A d d e n d u m

Iowa Department of Transportation
Office of Contracts

Date of Letting: May 17, 2016
Date of Addendum: May 11, 2016

B.O.	Proposal ID	Proposal Work Type	County	Project Number	Addendum
102	21-0718-058	PCC OVERLAY - UNBONDED	CLAY	NHSX-071-8(58)--3H-21	17MAY102.A01

Make the following changes to the PROPOSAL SCHEDULE OF PRICES:

Change Proposal Line No. 0010 2102-0425070 SPECIAL BACKFILL:
From: 2,598.500 TON
To: 2,686.000 TON

Change Proposal Line No. 0020 2102-2713090 EXCAVATION CLASS 13, WASTE:
From: 1,552.200 CY
To: 1,691.600 CY

Change Proposal Line No. 0120 2214-5145160 PAVEMENT SCARIFICATION:
From: 13,660.000 TON
To: 13,677.900 TON

Change Proposal Line No. 0130 2214-7450050 BLADING AND SHAPING SHOULDER MATERIAL:
From: 688.000 STA
To: 690.400 STA

Change Proposal Line No. 0150 2301-1033100 STANDARD OR SLIP FORM PORTLAND CEMENT CONCRETE PAVEMENT, CLASS C, CLASS 3 DURABILITY, 10 IN.:
From: 5,552.000 SY
To: 5,830.000 SY

Change Proposal Line No. 0190 2310-5151600 PORTLAND CEMENT CONCRETE OVERLAY QM-C, FURNISH ONLY:
From: 20,649.000 CY
To: 22,826.000 CY

Change Proposal Line No. 0200 2310-5151620 PORTLAND CEMENT CONCRETE OVERLAY, QM-C, PLACEMENT ONLY (UNBONDED):
From: 123,895.000 SY
To: 124,060.000 SY

Change Proposal Line No. 0230 2510-6745850 REMOVAL OF PAVEMENT:
From: 5,818.500 SY
To: 5,840.900 SY

Delete Proposal Line No. 0380 2301-7000120 PAYMENT ADJUSTMENT INCENTIVE/DISINCENTIVE FOR QM-C PCC PAVEMENT COARSENESS AND WORKABILITY FACTORS; 100,000.000 EACH

If the above changes are not made, they will be made as shown here.

Make the following change to the PROPOSAL SPECIAL PROVISIONS LIST & TEXT:

Add : DS-15011

DEVELOPMENTAL SPECIFICATIONS FOR PCC PAVEMENT NON-DESTRUCTIVE THICKNESS DETERMINATION

Replace plan sheets B.2, B.3, B.7, B.8, C.1, C.2, U.3, & U.5 with the attached:

Sheet B.2, make the following changes to MIL-2:
ADD: US71/B53 STA 368+86, RT Milling = 17.9 Tons Blade & Shape 2.4 STA

Sheet B.3, make the following changes to RTRN-1:
ADD: US71/B53 STA 368+86, RT PCC Overlay (Place) = 165 Sq.Yds. PCC Overlay (Furnish) 27.5 Cu.Yds.

Sheet B.7, make the following changes to PAV-2:
Change the following reference note, Contract Items: PCC Overlay Place and Furnish:
From: 8.9 cy Furnish per site
To: 14.8 cy Furnish per site

Sheet B.8, make the following changes to TIE4:

Change the following quantities at STA 370+24.00, LT:
10" Slip-Form Paving:
From: 721.3 Sq.Yds.
To: 741.0 Sq.Yds.

Special Backfill:
From: 242.2 Tons
To: 248.4 Tons

Class 13 Excavation:
From: 128.9 Cu.Yds.
To: 132.2 Cu.Yds.

Pavement Removal:
From: 721.3 Sq.Yds.
To: 741.0 Sq.Yds.

Change the following quantities at STA 370+24.00, RT:
10" Slip-Form Paving:
From: 722.3 Sq.Yds.
To: 788.7 Sq.Yds.

Special Backfill:
From: 242.5 Tons
To: 263.4 Tons

Class 13 Excavation:
From: 129.2 Cu.Yds.
To: 140.2 Cu.Yds.

Pavement Removal:
From: 722.3 Sq.Yds.
To: 744.7 Sq.Yds.

On sheet C.1, make the following changes to the Estimated Project Quantities:

Change Quantity for Item 1:
From: 2598.5 TON
To: 2686.0 TON

Change Quantity for Item 2:
From: 1552.2 CY
To: 1691.6 CY

Change Quantity for Item 12:
From: 13660 TON
To: 13677.9 TON

Change Quantity for Item 13:
From: 688 STA
To: 690.4 STA

Change Quantity for Item 15:
From: 5552 SY
To: 5830 SY

Change Quantity for Item 19:
From: 20649 CY
To: 22826 CY

Change Quantity for Item 20:
From: 123895 SY
To: 124060 SY

Change Quantity for Item 23:
From: 5818.5 SY
To: 5840.9 SY

On sheet C.2, make the following changes to the ESTIMATE REFERENCE INFORMATION:

Item 1, ADD: Includes 60.4 tons for pavement widening, see sheet U.5.

Item 2, ADD: Includes 125.1 CY for pavement widening, see Sheet U.5.

Item 15, ADD: Includes 191.8 Sq. Yds. for pavement widening, see Sheet U.5.

Item 19, ADD: Includes 74 CY for transition sections, see Sheet B.7. Quantity includes an additional 10% for irregularities in depth.

Replace sheet U.3.

Replace sheet U.5.

DEVELOPMENTAL SPECIFICATIONS
FOR
PCC PAVEMENT NON-DESTRUCTIVE THICKNESS DETERMINATION

Effective Date
October 20, 2015

THE STANDARD SPECIFICATIONS, SERIES 2015, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE DEVELOPMENTAL SPECIFICATIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

Replace all of Articles 2301.04 and 2301.05 of the Standard Specifications with the following. Differences from the Standard Specifications are highlighted.

2301.04 METHOD OF MEASUREMENT.
Measurement will be as follows:

A. Portland Cement Concrete Pavement.

1. Square yards, of the type specified, shown in the contract documents. The area of manholes, intakes, or other fixtures in the pavement will not be deducted from the measured pavement area.

2. The ~~coring~~ measurement requirements for thickness do not apply to detour pavements, paved drives, and temporary pavements. The thickness of pavement constructed will be determined from ~~core depths~~ thickness measurements as follows:

a. The division of sections, lots, and ~~core~~ measurement locations will be according to ~~Materials I.M. 346~~ Appendix A.

b. At locations determined by the Engineer~~, cut samples from the pavement, as directed above, by drilling with a core drill that will provide samples with a 4 inch outside diameter~~ the Engineer will measure for thickness according to Appendix A. ~~Restore the surface by tamping low slump concrete into the hole, finishing, and texturing. The Engineer will witness the core drilling, and identify and measure the cores immediately. The Engineer will measure the cores and determine the thickness index according to Materials I.M. 346. After measurement on the grade, deliver the cores to the Engineer's office or field laboratory. When cores are not measured on the grade, the Engineer will take immediate possession of the cores.~~

c. ~~Coring of pavement and other~~ Measurement work for thickness determination may be waived by mutual agreement for sections of the same design thickness less than 5000 square yards.

d. Only sections which are ~~cored~~ measured for thickness will be included in the thickness index determination. Areas not ~~cored~~ measured for thickness will be paid for at the contract unit price.

B. Integral Curb.
Incidental to the other items of work. Not measured for payment.

C. Concrete Median.
Square yards shown in the contract documents. This will be calculated to the nearest 0.1 foot of the length along the surface and the overall width of median when no integral curb is involved, or the width from back to back of curb when integral curb is involved.

D. Bridge Approach Sections.
Square yards shown in the contract documents.

E. Excavation.

1. When the contract provides a unit price per station for earth shoulder finishing and a price per cubic yard for excavation, the excavation required for preparation of natural subgrade will be measured as provided in Article 2102.04. The volume measured for payment will include only the materials actually removed above the elevation of the pavement subgrade and between vertical planes 1 foot outside the edge of the finished pavement.

2. Other work connected with preparation of natural subgrade will not be measured for payment.

3. When the contract provides a unit price for earth shoulder construction (whether or not a unit price per cubic yard of excavation is provided in the contract), excavation required for preparation of natural subgrade will not be measured for payment. Unless otherwise provided in the contract documents, work connected with preparation of natural subgrade will not be measured for payment.

F. Driveway Surfacing Material.
Tons or cubic yards, as provided in the contract and in Section 2315, placed at intersecting roads, drives, and turnouts. Excavation required for placement of this material will not be measured for payment.

