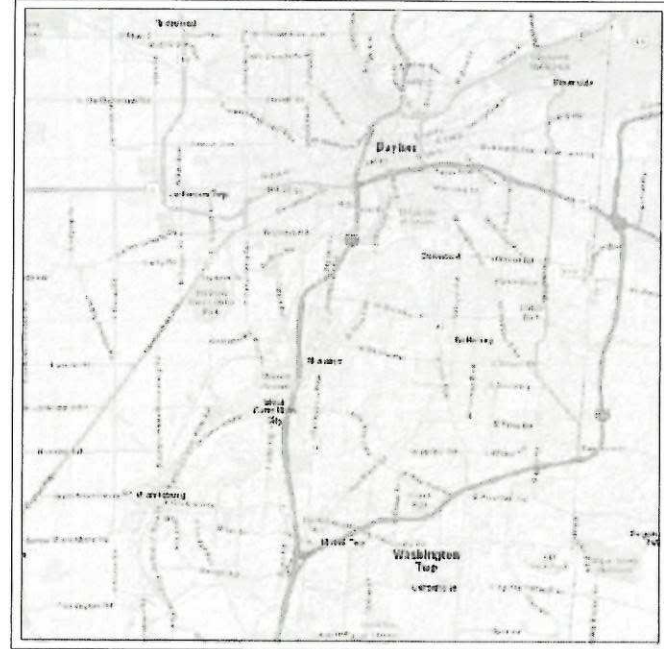


MOT - IR 75-VAR
 220350 PID - 113782
 Dist 7 5/26/2022



LOCATION MAP

LATITUDE: 40° 17' 49" LONGITUDE: 84° 09' 40"



PORTION TO BE IMPROVED _____
 INTERSTATE HIGHWAY _____
 FEDERAL ROUTES _____
 STATE ROUTES _____
 COUNTY & TOWNSHIP ROADS _____
 OTHER ROADS _____

DESIGN DESIGNATION

CURRENT ADT (20) _____ N/A
 DESIGN YEAR ADT (20) _____ N/A
 DESIGN HOURLY VOLUME (20) _____ N/A
 DIRECTIONAL DISTRIBUTION _____ N/A
 TRUCKS (24 HOUR B&C) _____ N/A
 DESIGN SPEED _____ N/A
 LEGAL SPEED _____ N/A
 DESIGN FUNCTIONAL CLASSIFICATION:
 INTERSTATE (URBAN) _____
 NHS PROJECT _____ YES

DESIGN EXCEPTIONS

NONE

ADA DESIGN WAIVERS

NONE

UNDERGROUND UTILITIES
 Contact Two Working Days
 Before You Dig

OHIO811.org
 Before You Dig

OHIO811. 8-1-1, or 1-800-362-2764
 (Non members must be called directly)

PLAN PREPARED BY:
MEAD & HUNT
 4700 LAKEHURST CT., SUITE 110
 COLUMBUS, OH, 43016

**STATE OF OHIO
 DEPARTMENT OF TRANSPORTATION**

MOT-75-VAR
 THE CITY OF DAYTON
 THE CITY OF MIAMISBURG
 THE CITY OF MORAINE
 THE CITY OF NORTHRIDGE
 THE CITY OF WEST CARROLLTON
 MONTGOMERY COUNTY

INDEX OF SHEETS:

TITLE SHEET	1
SCHEMATIC PLAN	2
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GENERAL SUMMARY	9
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TRAFFIC CONTROL	15-38

ENGINEER'S SEAL:

