



North Dakota Department of Transportation

Grant Levi, P.E.
Director

Jack Dalrymple
Governor

November 6, 2014

ADDENDUM 2 – JOB 43

TO: All prospective bidders on project SIM-8-029(136)053, Job No. 43 scheduled for the November 14, 2014 opening.

The following plan and proposal revisions shall be made:

Plan Revisions:

Remove and replace sheet 2-1 with the enclosed sheet revised 9/23/14, sheets 6-2 to 6-4 and sheet 11-14 with the enclosed sheets revised 10/30/14, and sheet 8-1 with the enclosed sheet revised 11/5/14. Add sheets 6-5, 6-6, 20-8, 90-1, and 150-1 thru 150-4.

Sheet 2-1:

Add Standard Drawings D-770-1, D-770-3, D-770-4, and D-770-5.

Sheet 6-2:

Eliminated note 650-P01. Changed note 704-P06.

Sheet 6-3:

Shifted notes due to 6-2 revisions.

Sheet 6-4:

Shifted notes due to 6-2 revisions. Added note 930-P04 DECK SPALL REPAIR.

Sheet 6-5 to 6-6:

Sheets added with notes regarding the ATR site.

Sheet 8-1:

Added item 550 0230 DOWELED EXPANSION JOINT ASSEMBLY, 2,176 LF.
Item 570 0095 SAW CONCRETE, quantity increased from 2,976 to 5,632 LF.
Item 570 0424 DOWEL BARS, quantity increased from 880 to 2,672 EA.
Item 570 0650 CONCRETE PAVEMENT REPAIR – FULL DEPTH – DOWELED, quantity increased from 752 to 4,378.4 SY.
Eliminated item 650 0800 DECK SPALL REPAIR, 220 SY.
Added item 772 9010 AUTOMATIC TRAFFICREORDER SYSTEM, 1 EA.
Added 930 9610 DECK SPALL REPAIR, 301 SF.
Added 950 8673 EXPANSION JOINT MODIFICATION, 264 LF.

Sheet 11-14:

Added length and width dimensions to bridge deck spall repairs at RP 64.290 and RP 64.537.

Sheet 20-8:

Added detail for expansion joint installation in median barrier.

Sheet 90-1:

Added expansion joint layout sheet.

Sheet 150-1 to 150-4:

New ATR site details.

Request for Proposal Revisions:

Remove and replace pages 1 of 10 to 10 of 10 of the Proposal Forms pages located at the beginning of the Request For Proposal, with the enclosed pages revised 11/6/14.

Page 1 - 10 of 10:

Page number total changed to 11.

Page 7 of 10:

Added item 550 0230 DOWELED EXPANSION JOINT ASSEMBLY, 2,176 LF.

Item 570 0095 SAW CONCRETE, quantity increased from 2,976 to 5,632 LF.

Item 570 0424 DOWEL BARS, quantity increased from 880 to 2,672 EA.

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Page changed to 7 of 11.

Page 8 of 10:

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Added 930 9610 DECK SPALL REPAIR, 301 SF.

Added 950 8673 EXPANSION JOINT MODIFICATION, 264 LF.

Page changed to 8 of 11.

Quantities shifted to new Page 9 of 11.

This addendum is to be incorporated into the bidder's proposal for this project.

Expedite bid files should be updated by downloading the addendum file from the Bid Express on-line bidding exchange at <http://www.bidx.com/> or the Department's web page (<http://www.dot.nd.gov>) and load it into the Expedite program.

Fot



CAL J. GENDREAU – CONSTRUCTION SERVICES ENGINEER

80:plm

Enclosure

Project: SIM-8-029(136)053 (PCN-18989)

The company, firm, corporation, or individual hereby acknowledges that it has designated a responsible person or persons as having the authority to obligate the company, firm, or individual, through electronic or paper submittal, to the terms and conditions described herein and in the contract documents. The designated responsible person submitting this proposal shall be hereafter known as the bidder. By submitting this proposal, the bidder fully accepts and agrees to all the provisions of the proposal. The bidder also certifies that the information given in this proposal is true and the certifications made in this proposal are correct.

The bidder acknowledges that they have thoroughly examined the plans, proposal form, specifications, supplemental specifications, special provisions and agrees that they constitute essential parts of this proposal.

The bidder acknowledges that all line items which contain a quantity shall have a unit price bid. Any line item which is bid lump sum shall contain a lump sum bid price.

The bidder acknowledges that they understand that the quantities of work required by the plans and specifications are approximate only and are subject to increases and decreases; the bidder understands that all quantities of work actually required must be performed and that payment therefore shall be at the prices stipulated herein; that the bidder proposes to timely furnish the specified materials in the quantities required and to furnish the machinery, equipment, labor and expertise necessary to competently complete the proposed work in the time specified.

NON-COLLUSION AND DEBARMENT CERTIFICATION

The bidder certifies that neither he/she, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with this bid.

By submitting this proposal, the bidder certifies to the best of his/her knowledge and belief that he/she and his/her principles:

- a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal Department or agency;
- b. Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or perform a public (Federal, State or Local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records; making false statements; or receiving stolen property

Project: SIM-8-029(136)053 (PCN-18989)

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- c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or Local) with commission of any of the offenses enumerated in paragraph b. of the certification; and
 - d. Have not within a three-year period preceding this proposal had one or more public transactions (Federal, State or Local) terminated for cause or default

Where the prospective bidder is unable to certify to any of the statements in this certification, the bidder shall submit an explanation in the blanks provided herein. The explanation will not necessarily result in denial of participation in a contract:

Explanation: _____

If the prequalified bidder's status changes, he/she shall immediately submit a new fully executed non-collusion affidavit and debarment certification with an explanation of the change to the Contract Office prior to submitting the bid.

Failure to furnish a certification or an explanation will be grounds for rejection of a bid.

BID LIMITATION (Optional)

The bidder who desires to bid on more than one project on which bids are to be opened on the same date, and who also desires to avoid receiving an award of more projects than the bidder is equipped to handle, may bid on multiple projects and limit the total amount of work awarded to the bidder on selected projects by completing the "Bid Limitation".

The Bid Limitation must be filled in on each proposal form for which the Bidder desires protection. Each such proposal must be covered by a proposal guaranty.

The bid limitation can be made by declaring the total dollar value of work OR total number of projects a bidder is willing to perform.

The Bidder desires to disqualify all of his/her bids on this bid opening that exceed a total dollar value of
\$ _____

OR

that exceed a total number of _____ projects.

The Bidder hereby authorizes the Department to determine which bids shall be disqualified.

Project: SIM-8-029(136)053 (PCN-18989)

PERMISSIBLE DISCOUNT (optional)

Only when invited to do so in the Request for Proposal by Special Provision, Bidders are permitted to offer a discount on a specific project (discount project) if they are awarded the contract on one or more additional projects bid at the same bid opening time and date. The bidder must present the proposal so that it can be considered with or without the discount. The bid or discount offered on the "discount project" will not affect the determination of the low bid of any other project.

When discounts are offered, they must be presented as a reduction in the unit price for one or more items of work in the specified proposal (discount project).

Space for Offering Discounts:

Item No: _____

Description: _____

Unit: _____

Proposal Quantity: _____ Unit Price Reduction: \$ _____ Discount: \$ _____

Item No: _____

Description: _____

Unit: _____

Proposal Quantity: _____ Unit Price Reduction: \$ _____ Discount: \$ _____

Item No: _____

Description: _____

Unit: _____

Proposal Quantity: _____ Unit Price Reduction: \$ _____ Discount: \$ _____

TOTAL DISCOUNT _____

It is understood that the discount will only apply if awarded under the conditions as listed above and signed by the bidder.

PROPOSAL FORM

North Dakota Department of Transportation

BID OPENING: November 14, 2014

Job 043

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Rev: 11/6/2014

Project: SIM-8-029(136)053 (PCN-18989)

RECEIPT OF ADDENDA ACKNOWLEDGEMENT

We hereby acknowledge receipt of the following addenda:

Addendum # _____ Dated _____

PROPOSAL GUARANTY

A proposal guaranty is required. The proposal guaranty must comply with Section 102.09, "Proposal Guarantee" of the Standard Specifications.

TYPE OF PROPOSAL GUARANTY APPLIED TO THIS PROJECT (Check one):

_____ Annual Bid Bond*

_____ Single Project Bid Bond

_____ Certified or Cashier's Check

*Annual Bid Bond is required when submitting proposals electronically

DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION(RC)
North Dakota Department of Transportation, Civil Rights Division
 SFN 52750 (Rev. 07-2012)

FORM A

Contractor		Phone
Job No.	Project No.	Bid Opening Date

All DBE firms who quoted this project must be listed in either 1, 2, or 3 below.

At the time of bid submittal, all bidders must provide a list of the DBE firms intended for use on this project, including all tiers of subcontracting. The information must be submitted on the Expedite computer-generated form. If the bidder intends to use DBE quotes received from a subcontractor over \$500,000, the bidder must include the subcontractor's Form A information in the bidder's Form A.

PRINT ALL NUMBERS CLEARLY AND LEGIBLY.

1. If the assigned project goal has not been achieved, and the bidder intends to do specific bid items with their own employees and equipment, or products to be supplied by the bidder, the specific bid items or products and DBE firms not used must be listed below.

