

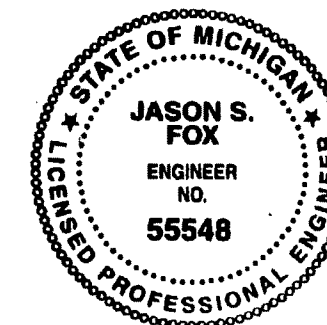
THE IMPROVEMENTS COVERED BY THESE PLANS SHALL BE DONE IN ACCORDANCE WITH THE MICHIGAN DEPARTMENT OF TRANSPORTATION 2012 STANDARD SPECIFICATIONS FOR CONSTRUCTION.

PHYSICAL ROAD NUMBER (PR#) & MILEPOST (MP) DATA ARE FROM MICHIGAN GEOGRAPHIC FRAMEWORK VERSION # 17.

MICHIGAN DEPARTMENT OF TRANSPORTATION

ROUTE: I-196BL & M-121
HOLLAND & ZEELAND TOWNSHIP
OTTAWA COUNTY

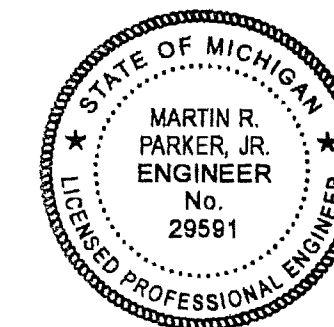
PLAN SHEETS 85-114
WERE PREPARED FOR THE
MICHIGAN DEPARTMENT OF TRANSPORTATION
BY



Jason S. Fox 4-9-18
JASON FOX, P.E. - PROJECT MANAGER

COM SMITH
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517-318-0359

PLAN SHEETS 139-213
WERE PREPARED FOR THE
MICHIGAN DEPARTMENT OF TRANSPORTATION
BY



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APPROVALS
RECOMMENDED FOR APPROVAL BY:

Nicholas Jasinski 4/10/18
NICHOLAS JASINSKI, P.E. - PROJECT MANAGER

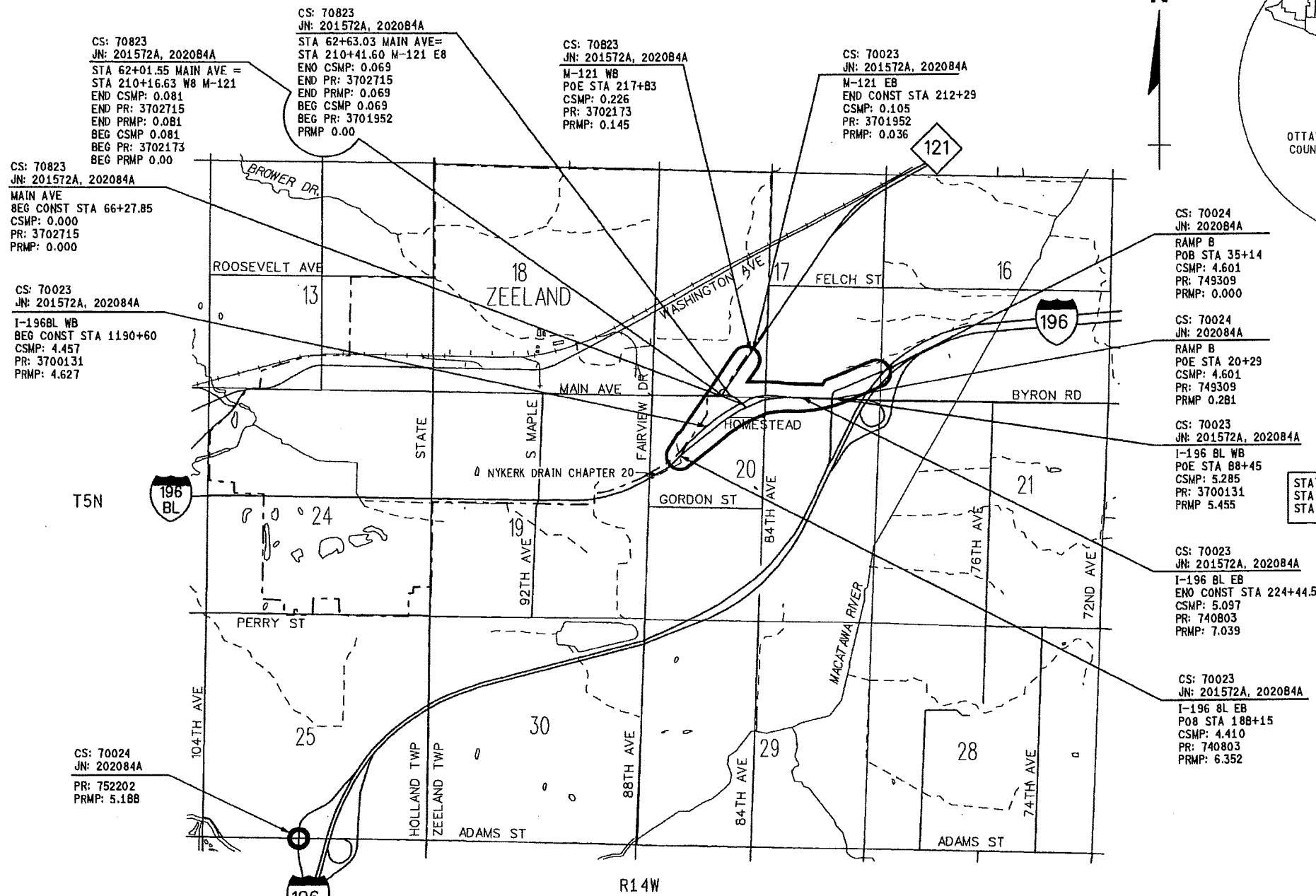
Gregg Zack 4/11/18
GREGG ZACK, P.E. - CONSTRUCTION ENGINEER