SIGNED: *Deborah Weaver*
 DATE: 01/10/2022

STANDARD CONSTRUCTION DRAWINGS						SUPPLEMENTAL SPECIFICATIONS	SPECIAL PROVISIONS
HL-10.11	1/15/21	MT-95.31	7/19/19	TC-65.11	7/21/17	800-2019	4/15/22
HL-10.13	4/17/20	MT-95.32	4/19/19	TC-71.10	7/16/21	809	4/25/22
HL-20.11	1/15/21	MT-95.41	1/17/20	TC-73.20	1/17/20	821	4/20/12
HL-30.11	1/15/21	MT-98.28	1/17/20	TC-82.10	7/19/19	832	10/19/18
HL-30.22	1/15/21	MT-98.29	1/17/20	TC-83.10	1/17/20	909	1/15/21
HL-40.10	7/17/20	MT-99.20	4/19/19	TC-83.20	7/21/17	919	1/17/20
HL-40.20	7/17/20	MT-101.60	1/17/20			824	4/20/12
		MT-101.90	7/17/20	ITS-11.10	1/15/21	813	10/19/18
ITS-14.10	1/15/21	MT-105.10	1/17/20	ITS-12.50	7/16/21		
ITS-14.11	1/15/21	MT-110.10	7/19/13				
ITS-15.10	1/15/21						
ITS-15.11	1/15/21	TC-41.20	10/18/13				
ITS-50.10	1/15/21	TC-41.40	10/18/13				
ITS-50.11	1/15/21	TC-42.20	10/18/13				
		TC-52.20	1/15/21				
MT-95.30	7/19/19	TC-65.10	1/17/14				

FEDERAL PROJECT NUMBER

E210(011)

RAILROAD INVOLVEMENT

NONE

PROJECT DESCRIPTION

THIS PROJECT CONSISTS OF PLACING WRONG WAY DETECTION SYSTEMS AT VARIOUS INTERCHANGES ALONG THE IR-75 CORRIDOR IN MONTGOMERY COUNTY

EARTH DISTURBED AREAS

PROJECT EARTH DISTURBED AREA: N/A ACRES
 ESTIMATED CONTRACTOR EARTH DISTURBED AREA: N/A ACRES
 NOTICE OF INTENT EARTH DISTURBED AREA: N/A ACRES

LIMITED ACCESS

THIS IMPROVEMENT IS ESPECIALLY DESIGNED FOR THROUGH TRAFFIC AND HAS BEEN DECLARED A LIMITED ACCESS HIGHWAY OR FREEWAY BY ACTION OF THE DIRECTOR IN ACCORDANCE WITH THE PROVISIONS OF SECTION 5511.02 OF THE OHIO REVISED CODE.

2019 SPECIFICATIONS

THE STANDARD SPECIFICATIONS OF THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, INCLUDING SUPPLEMENTAL SPECIFICATIONS LISTED IN THE PLANS AND CHANGES LISTED IN THE PROPOSAL SHALL GOVERN THIS IMPROVEMENT.

I HEREBY APPROVE THESE PLANS AND DECLARE THAT THE MAKING OF THIS IMPROVEMENT WILL NOT REQUIRE THE CLOSING TO TRAFFIC OF THE HIGHWAY AND THAT PROVISIONS FOR THE MAINTENANCE AND SAFETY OF TRAFFIC WILL BE AS SET FORTH ON THE PLANS AND ESTIMATES.

APPROVED *Robert L. Chubbey P.E., P.S.*
 DATE 1/11/2022 DISTRICT DEPUTY DIRECTOR

APPROVED *Jack Marchbanks*
 DATE 4-4-22 DIRECTOR, DEPARTMENT OF TRANSPORTATION

TITLE SHEET

DESIGN AGENCY
Mead & Hunt

CLIENT

DESIGNER
 DAD

REVIEWER
 DLW 01/05/22

PROJECT ID
 113782

SHEET TOTAL
 P.01 38

Contract Proposal available @ www.contracts.dot.state.oh.us
 RVA-97-10M
 MODEL SHEET PAPER SIZE: 17x11 (in.) DATE: 1/10/2022 TIME: 5:03:49 PM USER: 1670dlw
 X:\4012500200536\01112347_VAR-STW Safety Design 2020-10\113782_MOT-75-VAR\000-Engineering\Roadway\Sheets\113782_GT001.dgn

ITEM 809 WRONG WAY DETECTION SYSTEM (ALTERNATE 1)

THIS ITEM OF WORK SHALL CONSIST OF FURNISHING AND INSTALLING A COMPLETE WRONG WAY DETECTION SYSTEM. THE SYSTEM SHALL DETECT THE PRESENCE OF VEHICLES TRAVELING IN THE WRONG DIRECTION ON AN EXIT RAMP. WHEN A VEHICLE TRAVELING IN THE WRONG DIRECTION IS DETECTED, WHITE LED WARNING LIGHTS IN THE SIGN SYSTEM SHALL BE ACTIVATED, A CAMERA SHALL RECORD THE EVENT AND AFTER A SECOND DETECTOR CONFIRMS THAT THE VEHICLE CONTINUED TO TRAVEL IN THE WRONG DIRECTION, ELECTRONIC NOTIFICATION SHALL BE SENT.