- Own employees are individuals who are on the primes payroll, for which the prime contractor contributes to unemployment, social security, and workers compensation.
- Equipment is that which is titled, licensed, and insured in the prime contractors name or leased from a bonafied equipment supplier. It is not acceptable to use equipment or employees from an affiliate or subsidiary firm in lieu of the prime contractors own equipment and employees.

Name of DBE Firm	Bid item numbers or products to be supplied by the bidder
1.	
2.	
3.	
4.	

2. DBE firms not used due to bid differential are listed below.

DBE Firm	DBE Firm

3. For each DBE firm, list the specific bid item numbers to be performed and the total dollar value of the contract.

- If the DBE firm will perform only a portion of a bid item (supply, haul, etc.), this must be so noted, in parenthesis, after the bid item number. **The bidder must state why the DBE was not used for the entire bid item.**
- For DBE subcontractors, suppliers (regular dealers), and manufacturers, list only the amount of work to be completed with each DBE's own employees and equipment.
- For DBE trucking firms, list the amount of hauling to be performed by the DBE with its own trucks and employees; or the fees or commissions earned on non-DBE leased trucks. However, if the DBE is leasing trucks from a non-DBE firm, including an owner-operator, you can count the total value of the services provided by the non-DBE, not to exceed the total value of the services provided by the DBE-owned trucks. (See page 14, number 4, of this special provision for more detailed information.)

FORM A (continued)

If the information provided on Form C **differs** from the information provided on this Form A (bid item numbers, quantities, or dollar amounts), the apparent low bidder or subcontractor **must** provide, with the Form C, a written explanation for the difference.

The apparent low bidder or subcontractor **must** use the DBEs listed for the intended work indicated on Form C.

DBE bidders **must** list the work they will perform with their **own employees and equipment** and any work subcontracted to or materials purchased from other DBEs.

Name of DBE Firm		
List Specific Bid Item Numbers or Products to be Supplied		Total Contract Dollar Value \$
Percent DBE will do with own employees/equipment =	%	If Regular Dealer, X 60% = \$
Percent Non-DBE will do (trucking only) =	%	

Name of DBE Firm		
List Specific Bid Item Numbers or Products to be Supplied		Total Contract Dollar Value \$
Percent DBE will do with own employees/equipment =	%	If Regular Dealer, X 60% = \$
Percent Non-DBE will do (trucking only) =	%	

Name of DBE Firm		
List Specific Bid Item Numbers or Products to be Supplied		Total Contract Dollar Value \$
Percent DBE will do with own employees/equipment =	%	If Regular Dealer, X 60% = \$
Percent Non-DBE will do (trucking only) =	%	

Name of DBE Firm		
List Specific Bid Item Numbers or Products to be Supplied		Total Contract Dollar Value \$
Percent DBE will do with own employees/equipment =	%	If Regular Dealer, X 60% = \$
Percent Non-DBE will do (trucking only) =	%	

Name of DBE Firm		
List Specific Bid Item Numbers or Products to be Supplied		Total Contract Dollar Value \$
Percent DBE will do with own employees/equipment =	%	If Regular Dealer, X 60% = \$
Percent Non-DBE will do (trucking only) =	%	

Name of DBE Firm		
List Specific Bid Item Numbers or Products to be Supplied		Total Contract Dollar Value \$
Percent DBE will do with own employees/equipment =	%	If Regular Dealer, X 60% = \$
Percent Non-DBE will do (trucking only) =	%	

Use additional pages, following the same format, if necessary.

The NDDOT DBE Liaison Officer can be contacted at: CIVIL RIGHTS DIVISION
 ND DEPARTMENT OF TRANSPORTATION
 608 E BOULEVARD AVE
 BISMARCK ND 58505-0700

dlaub@nd.gov
 phone (701) 328-2576
 fax (701) 328-1965, (701) 328-0343

BID ITEMS

Project: SIM-8-029(136)053 (PCN-18989)

Bidder must type or neatly print unit prices in numerals, make extensions for each item, and total. Do not carry unit prices further than three (3) decimal places.

Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						\$\$\$\$\$	000	\$\$\$\$\$	00
001	103	0100	CONTRACT BOND	L SUM	1.				
002	550	0230	DOWELED EXPANSION JOINT ASSEMBLY	LF	2,176.				
003	570	0095	SAW CONCRETE	LF	5,632.				
004	570	0210	PCC PAVEMENT GRINDING	SY	222,464.				
005	570	0240	DOWELED CONTRACTION JOINT ASSEMBLY	LF	252.				
006	570	0424	DOWEL BARS	EA	2,672.				
007	570	0650	CONCRETE PAVEMENT REPAIR-FULL DEPTH-DOWELED	SY	4,378.400				
008	570	0705	10IN CONC PVMT REPAIR-SPOT FULL DEPTH	SF	2,370.				
009	570	0966	RANDOM PCC CRACK CLEANING & SEALING	LF	587.				
010	570	1512	SPALL REPAIR-PARTIAL DEPTH	SF	3,493.				
011	602	7000	SPECIAL SURFACE FINISH	SF	8,093.400				
012	702	0100	MOBILIZATION	L SUM	1.				
013	704	0100	FLAGGING	MHR	1,000.				
014	704	1000	TRAFFIC CONTROL SIGNS	UNIT	4,892.				
015	704	1050	TYPE I BARRICADE	EA	18.				
016	704	1052	TYPE III BARRICADE	EA	58.				

BID ITEMS

Project: SIM-8-029(136)053 (PCN-18989)

Bidder must type or neatly print unit prices in numerals, make extensions for each item, and total. Do not carry unit prices further than three (3) decimal places.

Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						\$\$\$\$	000	\$\$\$\$	00
017	704	1060	DELINEATOR DRUMS	EA	642.				
018	704	1067	TUBULAR MARKERS	EA	429.				
019	704	1081	VERTICAL PANELS-BACK TO BACK	EA	30.				
020	704	1087	SEQUENCING ARROW PANEL-TYPE C	EA	3.				
021	704	1500	OBLITERATION OF PAVEMENT MARKING	SF	17,213.				
022	704	4011	PORTABLE CHANGEABLE MESSAGE SIGN	EA	2.				
023	706	0500	AGGREGATE LABORATORY	EA	1.				
024	762	0420	SHORT TERM 4IN LINE-TYPE R	LF	54,877.				
025	762	1104	PVMT MK PAINTED 4IN LINE	LF	125,136.				
026	762	1305	PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED	LF	163,353.				
027	762	1309	PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED	LF	6,489.				
028	764	1495	ADJUST GUARDRAIL	LF	323.				
029	772	9010	AUTOMATIC TRAFFIC RECORDER SYSTEM	EA	1.				
030	930	3631	POLYURETHANE FOAM	LBS	61,791.				
031	930	9610	DECK SPALL REPAIR	SF	301.				
032	950	8673	EXPANSION JOINT MODIFICATION	LF	264.				

PROPOSAL FORM

North Dakota Department of Transportation

BID OPENING: November 14, 2014

Job 043

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Rev: 11/6/2014

Project: SIM-8-029(136)053 (PCN-18989)

Type of Work: CPR, STRUCTURE PAINTING, APPROACH SLAB JACKING, & INCIDENTALS

County: CASS

Length: 11.7940 Miles

TIME FOR COMPLETION:

The undersigned Bidder agrees, if awarded the contract, to prosecute the work with sufficient forces and equipment to complete the contract work within the allowable time specified as follows:

WORKING DAY CONTRACT: NA working days are provided. The Department will begin charging working days beginning NA or the date work begins on the project site, whichever is earlier.

CALENDAR DAY CONTRACT: 70 * calendar days are provided. The completion date will be determined by adding 70 * calendar days to 06/15/2015 or the date work begins on the project site, whichever is earlier.

COMPLETION DATE CONTRACT The project completion date is NA. The Department provides a minimum of NA working days. The Department will begin charging working days beginning NA or the date work begins on the project site, whichever is earlier.

***PHASE 3 AND 4 SHALL BE RESTRICTED TO 21 CALENDAR DAYS EACH FOR EACH DIRECTION OF TRAFFIC.**

TABLE OF CONTENTS

<u>Section No.</u>	<u>Sheet No.</u>	<u>Description</u>
1	1	Title Sheet
1	2	Traffic Data Sheets
2	1	Table of Contents
4	1	Scope of Work
6	1-6	Notes
8	1	Quantities
10	1	Basis of Estimate
11	1-14	Data Tables (Concrete Pavement Repair Locations)
20	1-7	General Details
30	1-2	Typical Sections
100	1-23	Work Zone Traffic Control
150	1-4	ATR Site

LIST OF STANDARD DRAWINGS

<u>Standard No.</u>	<u>Description</u>
D-101-01	NDDOT Abbreviations
D-101-02	NDDOT Abbreviations
D-101-03	NDDOT Abbreviations
D-101-10	NDDOT Utility Company Abbreviations
D-101-20	Linestyles
D-101-21	Linestyles
D-101-30	Symbols
D-101-31	Symbols
D-101-32	Symbols
D-550-2	Longitudinal Joint Details
D-550-3	Transverse Contraction Joint Details
D-550-4	Transverse Expansion Joint Detail
D-704-5	Contractor Sign Detail
D-704-7	Breakaway System for Construction Zone Signs
D-704-8	Breakaway System for Construction Zone Signs
D-704-9, 10, 11, 12	Construction Sign Details
D-704-13	Barricade Details
D-704-14	Construction Sign and Barricade Assembly Details
D-704-15	Construction Sign and Barricade Location Details
D-704-23	Short Term Urban Detour and Lane Closure on a Divided Highway Layouts
D-704-35	Sign Layout for One Lane Closure – Interstate System
D-704-61	Left Lane Closure on 6 Lane Interstate
D-704-62	Right Lane Closure on 6 Lane Interstate
D-762-02	Interstate Pavement Marking 4 Lane Divided Highway
D-770-01	Concrete Foundations (Traffic Signals & Highway Lighting)
D-770-03	Pull Box Details
D-770-04	Lighting and Signal Details
D-772-05	Loop Detectors Details (Saw Slot)

LIST OF SPECIAL PROVISIONS

<u>Special Provision No.</u>	<u>Description</u>
SP 4(14)	Federal Migratory Bird Treaty Act

NOTES

Revised 10/30/14

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The existing surface shall be cleaned and prepped according to manufacturer's recommendations. The existing surface is stained with creosote. After cleaning the creosote, some discoloring may remain. The new coating shall be applied at the manufacturer's recommended application rate and in accordance with the manufacturer's written instructions.