MICHIGAN
DEPARTMENT OF TRANSPORTATION
KIRK T. STEUDLE, P.E. - DIRECTOR

MILES: 1.382
CONTRACT FOR:
HOT MIX ASPHALT PAVING, PAVEMENT REMOVAL, ROADWAY REALIGNMENT,
TRAFFIC SIGNAL, SAFETY, AND DRAINAGE IMPROVEMENTS

ROAD	YEAR	TRAFFIC DATA			SPEED DATA		LIMITS
		AOT	OHV	COMM	DESIGN	POSTED	
I-196BL	2018	37500	111	5.5%	60	55	88TH AVE TO I-196
	2038	43550	129	5.5%	60	**	
M-121	2018	15025	77	9%	40	40	MAIN AVE INTERSECTION WITH I-196BL
	2038	17450	90	9%	40	**	
WB OFF RAMP	2018	13975	38	2.5%			I-196 WB OFF RAMP TO I-196BL
	2038	16225	45	2.5%			

SECTION	CONTROL SEC	JOB NO.
1	CM 70023 (70024, 70823)	201572A
1	HSIP 70023 (70024, 70823)	202084A



STATION RELATION
STA 1225+87.94 I-196 WB NON LEGAL ALI =
STA 79+99.69 BYRON RD LEGAL (I-196BL)

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)					NO SCALE	DATE: 04/06/18	CS: 70023 (70024, 70823)	TITLE SHEET	DRAWING	SHEET	
NO.	DATE	AUTH	DESCRIPTION			NO.	DATE	AUTH	DESCRIPTION	I-196BL AT M-121	I-196BL
FILE: 201572 TITLE.dgn								TSC: MUSKEGON	HOLLAND & ZEELAND TOWNSHIP, OTTAWA COUNTY		
								TITTLE 001			1

