

SIGNAL HEAD CHART

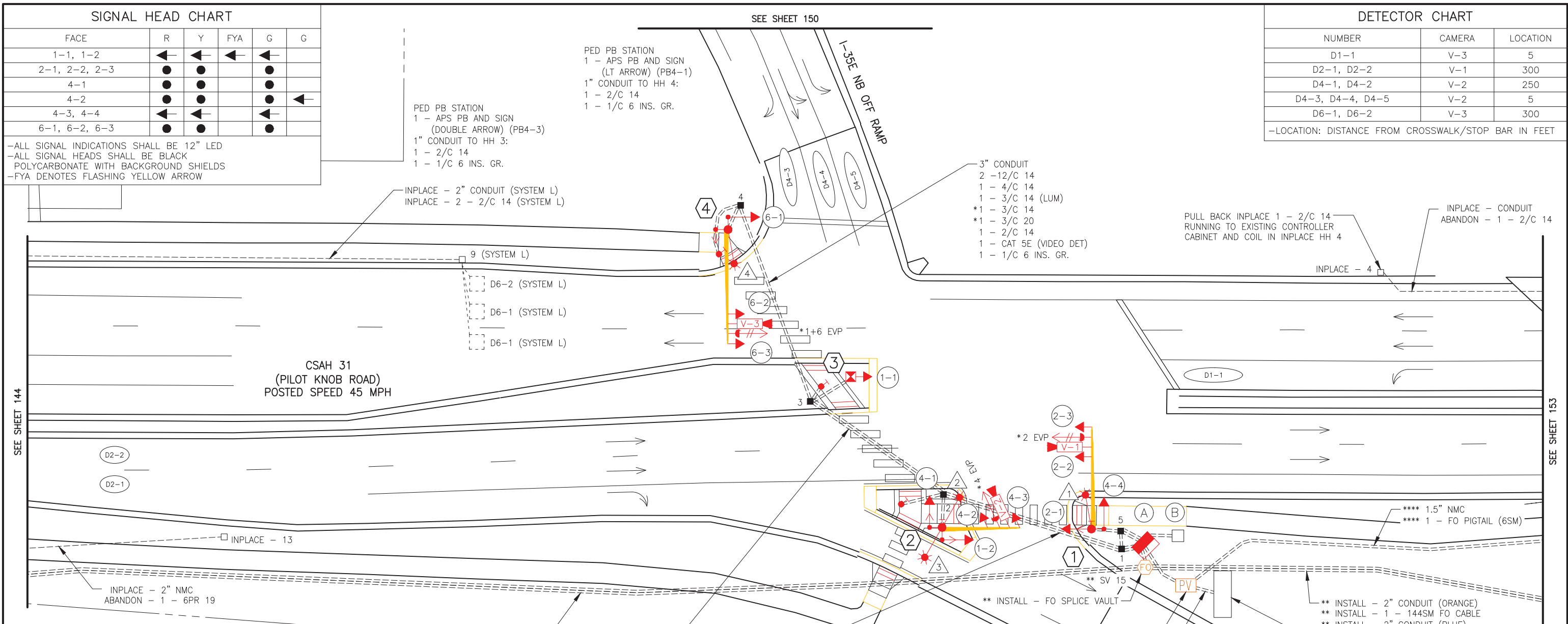
FACE	R	Y	FYA	G	G
1-1, 1-2	←	←	←	←	
2-1, 2-2, 2-3	●	●	●	●	
4-1	●	●	●	●	
4-2	●	●	●	●	←
4-3, 4-4	←	←	←	←	
6-1, 6-2, 6-3	●	●	●	●	

-ALL SIGNAL INDICATIONS SHALL BE 12" LED
 -ALL SIGNAL HEADS SHALL BE BLACK POLYCARBONATE WITH BACKGROUND SHIELDS
 -FYA DENOTES FLASHING YELLOW ARROW