~~**G. Portland Cement Concrete Pavement Samples.**~~
~~Not individually counted for payment when furnished according to Article 2301.04, A, or when required in the contract documents.~~

H. Saw Cut and Joint Sealing.

1. Saw cut for constructing joints in new pavement will not be measured for payment.

2. Saw cut for cutting old existing pavement, which is to be abutted with new pavement, will not be measured for payment.

3. Joint sealing will not be measured for payment.

I. Safety Fence for Pavement.
Not measured for payment.

J. Rumble Strip Panel (PCC Surface)
By count for Rumble Strip Panels properly installed at locations designated in the contract documents.

2301.05 BASIS OF PAYMENT.
Payment will be as follows:

A. Portland Cement Concrete Pavement.

1. Contract unit price for Standard or Slip-Form Portland Cement Concrete Pavement of the type specified per square yard.

2. Payment for the quantities of pavement in square yards will be at a percentage of the contract unit price according to Table 2301.05-1.

Table 2301.05-1: Payment Schedule for Quantities of Pavement

Thickness Index Range	Percent Payment	Thickness Index Range	Percent Payment
0.00 or more	103	-0.56 to -0.60	91
-0.01 to -0.05	102	-0.61 to -0.65	90
-0.06 to -0.10	101	-0.66 to -0.70	89
-0.11 to -0.15	100	-0.71 to -0.75	88

-0.16 to -0.20	99	-0.76 to -0.80	87
-0.21 to -0.25	98	-0.81 to -0.85	86
-0.26 to -0.30	97	-0.86 to -0.90	85
-0.31 to -0.35	96	-0.91 to -0.95	84
-0.36 to -0.40	95	-0.96 to -1.00	83
-0.41 to -0.45	94	-1.01 to -1.05	82
-0.46 to -0.50	93	-1.06 to -1.10	81
-0.51 to -0.55	92	-1.11 or less	80

3. Use the following formula to determine the thickness index for the section of pavement thickness:

$$TI = \overline{(X} - S) - T$$

Where:

TI = thickness index for the section.
$\overline{X}$ = mean ~~core length~~ thickness for the section.
T = ~~design thickness~~ see Table 2301.05-2.
S = ~~core length~~ measurement thickness standard deviation (of the sample) for the section.

Table 2301.05-2: Thickness Value for determining Thickness Index

Type of Base, Subbase, Subgrade just below the concrete	Value of T in Inches
Natural Subgrade or Soil Aggregate Subbase	Design Thickness
HMA Base, PCC Base, or Asphalt or Cement Treated Base	Design Thickness
Modified Subbase or Special Subbase	Design Thickness minus 0.25 inches
Granular Subbase	Design Thickness minus 0.35 inches

4. Replace pavement represented by cores deficient from design thickness by 1 inch or greater. The deficient areas and the replacement of the deficient cores will be determined according to ~~Materials I.M. 346~~ Appendix A. The cost for coring that confirms deficient pavement or determines deficient areas shall be incidental to the price paid for Portland Cement Concrete Pavement. The cost for coring that indicates that pavement is sufficient shall be paid as extra work, according to Article 1109.03, B of the Standard Specifications. The cost for coring replacement pavement to verify compliance shall be incidental to the price paid for Portland Cement Concrete Pavement.

5. At the Contractor's option, ~~cores that are~~ measurement readings that are larger than the thickness value (from Table 2301.05-2) by three standard deviations or greater ~~than design thickness~~ may be removed from analysis for thickness index determination. Do not remove more than 10% of the total ~~cores~~ measurements in a section. Do not replace ~~cores~~ measurements removed from the analysis.

6. Gaps in the pavement less than 500 feet, required by staging, will be considered irregular areas for analysis of pavement thickness determinations.

7. The percent payment for projects which have all ~~core lengths~~ measurement readings greater than ~~design thickness~~ T in Table 2301.05-2 will be at least 100%.

B. Integral Curb.
Not paid for separately.

C. Concrete Median.
Contract unit price per square yard.

D. Bridge Approach Sections.

1. Contract unit price for bridge approach pavement per square yard (square meter).

2. Payment is full compensation for:
- Excavation for modified subbase and subdrain.
- Furnishing and installing subdrain.
- Furnishing and installing subdrain outlet.

- Furnishing and installing polymer grid.
- Furnishing and placing porous backfill material.
- Furnishing and placing modified subbase backfill material.
- Saw cutting.
- Furnishing and installing reinforcing steel, tie bars, and dowel assemblies.
- Placing, finishing, texturing, grooving, and curing.
- All joint construction.
- All other materials and labor to construct the Bridge Approach Section as shown in the contract documents.

E. Excavation.

1. When the contract provides a unit price per station for earth shoulder finishing and the contract also provides a price per cubic yard for excavation, payment will be the contract unit price per cubic yard for excavation in connection with subgrade preparation and building shoulders.

2. When the contract provides a unit price for earth shoulder construction, the excavation required for preparation of subgrade and construction of shoulders will not be paid for as a separate item. It is incidental to pavement construction and earth shoulder construction and is to be included in those contract prices.

3. When no price per cubic yard for excavation is provided in the contract and no unit price is provided for earth shoulder finishing or earth shoulder construction, excavation necessary for subgrade preparation is incidental to pavement construction and is to be included in that contract unit price.

F. Driveway Surfacing Material.
Contract unit price as provided in Section 2315 for the quantity of driveway surfacing placed.

~~**G. Portland Cement Concrete Pavement Samples.**~~

~~**1.** Lump sum contract price for furnishing samples of finished pavement or other course according to Article 2301.04, A, or when required in the contract documents.~~

~~**2.** Payment is full compensation for furnishing all such samples for all courses or items of work.~~

H. Saw Cut and Joint Sealing
Incidental to the price for pavement.

I. Safety Fence for Pavement.
Incidental to the price for pavement.

J. Rumble Strip Panel (PCC Surface)
Each. Payment is full compensation for construction of the panels as detailed in the contract documents.

K. General.

1. When any of the types of additional protection described in Article 2301.03, K, 3, is necessary, additional payment will be made as extra work at the rate of $1.00 per square yard of surface protected. Payment will be limited to protection necessary within the contract period. Protection necessary after November 15 will be paid for only when the Engineer authorizes the work.

2. Furnish concrete for test specimens and transport the specimens and molds between the grade and plant as directed by the Engineer, at no additional cost to the Contracting Authority.

3. The above prices are full compensation for furnishing all tools, equipment, labor, and materials necessary for construction of the pavement in accordance with the contract documents.

4. The cost of furnishing, installing, and monitoring vibrators, as well as the vibrator monitoring device itself, is incidental to the contract unit price for PCC pavement.

APPENDIX A
EVALUATING PORTLAND CEMENT
CONCRETE PAVEMENT THICKNESS

SCOPE

Thickness measurements will be taken on Portland Cement Concrete (PCC) pavement, to determine the pavement thickness and the thickness index for each section. Refer to Specification DS-15011.

APPARATUS

1. An MIT Scan T2 gauge will be used to perform thickness measures.
2. Steel Targets will be 11.81 inches in diameter, 24 gauge, meeting ASTM A 653, commercial steel with a G90 coating (about 275 g/m^2 total both sides).

DEFINITIONS

Section: All Portland Cement Concrete in a project of the same bid item. Irregular areas, as defined herein, of the same bid item shall form a separate section.

Lot: A portion of a section normally 200 feet in length and 2 traffic lanes wide.

Regular area pavement sections:

- All mainline pavement for normal travel lanes. Includes middle (both direction) turn lanes
- Paved shoulder – if same thickness as pavement and part of pavement bid item include with pavement. If separate bid item, treat as separate section.
- Paved median - if same thickness as pavement and part of pavement bid item, and longer than 300 feet, include with pavement.
- Auxiliary lanes of full width longer 300 feet.
- Widening greater than 6 feet.

Irregular areas:

- Widening less than 6 feet.
- Side street connections.
- Ramps, including gore areas, and collector distributor roads.
- Deceleration and acceleration lanes.
- Turn lanes, including taper sections.
- Tapers.
- Radiuses.
- Median crossovers

PROCEDURES

The District Materials Engineer will determine the location of each lot, the random location of each metal target, and the random thickness measuring scheme for each section using an Iowa DOT developed MSExcel spreadsheet.