ALL ELEMENTS OF THE WRONG WAY SYSTEM SHALL BE PROVIDED AS A COMPLETE SYSTEM BY A SINGLE VENDOR/MANUFACTURE.

ALL ELEMENTS OF THE WRONG WAY DETECTION SYSTEM SHALL BE CONSIDERED INCIDENTAL TO THIS ITEM OF WORK UNLESS SEPARATELY ITEMIZED. THE FOLLOWING LIST REPRESENTS AN OUTLINE OF COMPONENTS TO BE INCLUDED WITH THE SYSTEM. ITEMS NOT SPECIFICALLY LISTED BELOW, BUT REQUIRED TO PROVIDE FOR A FULLY FUNCTIONING WRONG WAY DETECTION SYSTEM SHALL ALSO BE INCLUDED:

- **RADAR VEHICLE DUAL DIRECTION DETECTOR UNITS.**
 - NUMBER OF UNITS FURNISHED PER SITE SHALL BE AS REQUIRED TO MEET THE FUNCTIONALITY REQUIREMENTS OF THE SYSTEM AND DETECT ALL WRONG WAY VEHICLES.
 - DETECTION HARDWARE SHALL BE POWERED BY 120VAC.
 - ULTRA-LOW POWERED RADAR UNITS WITH PROGRAMMABLE OUTPUTS.
 - SHALL BE CAPABLE OF DETECTING INCOMING OR OUTGOING TARGETS TRAVELING BETWEEN 5 AND 100 MPH.
 - SHALL BE SEALED FROM WATER INTRUSION.
 - SHALL INCLUDE SELF-TESTING, STATUS LED LIGHTS AND SELF-PROTECTION FROM REVERSE POLARITY.
 - SHALL UTILIZE RS232 SERIAL COMMUNICATION FOR PROGRAMMING.
- **(2)-CONFORMATION CAMERA.**
 - WIDE ANGLE HDTV 1080P OUTDOOR RATED WITH CROSS-LINK ANALYSIS.
 - SHALL HAVE PROGRAMMABLE EVENT BASED LOGIC THAT INTEGRATES WITH THE WRONG WAY LOGIC CONTROLLER.
 - IP66 RATED, NEMA 4X
 - PROVIDE FOR A MINIMUM OF ONE INPUT AND ONE OUTPUT.
 - PROVIDE FOR ADJUSTABLE IMAGE SETTINGS.
 - USE A 1/4" PROGRESSIVE SCAN RGB CMO
- **(1)-AN ILLUMINATOR (SOLID STATE LED AS PER SS 813) SHALL BE FURNISHED AND INSTALLED AS DIRECTED BY THE ENGINEER WHERE AMBIENT LIGHTING CONDITIONS DON'T PROVIDE SUFFICIENT LIGHT LEVELS TO OPERATE CAMERAS IN COLOR MODE.**
- **(1)-CELLULAR MODEM**
 - WITH 5 YEARS OF MONITORING SERVICE. THE SYSTEM SHALL INCLUDE SYSTEM MONITORING, NOTIFICATIONS, AND UPDATES VIA A CELLULAR SERVICE, HOSTED/PROVIDED BY THE MANUFACTURE FOR A PERIOD OF 5 YEARS FOLLOWING THE ORIGINAL PROJECT COMPLETION DATE
 - 4G LTE CELLULAR GATEWAY WITH INTEGRAL FIVE PORT 10/100 ETHERNET SWITCH WITH EXTERNAL OMNI-DIRECTION ANTENNA.
 - INCLUDE INTEGRAL RS232 PORT.
 - SHALL BE CAPABLE OF OVER THE AIR FIRMWARE UPDATES AND REMOTE MANAGEMENT.
 - SHALL BE CAPABLE OF IPSEC VPN
- **(4)-WIRELESS RADIO COMMUNICATION UNITS. RADIO CONTROL SHALL OPERATE ON A 900 MHZ FREQUENCY HOPPING SPREAD SPECTRUM NETWORK, WI-FI OR APPROVED EQUAL. RADIOS SHALL INTEGRATE COMMUNICATION OF SIGN CONTROL CIRCUIT TO**

ITEM 809 WRONG WAY DETECTION SYSTEM (ALTERNATE 1), (CONT.)