SURVEY

GENERAL

- △ CP ALIGNMENT POINT MONUMENT
- ⊗ MONUMENT BOX

CONTROL

- △ CP CONTROL POINT
- ⊕ BM BENCHMARK
- △ REFERENCE - GPS
- △ REFERENCE - NGS
- ⊕ REFERENCE - USGS

BOUNDARY

- CITY LIMIT - MAP
- CITY LIMIT
- PARCEL-L PARCEL - LEGAL
- PARCEL-NL PARCEL - NON-LEGAL
- PLAT-L PLAT - LEGAL
- PLAT-NL PLAT - NON-LEGAL
- ROW - FREE ACCESS
- ROW - LIMITED ACCESS
- SEC - SECTION LINE
- SEC 1/4 - SECTION LINE - QUARTER
- SEC 1/8 - SECTION LINE - EIGHTH
- SEC 1/16 - SECTION LINE - SIXTEENTH
- TOWNSHIP LINE (MAP)
- CONCRETE MONUMENT
- CONTIGUOUS PROPERTY SYMBOL
- PARCEL CORNER - CAPPED IRON
- PARCEL CORNER - IRON PIN
- PARCEL CORNER - IRON PIPE
- PARCEL CORNER - NO ID
- 123456 PARCEL NUMBER BOX
- PLAT CORNER
- PROPERTY OWNERSHIP ARROW
- PROPERTY OWNERSHIP ARROW - DOUBLE
- ROW MONUMENT
- SECTION CORNER - CENTER
- SECTION CORNER - MEANDER
- SECTION CORNER - QUARTER
- SECTION CORNER - QUARTER-HALF
- SECTION CORNER - SECTION
- SECTION CORNER - SECTION-HALF
- SECTION CORNER - SIXTEENTH
- SECTION CORNER - WITNESS

MONUMENT PRESERVATION

- PRESERVE MONUMENT
- PROTECT MONUMENT

GENERAL LABELING

GENERAL

- LEFT TURN ARROW
- TRAFFIC FLOW ARROW

REMOVAL

- ABANDON
- BULKHEAD
- CLEARING
- REMOVE
- SALVAGE
- SAVE

CONSTRUCTION

- ADJUST
- ADJUST - STRUC COVER WITH TYPE
- ADJUST - BY OTHERS

REMOVAL AND CONSTRUCTION

- RELOCATE - WITH CASE NUMBER
- RELOCATE - BY OTHERS

CONSTRUCTION LIMITS

- SSL SLOPE STAKE LINE

BORINGS

- BH# BORING

STRUCTURES

- BEAM UNDERCLEARANCE
- REFERENCE POINT
- 501 OF 12345 STRUCTURE NO. + CONTROL SEC. LABEL

VEGETATION

- BRUSH LINE
- HEDGE LINE
- TREE LINE - CANOPY OR TRUNK
- TREE LINE - TRUNK
- SHRUB
- TREE - CONIFER
- TREE - DECIDUOUS
- TREE - STUMP

ENVIRONMENTAL

- EROSION CONTROL - SILT FENCE
- WETLAND - LEGAL
- WETLAND - NON-LEGAL
- CONTAMINATION - MONITORING WELL
- 12 EROSION CONTROL NUMBER
- EROSION CONTROL - RIPRAP
- W.T. 12' WATER TABLE - PLAN NOTE
- WETLAND - SPOT EL
- POTENTIALLY CONTAMINATED SITE

ROADSIDE / SITE

- ANTENNA
- BIG ROCK
- FLAG POLE
- PICNIC STOVE
- PICNIC TABLE
- SATELLITE DISH

NOTE:

EXISTING ITEMS ARE REPRESENTED BY THIN LINE WEIGHTS.
PROPOSED ITEMS ARE REPRESENTED BY HEAVIER LINE WEIGHTS.

RAILROAD

- TRACK
- CROSSING - GATE
- CROSSING - SIGNAL BOX
- CROSSING - SIGNAL FLASHING
- CROSSING - SYMBOL

SIGNS

- POST - DOUBLE
- POST - SINGLE
- STRUCTURE - CANTILEVER (EXISTING)
- STRUCTURE - CANTILEVER
- STRUCTURE - TRUSS (EXISTING)
- STRUCTURE - TRUSS
- SUSPENDED (EXISTING)

MAINTAINING TRAFFIC

- TYPE III BARRICADE
- CHANNELIZING DEVICE - CONE
- CHANNELIZING DEVICE - DRUM
- LIGHT - HIGH INTENSITY TYPE B
- LIGHT - STEADY BURN TYPE C
- LIGHTED ARROW PANEL - BAR
- LIGHTED ARROW PANEL
- PORTABLE CHANGEABLE MESSAGE SIGN
- TRAFFIC REGULATOR
- TEMPORARY SIGN
- TEMPORARY TRAFFIC SIGNAL