A. Target Location for Regular Areas

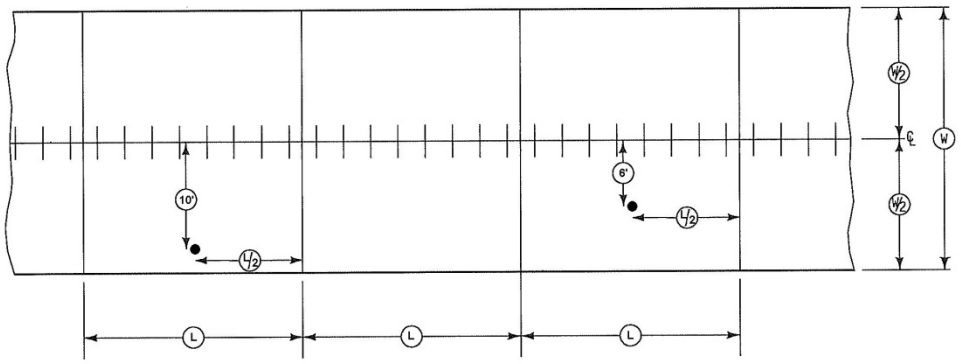
1. Divide the section longitudinally into 200 foot long lots. One target will be located in each lot based on the spreadsheet selection (The targets should be placed half way between dowel baskets). See Figure 1. A minimum of ten targets will be tested. If a target location falls on a bridge or in an approach section, it will be eliminated.

2. The transverse location of the targets will be randomly determined by the spreadsheet program. The random locations will be either 6 or 10 feet left or right of centerline. When tie steel is present at the edge of the pavement or lane, the locations will be 5 or 9 feet.

3. The program will randomly determine which targets to measure. If a measurement location falls on a bridge or bridge approach pavement, it will be eliminated and the next closest target not in the original random selection will be used for measurement.

4. Shoulders. Divide the section into 200 foot long lots. Place targets approximately mid-point transversely on shoulders wider than 6 feet. On 6 foot shoulders, the targets should be 4 feet from the edge of the pavement.

Figure1. Target Location



PLAN

B. Target Location for Irregular Areas

1. All irregular areas of the same design thickness will be grouped together for determining the number of lots. The Engineer may waive sections of the same design thickness that total less than 5000 square yards.

2. Place targets randomly in all irregular areas larger than 100 square feet. One target will be randomly located in each selected irregular area, unless one or more of the areas are significantly larger than the others, then more than one target may be located in the large area. Targets must be placed at least 2 feet away from tie steel and 4 feet from dowel bars. A minimum of ten targets will be tested to represent each section of irregular areas. All targets will be measured.

C. Testing
Follow the manufacturer's instructions for operating the thickness gauge. It is important to avoid testing close to any steel including vehicles, equipment, steel toed shoes as well as tie bars, dowel bars and baskets, and manhole covers. When wearing steel toed shoes, always keep both toes at least 2 feet from the gauge during the test. Three repeat readings will be taken. The readings should all be within 1 to 2 mm of each other. If the difference between any of the readings is more than 3 mm, take 2 additional readings. If the two additional readings are within 3 mm of any of the first 3 readings, the measurement is valid for that location. If not, note that the location is not valid and select the next target location not originally selected for testing.

D. Section Evaluation

1. Use the following formula to determine the mean thickness for the section:

$$\overline{X} = \frac{\sum X}{n}$$

Where: $\overline{X}$ = mean length for the section

$\sum X$ = sum of core lengths for the section

n = number of cores taken within the section

Round the mean thickness to two decimal places.

2. Use the following formula to determine the sample standard deviation of the thickness of the section:

$$S = \sqrt{\frac{\sum\left(X - \overline{X}\right)^2}{n-1}}$$

Where:

S = thickness standard deviation for the section.
$\overline{X}$ = mean thickness for the section
X = individual thickness values for the section.
n = number of tests representing the section.

$\sum$ = sign indicating the sum of all values of $(X - \overline{X})^2$

Round the sample standard deviation to two decimal places.

NOTE: Calculations of the standard deviation are best made with an electronic calculator with standard deviation capability that uses the formula containing the quantity (n-1).

3. Use the following formula to determine the thickness index for the section of pavement thickness.

$$TI = (\overline{X} - S) - T$$

Where:

TI = thickness index for the section
$\overline{X}$ = mean thickness length for the section
T = from Table 2301.05-2
S = measurement thickness standard deviation (of the sample) for the section

Round the thickness index to two decimal places.

NOTE: If the mean thickness minus the standard deviation is less than T of the section, the thickness index will be a negative number.

4. Basis of Payment. Payment for the quantities of pavement in square yards in each section will be as shown in Article 2301.05 of the Standard Specifications and based on the thickness index as determined in accordance with these instructions.

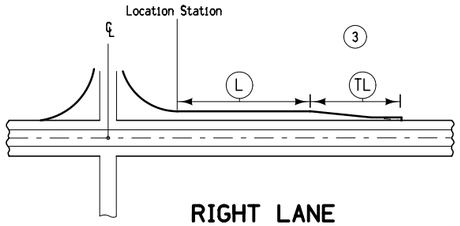
E. Deficient Areas

1. If any measurement is deficient from T by 1 inch or more, the measurement should be rechecked to confirm the reading and the equipment. If the repeat measurement is also 1 inch or more below T, mark the location directly over the target. The Contractor shall drill a 4.0 inch diameter core at that location. If the core length confirms the pavement is deficient by 1 inch or more, continue to drill cores as described below.

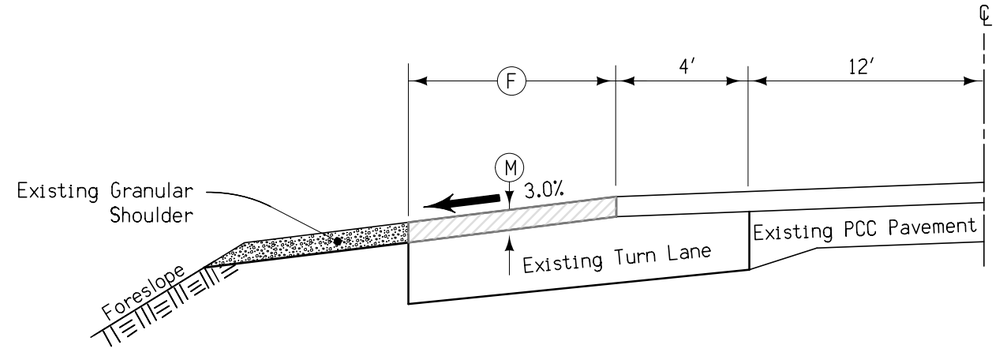
2. Deficient areas, represented by cores deficient in length by 1 inch or more from design thickness, are to be replaced. These areas will be determined by drilling a core 60 feet in each direction longitudinally at the same transverse location from the deficient core. Drilling will be continued at 60 feet intervals until a core is obtained which is not deficient by 1 inch or more from design thickness. Interpolate between this core and the adjacent core to determine the limits of the deficient area. This is the area to be removed and replaced at contractor's expense. These additional cores are to be used to define the deficient area and will not be used in the thickness index calculation. When an obstruction, such as a bridge, intersection, previous work, etc., prevents drilling a core at the required 60 feet interval in either direction longitudinally, continue the balance of the distance on the other side of the obstruction.

3. Any readings taken in the area for removal will be eliminated from the analysis for the entire section. After replacement, the contractor will take cores as directed by the engineer to verify the thickness.

MIL-2



RIGHT LANE



Notes:

① Quantities for Milling included in MIL-1.

② Quantities for Milling includes milling thru the sideroad intersection.

③ See "U" Sheets for layout.

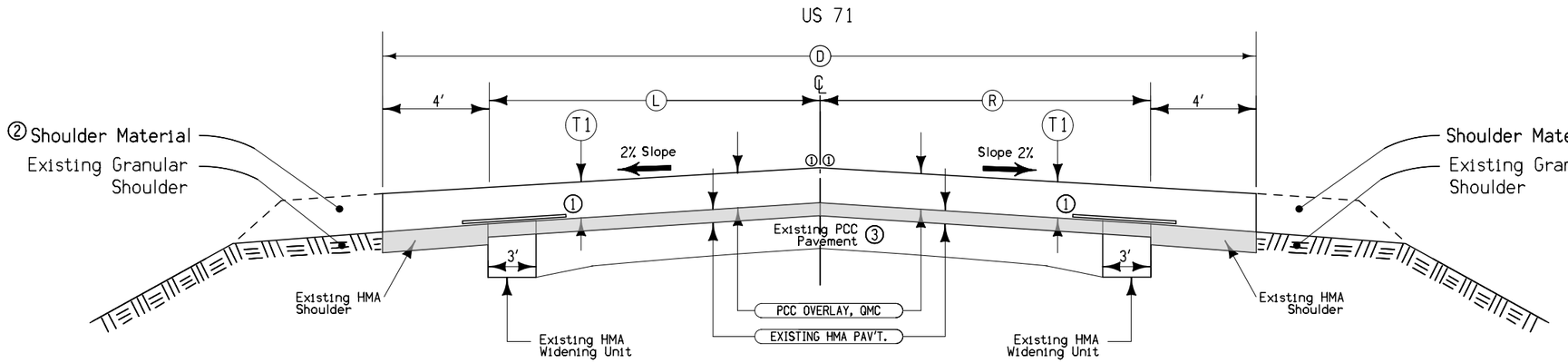
④ The intent is to remove the existing taper and extend it to 180-ft taper.