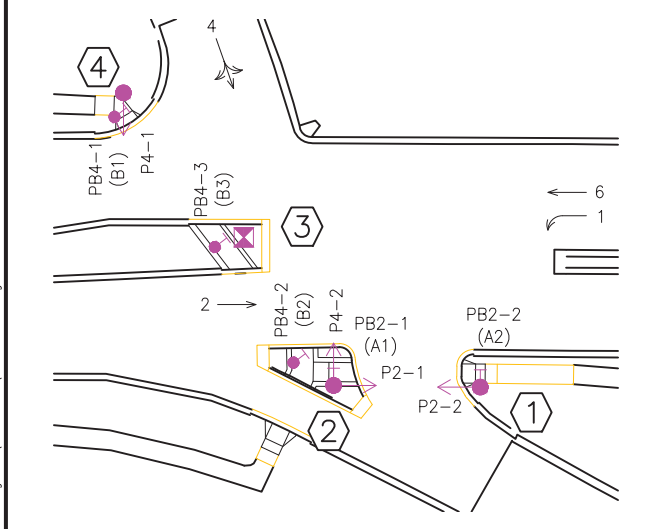
DETECTOR CHART

NUMBER	CAMERA	LOCATION
D1-1	V-3	5
D2-1, D2-2	V-1	300
D4-1, D4-2	V-2	250
D4-3, D4-4, D4-5	V-2	5
D6-1, D6-2	V-3	300

-LOCATION: DISTANCE FROM CROSSWALK/STOP BAR IN FEET

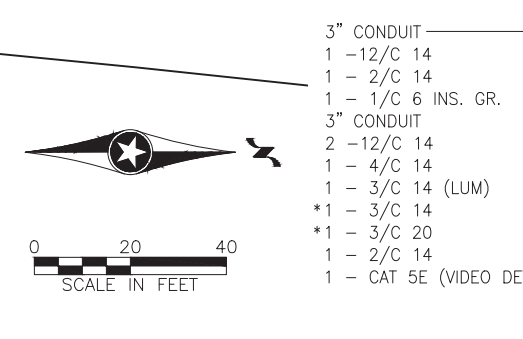


CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS



PEDESTRIAN PUSH BUTTONS SHALL BE LOCATED AS SHOWN ABOVE

** INSTALL - 2" CONDUIT (ORANGE)
 ** INSTALL - 1 - 144SM FO CABLE
 ** INSTALL - 2" CONDUIT (BLUE)
 ** INSTALL - 1 - 1/C 12 (TRACER)



SIGNAL SYSTEM OPERATION

- THE SIGNAL SYSTEM FLASH MODE IS ALL RED.
- NORMAL OPERATION IS 4 PHASE, WITH PHASE 1 BEING FLASHING YELLOW ARROWS BY TIME OF DAY.
- PHASES 2 AND 6 SHALL BE ON VEHICLE RECALL.

SYSTEM ID: 2564655
 TE: 13594
Ext: 20536

NO	DATE	BY	CKD	APPR

I hereby certify that this plan, specification, or report 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.
 Print Name: **GEORGE M. STUEMPFEG**
George M. Stuempfeg
 Date: **2019-04-29** License #: **121849**

COUNTY PROJECT NO. **26-56**
 STATE PROJECT NO. **019-030-008**
 EAGAN PROJECT NO. **195-020-027**

DRAWN BY **L. JAMES**
 DESIGNED BY **L. JAMES**
 CHECKED BY **G. STUEMPFEG**
 COMM. NO. **11493**



DAKOTA COUNTY
 TRAFFIC SIGNAL PLANS
 CSAH 26, 28, 31, & 43 INTERSECTION IMPROVEMENTS
 SYSTEM M - CSAH 31 (PILOT KNOB ROAD) AND I-35E SOUTH RAMPS
 INTERSECTION LAYOUT

SHEET **149** OF **386**

LUKE JAMES | 4/25/2019 12:38:55 PM | C:\Users\lujames\Documents\Projects\AutoCAD\CAD_2017\enu\...
 N:\BMS\SRF-PW\LJAMES@SRFCONSULTING.COM\DMS26347\26-56_R01.DWG: M1

- ① PA100 POLE FOUNDATION
 TYPE PA100-A-40-D40-9 (DAVIT AT 350 DEG)
 1 - ANGLE MOUNT SIGNAL OVERHEAD AT 0'
 1 - STRAIGHT MOUNT SIGNAL OVERHEAD AT 11'
 1 - ANGLE MOUNT SIGNAL AT 90 DEG
 1 - STRAIGHT MOUNT SIGNAL AT 270 DEG
 1 - STRAIGHT MOUNT COUNTDOWN PED HEAD AT 270 DEG
 INSTALL - 1 - VIDEO DETECTION CAMERA (STATE FURNISHED) AT 7' (V-1)
 *1 - ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT AT 6' (PHASE 2)
 1 - LUMINAIRE-LED (FOR 40' MOUNTING HEIGHT)
 1 - APS PB AND SIGN (RT ARROW) (PB2-2) AND POLE MOUNT ADAPTOR
 2 - TYPE D SIGNS (D-5 AND D-3) (SEE MAST ARM SIGNING DETAILS)
 1 - R9-3 SIGN (18" x 18") FACING WEST
 3" CONDUIT TO HH 5:
 2 -12/C 14
 1 - 4/C 14
 1 - 3/C 14 (LUM)
 *1 - 3/C 14
 *1 - 3/C 20
 1 - 2/C 14
 1 - CAT 5E (VIDEO DET)
 1 - 1/C 6 INS. GR.

- ② PA90 POLE FOUNDATION
 TYPE PA90-A-30-X40-TWIN6 (LUMINAIRE ARMS AT 120 AND 300 DEG)
 1 - ANGLE MOUNT SIGNAL OVERHEAD AT 0'
 1 - STRAIGHT MOUNT SIGNAL OVERHEAD AT 12'
 2 - ANGLE MOUNT SIGNALS AT 90 AND 180 DEG
 2 - ANGLE MOUNT COUNTDOWN PED HEADS AT 90 AND 180 DEG
 INSTALL - 1 - VIDEO DETECTION CAMERA (STATE FURNISHED) AT 5' (V-2)
 *1 - ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT AT 6' (PHASE 4)
 2 - LUMINAIRES-LED (FOR 40' MOUNTING HEIGHT)
 1 - APS PB AND SIGN (LT ARROW) (PB2-1) AND POLE MOUNT ADAPTOR
 3" CONDUIT TO HH 2:
 2 -12/C 14
 2 - 4/C 14
 2 - 3/C 14 (LUM)
 *1 - 3/C 14
 *1 - 3/C 20
 1 - 2/C 14
 1 - CAT 5E (VIDEO DET)
 1 - 1/C 6 INS. GR.