- WORK AREA

BARRIERS

- CABLE BARRIER - NOT TO SCALE
- CABLE BARRIER - TRUE SCALE
- CONCRETE BARRIER - DOUBLE FACE
- CONCRETE BARRIER - SINGLE FACE
- FENCE
- GUARDRAIL - NOT TO SCALE
- GUARDRAIL - TRUE SCALE
- NOISE BARRIER
- FENCE POST
- 123 GUARDRAIL RUN NUMBER
- IMPACT ATTENUATOR
- POST - MAILBOX
- POST - NO ID

SURFACING

REMOVAL

- CONCRETE RUBBLIZING OR HMA CRUSH & SHAPE
- HMA COLDMILLING
- HMA SURFACE REMOVAL AND / OR PAVEMENT REMOVAL

PROPOSED

- AGGREGATE APPROACH
- BRIDGE APPROACH
- HMA APPROACH
- MISCELLANEOUS CONCRETE

SIDEWALK

- SIDEWALK - REMOVAL
- SIDEWALK - CONCRETE RAMP
- SIDEWALK - DETECT. WARNING SURF.
- SIDEWALK - LANDING
- SWR-F SIDEWALK - RAMP LABEL

TYPICAL SECTION

- CONCRETE - PROPOSED
- HMA - PROPOSED

CURB & GUTTER

- CURB & GUTTER REMOVAL

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION



NO SCALE

FILE: 201572_Legend.dgn

DATE: 04/10/18

DESIGN UNIT: JASINSKI

TSC: MUSKEGON

CS: 70023, (70024, 70823)

JN: 201572A, 202084A

LEGEND

I-196BL AT M-121

DRAWING SHEET

I-196BL SECT 1

LEGEND 001 3

UTILITIES

COMBINED SEWER

- COMBINED SEWER
- //→→//→→→→ COMBINED SEWER - OUT OF SERVICE
- COMBINED SEWER - TO BE TAKEN OUT OF SERVICE
- ×→→×→→→→ COMBINED SEWER - TO BE REMOVED

COMMUNICATION

- FO —— FIBER OPTIC
- // —— FO —— // FIBER OPTIC - OUT OF SERVICE
- FO-OH —— FIBER OPTIC - OVERHEAD
- ⊠ FIBER OPTIC MARKER
- C —— CABLE
- // —— C —— // CABLE - OUT OF SERVICE
- C-OH —— CABLE - OVERHEAD
- ⊠ CABLE MARKER
- ◇ CABLE PEDESTAL
- T —— TELEPHONE
- // —— T —— // TELEPHONE - OUT OF SERVICE
- T-OH —— TELEPHONE - OVERHEAD
- ⊠ TELEPHONE BOX
- ⊙ TELEPHONE MANHOLE
- ◇ TELEPHONE PEDESTAL

FUEL / PETROLEUM

- ⊖ GASOLINE FILLER PIPE
- ⊠ GASOLINE PUMP
- ⊠ GASOLINE UNDERGROUND TANK
- PETRO —— PETROLEUM PIPELINE
- // —— PETRO —— // PETROLEUM PIPELINE - OUT OF SERVICE
- ⊠ PETROLEUM PIPELINE MARKER
- ⊙ PETROLEUM WELL
- ⊙ PROPANE TANK

NATURAL GAS

- G —— GAS LINE
- // —— G —— // GAS LINE - OUT OF SERVICE
- ⊠ MARKER
- ⊠ VALVE
- ⊠ WELL

SANITARY SEWER

- ⊙ MANHOLE WITH COVER (DIA VARIES)
- S —— SEWER
- // —— S —— // SEWER - OUT OF SERVICE
- ● —— SEWER - TO BE TAKEN OUT OF SERVICE
- × —— SEWER - TO BE REMOVED

WATER

- ⊠ FIRE HYDRANT
- ⊠ GATE VALVE AND BOX
- ⊙ GATE VALVE IN WELL
- ⊠ IRRIGATION CONTROL VALVE
- ⊠ IRRIGATION SPRINKLER HEAD
- ⊠ SERVICE METER
- ⊖ SERVICE SHUTOFF
- ⊙ WATER WELL
- I —— IRRIGATION
- W —— WATER MAIN
- // —— W —— // WATER MAIN - OUT OF SERVICE
- ● —— WATER MAIN - TO BE TAKEN OUT OF SERVICE
- × —— WATER MAIN - TO BE REMOVED