⑤ Blading and Shaping of Shoulder Material. Area consists of the top 2" of existing shoulder. Slope shall be adjusted as directed by the engineer.

ROAD IDENTIFICATION	Location Station	Side	(M)	(F)	(L)	(TL)	Design Quantities Per Location		
							Milling	Blade and Shape ⑤	Remarks
			Inches	Feet	Feet	Feet	Tons	Sta.	
US 71 / IA 110	56+26	LT	2	8	152	--	14.7	--	
US 71 / IA 110	57+78	LT	2	12	180	120	37.8	3.0	
US 71 / 485th St.	135+88	RT	2-6	--	--	--	134.2	--	
US 71 / B63	163+76	RT	2-6	8	343	63	72.4	--	480th St./Cemetary
US 71 / B63	165+01	RT	2-6	--	--	--	162.7	--	480th St./Cemetary
US 71 / B53	368+86	RT	2	8	137	120	17.9	2.4	440th St.

TYPICAL HALF SECTION TURN LANE FOR MILLING PRIOR TO UNBONDED PCC OVERLAY

POL-1



Notes:

① Refer to jointing layout on Sheet B.4 and B.5.

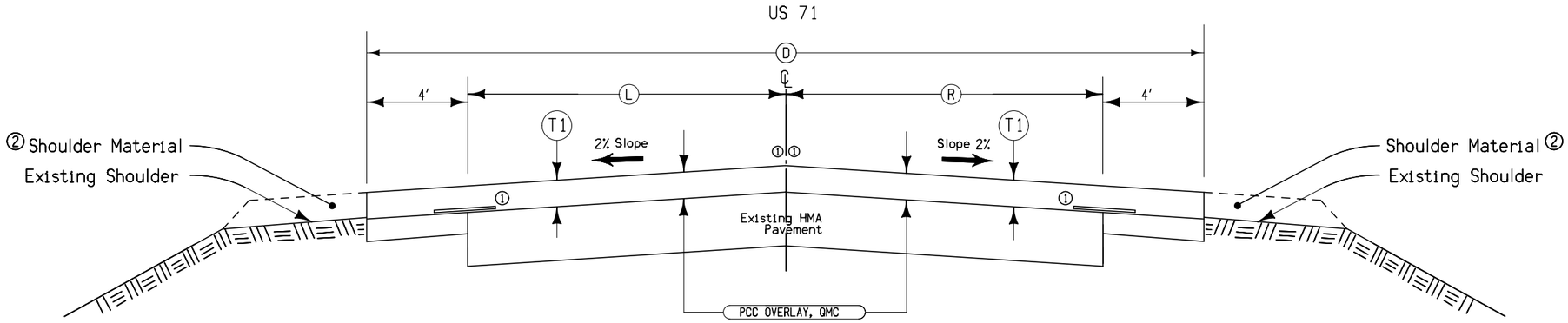
② Shoulder material as specified elsewhere in these plans; refer to Typical 7135 on Sheet B.4 for "Type 'B' Granular Surfaced Shoulders."

③ Existing total pavement width is 24-ft, including an existing 3-ft HMA widening unit.

TABLE OF DESIGN QUANTITIES Per Station									
LOCATION			(D)	(L)	(R)	(T1)	PCC OVERLAY, QMC (PLACE)	PCC OVERLAY, QMC (FURNISH)
ROAD IDENTIFICATION	STATION TO STATION		Feet	Feet	Feet	Inches	Sq. Yds.	Cu. Yds.
US 71	18+45	119+50	32	12	12	6.0	355.56	59.26
US 71	221+00	228+56	32	12	12	6.0	355.56	59.26
US 71	236+65	259+00	32	12	12	6.0	355.56	59.26
US 71	279+00	305+00	32	12	12	6.0	355.56	59.26

TYPICAL CROSS SECTION UNBONDED PCC OVERLAY OVER COMPOSITE PAVEMENT

POL-2



Notes:

① Refer to jointing layout on Sheet B.4 and B.5.

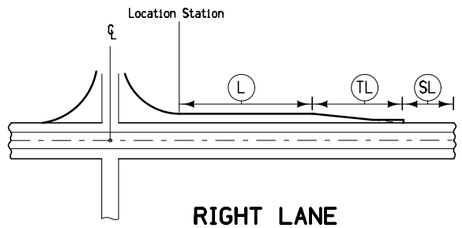
② Shoulder material as specified elsewhere in these plans; refer to Typical 7135 on Sheet B.4 for "Type 'B' Granular Surfaced Shoulders."

TABLE OF DESIGN QUANTITIES Per Station

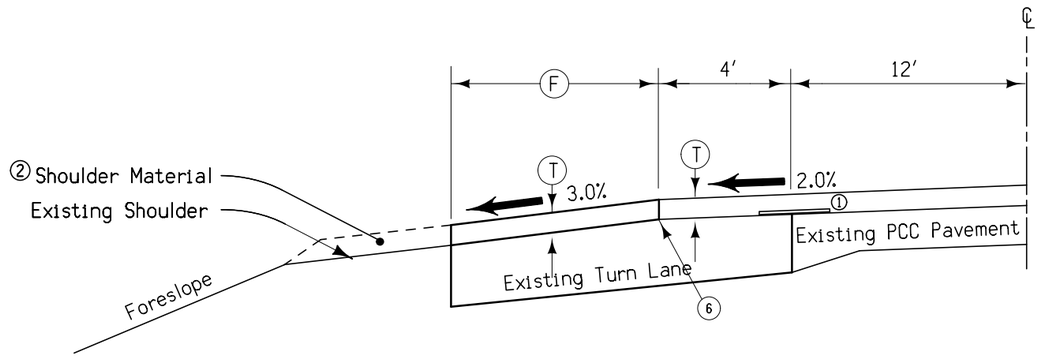
LOCATION			(D)	(L)	(R)	(T1)	PCC OVERLAY, QMC (PLACE)	PCC OVERLAY, QMC (FURNISH)
ROAD IDENTIFICATION	STATION TO STATION		Feet	Feet	Feet	Inches	Sq. Yds.	Cu. Yds.
US 71	119+50	221+00	32	12	12	6.0	355.56	59.26
US 71	259+00	279+00	32	12	12	6.0	355.56	59.26
US 71	305+00	368+86	32	12	12	6.0	355.56	59.26

TYPICAL CROSS SECTION UNBONDED PCC OVERLAY OVER FULL DEPTH HMA PAVEMENT

RTRN-1



RIGHT LANE



Notes:
Normal section shown may be Modified appropriately in areas of superelevated curves or other locations specifically designated by the engineer.

(1) Refer to jointing layout on Sheet B.4 and B.5.

(2) Shoulder material as specified elsewhere in these plans; refer to Typical 7135 on Sheet B.4 for "Type 'B' Granular Surfaced Shoulders."

(3) Includes taper and area thru intersection.

(4) Existing total pavement width is 24-ft.

(5) See "U" sheets for right turn layouts.

(6) "KT-2" Joint if paved at 16' width. Optional if paved full width or if area is blocked out.

ROAD IDENTIFICATION	Location Station	Side	(T)	(F)	(L)	(TL)	(SL)	Design Quantities Per Location (3)		
			Inches	Feet	Feet	Feet	Feet	PCC OVERLAY, QMC (PLACE) Sq. Yds.	PCC OVERLAY, QMC (FURNISH) Cu. Yds.	Remarks
US 71 / IA 110	56+26	LT	6.0	8	152	--		135	22.5	
US 71 / IA 110	57+78	LT	6.0	12	180	120		348	58.0	
US 71 / 485th St.	135+88	RT	6.0	--	--	--		617	102.8	
US 71 / B63	163+76	RT	6.0	8	343	63		333	55.5	480th St./Cemetary
US 71 / B63	165+01	RT	6.0	--	--	--		748	124.7	480th St./Cemetary
US 71 / B53	368+86	RT	6.0	8	137	120		165	27.5	440th St.