- Brown – 5,723.4 SF
- White – 2,370.0 SF

704-016 TRAFFIC CONTROL SUPERVISOR: Traffic control supervisor shall be provided on this project. The traffic control supervisor along with a phone number shall be identified at the Pre-construction meeting.

704-P01 TRAFFIC CONTROL DEVICES: The traffic control devices list has been developed using the following layouts on the Standard Drawing for traffic control:
 D-704-23, Type P, for one lane closure on 4 lane divided roadway
 D-704-35, for one lane closure on the Interstate System

The required traffic control signs and devices for two interstate lane closures (one in each direction) and one overhead lane closure are included in the traffic control devices list, and will be measured and paid for at the Contract Unit Price for each device. All costs associated with relocating the lane closures between sites, and additional devices required to accommodate the contractor's operation, shall be at the contractor's expense.

704-P02 MAINTENANCE & PROTECTION OF TRAFFIC FOR CONCRETE PAVEMENT REPAIRS: The layouts for construction signing for various lane closures show the required devices for each situation. In full depth removal areas vertical panels shall be spaced at 10 feet on centerline roadway until the concrete has been replaced. A minimum of two vertical panels shall be used at each full depth removal area.

Type I Barricades shall be placed in front of each open area or as directed by the Engineer. The barricades shall not encroach onto the traffic lane.

The concrete pavement repairs, slab jacking and striping must be completed for the entire length of one lane closure before starting any work in the adjacent lane or next phase. Lane closures will be a maximum of 5 miles. There will be a minimum of 2 miles between the end of a lane closure and the advanced signing of the next lane closure. If the contractor chooses to set up more than two lane closures it will be at the contractor's expense. No additional compensation will be allowed for relocation of traffic control devices.

If the contractor is going to operate in a manner other than as herein provided, a complete traffic control layout and program will be provided to the engineer for review, and approval will have to be given before any additional work is performed.

704-P03 TRAFFIC ROUTING DURING CONSTRUCTION: The contractor shall provide one lane for traffic at all times and two lanes in areas of the project that have 3 lanes or more. The contractor's traffic shall be in the same direction as public traffic. Ramp traffic shall be maintained at all times during the pavement removal and replacement.

704-P04 CONSTRUCTION TRAFFIC: The contractor's construction traffic required for concrete pavement repair shall be limited to access at interchanges only. Construction traffic will not be permitted to operate in the median nor will access from one roadway to the other roadway, through the median, be permitted.

704-P05 TRAFFIC CONTROL PHASING: Enough traffic control items have been included in the quantities so that the Contractor can work in lanes in both the northbound and southbound directions (see traffic control layout). However, work must take place in the lanes that are closed immediately after the lane closure has been set up.

Phase 1 has the Northbound and Southbound I-29 traffic maintained in the left lane from the beginning of the project, 5 miles north. Traffic control for phase 1 and 2 are based on 5 mile closures.

In phase 2, Northbound I-29 and Southbound I-29 traffic will be maintained in the right lane. Phases 1 and 2 are dedicated to the 2 lane sections in each direction (RP 53.764 to RP 62.508) and the lane closure will be adjusted to the north as project work is completed.

Phases 3 and 4 are designed for the I-29 section with 3 lanes of traffic in each direction RP 62.508 to RP 65.558). In phase 3, Northbound and Southbound traffic is maintained in the right lane and right shoulder west of milepoint 350.050. Northbound I-29 traffic is maintained in the left lane and left shoulder. In phase 4, Northbound and Southbound traffic is maintained in the left lane and left shoulder

Traffic control devices in Phase 5 are dedicated to the crossroad work at 52nd Ave S and 19th Ave N. The work at these two locations may be done simultaneously with other phases as long as work is ongoing in them.

These phases can be modified if a written request is received from the contractor and approved by the NDDOT or the NDDOT requests a change prior to construction taking place.

704-P06 PAVEMENT SWEEPING: The contractor shall sweep pavement prior to placing short term pavement marking. All costs connected with this work shall be included in the unit bid price of other items.

704-P07 COVER SIGN: The contractor will be responsible for covering speed limit signs and lane designation overhead signs as phasing and scheduling plans are agreed upon. The number of signs to be covered shall be at the discretion of the Engineer based on location and duration of each phase. This work will not be paid for separately, but shall be included in other items.

762-P01 PERMANENT STRIPING: The contractor shall install new PREFORMED PATTERNED PVMT MK 4IN LINE – GROOVED & PVMT MK PAINTED LINE centerline and edge line striping after CPR operations and grinding have been completed.

All permanent and temporary striping shall be along the same alignment and offset as the existing striping to ensure all existing striping is obliterated. Any existing striping remaining after the grooving operation for permanent striping has been completed shall be obliterated at the contractor's expense. All labor, materials, and equipment used to install new centerline striping in this manner shall

This document was originally issued and sealed by Justin Oss, Registration Number PE-7124, on 08/13/14 and the original document is stored at the North Dakota Department of Transportation.

NOTES

Revised 10/30/14

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be included in the unit bid price for "PREFORMED PATTERNED PVMT MK 4IN LINE – GROOVED."

The centerline pavement marking shall be placed to avoid interfering with the weigh in motion equipment.

764-P01 ADJUST GUARDRAIL: The existing W- Beam guardrail at the approach ends of Structures whose approach panels are to be jacked shall be disconnected from the concrete barriers prior to the slab jacking taking place. The guardrail may have to be raised once the jacking is complete in order to re-attach the guardrail and maintain the proper vertical height as shown in Section 130 Sheet 1 of the plans for W-Beam guardrail.

The guardrail shall be removed and reset at the proper height, tamping approved material into the post holes by mechanical methods. In lieu of removing the guardrail, the contractor may choose to pull each post up to the proper height and grout under each post with a grout that will not shrink. The type of grout and method of inserting the grout into the space below the post shall be approved by the engineer.

The contractor shall be responsible for any damage done to the guardrail and shall replace, at their own expense, any guardrail damaged during the adjusting of the guardrail.

Below are the approach panel jacking locations. Lengths of guardrail at each site that require adjustment are approximate, and may need to be modified to fit the conditions in the field:

40 th Ave, RP 61.248, NB I-29, Rt & Lt	53.8 LF (26.9 LF Each side)
40 th Ave, RP 61.281, SB I-29, Rt & Lt	53.8 LF (26.9 LF Each side)
Rose Coulee, RP 61.389, NB I-29, Rt & Lt	53.8 LF
Rose Coulee, RP 61.409, SB I-29, Rt & Lt	53.8 LF
17 th Ave, RP 63.777, NB I-29, Rt & Lt	26.9 LF
13 th Ave, RP 64.274, NB I-29	0 LF (exit end)
Texas Turn, RP 64.164, SB I-29, Rt	26.9 LF
19 th Ave N, Crossroad Rt & LT	53.8 LF

The item "Adjust Guardrail" will be measured by the linear foot. The quantities measured will be paid at the contract unit price and shall be full compensation for all labor, equipment, and materials necessary to disconnect the guardrail from the barrier, complete the adjustment, and re-attach the guardrail.

930-P01 SLAB JACKING: All slab jacking work shall be done after performing concrete pavement repairs at each site.

930-P02 POLYURETHANE FOAM: This work shall consist of lifting and leveling the existing concrete bridge approach panels and adjacent paving panels by a polyurethane foam system. Lifting and leveling of the concrete panels shall be performed by drilling injection holes, injecting polymer, verifying elevations to control lift of panel and cleanup as approved by the Project Engineer.

The medium used to lift and level the approach slabs shall be a water-blown high-density polyurethane. The material shall be hydrophobic. The high density, closed cell, polyurethane system shall exhibit the following physical characteristics and properties:

Density, Lb/Cu Ft (ASTM 1622)	Compressive Strength (ASTM 1621)
3.0	40 psi
3.5	50 psi
4.0	60 psi
6.0	110 psi

The polyurethane foam system will have a free-rise density of 3.0 – 3.2 lb/ft³, with a minimum compressive strength of 40 psi. The expansion of the polyurethane foam under pressure increases the foam density above the original free rise density value.