STEAM

- STEAM —— STEAM
- // —— STEAM —— // STEAM - OUT OF SERVICE

GENERIC EXISTING UTILITIES

- ⊙ □ CATCH BASIN COVER
- MANHOLE COVER
- ⊠ MARKER
- ◇ PEDESTAL
- ⊙ SEWER CLEANOUT ACCESS
- STRUCTURE BOTTOM (DIA VARIES)
- ⊠ UTILITY BOX
- U —— UTILITY

DRAINAGE

- ⊠ ⊙ ⊙ CATCH BASIN W/ COVER (DIA VARIES)
- 12 DRAINAGE STRUCTURE NUMBER
- DRAIN CASTING
- DROP INLET
- ▷ ▷ ▷ ▷ END SECTION (SIZE VARIES)
- FLOW DIRECTION ARROW
- ⊠ HEADWALL (SIZE VARIES)
- ⊙ MANHOLE W/ COVER (DIA VARIES)
- ⊠ MANHOLE BASE W/ COVER (SIZE VARIES)
- ⊠ MANHOLE TEE W/ COVER (SIZE VARIES)
- ⊠ OUTLET HEADWALL (SIZE VARIES)
- CULVERT - EXISTING
- ▬ CULVERT (SIZE VARIES)
- DITCH CENTERLINE
- ▷ ▷ ▷ ▷ STORM SEWER - EXISTING
- → → → STORM SEWER
- × × × × STORM SEWER - TO BE REMOVED
- → → → UNDERDRAIN
- WATER EDGE

NOTE:

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JN: 201572A, 202084A

LEGEND

I-196BL AT M-121

DRAWING	SHEET
I-196BL LEGEND 002	SECT 1 4

ELECTRICAL

- CONTROLLER CABINET - PAD MOUNTED
- HANDHOLE
- MANHOLE
- POLE UTILITY - EXISTING
- POLE UTILITY
- TRANSFORMER - PAD MOUNTED
- TRANSFORMER - POLE MOUNTED
- E — CABLE
- x- E -x- CABLE - TO BE REMOVED
- E-OH — CABLE OVERHEAD
- x- E-OH -x- CABLE OVERHEAD - TO BE REMOVED
- I — E — I — CABLE IN CONDUIT
- x- I — E — I -x- CABLE IN CONDUIT - TO BE REMOVED
- CABLE IN CONDUIT - DIRECTIONAL BORE

ARCHITECTURAL

- EXIT SIGN WITH EMERGENCY LIGHT
- LIGHT RECESSED FIXTURE
- MOTOR
- OUTLET BOX
- OUTLET SINGLE
- OUTLET TELEPHONE
- SERVICE DISCONNECT
- SERVICE METER
- SWITCH
- SWITCH THREE WAY
- WALL BRACKET FIXTURE

LIGHTING

- CONTROL PANEL - EXISTING
- CONTROL PANEL
- LIGHT STANDARD EXISTING - TO BE REMOVED & SALVAGED
- LIGHT STANDARD DOUBLE ARM - EXISTING
- LIGHT STANDARD DOUBLE ARM
- LIGHT STANDARD POST TOP - EXISTING
- LIGHT STANDARD POST TOP
- LIGHT STANDARD SINGLE ARM - EXISTING
- LIGHT STANDARD SINGLE ARM
- LIGHT POLE - TEMPORARY
- LUMINAIRE WALL MOUNTED UNDERBRIDGE - EXISTING
- LUMINAIRE WALL MOUNTED UNDERBRIDGE
- TOWER LIGHTING UNIT - EXISTING
- TOWER LIGHTING UNIT