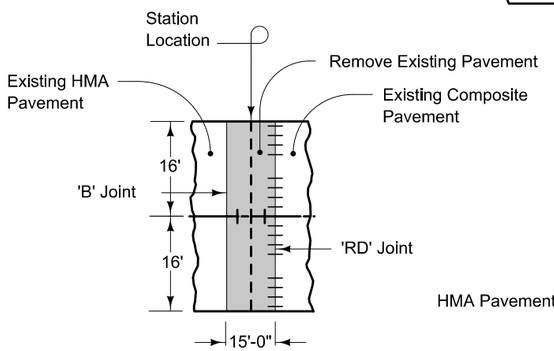
TYPICAL HALF SECTION TURN LANE UNBONDED PCC OVERLAY

FILE NO.	ENGLISH	DESIGN TEAM DISTRICT 3	CLAY COUNTY	PROJECT NUMBER NHSX-071-8(58)--3H-21	SHEET NUMBER B.3

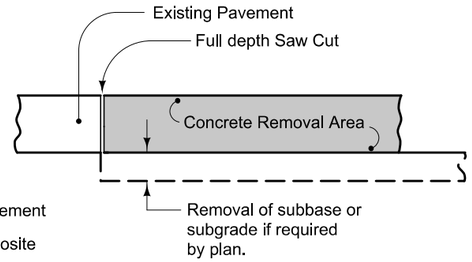
9:12:22 AM 5/6/2016 mmalcho pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\2107102014\DistrictDesign\(58)\21071058_B01.sht

Changed by Addenda

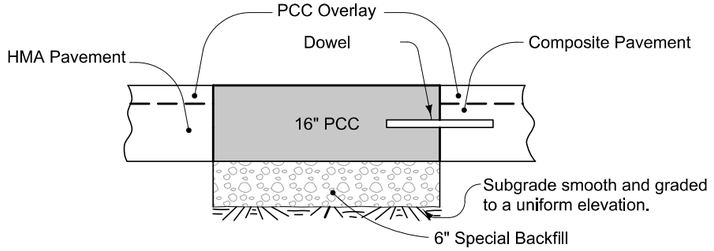
PAV-2



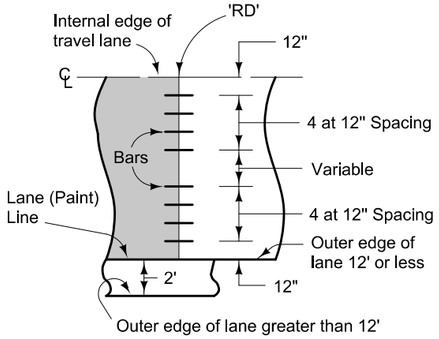
PLAN VIEW THRU PAVEMENT



PAVEMENT REMOVAL DETAILS



LONGITUDINAL SECTION THRU PAVEMENT



DETAIL FOR 'RT' OR 'RD' JOINT BAR SPACING

TYPICAL HALF PLAN

1 1/2" Dowel Bar

See PV-101 for joint and bar placement details. Refer to EX-JNT D on this sheet for jointing transition.

Detail shows placing transition pavement between full depth HMA and composite pavement sections.

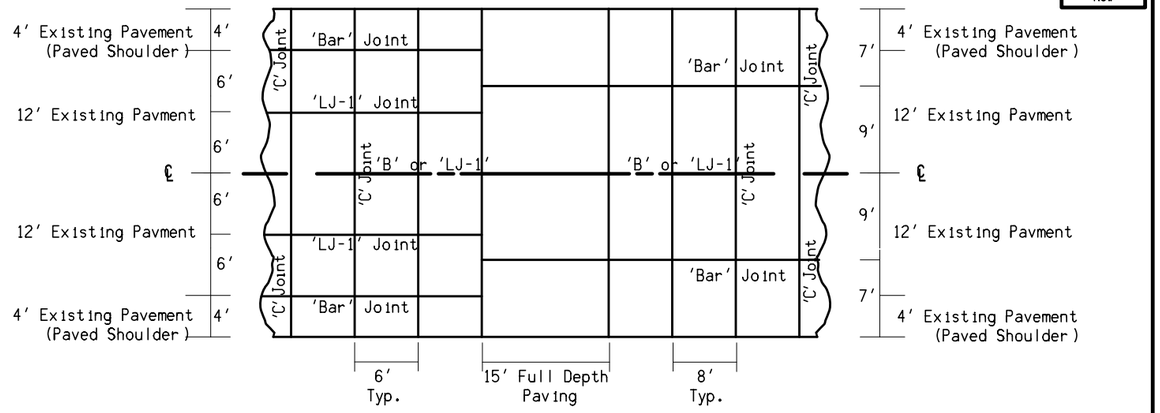
Removal includes removal of shoulders.

Transition pavement shall be placed during PCC overlay paving.

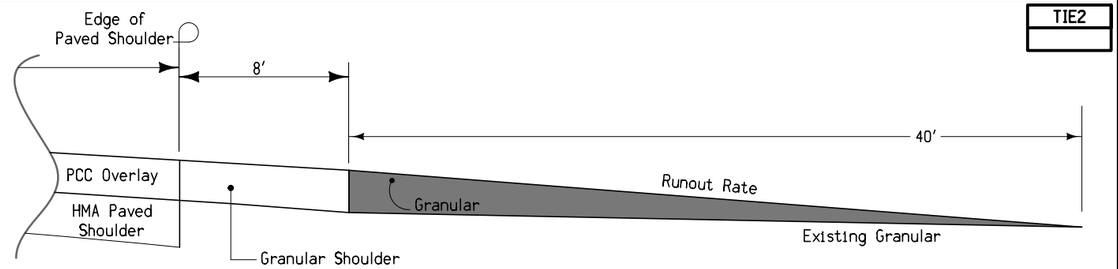
Contract Items:
Pavement Removal, (53.3 sy per site)
Special Backfill, (18.9 tons per site)
PCC Overlay Place and Furnish, (53.3 sy Place and 14.8 cy Furnish per site)

Transition locations are Sta. 119+50, 221+00, 259+00, 279+00, and 305+00.

EX-JNT D
New



TIE2



Posted Speed Limit (mph)	Runout Ratio (ft per inch)
45 or More	50
20 to 45	25
Under 20	10 *

* Based on turning maneuvers at side roads and intersections.

Granular Runout

GRANULAR RUNOUT AT GRANULAR SIDE ROADS AND ENTRANCES

FILE NO.	ENGLISH	DESIGN TEAM DISTRICT 3	CLAY COUNTY	PROJECT NUMBER NHSX-071-8(58)--3H-21	SHEET NUMBER B.7

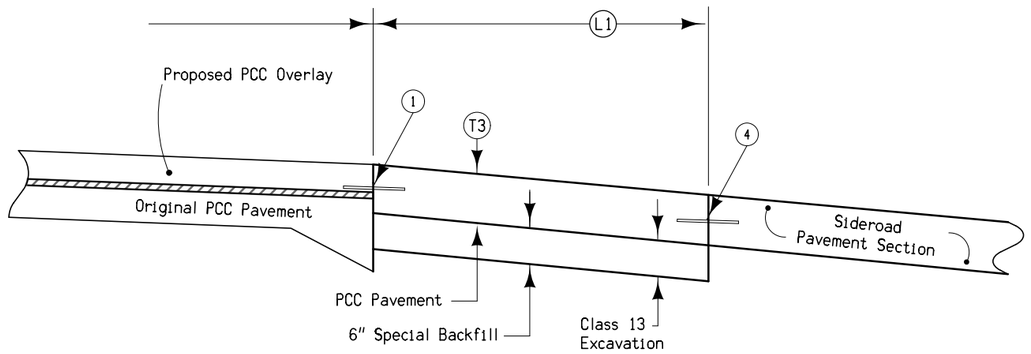
9:12:23 AM 5/6/2016 mmalcho pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\21071020l4\DistrictDesign\(58)\21071058_B01.sht

Changed by Addenda

Posted Speed Limit (mph)	Runout Ratio (ft per inch)
45 or More	50
20 to 45	25
Under 20	10 *

* Based on turning maneuvers at side roads and intersections.

Sideroad Tie-In



Notes:
Normal section shown may be Modified appropriately in areas of superelevated curves or other locations specifically designated by the engineer.

(1) Longitudinal joints shall be located at centerline, 5.0-ft Lt. and Rt. of centerline and 10.0-ft. Lt. and Rt. of centerline. A modified "L-1" (ML-1) joint shall be located at 10.0-ft. Lt. and Rt. of centerline with a 3-ft. long reinforcing bar. Transverse joints shall be located at 6.0-ft. spacings.

