STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

TMSI

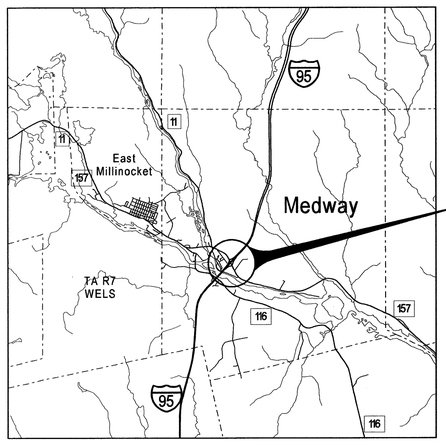
MEDWAY
PENOBSCOT COUNTY
I - 95 at EXIT 244

Project Number NHPP-2057(600)

Highway Lighting

INDEX OF SHEETS

Description	Sheet No.
Title Sheet	1
Plans	2 - 4



LOCATION MAP

2 0 2 4

Scale in Miles

Project Area
Medway
EXIT 244
NHPP - 2057(600)

PROJECT LOCATION:	I-95 EXIT 244
PROGRAM AREA:	MULTIMODAL
SCOPE OF WORK:	HIGHWAY LIGHTING

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

APPROVED — DATE 5/23/14

COMMISSIONER:

CHIEF ENGINEER: 5-20-14

STATE OF MAINE — ALBERT L. GARCIA No. 4226 — REGISTERED PROFESSIONAL ENGINEER

SIGNATURE

4226 — P.E. NUMBER

5/20/14 — DATE

PROJECT INFORMATION	
PROGRAM	MULTIMODAL
PROJECT MANAGER	B. KEEZER
DESIGNER	RAL/ALG
CONSULTANT	TMSI ENGINEERS
PROJECT RESIDENT	
CONTRACTOR	
PROJECT COMPLETION DATE	