ITS / SIGNALS

- DYNAMIC MESSAGE SIGN - EXISTING
- DYNAMIC MESSAGE SIGN
- ENVIRONMENTAL SENSOR STATION SITE
- FIBER OPTIC SPLICE CABINET
- HANDHOLE, ROUND, 3 FOOT DIAMETER
- HANDHOLE, ROUND, COMMUNICATIONS
- HANDHOLE, ROUND, ELECTRIC
- HANDHOLE, TYPE D
- ITS CABINET - EXISTING
- ITS CABINET
- MICROWAVE VEHICLE DETECTION SYSTEM - EXISTING
- MICROWAVE VEHICLE DETECTION SYSTEM
- MICROWAVE VEHICLE DETECTION SYSTEM ZONE COVERAGE - EXISTING
- MICROWAVE VEHICLE DETECTION SYSTEM ZONE COVERAGE
- SPUN CONCRETE POLE - EXISTING
- SPUN CONCRETE POLE
- SURVEILLANCE SYSTEM - EXISTING
- SURVEILLANCE SYSTEM
- WIRELESS LINK - EXISTING
- WIRELESS LINK
- COMMUNICATIONS CABLE IN CONDUIT
- COMMUNICATIONS CABLE IN CONDUIT - TO BE REMOVED
- ANTENNA
- CASE SIGN (1-WAY OR 2-WAY)
- CASE SIGN (4-WAY)
- DEDICATED SHORT RANGE COMMUNICATIONS
- CONTROLLER CABINET - POLE MOUNTED
- CONTROL EMERGENCY PREEMPTION OPTICOM
- DILEMMA ZONE DETECTION
- GLOBAL POSITIONING SYSTEM MODULE
- GUY ANCHOR
- PEDESTRIAN PEDESTAL
- PEDESTRIAN PUSHBUTTON
- POLE MAST ARM (LENGTH VARIES) - EXISTING
- POLE MAST ARM (LENGTH VARIES)
- POLE STRAIN
- ROAD SIGN W/ FLASHING SIGN OPTICAL (1-WAY)
- SIGNAL HANDHOLE - POLYMER CONCRETE
- SIGNAL HANDHOLE - 2 FOOT ROUND
- SIGNAL HANDHOLE - 3 FOOT ROUND
- SIGNAL HANDHOLE - 2 FOOT SQUARE
- SIGNAL HANDHOLE - 4 FOOT SQUARE
- SIGNAL HEAD PEDESTRIAN - EXISTING
- SIGNAL HEAD PEDESTRIAN 1-WAY
- SIGNAL HEAD PEDESTRIAN 2-WAY
- SIGNAL HEAD VEHICLE 1-WAY - EXISTING
- SIGNAL HEAD VEHICLE 2-WAY - EXISTING
- SIGNAL HEAD VEHICLE 3-WAY - EXISTING
- SIGNAL HEAD VEHICLE 4-WAY - EXISTING
- SIGNAL HEAD VEHICLE 1-WAY
- SIGNAL HEAD VEHICLE 2-WAY
- SIGNAL HEAD VEHICLE 3-WAY
- SIGNAL HEAD VEHICLE 4-WAY
- SIGNAL HEAD VEHICLE BAGGED
- SIGNAL HEAD VEHICLE PROGRAMMABLE
- VEHICLE DETECTION CAMERA
- VEHICLE DETECTION CAMERA - HEMISPHERICAL
- VEHICLE DETECTION LOOP
- VEHICLE DETECTION - RADAR
- WIRELESS VEHICLE DETECTION RADIO RECEIVER
- WIRELESS VEHICLE DETECTION RADIO REPEATER
- WIRELESS VEHICLE DETECTION SENSOR - EXISTING
- WIRELESS VEHICLE DETECTION SENSOR

CABLING / WIRING DIAGRAM

- CIRCUIT BREAKER
- COILED WIRE
- FUSE
- FUSE SWITCH
- GROUND
- ILLUMINATED CASE SIGN
- METER
- SERVICE DISCONNECT
- SIGNAL HEAD

NOTE:

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FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



NO SCALE

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JN: 201572A, 202084A

LEGEND

I-196BL AT M-121

DRAWING SHEET

I-196BL SECT 1

LEGEND 003 5

GENERAL NOTES

UTILITIES

MISS DIG/UNDERGROUND UTILITY NOTIFICATION

For the protection of underground utilities and in conformance with Public Act 174 of 2013, the Contractor shall contact MISS DIG System, Inc. by phone at 811 or 800-482-7171 or via the web at either elocate.missdig.org for single address or rte.missdig.org, a minimum of 3 business days prior to excavating, excluding weekends and holidays.

MDOT Roadway Lighting, Traffic Signals, or other electrical systems staking requests should be Emailed on MDOT Form 5300B (<http://mdotcf.state.mi.us/public/webforms/public/5300B.pdf>) to: MDOT-Electrical-Staking-Grand@michigan.gov

Telephone inquiries can be made at 616-451-3091.