Each 3-ft. rebar shall be attached to the existing HMA surface in at least 2 locations. Connecters shall be no less than 12-in. apart and no more than 15-in. apart. See Sheet B.5 for a plan view of the required joint layout.

(2) Quantity is estimated using a 10-in. thickness.

(3) Existing pavement thickness is 9".

(4) 'BT-3' Joint. See PV-101 for joint details.

ROAD IDENTIFICATION	Location Station	Side	(T3)	(L1)	Design Quantities Per Location									
					PCC, QMC (PLACE)	PCC, QMC (FURNISH)	Standard/Slip-Form PCC Paving, 10"	Special Backfill	Class 13 Excavation	Embank-In-Place	Earth Shoulder Finishing	Granular Shoulder	Pavement Removal	Comments
			Inches	Feet	Sq. Yds.	Cu. Yds.	Sq. Yds.	Tons	Cu. Yds.	Cu. Yds.	Sta.	Tons	Sq. Yds.	
US 71	56+74	LT	10	24	0	0	462	160.5	84.9	0	0	0	462 (3)	IA 10
US 71	370+24	LT	10	50	0	0	741.0	248.4	132.2	0	0	0	741.0	B53 West Half
US 71	370+24	RT	10	50	0	0	788.7	263.4	140.2	0	0	0	744.7	B53 East Half

PCC PAVING OF TIE-INS AT PAVED SIDE ROADS

ESTIMATED PROJECT QUANTITIES
(1 DIVISION PROJECT)

Item No.	Item Code	Item	Unit	Total	As Built Qty.
1	2102-0425070	SPECIAL BACKFILL	TON	2686	
2	2102-2713090	EXCAVATION, CLASS 13, WASTE	CY	1691.6	
3	2121-7425020	GRANULAR SHOULDERS, TYPE B	TON	24294	
4	2122-5190006	PAVED SHOULDER, P.C. CONCRETE, 6 IN.	SY	1336.7	
5	2122-5500060	PAVED SHOULDER, HOT MIX ASPHALT MIXTURE, 6 IN.	SY	444.4	
6	2123-7450000	SHOULDER CONSTRUCTION, EARTH	STA	20.1	
7	2212-0475095	CLEANING AND PREPARATION OF BASE	MILE	6.7	
8	2212-5070310	PATCHES, FULL-DEPTH REPAIR	SY	830.7	
9	2212-5070330	PATCHES BY COUNT (REPAIR)	EACH	78	
10	2212-5075001	HOT MIX ASPHALT SURFACE PATCHES	TON	33.5	
11	2213-7100400	RELOCATION OF MAIL BOXES	EACH	13	
12	2214-5145160	PAVEMENT SCARIFICATION	TON	13677.9	
13	2214-7450050	BLADING AND SHAPING SHOULDER MATERIAL	STA	690.4	
14	2301-0690202	BRIDGE APPROACH, BR-202	SY	373.2	
15	2301-1033100	STANDARD OR SLIP FORM PORTLAND CEMENT CONCRETE PAVEMENT, CLASS C, CLASS 3 DURABILITY, 10 IN.	SY	5830	
16	2303-0001000	HOT MIX ASPHALT MIXTURE, WEDGE, LEVELING OR STRENGTHENING COURSE	TON	43.1	
17	2307-0025012	AGGREGATE, COVER - SAND	TON	4.2	
18	2307-0600454	BINDER BITUMEN, CRS-2	GAL	83.7	
19	2310-5151600	PORTLAND CEMENT CONCRETE OVERLAY, QM-C, FURNISH ONLY	CY	22826	
20	2310-5151620	PORTLAND CEMENT CONCRETE OVERLAY, QM-C, PLACEMENT ONLY (UNBONDED)	SY	124060	
21	2314-8257000	DUST CONTROL SURFACE TREATMENT	STA	211.2	
22	2426-6772016	CONCRETE REPAIR	SF	128	
23	2510-6745850	REMOVAL OF PAVEMENT	SY	5840.9	
24	2518-6910000	SAFETY CLOSURE	EACH	32	
25	2526-8285000	CONSTRUCTION SURVEY	LS	1	
26	2527-9263109	PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED	STA	5475.25	
27	2527-9263131	WET RETROREFLECTIVE REMOVABLE TAPE MARKINGS	STA	9.2	
28	2527-9263137	PAINTED SYMBOLS AND LEGENDS, WATERBORNE OR SOLVENT-BASED	EACH	8	
29	2528-8445110	TRAFFIC CONTROL	LS	1	
30	2528-8445113	FLAGGERS	EACH	See Proposal	
31	2528-8445115	PILOT CARS	EACH	See Proposal	
32	2529-5070110	PATCHES, FULL-DEPTH FINISH, BY AREA	SY	110.7	
33	2529-5070120	PATCHES, FULL-DEPTH FINISH, BY COUNT	EACH	5	
34	2533-4980005	MOBILIZATION	LS	1	
35	2548-0000200	MILLED SHOULDER RUMBLE STRIPS, PCC SURFACE	STA	709.7	
36	2548-0000320	MILLED CENTERLINE RUMBLE STRIPS, PCC SURFACE	STA	354.8	

ESTIMATE REFERENCE INFORMATION

Item No.	Item Code	Description
1	2102-0425070	SPECIAL BACKFILL
		See Typical POL-3 on Sheet B.1 and Typical 7152-B on Sheet B.4 and Typical PAV-2 on Sheet B.7 TIE4 on Sheet B.8. Includes 60.4 tons for pavement widening, see Sheet U.5.
-	-	-
2	2102-2713090	EXCAVATION, CLASS 13, WASTE
		See Typical POL-3 on Sheet B.1 and Typicals 7152-A and 7152-B on Sheet B.4 and Typical TIE4 on Sheet B.8. Includes 125.1 CY for pavement widening, see Sheet U.5.
-	-	-
3	2121-7425020	GRANULAR SHOULDERS, TYPE B
		See Typical 7135 on Sheet B.4. Quantity includes 226.1 tons for an estimated 18 driveways on this project.
-	-	-
4	2122-5190006	PAVED SHOULDER, P.C. CONCRETE, 6 IN.
		See Typical 7152-B on Sheet B.4.
-	-	-
5	2122-5500060	PAVED SHOULDER, HOT MIX ASPHALT MIXTURE, 6 IN.
		Item is for the east jct. 430th St. and Co. Rd. C13 inside and outside radius approximately 500 ft. for both.
		See Typical 7152-A on Sheet B.4.
-	-	-
6	2123-7450000	SHOULDER CONSTRUCTION, EARTH
		See Typical 7152-B on Sheet B.4.
-	-	-
7	2212-0475095	CLEANING AND PREPARATION OF BASE
		Includes all mainline, turn lanes, tapers and fillets.
-	-	-
8	2212-5070310	PATCHES, FULL-DEPTH REPAIR
		See Tab 102-6C on Sheet C.5.
-	-	-
9	2212-5070330	PATCHES BY COUNT (REPAIR)
		See Tab 102-6C on Sheet C.5.
-	-	-
10	2212-5075001	HOT MIX ASPHALT SURFACE PATCHES
		Quantity is estimated at 5 tons per two lane mile.
-	-	-
11	2213-7100400	RELOCATION OF MAIL BOXES
		The contractor is responsible for coordinating with individual property owners for the relocation of each mailbox. Temporary and permanent mailbox installations must be scheduled and meet the requirements of the US Post Office.
		The quantity for Relocation of Mailboxes will be counted per each mailbox removed and reinstalled. Payment shall be full compensation for removing & reinstalling per each mailbox including a temporary mailbox and necessary hardware. Contractor shall replace damaged mailboxes at no additional cost to the owner.
-	-	-
12	2214-5145160	PAVEMENT SCARIFICATION
		See Typical MIL-1 on Sheet B.1 and Typical MIL-2 on Sheet B.2 and Typical TIE1 on Sheet B.7.
-	-	-
13	2214-7450050	BLADING AND SHAPING SHOULDER MATERIAL
		See Typical MIL-1 on Sheet B.1 and Typical MIL-2 on Sheet B.2.
-	-	-
14	2301-0690202	BRIDGE APPROACH, BR-202
		See Tab 112-6 on Sheet C.4 for details. Course aggregate durability shall be Class 3. Guardrail is not to be disturbed, handwork around guardrail or guardrail removal/replacement shall be incidental with this bid item. Bridge Approach paving shall match existing paved shoulder. Refer to Standard Road Plan BR-213 if abutting pavement is not completed prior to bridge approach pavement.
-	-	-
15	2301-1033100	STANDARD OR SLIP FORM PORTLAND CEMENT CONCRETE PAVEMENT, CLASS C, CLASS 3 DURABILITY, 10 IN.
		See Typical POL-3 on Sheet B.1 and Typical TIE4 on Sheet B.8. CD Assemblies are included in this Item.
		Includes 191.8 Sq. Yds. for pavement widening, see Sheet U.5.
-	-	-
16	2303-0001000	HOT MIX ASPHALT MIXTURE, WEDGE, LEVELING OR STRENGTHENING COURSE
		See Tab 106-2 on Sheet C.4. Location is County Road M36 approximately 1.5 miles south of County Road B53.
-	-	-
17	2307-0025012	AGGREGATE, COVER - SAND
		Quantity is estimated at a rate of 10 pounds per square yard for 2 applications over PCC repair patches placed on this project.
-	-	-
18	2307-0600454	BINDER BITUMEN, CRS-2
		Item is for creating a bond breaker between PCC repair patches and the PCC overlay. Quantity is estimated at a rate of 0.10 gallons per square yard for 2 applications over PCC repair patches placed on this project.
-	-	-
19	2310-5151600	PORTLAND CEMENT CONCRETE OVERLAY, QM-C, FURNISH ONLY
		See Typical POL-1 on Sheet B.2 and Typicals POL-2 and RTRN-1 on Sheet B.3. Includes 74 CY. for transition sections, see Sheet B.7. Quantity includes an additional 10% for irregularities in depth.
-	-	-
20	2310-5151620	PORTLAND CEMENT CONCRETE OVERLAY, QM-C, PLACEMENT ONLY (UNBONDED)
		See Typical POL-1 on Sheet B.2 and Typicals POL-2 and RTRN-1 on Sheet B.3.
-	-	-
21	2314-8257000	DUST CONTROL SURFACE TREATMENT
		Quantity is based on 4 miles for dust control.