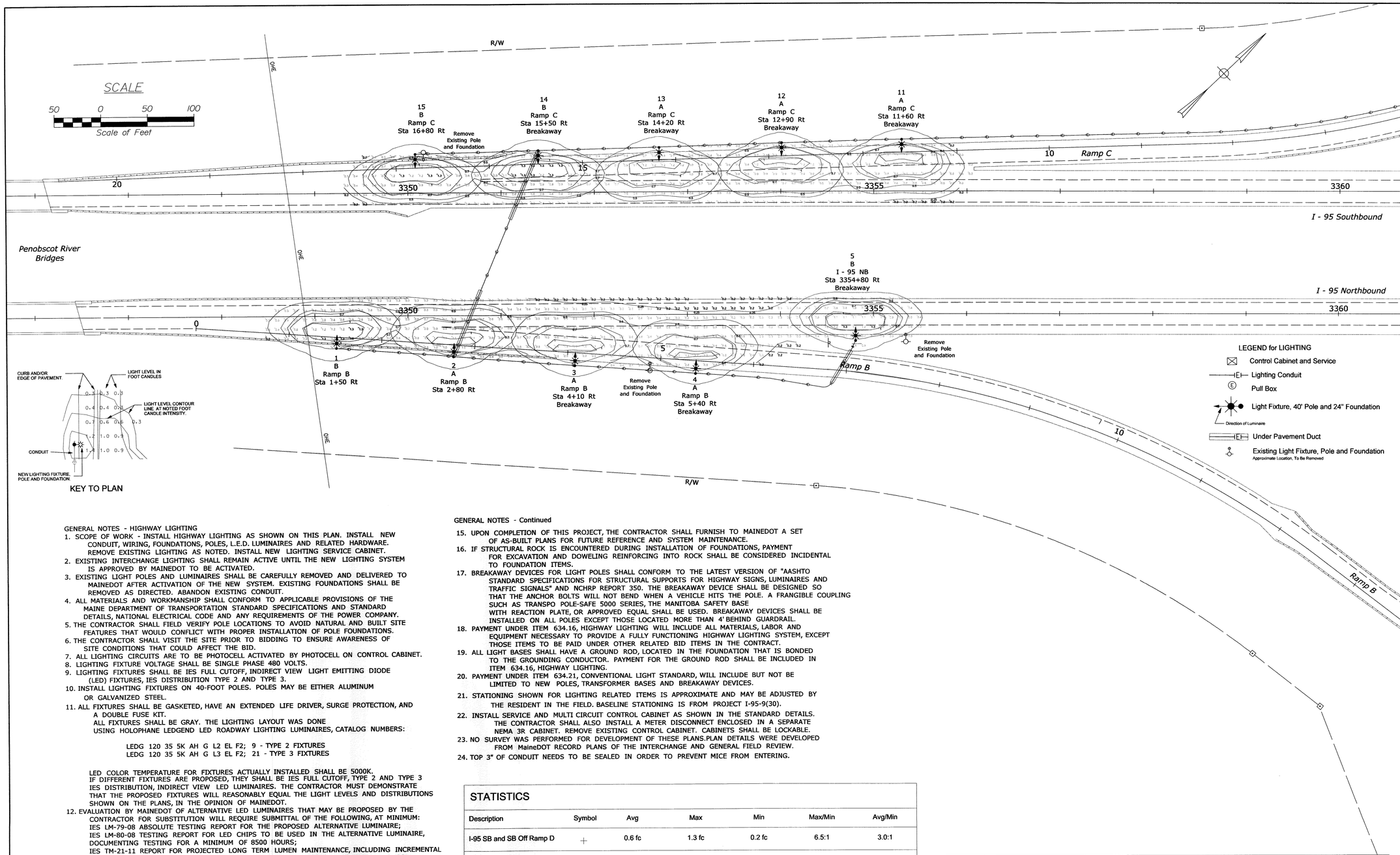
NHPP-2057(600) WIN 20576 00

MEDWAY
I - 95 at EXIT 244

TITLE SHEET

SHEET NUMBER
1
OF 4

Filename: ...\TITLE.dgn Division: HIGHWAY Username: common Date:5/20/2014



GENERAL NOTES - HIGHWAY LIGHTING

1. SCOPE OF WORK - INSTALL HIGHWAY LIGHTING AS SHOWN ON THIS PLAN. INSTALL NEW CONDUIT, WIRING, FOUNDATIONS, POLES, L.E.D. LUMINAIRES AND RELATED HARDWARE. REMOVE EXISTING LIGHTING AS NOTED. INSTALL NEW LIGHTING SERVICE CABINET.
2. EXISTING INTERCHANGE LIGHTING SHALL REMAIN ACTIVE UNTIL THE NEW LIGHTING SYSTEM IS APPROVED BY MAINEDOT TO BE ACTIVATED.
3. EXISTING LIGHT POLES AND LUMINAIRES SHALL BE CAREFULLY REMOVED AND DELIVERED TO MAINEDOT AFTER ACTIVATION OF THE NEW SYSTEM. EXISTING FOUNDATIONS SHALL BE REMOVED AS DIRECTED. ABANDON EXISTING CONDUIT.
4. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO APPLICABLE PROVISIONS OF THE MAINE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS AND STANDARD DETAILS, NATIONAL ELECTRICAL CODE AND ANY REQUIREMENTS OF THE POWER COMPANY.
5. THE CONTRACTOR SHALL FIELD VERIFY POLE LOCATIONS TO AVOID NATURAL AND BUILT SITE FEATURES THAT WOULD CONFLICT WITH PROPER INSTALLATION OF POLE FOUNDATIONS.
6. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING TO ENSURE AWARENESS OF SITE CONDITIONS THAT COULD AFFECT THE BID.
7. ALL LIGHTING CIRCUITS ARE TO BE PHOTOCELL ACTIVATED BY PHOTOCELL ON CONTROL CABINET.
8. LIGHTING FIXTURE VOLTAGE SHALL BE SINGLE PHASE 480 VOLTS.
9. LIGHTING FIXTURES SHALL BE IES FULL CUTOFF, INDIRECT VIEW LIGHT EMITTING DIODE (LED) FIXTURES, IES DISTRIBUTION TYPE 2 AND TYPE 3.
10. INSTALL LIGHTING FIXTURES ON 40-FOOT POLES. POLES MAY BE EITHER ALUMINUM OR GALVANIZED STEEL.
11. ALL FIXTURES SHALL BE GASKETED, HAVE AN EXTENDED LIFE DRIVER, SURGE PROTECTION, AND A DOUBLE FUSE KIT.
    ALL FIXTURES SHALL BE GRAY. THE LIGHTING LAYOUT WAS DONE USING HOLOPHANE LEDGEND LED ROADWAY LIGHTING LUMINAIRES, CATALOG NUMBERS:

    LEDG 120 35 5K AH G L2 EL F2; 9 - TYPE 2 FIXTURES
    LEDG 120 35 5K AH G L3 EL F2; 21 - TYPE 3 FIXTURES

    LED COLOR TEMPERATURE FOR FIXTURES ACTUALLY INSTALLED SHALL BE 5000K. IF DIFFERENT FIXTURES ARE PROPOSED, THEY SHALL BE IES FULL CUTOFF, TYPE 2 AND TYPE 3 IES DISTRIBUTION, INDIRECT VIEW LED LUMINAIRES. THE CONTRACTOR MUST DEMONSTRATE THAT THE PROPOSED FIXTURES WILL REASONABLY EQUAL THE LIGHT LEVELS AND DISTRIBUTIONS SHOWN ON THE PLANS, IN THE OPINION OF MAINEDOT.
12. EVALUATION BY MAINEDOT OF ALTERNATIVE LED LUMINAIRES THAT MAY BE PROPOSED BY THE CONTRACTOR FOR SUBSTITUTION WILL REQUIRE SUBMITTAL OF THE FOLLOWING, AT MINIMUM:
    IES LM-79-08 ABSOLUTE TESTING REPORT FOR THE PROPOSED ALTERNATIVE LUMINAIRE;
    IES LM-80-08 TESTING REPORT FOR LED CHIPS TO BE USED IN THE ALTERNATIVE LUMINAIRE, DOCUMENTING TESTING FOR A MINIMUM OF 8500 HOURS;
    IES TM-21-11 REPORT FOR PROJECTED LONG TERM LUMEN MAINTENANCE, INCLUDING INCREMENTAL LUMEN DEPRECIATION TABLE AT 25 DEGREES CELSIUS TO A MINIMUM OF 50,000 HOURS;
    IES PHOTOMETRIC FILE FROM THE MANUFACTURER FOR THE PROPOSED ALTERNATIVE LUMINAIRE;
    PHOTOMETRIC PLOT, OVERLAID ON THE LAYOUT OF THE LUMINAIRE LOCATIONS FOR THIS SPECIFIC PROJECT, SHOWING LIGHT CONTOURS, ILLUMINATION STATISTICS FOR EACH OF THE LIGHTING GROUPS, AND VALUE OF LIGHT LOSS FACTOR USED IN THE ANALYSIS;
    VALUES OF LLD, LDD, BALLAST FACTOR AND OTHER FACTORS USED FOR CALCULATION OF THE ASSUMED LIGHT LOSS FACTOR;
    SPECIFICATION DATA REGARDING OPTICS, CHROMATIC COLOR TEMPERATURE, DRIVER, SURGE PROTECTION, HOUSING AND GASKETING.
13. CONDUIT SHALL BE 2" MINIMUM, PVC SCHEDULE 40. CONDUIT UNDER PAVEMENT SHALL BE UNDER PAVEMENT DUCT ITEM 626.25. MINIMUM BURIAL DEPTH FOR CONDUIT SHALL BE 36".
14. THERE SHALL BE NO SPLICES OR JUNCTION BOXES BETWEEN POLES. THE WIRE IN CONDUITS SHALL BE CONTINUOUS BETWEEN POLES.