- ③ PEDESTAL FOUNDATION
 13' PEDESTAL POLE PLUS BASE
 1 - STRAIGHT MOUNT SIGNAL AT 270 DEG
 1 - R10-X12 SIGN (36" x 42") FACING NORTH
 3" CONDUIT TO HH 3:
 1 -12/C 14
 1 - 1/C 6 INS. GR.

- ④ PA100 POLE FOUNDATION
 TYPE PA100-A-45-D40-9 (DAVIT AT 350 DEG)
 1 - ANGLE MOUNT SIGNAL OVERHEAD AT 0'
 1 - STRAIGHT MOUNT SIGNAL OVERHEAD AT 11'
 1 - ANGLE MOUNT SIGNAL AT 180 DEG
 1 - ANGLE MOUNT COUNTDOWN PED HEAD AT 90 DEG
 INSTALL - 1 - VIDEO DETECTION CAMERA (STATE FURNISHED) AT 7' (V-3)
 *1 - ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT AT 6' (PHASES 1+6)
 1 - LUMINAIRE-LED (FOR 40' MOUNTING HEIGHT)
 1 - TYPE D SIGN (D-1) (SEE MAST ARM SIGNING DETAILS)
 1 - R9-3 SIGN (18" x 18") FACING NORTH
 3" CONDUIT TO HH 4:
 2 -12/C 14
 1 - 4/C 14
 1 - 3/C 14 (LUM)
 *1 - 3/C 14
 *1 - 3/C 20
 1 - CAT 5E (VIDEO DET)
 1 - 1/C 6 INS. GR.

- Ⓐ EQUIPMENT PAD (SEE DETAIL SHEET)
 SERVICE CABINET (SSB) NO BATTERY BACKUP SYSTEM OR BATTERIES
 INSTALL - CONTROLLER AND CABINET (STATE FURNISHED)

- **** 2 - FO SPLICE/PATCH PANEL
 **** 2 - FO PIGTAIL TERMINATION

- 3" CONDUIT TO HH 1:
 2 -12/C 14
 2 - 4/C 14
 *1 - 3/C 14
 *1 - 3/C 20
 2 - 2/C 14
 1 - CAT 5E (VIDEO DET)

- 3" CONDUIT TO HH 1:
 1 -12/C 14
 1 - 2/C 14
 1 - 1/C 6 INS. GR.

- 3" CONDUIT TO HH 1:
 2 -12/C 14
 1 - 4/C 14
 *1 - 3/C 14
 *1 - 3/C 20
 1 - 2/C 14
 1 - CAT 5E (VIDEO DET)

- 3" CONDUIT TO HH 5:
 2 -12/C 14
 1 - 4/C 14
 *1 - 3/C 14
 *1 - 3/C 20
 1 - 2/C 14
 1 - CAT 5E (VIDEO DET)
 1 - 1/C 6 INS. GR.

- 3" CONDUIT TO HH 5 (EMPTY)

- ** INSTALL - 1 1/2" CONDUIT TO SV 15:
 ** INSTALL - 1 - 1/C 12 (TRACER)

- **** 1.5" NMC TO PV:
 **** 2 - FO PIGTAIL (6SM)

- 1 - 3" CONDUIT STUBBED OUT OF CONTROLLER CABINET (CAPPED BOTH ENDS)
 1 - 2" CONDUIT STUBBED OUT OF CONTROLLER CABINET (CAPPED BOTH ENDS)

- CONTROLLER CABINET TO SERVICE CABINET:
 2" CONDUIT
 3 - 1/C 6

- CONTROLLER CABINET TO SERVICE CABINET (COMMS):
 2" CONDUIT
 1 - 6PR 19

- SERVICE CABINET TO HH 5:
 2" CONDUIT
 4 - 3/C 14 (LUM)