ESTIMATE REFERENCE INFORMATION

Item No.	Item Code	Description
		Method of measurement shall be actual Lineal Foot measured and converted to STA. Payment shall include full
		compensation for furnishing, handling and application of materials to the road surface.
-	-	-
22	2426-6772016	CONCRETE REPAIR
		Item is for spalling on both ends of the bridge, the repair is to be regular (not shallow) and to be done
		in accordance with Section 2426 of the Standard Specifications. Quantity is based on 2-ft. by 32-ft.
		dimension.
-	-	-
23	2510-6745850	REMOVAL OF PAVEMENT
		See Typical POL-3 on Sheet B.1 and Typical PAV-2 on Sheet B.7 and Typical TIE4 on Sheet B.8.
-	-	-
24	2518-6910000	SAFETY CLOSURE
		See Tab 108-13A on Sheet C.4.
-	-	-
25	2526-8285000	CONSTRUCTION SURVEY
		The intent of the design profile shall be to closely matching the existing profile. Raising the design profile
		above existing to minimize excavation will not be accepted and shall meet the following requirements:
		1. Obtain elevations of existing pavement at centerline, quarter points and pavement edges at 50 foot
		intervals on straight and level sections and at 25 foot intervals on horizontal and vertical curves.
		2. Prior to milling and finish patching, design a smooth profile grade line based upon these elevations to
		provide the required minimum 0.5 inches and a maximum of 2 inches in milling depth. This grade line shall
		tie into existing bridges and adjacent pavement and provide the required pavement crown.
		3. The design profile grade shall provide minimum vertical curve lengths of 210 feet with minimum K values
		of 181 for sags and 247 for crests.
		4. Provide the DOT with the proposed profile design and any adjustments to intersections and turn lanes for DOT
		review and approval within 10 working days. The DOT will promptly review and comment on the submitted design.
		See Standard Specification, Section 2526 for additional information. Construction Survey shall apply for the
		use of traditional construction survey methods required for the following activities:
		a. Grading and staking for embankment construction in the plans.
		b. Establishment of secondary control monuments.
		Existing section corners will be re-established by the DOT after construction.
-	-	-
26	2527-9263109	PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED
		See Tab 108-22 on Sheet C.4.
-	-	-
27	2527-9263131	WET RETROREFLECTIVE REMOVABLE TAPE MARKINGS
		See Tab 108-22 on Sheet C.4.
-	-	-
28	2527-9263137	PAINTED SYMBOLS AND LEGENDS, WATERBORNE OR SOLVENT-BASED
		See Tab 108-29 on Sheet C.5.
-	-	-
29	2528-8445110	TRAFFIC CONTROL
		See Traffic Control Plan on Sheet J.1.
-	-	-
30	2528-8445113	FLAGGERS
		- -
-	-	-
31	2528-8445115	PILOT CARS
		- -
-	-	-
32	2529-5070110	PATCHES, FULL-DEPTH FINISH, BY AREA
		See Tab 102-6C on Sheet C.5.
-	-	-
33	2529-5070120	PATCHES, FULL-DEPTH FINISH, BY COUNT
		See Tab 102-6C on Sheet C.5.
-	-	-
34	2533-4980005	MOBILIZATION
		- -
-	-	-
35	2548-0000200	MILLED SHOULDER RUMBLE STRIPS, PCC SURFACE
		See Tab 112-10 on Sheet C.4.
-	-	-
36	2548-0000320	MILLED CENTERLINE RUMBLE STRIPS, PCC SURFACE
		See Tab 112-10 on Sheet C.4.
-	-	-

PROJECT DESCRIPTION

This is a 6" PCC unbonded overlay project from Buena Vista County Line north to County Road B53. Other work includes full-depth PCC patching, bridge approach upgrades, milled centerline and shoulder rumble strips, and pavement markings.

CIRCULAR CURVE DATA

101-10C
10-02-90

NO.	Δ	D	T	L	E	R
1	19°59'28.55"	38°11'49.87"	26.437'	52.337'	2.312'	150'
2	54°12'34.17"	81°51'4.01"	35.828'	66.229'	8.636'	70'
3	16°45'51.05"	14°19'26.20"	58.939'	117.036'	4.319'	400'
4	11° 57' 16.78"	11° 27' 32.96"	52.352	104.324	2.733	500
5	44° 08' 20.12"	63° 39' 43.12"	36.489	69.333	7.116	90
6	32° 51' 35.57"	38° 11' 49.87"	44.233	86.027	6.386	150
7	16° 15' 36.74"	14° 19' 26.20"	57.143	113.518	4.061	400
8	52° 44' 13.11"	81° 51' 4.01"	34.70	64.430	8.129	70
9	21° 31' 9.93"	38° 11' 49.87"	28.505	56.338	2.684	150
10	~~13° 41' 22.30"~~	~~11° 27' 32.96"~~	~~60.018~~	~~119.464~~	~~3.589~~	~~200~~ 500
11	~~48° 20' 58.65"~~	~~63° 39' 43.12"~~	~~40.400~~	~~75.947~~	~~8.652~~	~~70~~ 90
12	27° 32' 33.63"	38° 11' 49.87"	36.764	72.107	4.440	150

ISLAND DATA

101-13
05-10-88

POINT NO.	STATION	DISTANCE
A	370+37.59	25.0' Rt.
A	8370+49.85	14.0' Lt.
B	370+53.89	25.0' Rt.
C	8370+62.80	15.0' Lt.

All Distances are to the Radius Point

INTERSECTION PAVING REQUIREMENTS

101-12
04-21-72

TYPE	UNIT	AMOUNT	DESCRIPTION
Pavement	Sq. Yds.	1,646.78	(1)
Island	Sq. Yds.	14.47	Rt. side of M.L.
Curb	Lin Ft.	49.44	Rt. side of M.L.

(1) from pavement edge to 8370+25 does not include turning lane

ISLAND DATA

101-13
05-10-88

POINT NO.	STATION	DISTANCE
D	370+10.23	25.0' Lt.
D	8370+00.21	14.0' Rt.
E	370+53.89	25.0' Lt.
F	8370+62.80	15.0' Rt.