GENERAL NOTES - Continued

15. UPON COMPLETION OF THIS PROJECT, THE CONTRACTOR SHALL FURNISH TO MAINEDOT A SET OF AS-BUILT PLANS FOR FUTURE REFERENCE AND SYSTEM MAINTENANCE.
16. IF STRUCTURAL ROCK IS ENCOUNTERED DURING INSTALLATION OF FOUNDATIONS, PAYMENT FOR EXCAVATION AND DOWELING REINFORCING INTO ROCK SHALL BE CONSIDERED INCIDENTAL TO FOUNDATION ITEMS.
17. BREAKAWAY DEVICES FOR LIGHT POLES SHALL CONFORM TO THE LATEST VERSION OF "AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS" AND NCHRP REPORT 350. THE BREAKAWAY DEVICE SHALL BE DESIGNED SO THAT THE ANCHOR BOLTS WILL NOT BEND WHEN A VEHICLE HITS THE POLE. A FRANGIBLE COUPLING SUCH AS TRANSPO POLE-SAFE 5000 SERIES, THE MANITOBA SAFETY BASE WITH REACTION PLATE, OR APPROVED EQUAL SHALL BE USED. BREAKAWAY DEVICES SHALL BE INSTALLED ON ALL POLES EXCEPT THOSE LOCATED MORE THAN 4' BEHIND GUARDRAIL.
18. PAYMENT UNDER ITEM 634.16, HIGHWAY LIGHTING WILL INCLUDE ALL MATERIALS, LABOR AND EQUIPMENT NECESSARY TO PROVIDE A FULLY FUNCTIONING HIGHWAY LIGHTING SYSTEM, EXCEPT THOSE ITEMS TO BE PAID UNDER OTHER RELATED BID ITEMS IN THE CONTRACT.
19. ALL LIGHT BASES SHALL HAVE A GROUND ROD, LOCATED IN THE FOUNDATION THAT IS BONDED TO THE GROUNDING CONDUCTOR. PAYMENT FOR THE GROUND ROD SHALL BE INCLUDED IN ITEM 634.16, HIGHWAY LIGHTING.
20. PAYMENT UNDER ITEM 634.21, CONVENTIONAL LIGHT STANDARD, WILL INCLUDE BUT NOT BE LIMITED TO NEW POLES, TRANSFORMER BASES AND BREAKAWAY DEVICES.
21. STATIONING SHOWN FOR LIGHTING RELATED ITEMS IS APPROXIMATE AND MAY BE ADJUSTED BY THE RESIDENT IN THE FIELD. BASELINE STATIONING IS FROM PROJECT I-95-9(30).
22. INSTALL SERVICE AND MULTI CIRCUIT CONTROL CABINET AS SHOWN IN THE STANDARD DETAILS. THE CONTRACTOR SHALL ALSO INSTALL A METER DISCONNECT ENCLOSED IN A SEPARATE NEMA 3R CABINET. REMOVE EXISTING CONTROL CABINET. CABINETS SHALL BE LOCKABLE.
23. NO SURVEY WAS PERFORMED FOR DEVELOPMENT OF THESE PLANS.PLAN DETAILS WERE DEVELOPED FROM MaineDOT RECORD PLANS OF THE INTERCHANGE AND GENERAL FIELD REVIEW.
24. TOP 3" OF CONDUIT NEEDS TO BE SEALED IN ORDER TO PREVENT MICE FROM ENTERING.