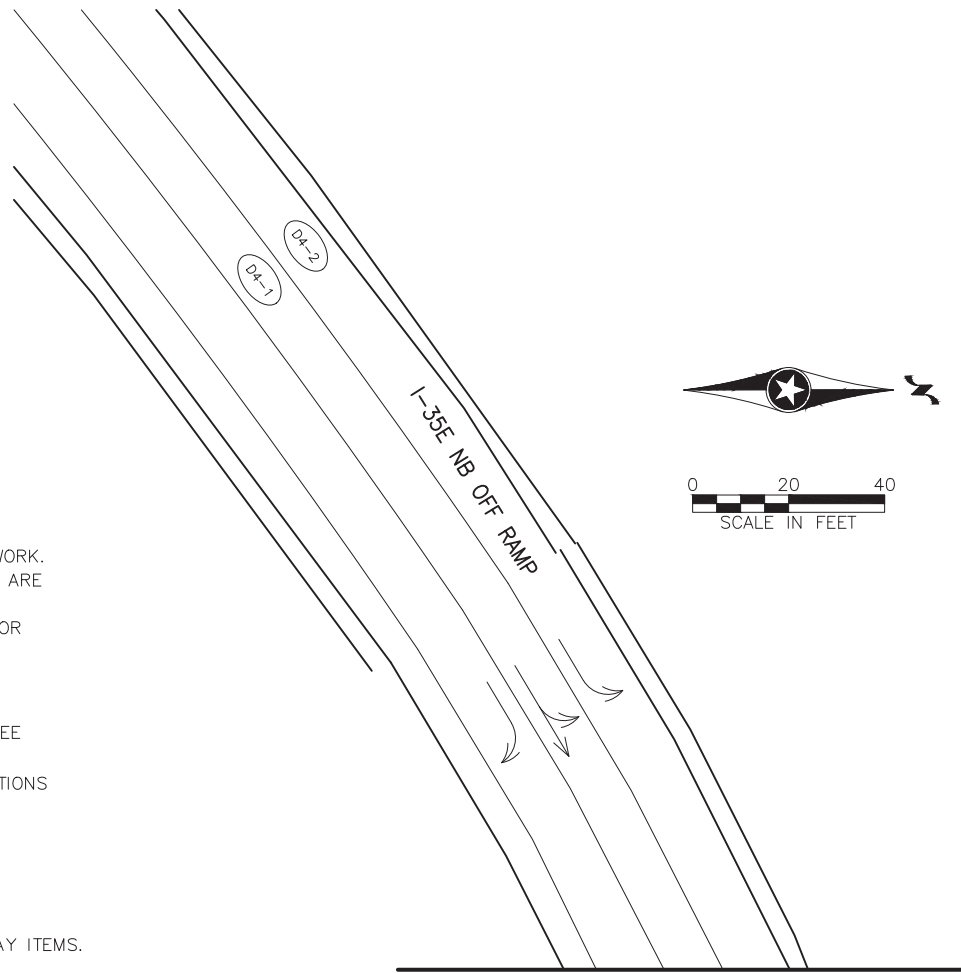
- 1 - 2" CONDUIT STUBBED OUT OF SERVICE CABINET (CAPPED BOTH ENDS)

- SERVICE CABINET TO EXTERNAL GROUND ROD:
 1" CONDUIT
 1 - 1/C 6 INS. GR.
 (SEE EQUIPMENT PAD LAYOUT)

- SERVICE CABINET TO SOP:
 2" CONDUIT
 3 - 1/C 2

- HH 5 TO HH 1:
 2" CONDUIT
 3 - 3/C 14 (LUM)

- Ⓑ SOP - GROUND MOUNTED TRANSFORMER (DAKOTA ELECTRIC)
 2" CONDUIT INTO SERVICE CABINET:
 3 - 1/C 2



SEE SHEET 149

SYSTEM ID: 2564655
 TE: 13594

NOTES:

- ALL ITEMS ARE FURNISH AND INSTALL UNLESS OTHERWISE NOTED.
- SEE SPECIAL PROVISIONS FOR STATE AND COUNTY FURNISHED MATERIALS.
- REFER TO "FOR INFORMATION ONLY" SHEETS FOR INPLACE SIGNAL COMPONENTS.
- THE CONTRACTOR SHALL LOCATE AND VERIFY INPLACE UTILITIES PRIOR TO COMMENCING WORK.
- ENSURE THE EXACT LOCATION OF THE HANDHOLES, VAULTS, POLES, AND EQUIPMENT PAD ARE VERIFIED IN THE FIELD BY MNDOT OFFICE PERSONNEL.
- THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE CONNECTION OF THE POWER FOR THE TRAFFIC SIGNAL SYSTEM.
- FOR MAST ARM SIGNS SEE DETAIL SHEET. ALL SIGNS REQUIRED ARE INCIDENTAL.
- FOR PAVEMENT MARKINGS SEE CONSTRUCTION PLANS.
- FOR CONSTRUCTION OF PEDESTRIAN CURB RAMPS, CONCRETE WALK, AND MEDIAN WORK SEE CONSTRUCTION PLANS.
- THIS PLAN SPECIFIES CONDUIT SIZES, TYPES, AND GENERAL LOCATIONS. THE EXACT LOCATIONS WILL BE DETERMINED IN THE FIELD. CONDUITS UNDER THE ROADWAYS REQUIRE BORING.
- USE PVC OR HDPE FOR ALL NEW CONDUIT.
- CONDUIT SIZES ARE NOMINAL DIAMETER.
- ALL WIRES LISTED ARE AWG (AMERICAN WIRE GAUGE).
- ITEMS DENOTED WITH * ARE INCLUDED IN PAYMENT FOR THE EVP SYSTEM PAY ITEM.
- ITEMS DENOTED WITH ** AND **** ARE INCLUDED IN PAYMENT FOR THE INTERCONNECT PAY ITEMS.
 ** DENOTES COUNTY INTERCONNECT AND **** DENOTES MNDOT INTERCONNECT.