The high density formulation shall reach 90% of full compressive strength within 15 minutes of injection, at which time the Contractor may allow traffic on the treated areas, as approved by the Project Engineer.

The Contractor shall submit, to the Project Engineer, manufacturer's certification stating that all materials and methods meet requirements. The Contractor shall also submit all warranties and guarantees, which shall be transferred to the Department upon acceptance by the Project Engineer.

A list of the lifting and undersealing equipment shall be submitted to the Project Engineer for review. The minimum list of equipment required shall be as listed below. This list shall not preclude the use of additional equipment.

- a. A pneumatic drill and an electric drill capable of drilling 5/8-inch diameter holes to the required depths.
- b. A truck-mounted pumping unit capable of injecting the high-density polyurethane formulation between the concrete pavement and the underlying surface. The pumping unit shall be equipped with a dial gauge in increments of 45 grams (1/10 pound), and shall be capable of controlling the rate of flow of the material as well as of the rise of the pavement.
- c. A laser leveling unit to ensure that the concrete is raised to an even plane and to the required elevations.

All equipment provided by the Contractor shall be in excellent condition and kept clean at all times. All stored materials shall be sealed and protected from contamination of dust or any foreign material.

The Contractor shall have prior experience using high-density polyurethane to raise and underseal concrete slabs.

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A series of 5/8 inch holes shall be drilled at the locations required for the proper raising of the surface. The exact locations and spacing shall be determined by the Contractor. The pumping unit shall be calibrated daily, or at the Project Engineer's request, to ensure consistent accuracy of injected material.

The high density polyurethane formulation is injected under the slab. The amount of rise shall be controlled, using the pumping unit, by regulating the rate of injection of the raising/undersealing polymer. When the nozzle is removed from the hole, any excessive polyurethane material shall be removed from the area and the hole sealed with a non-expansive cementitious grout. All removed material shall be disposed of in an environmentally acceptable manner conforming to Federal, State and local regulations. Final elevations shall be within 1/8" of the elevations proposed by profile. A tight string line shall be used to monitor and verify elevations for slab lengths of 50 foot or less. For longer sections, a laser level will be used to monitor and verify elevations. The Contractor shall be responsible for setting and maintaining the stringline and laser level, as well as any pavement blowouts or excessive pavement lifting which may result from the process and shall repair the damaged area to the satisfaction of the Project Engineer without additional cost.

The slab shall not be raised more than 1/4 inch while pumping in any one hole at any one time. Cracks emanating radially from the injection holes will be presumed to have been caused by improper injection techniques by the Contractor. For each five feet of crack measured, the pay quantity will be reduced by 10 pounds of polyurethane material. If cracks develop between adjacent injection holes, the Contractor shall repair the cracks by a satisfactory method approved by the Engineer. Pavement raised above specified tolerances shall be brought to grade by grinding. If over jacking is greater than 0.10 foot, satisfactory removal and replacement shall be required, at no cost to the Owner.

The price bid for the item "Polyurethane Foam" shall include full compensation for furnishing all labor, supervision, materials tools, equipment, and incidentals for all work called for in this note. Daily material usage shall be attested by the Inspector and the Contractor and reported on a field production report.

930-P03 19TH AVE APPROACH SLAB JACKING: The approach panels at 19th Ave N that are to be lifted are pile supported. The approach side of the second panel away from the bridge will be the only side that is able to be lifted. The adjacent concrete paving will still be tapered like all other locations as shown in the detail sheets.

930-P04 DECK SPALL REPAIR: The removal requirements for bridge deck and approach panel repairs shall conform to Class 2-A as per NDDOT Spec 650.04 B.3. Concrete placement and curing procedures should also follow 650.04 B. All bridge deck and approach panel spalls repairs shall be paid for under the "DECK SPALL REPAIR" bid item.

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SECTION 150

772-P01 AUTOMATIC TRAFFIC RECORDER SYSTEM: The Contractor shall work on the Automatic Traffic Recorder (ATR) site after the roadway work is completed.

Representative

The Contractor shall ensure that a qualified PEEK Traffic Corp. representative will be on site to assist and supervise the system installation and all work. The Contractor shall ensure that the PEEK Traffic Corp. representative is certified for ATR equipment installation, operation, calibration, and vehicle verification processes.

Loops

Loop conductor shall meet the requirements of Spec. 896.02 B.1.

Loop lead-in conductor shall meet the requirements of Spec. 896.03 B.3 and shall not be spliced except at the pull box, where the loop conductor and loop lead-in conductor are joined. All loop splices shall be soldered along with a 3M splice kit, or CK 137 Shake-N-Seal from Uraseal.

Sawing & Sealing Joints

The Contractor shall follow the provisions of Spec. 772.04 E.4 and E.7 when sawing and sealing any joints. Loop saw slots shall be 2 inches deep or as recommended by the manufacturer. Hot Poured Joint Seal shall not be used for sealing any saw slots.

The Contractor shall use 3M Bondo P-606V Loop Sealant, VersaFLEX SL/75 Joint Filler, or BASF MasterSeal SL 180 Loop Sealant for sealing all saw cuts.

The Contractor shall follow minimum curing specifications for all loops according to the detector loop manufacturer. The sealant shall cure until it does not track or has set sufficiently where it is not damaged by traffic. Any damage will be repaired at the Contractor's expense.

Cabinet

The Contractor is responsible for all conductor termination. All lug terminals for conductor termination shall be crimped and soldered. The conductors shall meet the requirements of Spec. 896.02 A.

The 2" rigid conduit shall be at a minimum depth of 24" below finished grade. This conduit shall meet the requirements of Spec. 896.01 B.2. The conduit shall not be spliced from the pull box to the recorder cabinet, and shall be a continuous run.

All holes made or existing in the pull box for conduit access shall be plugged/sealed and made watertight. All conduit containing electrical conductor (both in the pull box and the cabinet) shall be sealed and made watertight after the conductor has been pulled through and terminated.

The pull box shall be round PVC pull box as shown on Standard Drawing D-772-3. The pull box cover shall be made watertight. The cover shall have a gasket around the opening and around each of the screw holes.

The ADR-6000 traffic recorder shall be manufactured by PEEK Traffic Corp. All AC power feeds, data lines, and loops shall be protected with approved surge/line protectors. A 6 outlet AC line protector unit must be provided for the 120 volt 60 Hz power source. The protector unit will include a thermal circuit breaker. Electrical Magnetic Interference (EMI) noise suppression will be provided for diverting and clamping high voltage surges. The noise suppression shall limit the maximum voltage reaching the sensitive electronic equipment during a transient pulse. The unit will be approved by Underwriter Laboratories (UL).

The Contractor shall install a 4G Cellular Modem in the ATR cabinet. The Contractor shall contact the Information Technology Division within the NDDOT:

Robert Steckler
216 Airport Road
Bismarck, ND 58504
Telephone: (701) 328-6935

The Contractor must contact Robert Steckler a minimum of 3 weeks in advance of the installation.

Foundations

The ATR cabinet foundation and working slab shall be constructed using the ATR Detail Sheet and standard drawing D-770-1.

The cabinet foundation shall be of sufficient size so there is a minimum of 2" of clearance from the outside edge of cabinet to the outside edge of the foundation on any side. The Contractor shall ensure a water-tight seal between the cabinet and the foundation by caulking, except for the V groove. Rodent protection shall be placed in the V groove between the concrete foundation and the cabinet, which will allow water to drain properly from the cabinet. The materials and preparation of the working slab shall be as approved by the Engineer.

Bolt studs in the cabinet foundation shall be securely fastened to the cabinet flange at all four corners. Washers of sufficient size shall be used to secure the cabinet to the foundation.

Ground rods must be placed at all four (4) corners, located outside of the foundation pad in a ring type configuration. Each ground rod must be 5/8 inch diameter by 10 feet long. Connection of ground rods must be with a No. 2/0 AWG copper conductor bonded to the cabinet. The copper conductor shall be buried a minimum of 6 inches below the ground surface. All buried connections will be made with a Cadweld type connection. The earth ground

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resistance will test to 25 ohm or less, and be tested with an earth/ground resistance tester capable of measuring earth ground resistance less than 25 ohm. The Contractor will install any additional ground rods to achieve the 25 ohm or less earth ground resistance. All test results will be documented by the Contractor and furnished to NDDOT in a clean, organized format.

Ground disturbed when installing this equipment will require final grading and seeding with Class II Seed.

Testing

All new loops shall be tested prior to and after installation and must test to manufacturers specifications or be replaced. If the loops meet manufacturer's specifications after installation, but do not perform traffic count or classification correctly, the Contractor will be responsible for any corrections up to and including replacing the defective part or parts. This may include loops and electronic equipment.

The Contractor shall verify vehicle classification by comparing ATR results with base line traffic counts and classification obtained by videotaping and manually counting and classifying vehicles for a period of 2 hours.

Acceptance

Acceptance of the ATR site will be determined after the site is in operation for 30 days. The 30 days begins after successful testing and it is determined that the ATR site is working correctly. Any damage caused as a result of construction practices or techniques shall be paid at the Contractor's expense. This includes new items installed by this contract including detector loops.