STATISTICS

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
I-95 SB and SB Off Ramp D	+	0.6 fc	1.3 fc	0.2 fc	6.5:1	3.0:1
I-95 SB and SB On Ramp C	+	0.6 fc	1.3 fc	0.2 fc	6.5:1	3.0:1
I -95 NB and Off Ramp B	+	0.6 fc	1.3 fc	0.2 fc	6.5:1	3.0:1
I - 95 NB and On Ramp A	+	0.6 fc	1.3 fc	0.2 fc	6.5:1	3.0:1
Rte 157 and Ramps A & B	+	0.7 fc	1.3 fc	0.3 fc	4.3:1	2.3:1
Rte 157 and Ramps C & D	+	0.8 fc	1.5 fc	0.3 fc	5.0:1	2.7:1

LUMINAIRE SCHEDULE

Symbol	Label	Qty	Catalog Number	Description	Lamp	File	Lumens	LLF	Watts
✳	A	21	LEDG 120 35 5K AH 0 X L3	LEDGEND ROADWAY LED	120 LED ARRAY	LEDG_120_35_5K_AS_0_X_L3.ies	Absolute	0.79	130
✳	B	9	LEDG 120 35 5K AH 0 X L2	LEDGEND ROADWAY LED	120 LED ARRAY	LEDG_120_35_5K_AS_0_X_L2.ies	Absolute	0.79	130

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

NHPP - 2057(600)

WIN 20576.00

HIGHWAY PLANS

STATE OF MAINE · ALBERT L. GODFREY No. 4226 · REGISTERED PROFESSIONAL ENGINEER

SIGNATURE

4226 P.E. NUMBER

5-20-14 DATE

PROJ. MANAGER	B. KEEZER									
DESIGN-DETAILED	RAL	RAL								
CHECKED-REVIEWED	ALG	ALG								
DESIGN2-DETAILED2										
DESIGN3-DETAILED3										
REVISIONS 1										
REVISIONS 2										
REVISIONS 3										
REVISIONS 4										
FIELD CHANGES										
DATE		Jan. 2014	5-7-14							
BY		RAL	ALG							