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I hereby certify that this plan, specification, or report 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.
 Print Name: GEORGE M. STUEMPFEG
George M. Stuempfeg
 Date: 2019-04-29 License # 121849

COUNTY PROJECT NO.
 26-56
 STATE PROJECT NO.
 019-030-008
 EAGAN PROJECT NO.
 195-020-027

DRAWN BY
 L. JAMES
 DESIGNED BY
 L. JAMES
 CHECKED BY
 G. STUEMPFEG
 COMM. NO. 11493

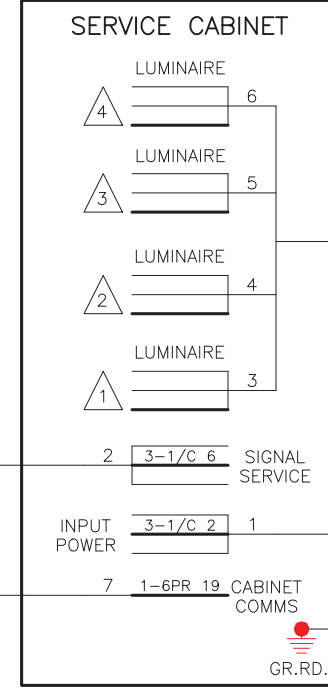
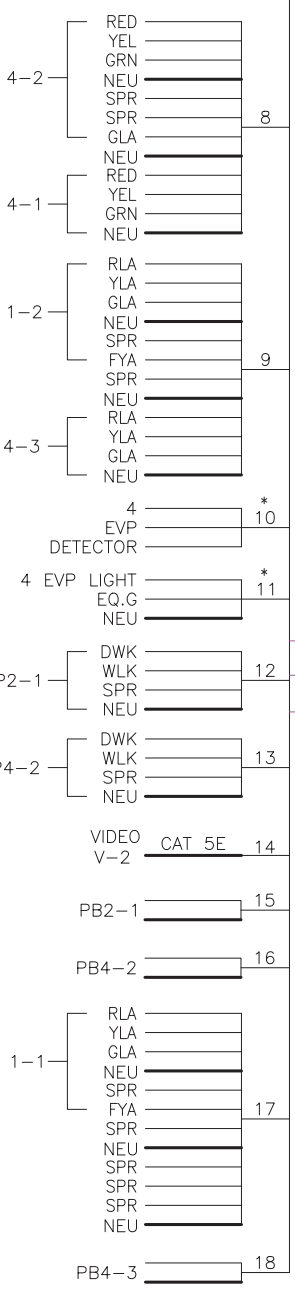
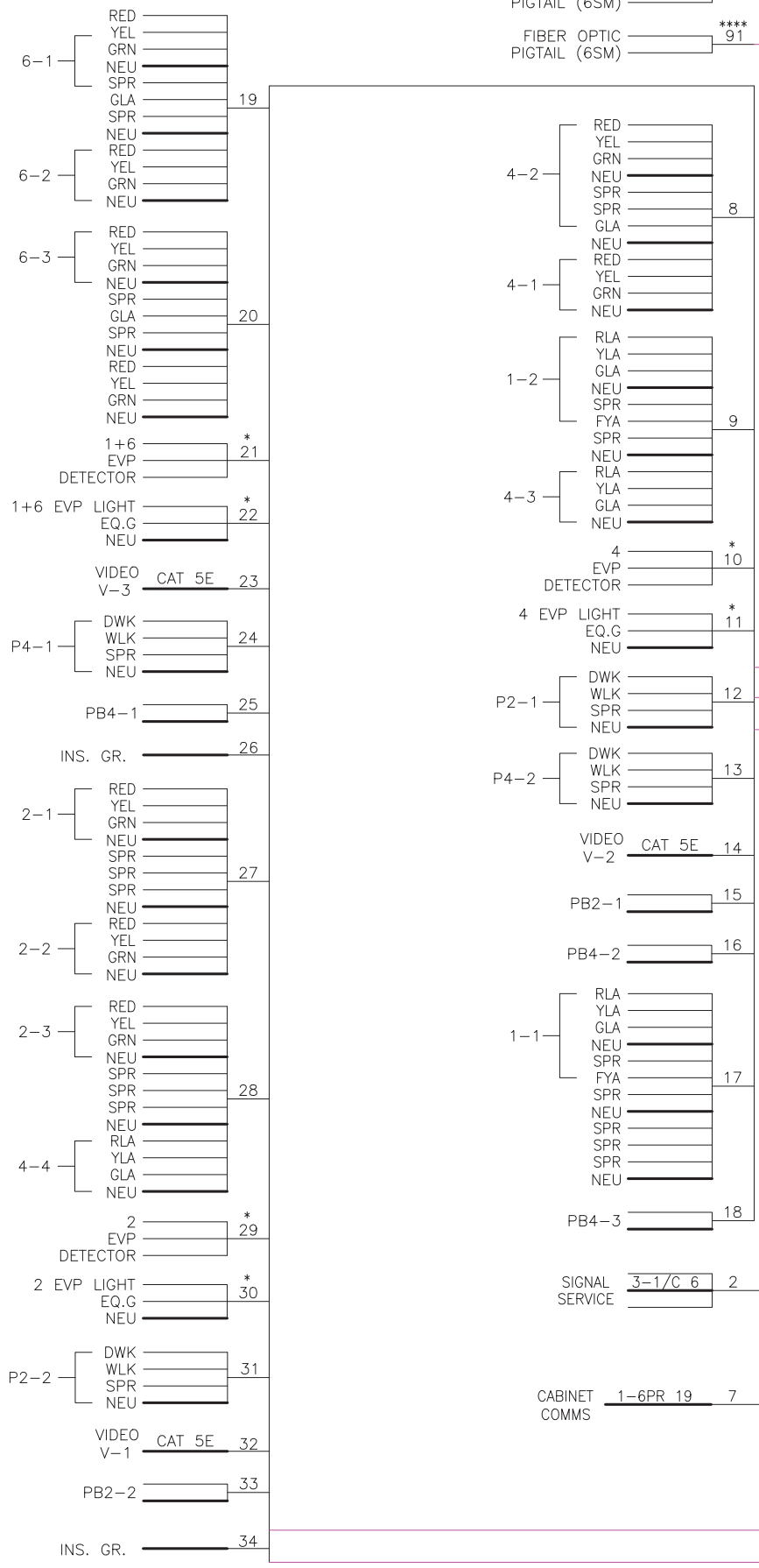