The Contractor shall provide the operation and maintenance manuals and detailed wiring schematics for this ATR site.

Completion of work requires the following items to be completed: the Automatic Traffic Recorder site in working order as approved by the PEEK Traffic Corp. representative, site passed inspection by the Engineer, and successful completion of testing.

All costs for labor, equipment, materials, PEEK representative, and all testing necessary to install the ATR equipment, shall be included in the price bid for "Automatic Traffic Recorder System".

772-P02 EXISTING EQUIPMENT: An ATR site is currently located at RP 55.5 on the west side of the roadway. NDDOT personnel will remove the components inside the cabinet and the solar panels. The Contractor shall remove the cabinet, pedestal and pull boxes, and foundation which shall become the property of the Contractor.

All costs associated with removing this equipment shall be included in the price bid for "Revise Automatic Traffic Recorder System".

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ESTIMATE OF QUANTITIES

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SPEC CODE	ITEM DESCRIPTION	UNIT	MAINLINE	TOTAL
-----	-----	-----	-----	-----
103	0100 CONTRACT BOND	L SUM	1	1
550	0230 DOWELED EXPANSION JOINT ASSEMBLY	LF	2,176	2,176
570	0095 SAW CONCRETE	LF	5,632	5,632
570	0210 PCC PAVEMENT GRINDING	SY	222,464	222,464
570	0240 DOWELED CONTRACTION JOINT ASSEMBLY	LF	252	252
570	0424 DOWEL BARS	EA	2,672	2,672
570	0650 CONCRETE PAVEMENT REPAIR-FULL DEPTH-DOWELED	SY	4,378.4	4,378.4
570	0705 10IN CONC PVMT REPAIR-SPOT FULL DEPTH	SF	2,370	2,370
570	0966 RANDOM PCC CRACK CLEANING & SEALING	LF	587	587
570	1512 SPALL REPAIR-PARTIAL DEPTH	SF	3,493	3,493
602	7000 SPECIAL SURFACE FINISH	SF	8,093.4	8,093.4
702	0100 MOBILIZATION	L SUM	1	1
704	0100 FLAGGING	MHR	1,000	1,000
704	1000 TRAFFIC CONTROL SIGNS	UNIT	4,892	4,892
704	1050 TYPE I BARRICADE	EA	18	18
704	1052 TYPE III BARRICADE	EA	58	58
704	1060 DELINEATOR DRUMS	EA	642	642
704	1067 TUBULAR MARKERS	EA	429	429
704	1081 VERTICAL PANELS-BACK TO BACK	EA	30	30
704	1087 SEQUENCING ARROW PANEL-TYPE C	EA	3	3
704	1500 OBLITERATION OF PAVEMENT MARKING	SF	17,213	17,213
704	4011 PORTABLE CHANGEABLE MESSAGE SIGN	EA	2	2
706	0500 AGGREGATE LABORATORY	EA	1	1
762	0420 SHORT TERM 4IN LINE-TYPE R	LF	54,877	54,877
762	1104 PVMT MK PAINTED 4IN LINE	LF	125,136	125,136
762	1305 PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED	LF	163,353	163,353
762	1309 PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED	LF	6,489	6,489
764	1495 ADJUST GUARDRAIL	LF	323	323
772	9010 AUTOMATIC TRAFFIC RECORDER SYSTEM	EA	1	1
930	3631 POLYURETHANE FOAM	LBS	61,791	61,791
930	9610 DECK SPALL REPAIR	SF	301	301
950	8673 EXPANSION JOINT MODIFICATION	LF	264	264

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ND	SIM-8-029(136)053	11	14

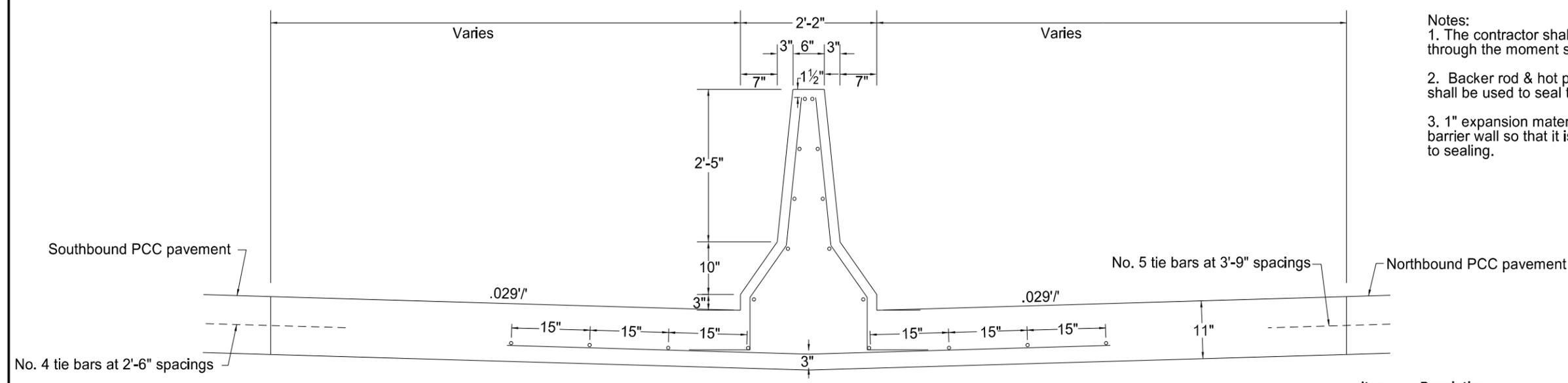
Reference Point	Dist. From RP	Lane	Full Depth Repair (ft)			SY	Sawcut	Dowel Bars	Doweled Contr. Joint Assembly (LF)	Spall Repair (ft)			SF	Random Cracks (LF)	Comments
			Length	X	Width					Length	X	Width			
63.556	2936	ML		X		0				4	X	2	8	C	CORNER BREAK
63.556	2936	ML		X		0				4	X	4	16	C	CORNER BREAK
63.557	2941	ML		X		0				4	X	2	8	C	CORNER BREAK
63.559	2952	ML	4	X	2	1	12	2			X		-	L	LONG JOINT
63.560	2957	ML	7	X	3.5	3	21	4			X		-	C	CORNER BREAK
63.560	2957	ML		X		0				2	X	2	4	C	CORNER BREAK
63.563	2973	ML	36	X	12	48	96	20	24		X		-	2	2 FULL PANELS
63.730	3854	ML		X		0				2	X	2	4		CORNER BREAK
63.769	4060	RAMP		X		0				2	X	3	6		CORNER BREAK
63.773	4081	ML		X		0				3	X	2	6		MID PANEL
63.817	4314	RAMP		X		0				3	X	3	9		CORNER BREAK
63.817	4314	RAMP		X		0					X		-	10	ROUT AND SEAL
63.829	4377	PL		X		0				2	X	2	4		CORNER BREAK
63.960	5069	PL		X		0				2	X	2	4		CORNER BREAK
63.969	5116	PL		X		0				2	X	4	8		TRANSVERSE JOINT
63.969	5116	DL		X		0				2	X	2	4		CORNER BREAK
63.975	5148	DL		X		0				2	X	2	4		WHEEL PATH
SUBTOTAL						54	153	28	24				413	40	SUBTOTAL FOR MILE 63
64.125	660	NSIDE 10'SH		X		0					X		-	15	ROUT AND SEAL
64.167	882	10'SH		X		0					X		-	15	ROUT AND SEAL
64.167	882	DL		X		0				2	X	2	4		CORNER BREAK
64.178	940	DL		X		0				2	X	2	4		CORNER BREAK
64.227	1199	DL		X		0				2	X	3	6		TRANSVERSE JOINT
64.290	1531	BRIDGE		X		0				2	X	24	48		BRIDGE DECK END BLOW OUT 24' WIDE
64.455	2402	DL		X		0				2	X	2	4		LONG JOINT
64.537	2835	BRIDGE		X		0				2	X	6	12		BRIDGE DECK END BLOW OUT 6' WIDE
64.590	3115	RAMP		X		0				4	X	2	8		APPROACH SLAB
64.721	3807	DL	21	X	12	28	66	20	12		X		-		FULL PANEL
64.760	4013	DL		X		0				2	X	2	4		CORNER BREAK
64.848	4477	ML		X		0				2	X	2	4		CORNER BREAK
64.853	4504	ML		X		0				2	X	2	4		CORNER BREAK
64.872	4604	ML		X		0				4	X	2	8		CORNER BREAK
64.884	4668	ML		X		0				2	X	2	4		CORNER BREAK
64.956	5048	ML		X		0				2	X	2	4		CORNER BREAK
SUBTOTAL						28	66	20	12				114	30	SUBTOTAL FOR MILE 64
65.019	100	ML		X		0				2	X	3	6		CORNER BREAK
65.097	512	DL		X		0				2	X	2	4		CORNER BREAK
65.107	565	DL		X		0				2	X	2	4		LONG JOINT
65.107	565	PL		X		0				2	X	2	4		CORNER BREAK
65.169	892	DL		X		0				2	X	2	4		MID PANEL
65.199	1051	DL		X		0				2	X	2	4		MID PANEL
65.245	1294	RAMP		X		0				2	X	2	4		LONG JOINT
65.283	1494	PL		X		0				3	X	2	6		CORNER BREAK
65.321	1695	DL		X		0				2	X	2	4		CORNER BREAK
65.370	1954	DL		X		0				5	X	2	10		LONG JOINT
65.370	1954	DL		X		0				2	X	2	4		CORNER BREAK
65.375	1980	DL		X		0				2	X	2	4		CORNER BREAK
65.500	2640	PL		X		0				2	X	2	4		CORNER BREAK
SUBTOTAL						0	0	0	0				62	0	SUBTOTAL FOR MILE 65