ACTIVATE SIGNS. THE RADIO SHALL BE SYNCHRONIZED SO ALL OF THE REMOTE INDICATIONS WILL TURN ON WITHIN 120 MSEC OF EACH OTHER AND REMAIN SYNCHRONIZED THROUGH-OUT THE DURATION OF THE FLASHING CYCLE.

- **LOOP DETECTOR MONITORING CARD**
 - NUMBER OF CARDS FURNISHED SHALL BE SUFFICIENT TO ACCOMMODATE THE PROPOSED LOOP DETECTION NEEDS.
 - SHALL WORK WITH STANDARD NEMA/170/2070 CARD RACKS.
 - SHALL UTILIZE TIA232 SERIAL COMMUNICATION FOR PROGRAMMING.
 - SHALL INCLUDE SELF-TESTING AND LED STATUS LIGHTS.
 - PROVIDE FOR A MINIMUM OF 4 FREQUENCY SETTINGS.
- **(1) - WRONG WAY LOGIC CONTROLLER WITH INTEGRATED TEST FUNCTIONS.**
 - SHALL ANALYZE INPUTS FROM MULTIPLE SENSORS AND CAMERAS.
 - PROVIDE FOR PROGRAMMABLE OUTPUTS.
 - SHALL CONTAIN DRIVE RELAYS
 - SHALL INCLUDE LED STATUS LIGHTS AND ON-SITE TESTING.
 - PROVIDE FOR MICRO USB INTERFACE
- **(1) - PROGRAMMABLE SIGN CONTROLLER**
 - PROVIDE FOR A MINIMUM OF TWO INPUTS AND OUTPUTS
 - PROGRAMMABLE INCLUDING FLASH PATTERN, DURATION AND LED INTENSITY.
 - INTEGRATE WITH WIRELESS RADIOS.
 - INCLUDE REAL TIME CLOCK WITH ON-BOARD BATTERY.
 - PROVIDE FOR DATA LOGGING.
 - PROVIDE FOR RS232 SERIAL INTERFACE
- **POLE MOUNTED CONTROL CABINET(S), WITH CONTROL EQUIPMENT.**
- **(2) - WRONG WAY SIGNS R5-1A (48"X36"), 120V AC/SOLAR POWERED, WHITE LED, PERIMETER BLINKING.**
- **(4) - WRONG WAY SIGNS R5-1A (42"X30"), SIGN FLAT SHEET.**
- **(2) - DO NOT ENTER SIGNS R5-1 (48"X48"), 120VAC/SOLAR POWERED, WHITE LED, PERIMETER BLINKING.**
- **SOLAR PANELS MOUNTED TO AN ALUMINUM PLATE AND BRACKET AT AN ANGLE OF 45 DEGREES- 60 DEGREES TO PROVIDE MAXIMUM OUTPUT.**
- **BATTERIES FOR LED SIGNS WITH WRITTEN TWO YEAR FULL REPLACEMENT WARRANTY.**
- **THE SYSTEM SHALL OPERATE UNDER THE FOLLOWING CONDITIONS:**
 - SHALL COMPLY WITH PART 15 OF FCC.
 - SHALL OPERATE FROM -4 DEGREES F TO 122 DEGREES F.
 - PROGRAMMABLE FROM A WINDOWS BASED PC
- **(8)-HOURS OF ONSITE TRAINING.**
- **THE SYSTEM SHALL INLCUDE AN API TO CONNECT ALL THE DATA/ALERTS/CAMERA IMAGES/VIDEO INTO THE ODOT ATMS SOFTWARE WHICH IS PROVIDED BY IBI AND IS KNOWN AS OHGO inSIGHT. THE SYSTEM SHALL SUPPORT BI-DIRECTIONAL COMMUNICATION SO EVENTS/INCIDENTS CAN BE ACKNOWLEDGED/RESOLVED.**
- **THE API SHALL MEET THE REQUIREMENTS OF THE "ATMS WRONG WAY DRIVER ALERT API" DOCUMENT PROVIDED WITH THESE PLANS. ALL WORK NEEDED TO DEVELOP AND PROVIDE A FULLY FUNCTIONAL API (LABORS, MATERIALS, ETC.) SHALL BE INCIDENTAL TO THIS ITEM.**

ITEM 809 WRONG WAY DETECTION SYSTEM (ALTERNATE 1), (CONT.)