DAKOTA COUNTY
 TRAFFIC SIGNAL PLANS
 CSAH 26, 28, 31, & 43 INTERSECTION IMPROVEMENTS
 SYSTEM M - CSAH 31 (PILOT KNOB ROAD) AND I-35E SOUTH RAMPS
 INTERSECTION NOTES

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CONTROLLER CABINET

FIBER OPTIC PIGTAIL (6SM) **** 90 → TO PV TO RTMC CONNECTION
 FIBER OPTIC PIGTAIL (6SM) **** 91 → TO PV TO BRIDGE



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 EAGAN PROJECT NO. 195-020-027

DRAWN BY D. RASMUSSEN
 DESIGNED BY D. RASMUSSEN
 CHECKED BY G. STUEMPFEG
 COMM. NO. 11493



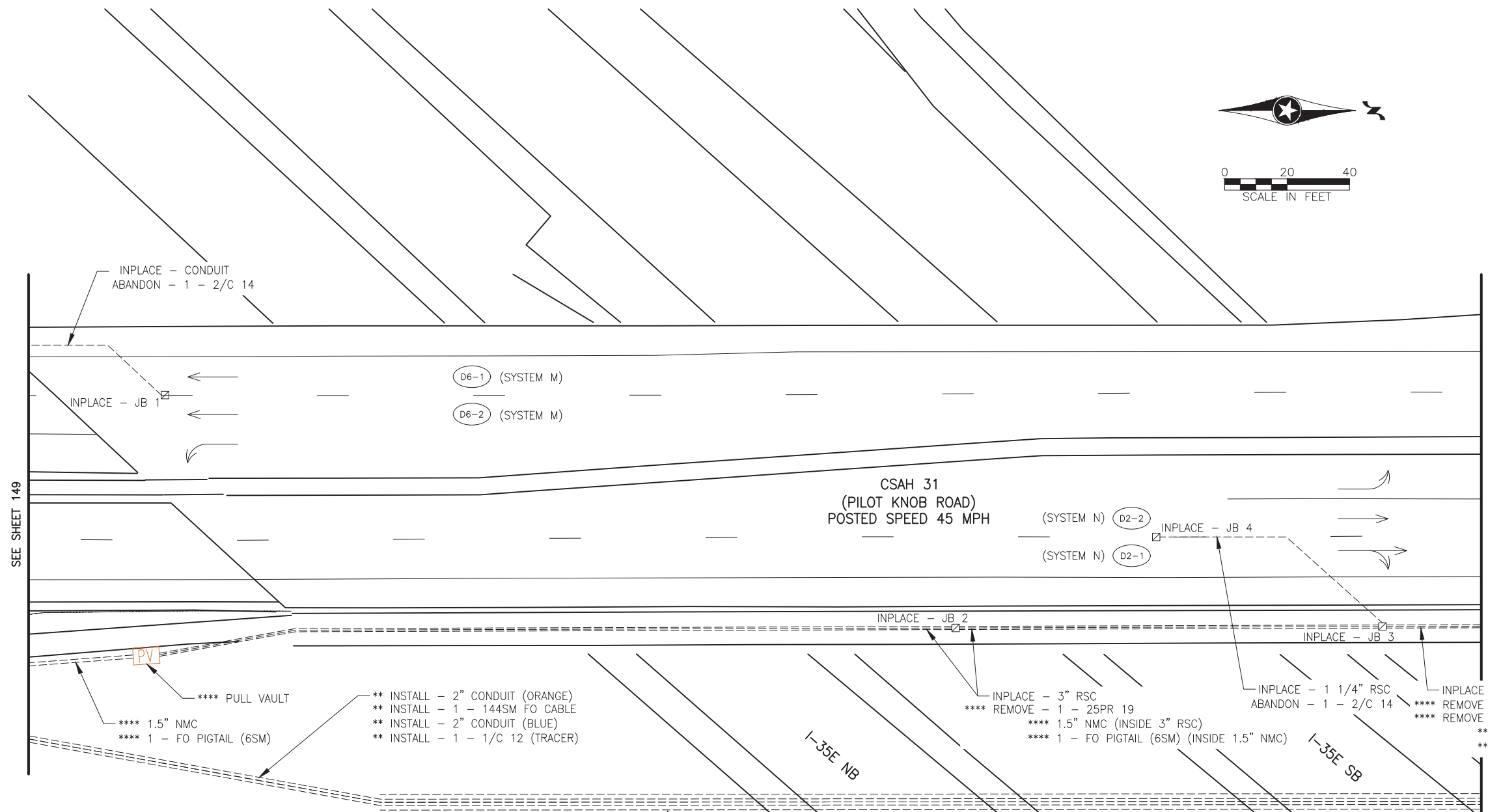
DAKOTA COUNTY
 TRAFFIC SIGNAL PLANS
 CSAH 26, 28, 31, & 43 INTERSECTION IMPROVEMENTS
 SYSTEM M - CSAH 31 (PILOT KNOB ROAD) AND I-35E SOUTH RAMPS
 FIELD WIRING DIAGRAM