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North Bound
Data Table
RP 63.556 to RP 65.500

Revised 11/5/14

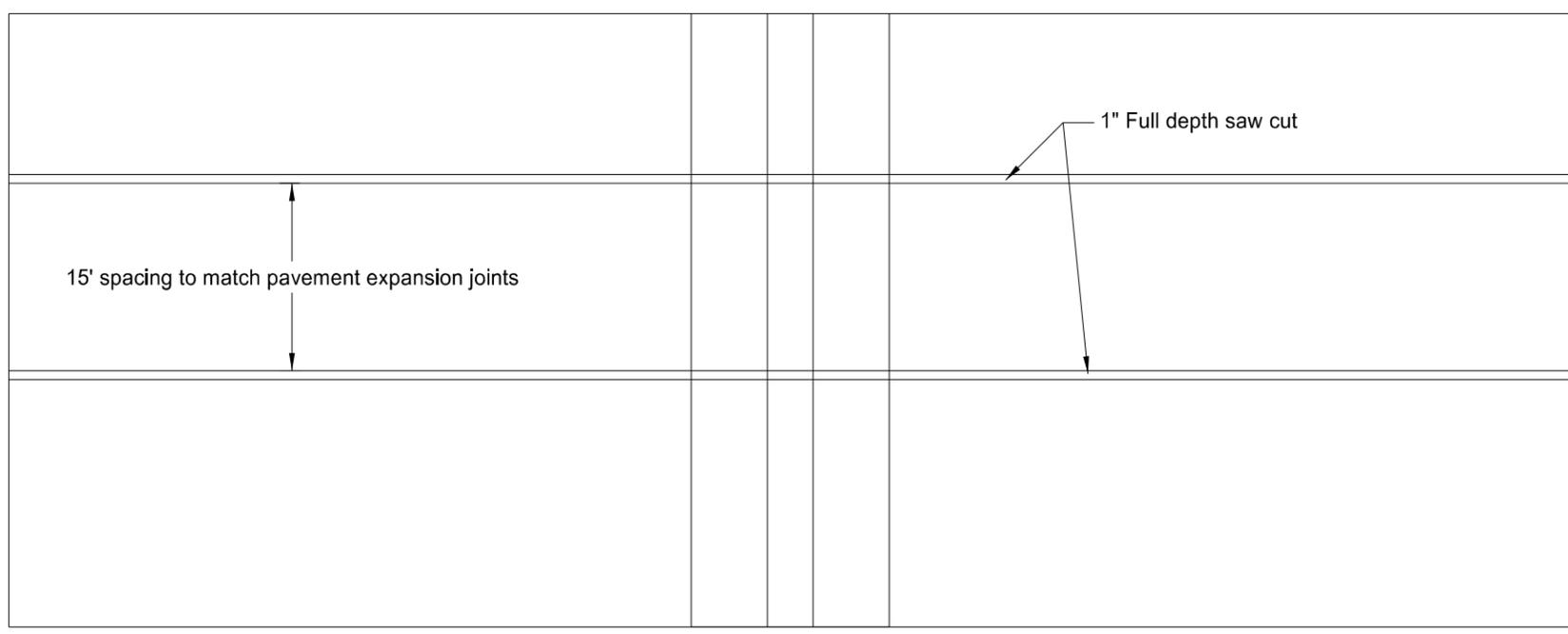
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- Notes:
1. The contractor shall make a 1" full depth saw cut through the moment slab and jersey barrier wall.
 2. Backer rod & hot pour elastic joint sealant shall be used to seal the joint in the moment slab.
 3. 1" expansion material shall be cut to fit the jersey barrier wall so that it is 3/4" from the surface prior to sealing.

Plan View

Item	Description	*Quantity	Unit
950-8673	EXPANSION JOINT MODIFICATION		
	17th Ave	104	LF
	Texas Turn	56	LF
	13th Ave	56	LF
	9th Ave	48	LF



Elevation View

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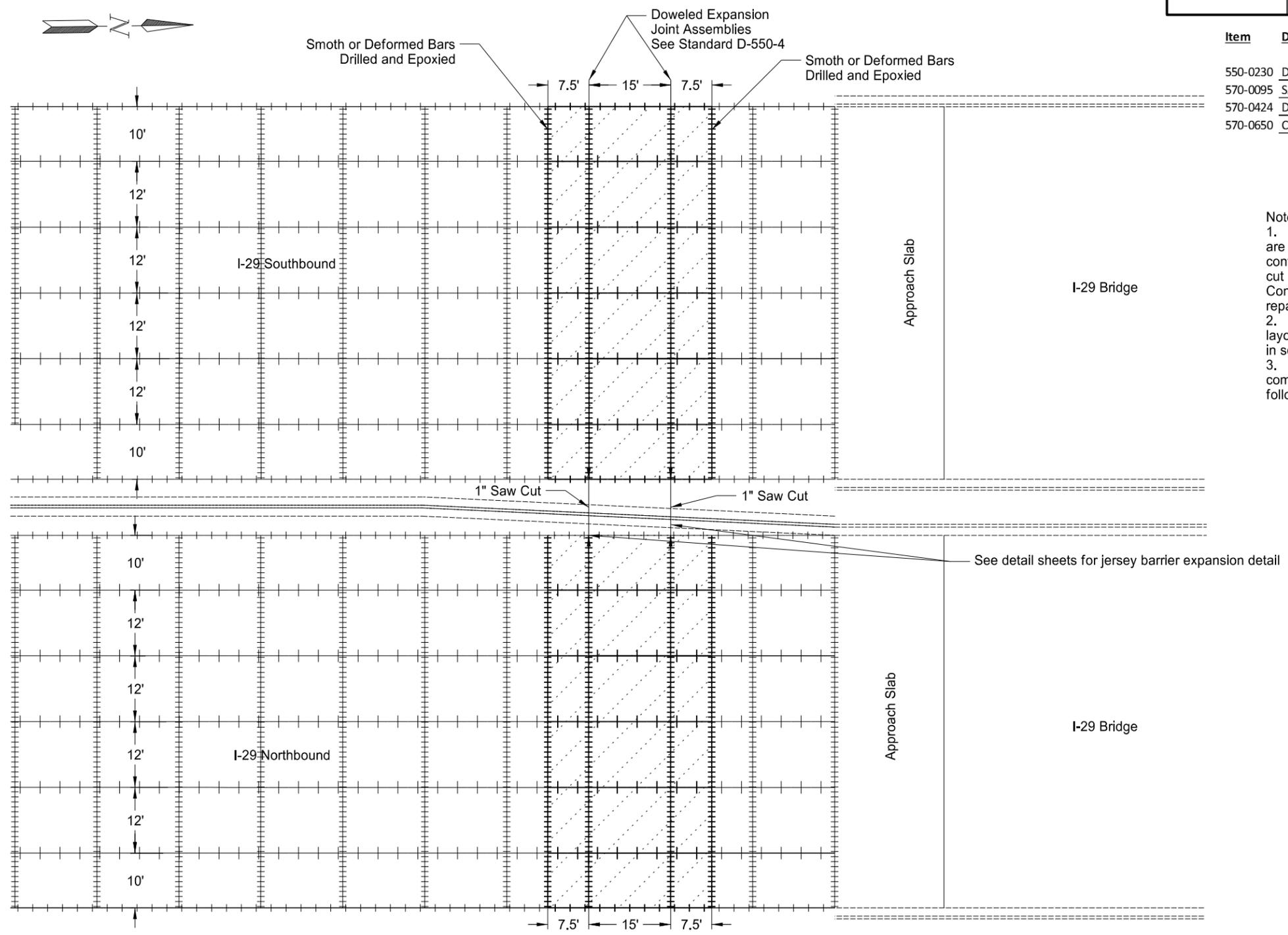
Barrier Expansion Joint Detail
17th ave, Texas turn, 13th Ave, 9th ave

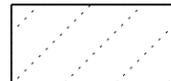
Revised 11/5/14

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Item	Description	*Quantity	Unit
550-0230	DOWELED EXPANSION JOINT ASSEMBLY	272	LF
570-0095	SAW CONCRETE	332	LF
570-0424	DOWEL BARS	224	EA
570-0650	CONCRETE PAVEMENT REPAIR-FULL DEPTH DOWELED	453.3	SY

- Notes:
1. The full depth repairs for the installation of expansion joints are to begin one contraction joint south and again one contraction joint north of the I-94 structure. A saw cut is to be performed midway in the next slab. From there two Contraction joints shall be replaced with expansion joints. The repairs shall end midway in the next slab with another saw cut.
 2. The phasing of the work is to coincide with the traffic control layout. This will require areas to be removed and reconstructed in sections.
 3. Quantities shown are for 1 side of the 4 structures to be completed. This work shall be performed at each end of the following structures: 17th ave, Texas Turn, 13th ave & 9th ave.