ALL LED, PERIMETER EDGE LIT BLINKING SIGNS SHALL BE WIRELESSLY CONTROLLED AND SYNCHRONIZED VIA THE USE OF WIRELESS RADIOS. EACH SIGN SHALL BE A COMPLETE ASSEMBLY, CONSISTING OF BUT NOT LIMITED TO, SIGNAGE, SIGN MOUNTING HARDWARE, INDICATIONS AND ELECTRICAL COMPONENTS (WIRING, SOLID-STATE CIRCUIT BOARDS, ETC.). EACH SIGN SHALL BE SUPPLIED WITH ALL REQUIRED HARDWARE TO INSTALL ASSEMBLY. ALL EXPOSED HARDWARE SHALL BE ANTI-VANDAL. ASSURE ALL SIGNS MEETS THE REQUIREMENTS OF C&MS 630. THE CONTROL CIRCUIT SHALL BE SEALED WATERTIGHT TO ELIMINATE DIRT CONTAMINATION AND ALLOW FOR SAFE HANDLING IN ALL WEATHER CONDITIONS.

SEE SOLAR POWERED LED SIGN REQUIREMENTS AND ELECTRICAL REQUIREMENTS FOR SOLAR-POWERED DEVICES FOR ADDITIONAL REQUIREMENTS.

WARRANTY
WARRANTY SHALL BE FIVE YEARS FROM THE DATE OF FINAL ACCEPTANCE.

MEASUREMENT
THE DEPARTMENT WILL MEASURE THIS ITEM COMPLETE IN PLACE, INCLUDING ALL MATERIALS, TESTING, LABOR AND SOFTWARE FOR A FULLY FUNCTIONAL SYSTEM.

PAYMENT
PAYMENT WILL BE AT THE CONTRACT UNIT PRICE PER EACH FOR ITEM 809 WRONG WAY DETECTION SYSTEM AND INCLUDE ALL MATERIALS AND LABOR TO FURNISH AND INSTALL A COMPLETE SYSTEM AT ONE EXIT RAMP. ALL ELEMENTS OF THE SYSTEM SHALL BE CONSIDERED INCIDENTAL TO THIS ITEM OF WORK UNLESS SEPARATELY ITEMIZED.

ITEM 809 WRONG WAY DETECTION SYSTEM, (TAPCO)-(ALTERNATE 2)

THIS ITEM SHALL BE AN ALTERNATE BID TO PROVIDE A WRONG WAY DETECTION SYSTEM MANUFACTURED/PROVIDED BY TAPCO, TRAFFIC AND PARKING CONTROL CO., INC. THE SAME NOTES AND REQUIREMENTS APPLY FROM ITEM 809, WRONG WAY DETECTION SYSTEM, (ALTERNATE 1).

ITEM 809 WRONG WAY DETECTION SYSTEM,(TRAFFICALM)-(ALTERNATE 3)

THIS ITEM SHALL BE AN ALTERNATE BID TO PROVIDE A WRONG WAY DETECTION SYSTEM MANUFACTURED/PROVIDED BY TRAFFICALM, SYSTEMS. THE SAME NOTES AND REQUIREMENTS APPLY FROM ITEM 809, WRONG WAY DETECTION SYSTEM, (ALTERNATE 1).

WRONG WAY DETECTION SYSTEM NOTES

THESE SPECIFICATIONS, TOGETHER WITH THE ACCOMPANYING PLANS ARE INTENDED TO DESCRIBE THE TYPE, SIZE AND LOCATION OF THE PRODUCTS AND MATERIALS TO BE PROVIDED AND INSTALLED UNDER THE VARIOUS BID ITEMS RELATED TO THE WRONG WAY DETECTION SYSTEM. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL DEVICES AND RELATED MATERIALS IN COMPLIANCE WITH THESE PLANS AND SPECIFICATIONS, AS WELL AS:

- OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (OMUTCD)
- 2019 OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS
- STANDARD CONSTRUCTION DRAWINGS ISSUED BY THE OHIO DEPARTMENT OF TRANSPORTATION

THESE SPECIFICATIONS SET FORTH THE MINIMUM REQUIREMENTS OF THE WRONG WAY DETECTION SYSTEM AND THE ITEMS REFERRED HEREIN.