SHEET 151 OF 386

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SYSTEM ID: 2564655
 TE: 13594

- NOTES:
- SIGNAL SYSTEM INCLUDES BATTERY BACKUP SERVICE CABINET (NO BATTERIES).
 - FOR CONDUCTOR COLOR CODE SEE TRAFFIC SIGNAL POLE WIRING CONNECTOR DETAIL.
 - ITEMS DENOTED WITH * ARE INCLUDED IN PAYMENT FOR THE EVP SYSTEM PAY ITEM.
 - ITEMS DENOTED WITH **** ARE INCLUDED IN PAYMENT FOR THE INTERCONNECT PAY ITEMS.



NOTES:

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 2. SEE SPECIAL PROVISIONS FOR STATE AND COUNTY FURNISHED MATERIALS.
 3. REFER TO "FOR INFORMATION ONLY" SHEETS FOR INPLACE SIGNAL COMPONENTS.
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 6. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE CONNECTION OF THE POWER FOR THE TRAFFIC SIGNAL SYSTEM.
 7. FOR MAST ARM SIGNS SEE DETAIL SHEET. ALL SIGNS REQUIRED ARE INCIDENTAL.
 8. FOR PAVEMENT MARKINGS SEE CONSTRUCTION PLANS.
 9. FOR CONSTRUCTION OF PEDESTRIAN CURB RAMPS, CONCRETE WALK, AND MEDIAN WORK SEE CONSTRUCTION PLANS.
 10. THIS PLAN SPECIFIES CONDUIT SIZES, TYPES, AND GENERAL LOCATIONS. THE EXACT LOCATIONS WILL BE DETERMINED IN THE FIELD. CONDUITS UNDER THE ROADWAYS REQUIRE BORING.
 11. USE PVC OR HDPE FOR ALL NEW CONDUIT.
 12. CONDUIT SIZES ARE NOMINAL DIAMETER.
 13. ALL WIRES LISTED ARE AWG (AMERICAN WIRE GAUGE).
 14. ITEMS DENOTED WITH * ARE INCLUDED IN PAYMENT FOR THE EVP SYSTEM PAY ITEM.
 15. ITEMS DENOTED WITH ** AND **** ARE INCLUDED IN PAYMENT FOR THE INTERCONNECT PAY ITEMS.
- ** DENOTES COUNTY INTERCONNECT AND **** DENOTES MNDOT INTERCONNECT.

- ** 6" CONDUIT (CASING)
- ** INSTALL - 2" CONDUIT (ORANGE)
- ** INSTALL - 1 - 144SM FO CABLE
- ** INSTALL - 2" CONDUIT (BLUE)
- ** INSTALL - 1 - 1/C 12 (TRACER)

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NO	DATE	BY	CKD	APPR

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George M. Stuempfeg
 Date: 2019-04-29 License # 121849

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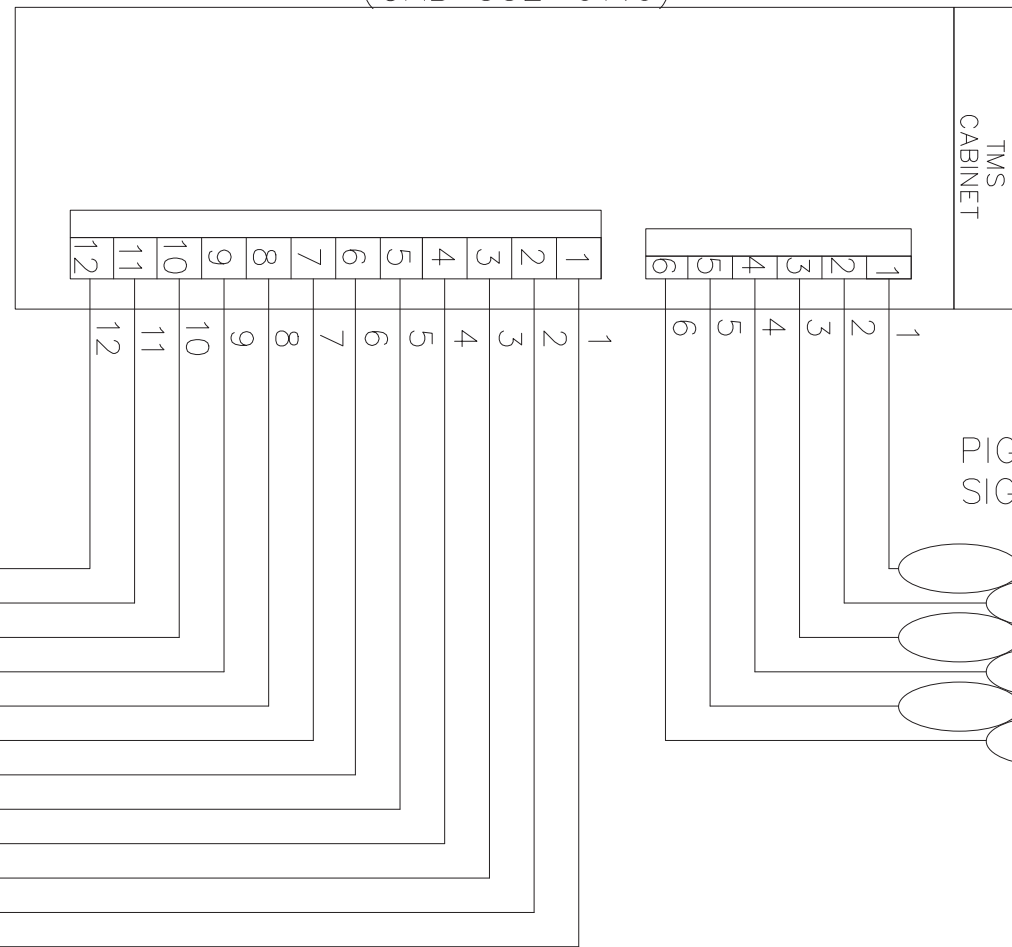
DRAWN BY
L. JAMES
 DESIGNED BY
L. JAMES
 CHECKED BY
G. STUEMPFEG
 COMM. NO. 11493