 Concrete Pavement Repair - Full Depth - Doweled

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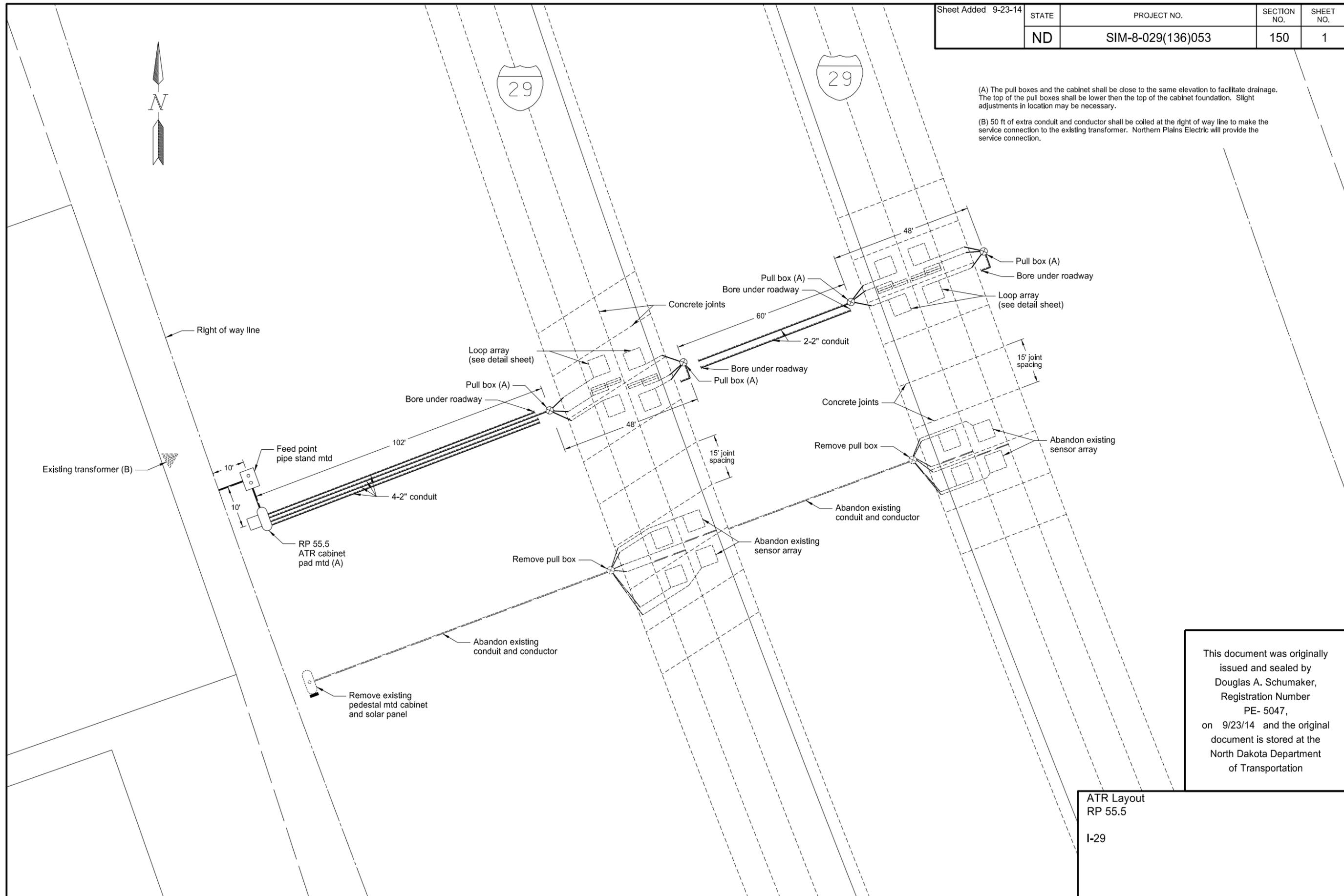
I-29 Expansion Joint Layout
17th ave, Texas turn, 13th ave, 9th ave Structures

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(A) The pull boxes and the cabinet shall be close to the same elevation to facilitate drainage. The top of the pull boxes shall be lower than the top of the cabinet foundation. Slight adjustments in location may be necessary.

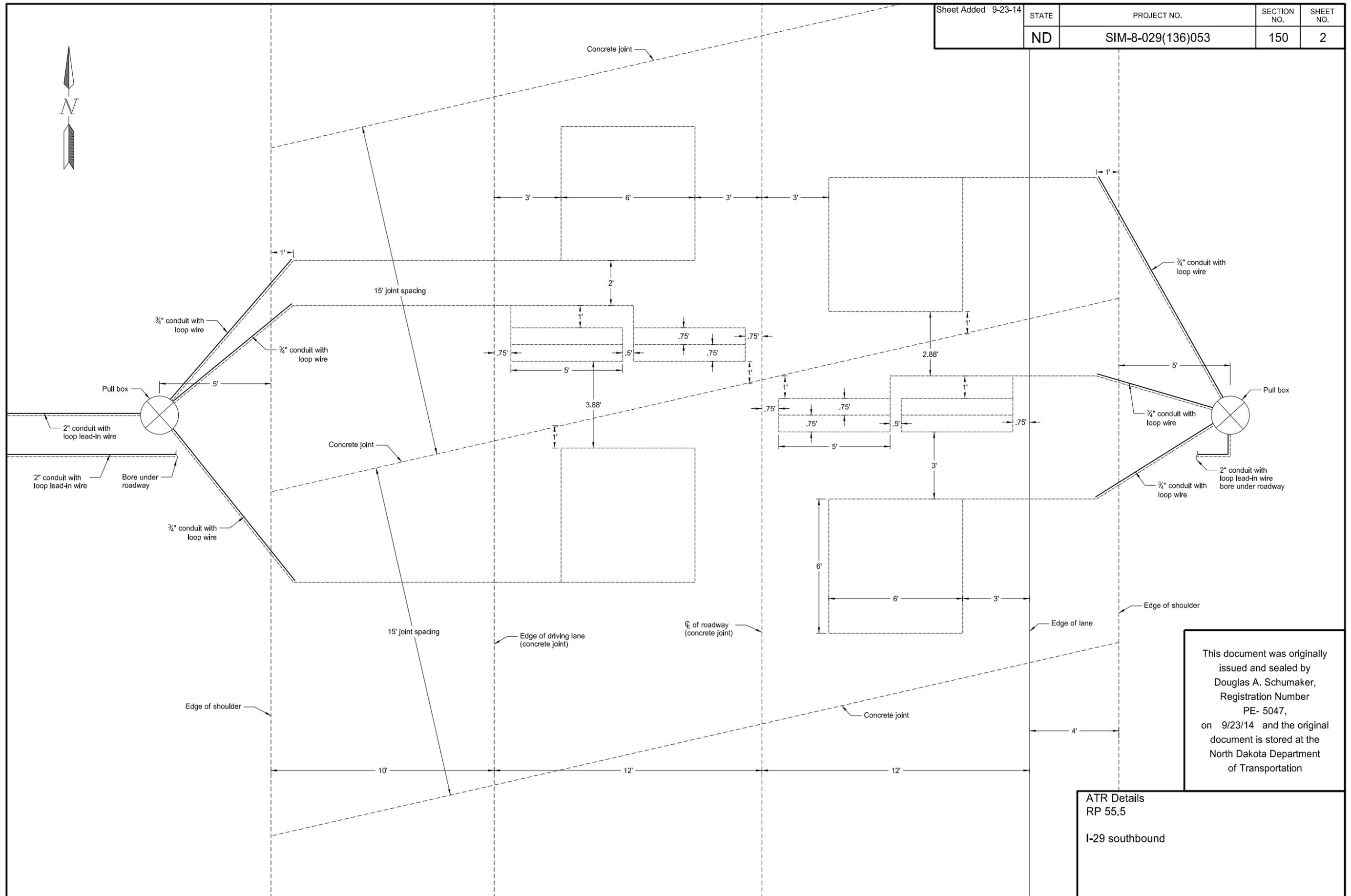
(B) 50 ft of extra conduit and conductor shall be coiled at the right of way line to make the service connection to the existing transformer. Northern Plains Electric will provide the service connection.