MEDWAY
I - 95 at EXIT 244

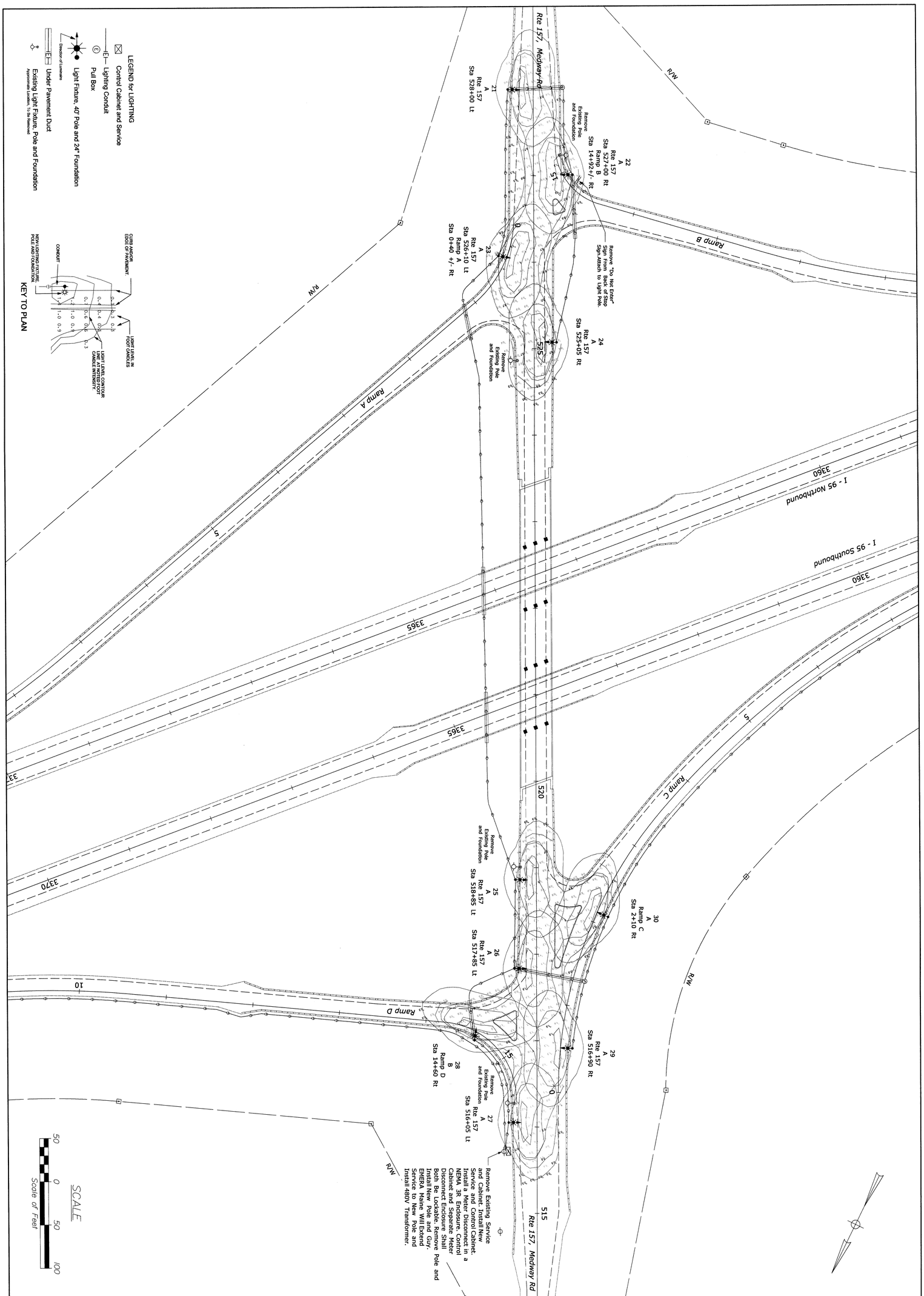
HIGHWAY LIGHTING PLANS

SHEET NUMBER

2

OF 4

Filename: ...\Plan Sht 1.dgn Division: HIGHWAY Username: common Date:5/20/2014



SHEET NUMBER 3 OF 4

MEDWAY
I - 95 at EXIT 244
HIGHWAY LIGHTING PLANS

	B. KEEZER	BY	DATE
PROJ. MANAGER			
DESIGN-DETAILED	RAL	RAL	Jan, 2014
CHECKED-REVIEWED	ALG	ALG	5-7-14
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