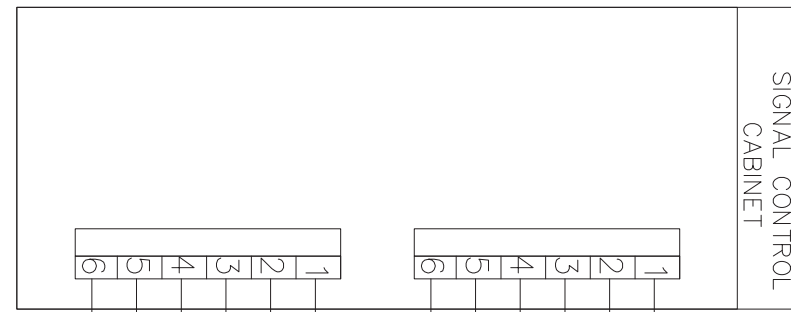
DAKOTA COUNTY
 TRAFFIC SIGNAL PLANS
 CSAH 26, 28, 31, & 43 INTERSECTION IMPROVEMENTS
 INTERCONNECT LAYOUT

SHEET
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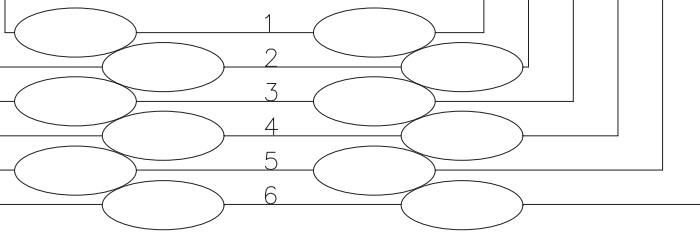
GROUND MOUNTED TMS CABINET
(CAB 35E-97.0)



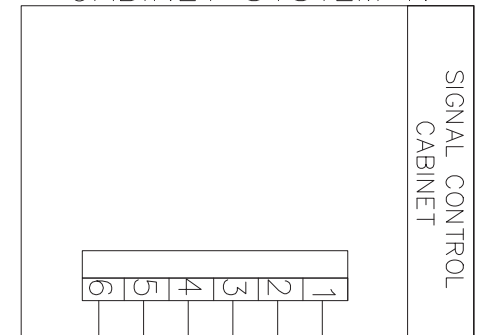
SIGNAL CONTROL CABINET
SYSTEM M



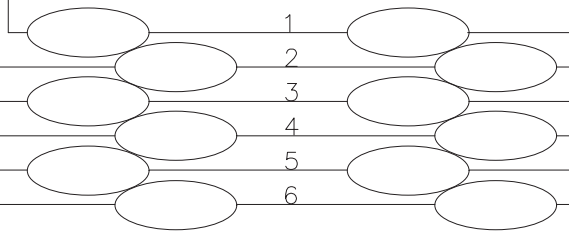
PIGTAIL ID#
SIG 20536 6SM



SIGNAL CONTROL
CABINET SYSTEM N



PIGTAIL ID#
SIG 20535 6SM



PIGTAIL ID#
POLE 35E-97.0

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NO	DATE	BY	CKD	APPR

I hereby certify that this plan, specification, or report 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.
Print Name: JACOB H. W. FOLKERINGA
Jacob H. W. Folkeringa
Date 2019-03-15 License # 50911

COUNTY PROJECT NO.
26-56
STATE PROJECT NO.
019-030-008
EAGAN PROJECT NO.
195-020-027

DRAWN BY
D. RICKBEIL
DESIGNED BY
Z. HANSON
CHECKED BY
J. FOLKERINGA
COMM. NO. 11493



DAKOTA COUNTY
TRAFFIC SIGNAL PLANS
CSAH 26, 28, 31, & 43 INTERSECTION IMPROVEMENTS
INTERCONNECT SCHEMATIC

SHEET
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OF
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