ITEM 630 SIGNING MISC: SERVICE ROUTING VIA EXISTING STRUCTURES

THIS ITEM SHALL CONSIST OF PROVIDING ELECTRICAL SERVICE TO WRONG WAY SIGNS VIA 2"CONDUIT (725.051) INSTALLED ONTO EXISTING ROADWAY STRUCTURES SUCH AS OVERHEAD SIGN GANTRIES AND RETAINING WALLS. THE INSTALLATION SHALL INCLUDE CONDUITS, CONDUIT GROUNDING, JUNCTION BOXES, MOUNTINGS, FITTINGS, AND ALL INCIDENTALS NECESSARY TO COMPLETE, READY FOR USE, THE SERVICE AS DETAILED ON THE PLANS.

PAYMENT WILL BE MADE AT THE UNIT BID PRICE UNDER C&MS ITEM 630 SIGNING MISC.: SIGNING MISC.: SERVICE ROUTING VIA EXISTING STRUCTURES FOR EACH SERVICE WHICH SHALL BE FULL COMPENSATION FOR ALL LABOR, MATERIALS, AND INCIDENTALS REQUIRED TO COMPLETE THIS ITEM IN A SATISFACTORY AND WORKMANLIKE MANNER.

THIS PAY ITEM IS TO BE USED AT LOCATION 12, 13, 14 AND 18.

ITEM 632 PEDESTAL, MISC.: PEDESTAL, 15', TRANSFORMER BASE

THE PEDESTAL SHALL BE PER ITEM 632 AND THE DETAILS SHOWN ON SHEET 33.

PAYMENT SHALL BE PER ITEM 632.

ITEM 632 PEDESTAL FOUNDATION, AS PER PLAN

IN ADDITION TO THE REQUIREMENTS OF ITEM 625, WHEN THE FOUNDATION IS LOCATED IN A PAVED AREA, THE PAYMENT FOR PEDESTAL FOUNDATION SHALL INCLUDE ALL SAWING, EXCAVATION, REMOVAL OF PAVEMENT, DISPOSAL OF SURPLUS MATERIALS AND RESTORATION AND REPAVING TO RESTORE SURROUNDING PAVEMENT TO ORIGINAL CONDITIONS.

THIS PAY ITEM WILL BE USED FOR LOCATIONS 13 AND 14.

ITEM 625 TRENCH, 30" DEEP AS PER PLAN

THIS ITEM CONSISTS OF ALL PARTS, MATERIALS, AND LABOR TO PREPARE A 30" DEEP TRENCH IN A SLOPED AREA. PER CMS 102.05 THE CONTRACTOR SHALL VISIT, INVESTIGATE, AND INSPECT THE SITE IN ORDER TO ESTABLISH A SATISFIED UNDERSTANDING OF ALL CHARACTER, QUALITY, QUANTITIES, AND CONDITIONS TO BE ENCOUNTERED IN PERFORMING THE WORK. NOTIFY PROJECT ENGINEER 1 WEEK PRIOR TO BACKFILL.

THIS PAY ITEM IS USED AT LOCATIONS 1 AND 17.

ITEM 625 PULL BOX MISC.: PULL BOX, 725.06, SIZE 1.5

IN ADDITION TO THE REQUIREMENTS OF ITEM 625, AND SCD HL-30.11, WHEN THE PULL BOX IS LOCATED IN A PAVED AREA, THE PAYMENT FOR PULL BOX SHALL INCLUDE ALL SAWING, EXCAVATION, REMOVAL OF PAVEMENT, DISPOSAL OF SURPLUS MATERIALS AND RESTORATION AND REPAVING TO RESTORE SURROUNDING PAVEMENT TO ITS ORIGINAL CONDITIONS.

THIS PAY ITEM IS USED AT LOCATION 2.