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ATR Layout
 RP 55.5
 I-29

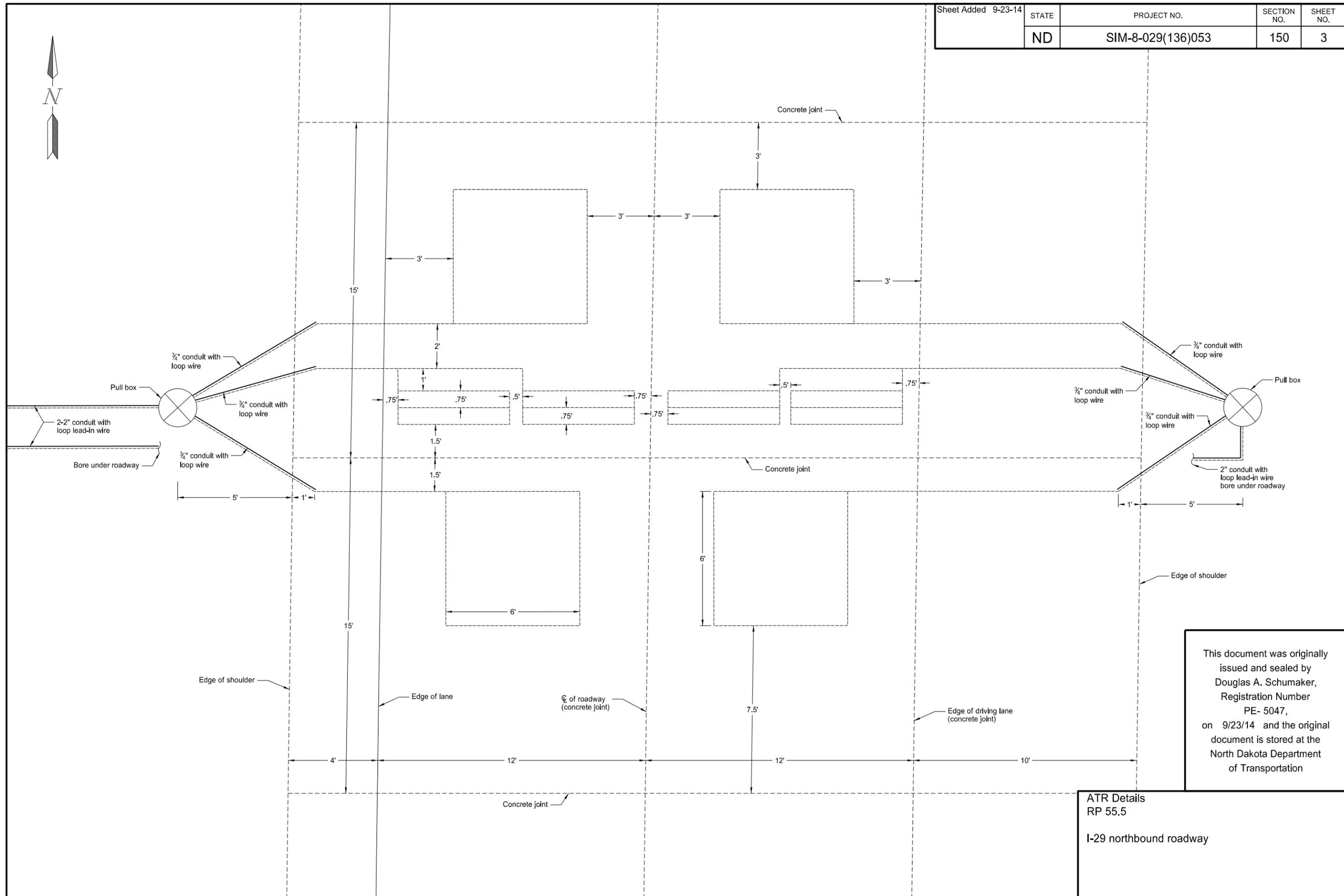
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ATR Details
 RP 55.5
 I-29 southbound

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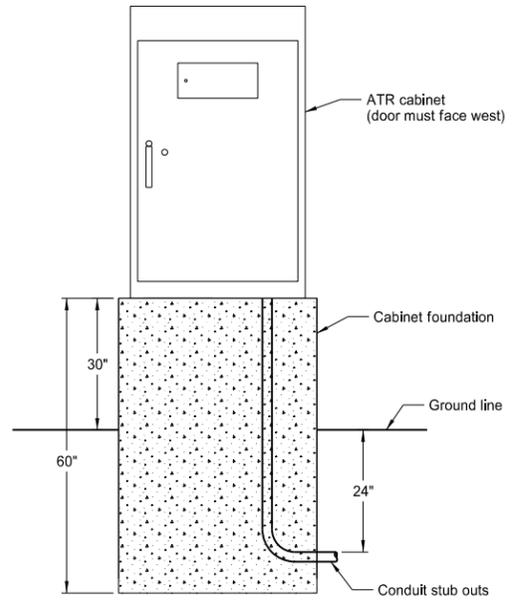
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ATR Details
RP 55.5
I-29 northbound roadway

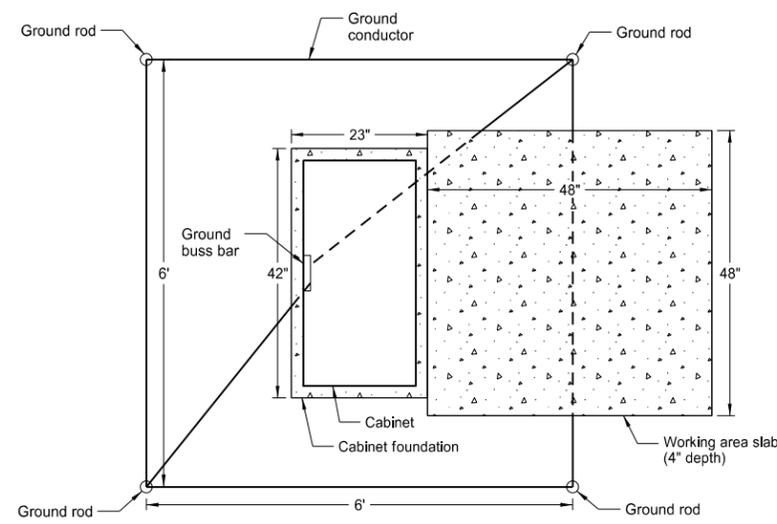
Quantities (A)		
PVC Pull Box	EA	4
Underground Conductor No 4 Type RHW (B)	LF	220
Underground Conductor No 6 Type THW (B)	LF	110
Shielded Twisted Pair Loop Lead-In Wire 14 AWG XHHW	LF	3120
Conductor Loop Wire 14 AWG XHHW (C)	LF	3072
Saw Slot and Sealant for Loops	LF	465
3/4 Inch Diameter Rigid HDPE Conduit	LF	96
2 Inch Diameter Rigid HDPE Conduit (D)	LF	898
PEEK ADR 6000 Traffic Counter/Classifier with all necessary cabling plus IDRIS License	EA	1
NEMA Type 3R Ground Mounted Cabinet including AC Power Panel and Sensor Surge Boards	EA	1
GFCl/Duplex Receptacles (3), Battery Backup, Thermostatically Controlled Fan	EA	1
Telephone with Surge Protection	EA	1
4G Cellular Modem with all necessary cabling including ethernet and power cables	EA	1
Video Verification and Validation	EA	1
PEEK Representative Oversight	EA	1
30 Day Monitoring Period	EA	1
Concrete ATR Cabinet Foundation with working slab and grounding system	EA	1
Feed Point- Pipe Stand Mounted including switch box, meter trim, 2 inch perf. tube, and concrete slab	EA	1
Remove cabinet with cabinet, pedestal, foundation, and pull boxes	EA	1

Automatic Traffic Recorder System	EA	1
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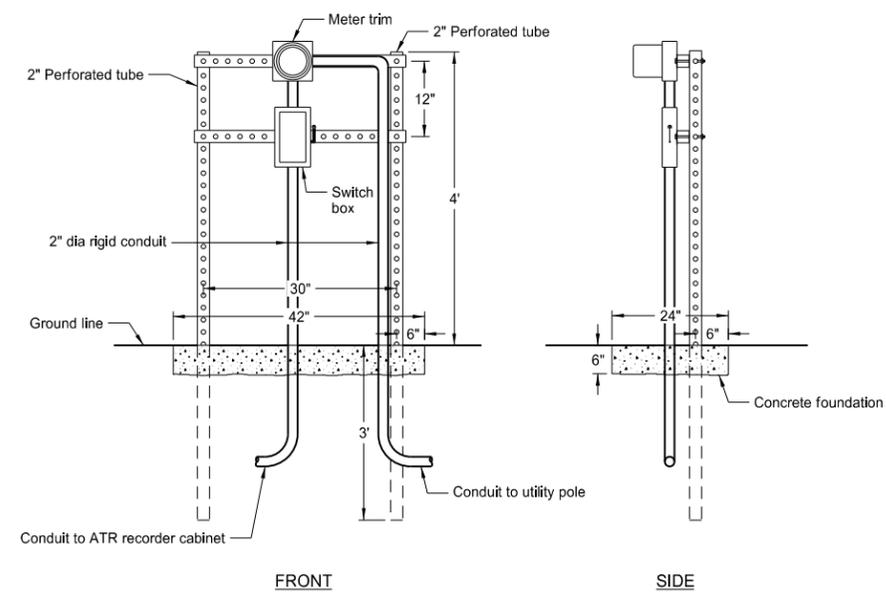
- (A) These quantities shall be included in the price bid for the item "Automatic Traffic Recorder System".
- (B) 2 No 4 and 1 No 6 conductors are provided to extend from the ATR cabinet to the feed point and from the feed point to the right of way line. Northern Plains Electric will provide the service connection.
- (C) The Entrance and Exit loops shall be 6'x6' with 4 turns of conductor per loop. The Inner Axle loops shall be 1.5'x5' Quadrapol with 3 turns of conductor.
- (D) An extra 20 ft of conduit stub out is provided for future use. Both ends shall be capped.



ATR Recorder Cabinet with Concrete Foundation



Cabinet Foundation and Working Slab



Feed Point Detail with Concrete Foundation

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ATR Details
RP 55.5
I-29

