPROACH NOSE DETAIL

FOR RETURNED CURB SIDE TREATMENT

CURB & GUTTER

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FOR RETURNED CURB SIDE TREATMENT

CURB & GUTTER

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STANDARD PLAN 5-297.250  4 OF 6

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FOR RETURNED CURB SIDE TREATMENT

CURB & GUTTER

PEDESTRIAN CURB RAMP DETAILS

STANDARD PLAN 5-297.250  4 OF 6

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STATE DESIGN ENGINEER

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APPROVED: JANUARY 23, 2017

REVISION: 1-23-2017
5 OF 6
EXISTING CROSS SLOPE GREATER THAN 2.0%.

NOTES:
A VALUABLE FLAT IS AN IN-SITU CONCRETE PLACE THAT IS REQUIRED WHEN THE FLAT IS ADJACENT TO A VALUABLE SURFACE OR WHEN THE PEDESTRIAN PATH OF TRAVEL OF A PUSH BUTTON TRAVELING THE FLAT.

ALL V CURB CONSTRUCTION JOINTS SHALL BE PLACED SIDEWALK LIMITS.
WHERE RIGHT-OF-WAY ALLOWS USE OF V CURB SHOULD BE MINIMIZED, GRADING ADJACENT TO THE SIDEWALK LIMITS 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.
V CURB SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT-OF-WAY permits.

TRANSITION PANELS ARE TO ONLY BE USED AFTER THE RAMP, OR IF NEEDED, LANDING ARE AT THE FULL CURB HEIGHT (TYPICAL SECTION).

TRANSITION PANEL USES THE CALculated TRANSITION LENGTH, NOT THE FULL CURB HEIGHT.

ADJACENT TO A WALKABLE SURFACE, OR WHEN THE PEDESTRIAN PATH OF TRAVEL OF A PEDESTRIAN CURB RAMP DETAILS ARE AT THE FULL CURB HEIGHT (TYPICAL SECTION).

TRANSITION PANELS ARE TO ONLY BE USED AFTER THE RAMP, OR IF NEEDED, LANDING ARE AT THE FULL CURB HEIGHT (TYPICAL SECTION).

EXISTING CROSS SLOPE GREATER THAN 2.0%.

4.5'
5.0% minimum and 8.3% maximum in the direction shown.
NOTE: THESE LONGITUDINAL SLOPE RANGES ARE TO BE THE STARTING POINT OF SITE CONSIDERATIONS.
TRANSITION PANELS ARE TO ONLY BE USED AFTER THE RAMP, OR IF NEEDED, LANDING ARE AT THE FULL CURB HEIGHT (TYPICAL SECTION).
TRANSITION PANELS ARE TO ONLY BE USED AFTER THE RAMP, OR IF NEEDED, LANDING ARE AT THE FULL CURB HEIGHT (TYPICAL SECTION).

6.0'
**PEDESTRIAN RAMP**

**TYPICAL TABLING AREA**

**ALLOWABLE TABLING AREA**

**EDGE OF THROUGH LANE**

**LANDING**

**STANDARD PLAN 5-297.250**

**STATE PROJ. NO. XXXX-XX (T.H.156)**

**SHEET NO. 14 OF 20 SHEETS**

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**NOTES:**

1. **TO DOUBLE RAMPS AND LANDING ARE PROPERLY CONSTRUCTED, ALL DETAIL SHOWN AT THE TOP OF A CURB RAMP, CURB DRAINAGE DETAILS MAY BE ADDED TO THE INTERCOMPLETE DETAILS ON THIS SHEET FOR ALL SEPARATELY FOUND REFERENCING LANDING.