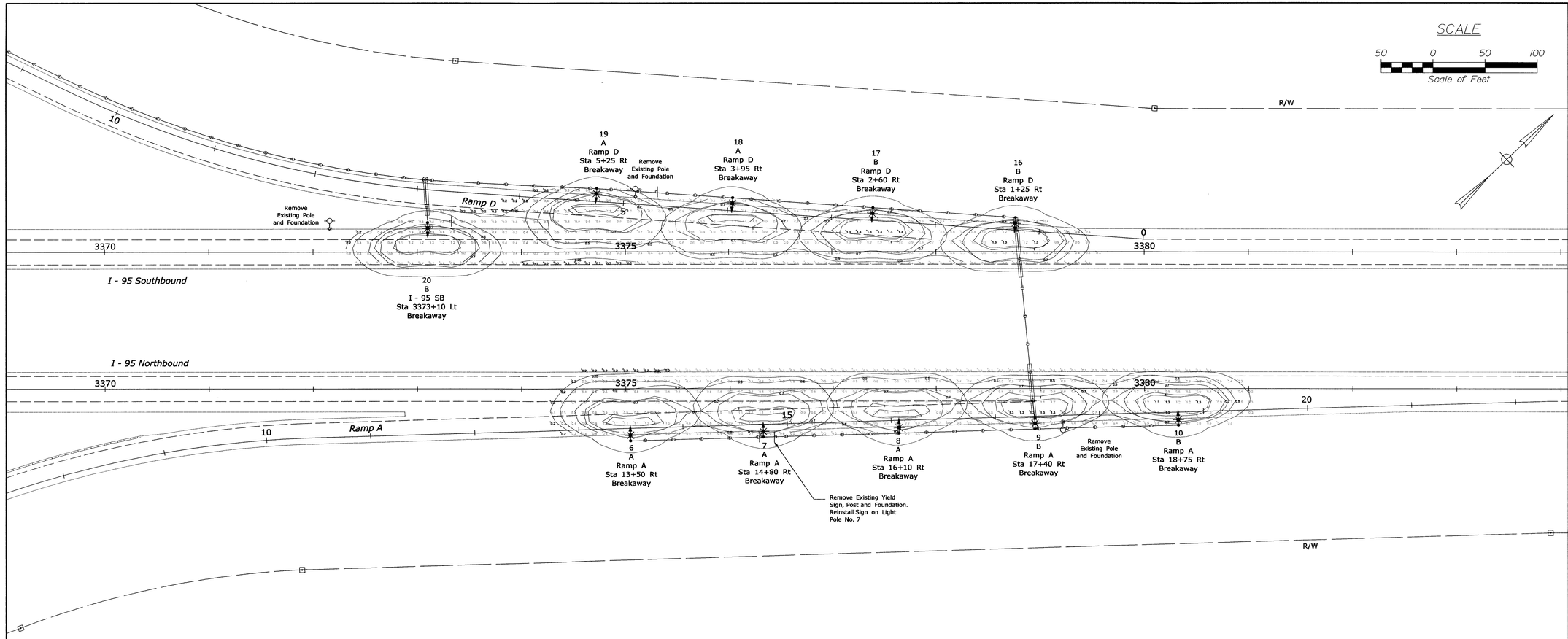
SIGNATURE
4226
P.E. NUMBER
5-20-14
DATE

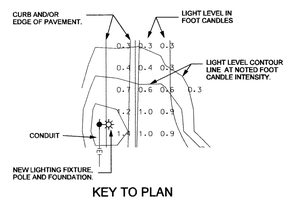
STATE OF MAINE
ALBERT L. GODFREY
No. 4226
LICENSED
PROFESSIONAL ENGINEER

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

NHPP - 2057(600)

WIN 20576.00 HIGHWAY PLANS



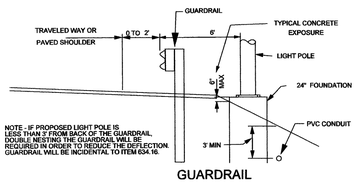


KEY TO PLAN

LEGEND for LIGHTING

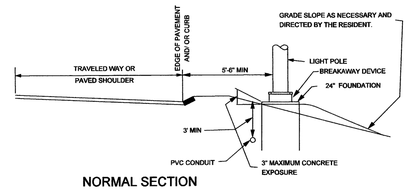
- Control Cabinet and Service
- Lighting Conduit
- Pull Box
- Light Fixture, 40' Pole and 24" Foundation
  - Direction of Luminaire
- Under Pavement Duct
- Existing Light Fixture, Pole and Foundation
  - Approximate Location, To Be Removed

TYPICAL SECTIONS - PLACEMENT OF POLES
Interstate 95



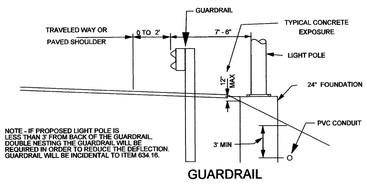
NOTE - IF PROPOSED LIGHT POLE IS LESS THAN 3' FROM BACK OF THE GUARDRAIL, DOUBLE NESTING THE GUARDRAIL WILL BE REQUIRED IN ORDER TO REDUCE THE DEFLECTION. GUARDRAIL WILL BE INCIDENTAL TO ITEM 634.16.

GUARDRAIL



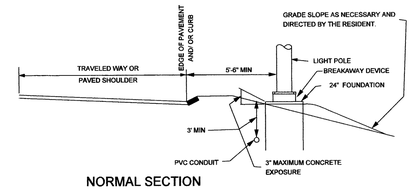
NORMAL SECTION

TYPICAL SECTIONS - PLACEMENT OF POLES
Route 157



NOTE - IF PROPOSED LIGHT POLE IS LESS THAN 3' FROM BACK OF THE GUARDRAIL, DOUBLE NESTING THE GUARDRAIL WILL BE REQUIRED IN ORDER TO REDUCE THE DEFLECTION. GUARDRAIL WILL BE INCIDENTAL TO ITEM 634.16.