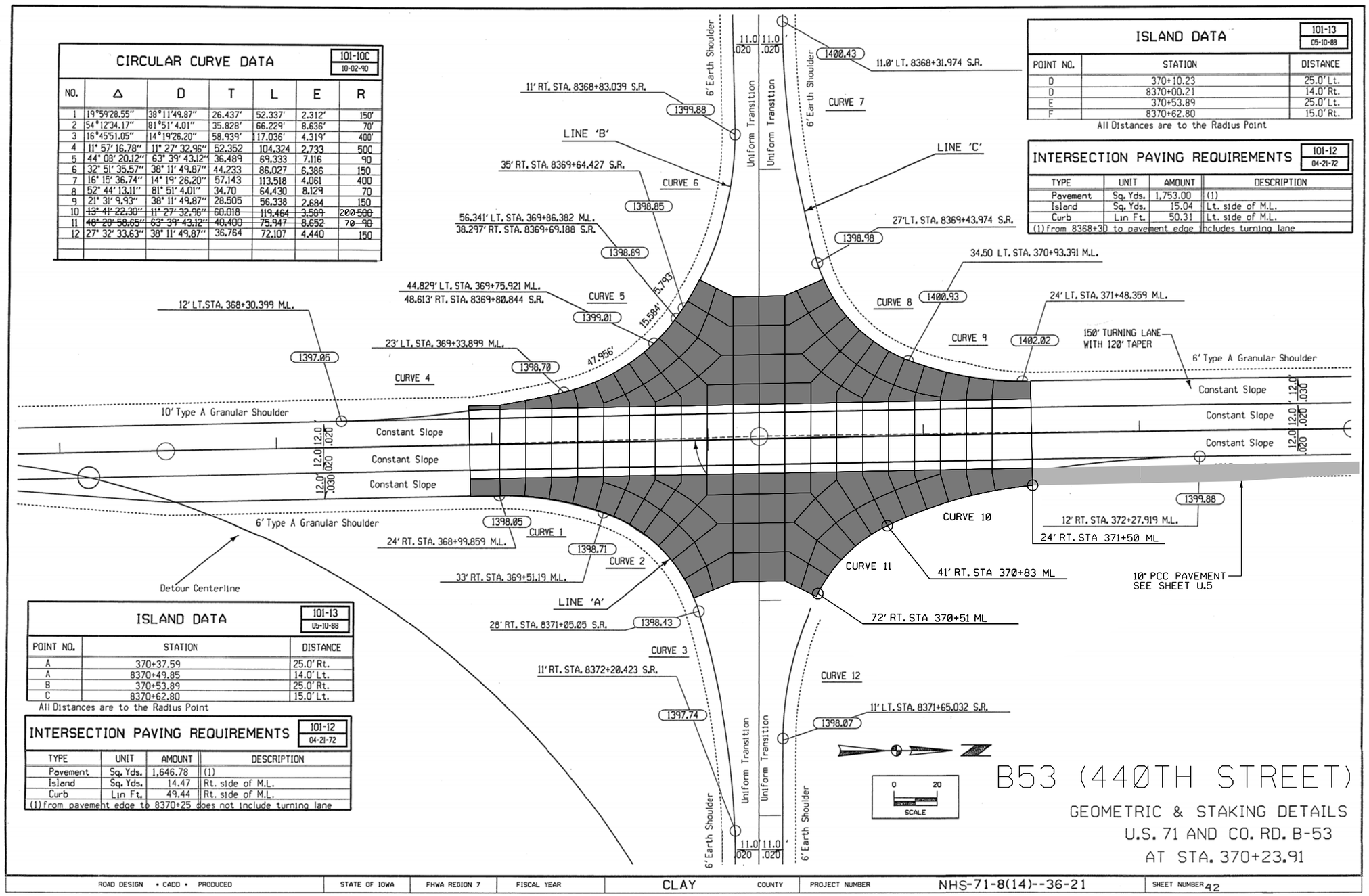
All Distances are to the Radius Point

INTERSECTION PAVING REQUIREMENTS

101-12
04-21-72

TYPE	UNIT	AMOUNT	DESCRIPTION
Pavement	Sq. Yds.	1,753.00	(1)
Island	Sq. Yds.	15.04	Lt. side of M.L.
Curb	Lin Ft.	50.31	Lt. side of M.L.

(1) from 8368+30 to pavement edge includes turning lane



B53 (440TH STREET)

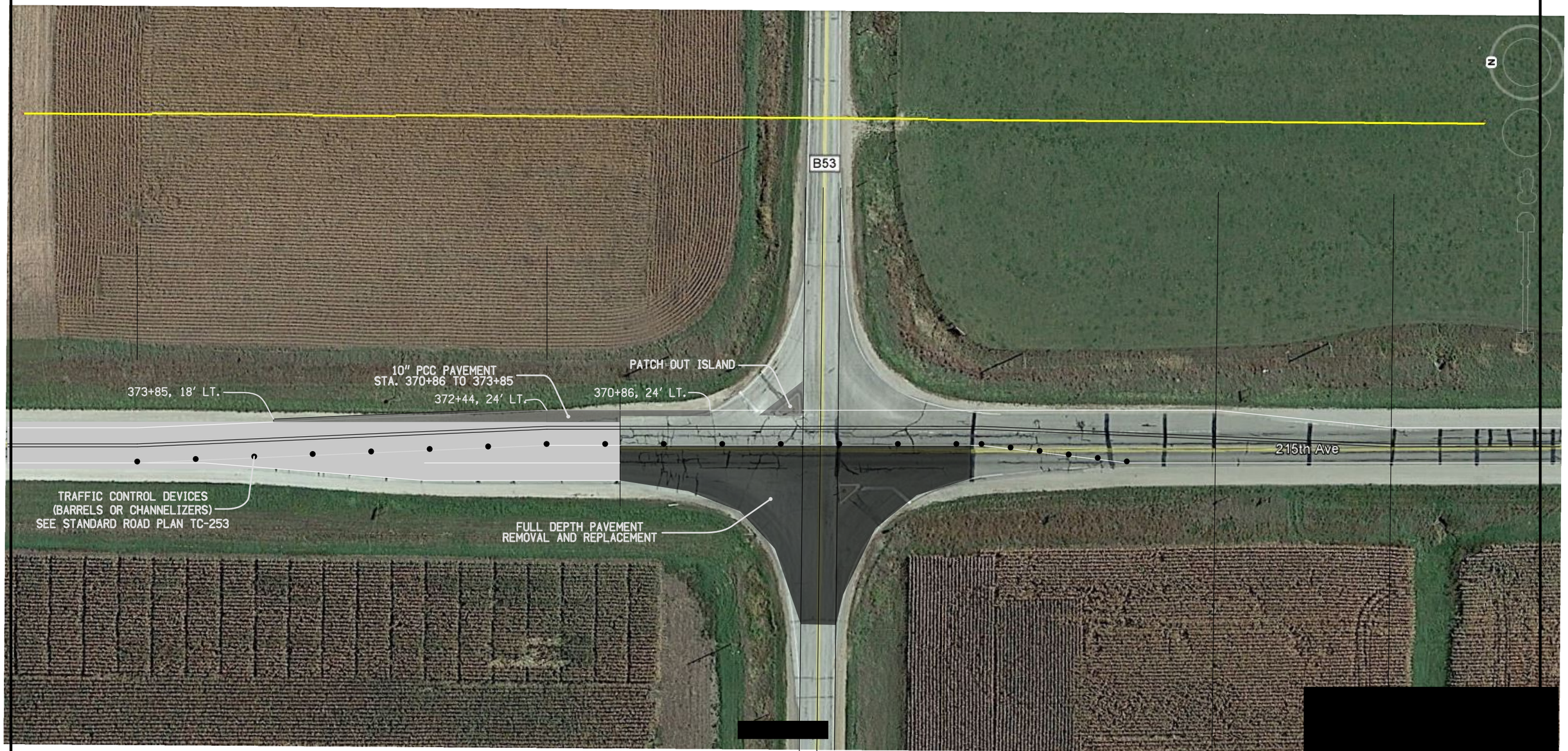
GEOMETRIC & STAKING DETAILS
U.S. 71 AND CO. RD. B-53
AT STA. 370+23.91

ROAD DESIGN • CADD • PRODUCED	STATE OF IOWA	FHWA REGION 7	FISCAL YEAR	CLAY COUNTY	PROJECT NUMBER NHS-71-8(14)--36-21	SHEET NUMBER 42

FILE NO.	ENGLISH	DESIGN TEAM DISTRICT 3	CLAY COUNTY	PROJECT NUMBER NHSX-071-8(58)--3H-21	SHEET NUMBER U.3

3:04:30 PM 5/6/2016 jklemme pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\2107102014\DistrictDesign\(58)\21071058_U01.sht

Changed by Addenda



STAGE 1

FILE NO.	ENGLISH	DESIGN TEAM DISTRICT 3	CLAY COUNTY	PROJECT NUMBER NHSX-071-8(58)--3H-21	SHEET NUMBER U.5

8:48:50 AM 5/2/2016 mmalcho pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\2107102014\DistrictDesign\(58)\21071058_U01.sht

Changed by Addenda