2. **ITEM AND TYPICAL CURB AND GUTTER PROPOSED CURB AND GUTTER PLAN VIEW**

3. **SAWCUT EXISTING CURB AND GUTTER PLAN VIEW**

4. **3" MAX.**

5. **36" MAX.**

6. **12" MAX.**

7. **3" MIN.**

8. **12" MIN.**

9. **36" MIN.**

10. **12" MIN.**

11. **3" MIN.**

12. **12" MIN.**

13. **36" MIN.**

14. **12" MIN.**

15. **3" MIN.**

16. **12" MIN.**

17. **36" MIN.**

18. **12" MIN.**

19. **3" MIN.**

20. **12" MIN.**

21. **36" MIN.**

22. **12" MIN.**

23. **3" MIN.**

24. **12" MIN.**

25. **36" MIN.**

26. **12" MIN.**

27. **3" MIN.**

28. **12" MIN.**

29. **36" MIN.**

30. **12" MIN.**

31. **3" MIN.**

32. **12" MIN.**

33. **36" MIN.**

34. **12" MIN.**

35. **3" MIN.**

36. **12" MIN.**

37. **36" MIN.**

38. **12" MIN.**

39. **3" MIN.**

40. **12" MIN.**

41. **36" MIN.**

42. **12" MIN.**

43. **3" MIN.**

44. **12" MIN.**

45. **36" MIN.**

46. **12" MIN.**

47. **3" MIN.**

48. **12" MIN.**

49. **36" MIN.**

50. **12" MIN.**

51. **3" MIN.**

52. **12" MIN.**

53. **36" MIN.**

54. **12" MIN.**

55. **3" MIN.**

56. **12" MIN.**

57. **36" MIN.**

58. **12" MIN.**

59. **3" MIN.**

60. **12" MIN.**

61. **36" MIN.**

62. **12" MIN.**

63. **3" MIN.**

64. **12" MIN.**

65. **36" MIN.**

66. **12" MIN.**

67. **3" MIN.**

68. **12" MIN.**

69. **36" MIN.**

70. **12" MIN.**

71. **3" MIN.**

72. **12" MIN.**

73. **36" MIN.**

74. **12" MIN.**

75. **3" MIN.**

76. **12" MIN.**

77. **36" MIN.**

78. **12" MIN.**

79. **3" MIN.**

80. **12" MIN.
NOTES:
1. INSTALL PREFORMED PAVEMENT MARKING TAPE FOR PERMANENT TRAFFIC LANE DELINEATION AND LEGENDS, IN ACCORDANCE WITH MM-102 AND AS FOLLOWS.
2. TAPE AREAS TO BE CENTERED AND ALIGNED ON CENTER LINE AND LANE LINES.
3. SIGNS SHALL BE RETROREFLECTIVE MARY PETER PREFORMED TAPE.
4. A MINIMUM OF 30' CLEAR DISTANCE MUST BE LEFT ADJACENT TO SIGNS.
5. IF LAST TAPE AREA FALLS INTO THIS DISTANCE, IT MUST BE OMITTED.
6. FOR DIVIDED ROADWAYS, ADJUSTMENTS IN SPACING OF THE TAPE AREAS SHOULD BE MADE IN THE MEDIAN SO THAT THE TAPE AREAS ARE MAINTAINED IN THEIR PROPER LOCATION ACROSS THE TRAVELED PORTION OF THE ROADWAY.
7. ALL ENDS OF CROSSWALKS, THE TAPE AREAS ARE TO BE MADE PARALLEL TO THE LANE LINES.
8. ALTERNATE PAVEMENT SURFACES AND TRANSITION SURFACES, WHERE PAVEMENT MARKINGS CANNOT BE INSTALLED IN THE HOT WET, SHALL BE GROOVED FOR THE INSTALLATION OF THE POLY-PREFORMED MARKINGS.
9. GROOVING SPECIFICATIONS ARE DETAILED IN MM/DOT DIVISION 9 SPECIAL PROVISIONS.

GENERAL NOTES:
1. CORNERS OF STANDARD SIGN PANELS WITH MARGINS SHALL BE TRIMMED.
2. PANEL MOUNTING DETAILS OF MAST ARM MOUNTED SIGNS, SEE MNDOT STANDARD SIGNS AND MARKINGS MANUAL, PAGE 105.
3. FOR TYPE D STRINGER AND PANEL JOINT DETAILS, SEE MNDOT STANDARD SIGNS AND MARKINGS MANUAL, PAGE 105A.
4. FOR STRUCTURAL DETAILS OF MAST ARM MOUNTED SIGNS, SEE MNDOT STANDARD SIGNS AND MARKINGS MANUAL, PAGE 105A.
5. SPACING BETWEEN STIFFENERS SHALL NOT EXCEED 36 INCHES AND SHALL BE UNIFORMLY SPACED.

SPECIFIC NOTES:
1. METER ADDRESS: 9999 GRAND AVE.
2. METER ADDRESS: 9999 GRAND AVE.
3. METER ADDRESS: 9999 GRAND AVE.
4. METER ADDRESS: 9999 GRAND AVE.
5. METER ADDRESS: 9999 GRAND AVE.

LIC. NO.
S.A.P. NO.
SHEET NO. 19 OF 20 SHEETS
CERTIFIED BY
STATE PROJ. NO. XXXX-XX (T.H.156)
NOTES:
1. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THE "GOPHER STATE ONE CALL" (503-454-0000) CENTER AT 850-454-0000.
2. FOR PLAN AND UTILITY SYMBOLS, SEE TECHNICAL MANUAL.
3. NO UTILITIES WILL BE AFFECTED BY THIS PROJECT.
4. ALL WORK SHOWN UNDER THIS CONTRACT IS WITHIN MN/DOT RIGHT OF WAY.
5. THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL 4. 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."

POSTED SPEED 40 M.P.H.