GUARDRAIL



NORMAL SECTION

CONDUIT SUMMARY

CIRCUIT 1, Ramps B & C					Wire Size 480 Volts, #10 Stranded Copper XHHW-2
Station	Pole	Breakaway	Foundation Size	Distance	Remarks
Control Cabinet 515+72 +/- Lt	—	—	—		
516+90 Rt	29	No	24	430	Thru Pole Bases 26, 27, 28 and Pull Box at Ramp C Sta 1+30 Rt
2+10 Rt Ramp C	30	No	24	160	Back Thru Pull Box at Ramp C Sta 1+30 Rt
11+60 Rt Ramp C	11	Yes	24	950	
12+90 Rt Ramp C	12	Yes	24	130	
14+20 Rt Ramp C	13	Yes	24	130	
15+50 Rt Ramp C	14	Yes	24	130	
16+80 Rt Ramp C	15	No	24	130	
15+50 Rt Ramp C	14	Yes	24	240	
2+80 Rt Ramp B	2	No	24	130	
4+10 Rt Ramp B	3	Yes	24	130	
5+40 Rt Ramp B	4	Yes	24	200	
3354+80 NB Rt	5	Yes	24		
2+80 Rt Ramp B	2	No	24	130	
1+50 Rt Ramp B	1	No	24		

CONDUIT SUMMARY, Continued

CIRCUIT 2, Ramps A & D					Wire Size 480 Volts, #12 Stranded Copper XHHW-2
Station	Pole	Breakaway	Foundation Size	Distance	Remarks
Control Cabinet 516+72 +/- Lt	—	—	—		
3373+10 SB Lt	20	Yes	24	950	Thru Pull Box at Ramp D Sta 6+90 Rt
5+25 Rt Ramp D	19	Yes	24	165	Back Thru Pull Box at Ramp D Sta 6+90 Rt
3+95 Rt Ramp D	18	Yes	24	130	
2+60 Rt Ramp D	17	Yes	24	135	
1+25 Rt Ramp D	16	Yes	24	135	
17+40 Rt Ramp A	9	Yes	24	210	
16+10 Rt Ramp A	8	Yes	24	130	
14+80 Rt Ramp A	7	Yes	24	130	
13+50 Rt Ramp A	6	Yes	24	130	
17+40 Rt Ramp A	9	Yes	24	135	
18+75 Rt Ramp A	10	Yes	24		

CONDUIT SUMMARY, Continued

CIRCUIT 3, Rte 157, Medway Rd.					Wire Size 480 Volts, #12 Stranded Copper XHHW-2
Station	Pole	Breakaway	Foundation Size	Distance	Remarks
Control Cabinet 516+72 +/- Lt	—	—	—		
516+05 Lt	27	No	24	35	In Conduit With Circuit 1
14+60 Rt Ramp D	28	No	24	110	In Conduit With Circuit 1
517+85 Lt	26	No	24	120	In Conduit With Circuit 1
518+85 Lt	25	No	24	100	
510+10 Lt	23	No	24	745	
528+00 Lt	21	No	24	195	
527+00 Rt	22	No	24	170	Thru Pull Box 528+00 Rt
525+05 Rt	24	No	24	200	

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

NHPP - 2057(600)

WIN 20576.00

HIGHWAY PLANS

STATE OF MAINE * ALBERT L GODFREY No. 4226 LICENSED PROFESSIONAL ENGINEER

SIGNATURE 4226

P.E. NUMBER 5-20-14

DATE

PROJ. MANAGER		
DESIGN-DETAILED	RAL	Jan. 2014
CHECKED-REVIEWED	ALG	5-7-14
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

B. KEEZER

MEDWAY
I - 95 at EXIT 244
HIGHWAY LIGHTING PLANS

SHEET NUMBER
4
OF 4

Filename: ...\Plan Sht 3.dgn Division: HIGHWAY Username: common Date:5/20/2014