MDOT FREEWAY ITS OPERATIONS CENTER:
Grand: (616) 451-8448

ROW / REAL ESTATE

PROPERTY OWNERS

The names of property owners shown on the plans are for information only, and their accuracy is not guaranteed.

LAWN SPRINKLER SYSTEMS AND LANDSCAPING

Owners of existing lawn sprinkler systems and/or landscaping shall be notified (in writing with a copy sent to the Engineer) by the Contractor two weeks in advance of any work to be done that will affect those systems and/or landscaping. If the property owner fails to relocate the lawn sprinkler system prior to the Contractor beginning work, and if the Contractor cuts the system during the construction, the Contractor shall cap the system pipe and witness the location of the cap with a wooden stake for the property owner's use. The Contractor shall place the salvaged sprinkler heads on the property owner's property. If the property owner fails to relocate the landscaping prior to the Contractor beginning work, the Contractor shall carefully salvage the landscaping items and stockpile them on the property owner's property for the property owner. Any other modification to the lawn sprinkler systems and/or landscaping is the responsibility of the owner and is not part of this contract. This work is included in other items of the project.

SURVEY

ADJUSTING MONUMENT BOXES

All government corners on this project shall be preserved, whether shown or not. It may be necessary to place or adjust monument boxes, as required.

OLD PLANS

OLD ROAD PLANS

The following old road plans were referred to in the design of this project.

70-R-1 – ROW Plans
70-61 C3 C4 C5 – G&DS, 1955
00983 – I-196 G&DS, 1971
28123 – M-121 EB Jnt Rpr & Shldr, 1990
32878 – Intersection Recon, 1993
50745 – Intersection Betterment, 2002
60422 – I-196BL Jnt Rpr, Valley Gutter, Realign, 2006

In addition, other old road plans that predate this project may be available. These plans may be reviewed in the Transportation Service Center (TSC) during normal working hours.

DETAILED GRADES

GRADES FOR INTERSECTIONS

All intersections are to be considered as complete units and their grades determined before construction is started.

SIGNALIZED SIDE ROAD TO TRUNK LINE INTERSECTIONS:

The normal edge of pavement grade of the proposed trunk line adjacent to the side road intersection shall be carried across the intersection wherever possible. The side road approach grade and crown shall be established to provide for drainage and to assure suitable rideability of the side road.

SIGNALIZED TRUNK LINE TO TRUNK LINE INTERSECTIONS:

The grades to be established shall provide for drainage and rideability of each trunk line. Crowns may be varied on each trunk line to best fit the longitudinal grades of each trunk line.

SIDEWALK AND SIDEWALK RAMP GRADES

All sidewalk and sidewalk ramp grades shall be staked according to Standard Plan R-28 series and as shown on the plans. Prior to constructing the sidewalk and sidewalk ramps, the Engineer will verify the grades and authorize the construction of the sidewalk and sidewalk ramps.

EARTHWORK

EARTHWORK

Earthwork quantities are computed by the average end area method based upon ground survey information.

EARTH DISTURBANCE LIMITS

The earth disturbance limit for this project will be limited to 10' beyond the slope stake line or to the ROW line whichever is less for all areas except for wetland areas. For areas adjacent to wetlands, the earth disturbance limit will be limited to the slope stake line. Restoration measures have been included in this set of plans for the approved areas of disturbance. The Contractor shall submit an earth change plan for any work beyond the approved limits to the Engineer to review for approval prior to the disturbance. All costs for obtaining and executing an approved earth change plan, including restoration, shall be at the Contractor's expense.

SOIL EROSION MEASURES

Appropriate soil erosion and sedimentation control measures shall be in place prior to earth-disturbing activities. Place turf establishment items as soon as possible on potential erodible slopes as directed by the Engineer. Critical ditch grades shall be protected with either sod or seed/mulch or mulch blanket as directed by the Engineer.

BASES

AGGREGATE BASE

Aggregate bases shall use aggregate 21AA, unless otherwise specified.

DRAINAGE

CULVERT EXTENSIONS

The extension of existing culverts on this project may require extra work to obtain a tight seal at the joint connecting new culvert pipe to existing culvert pipe. The joint between the existing and new pipes shall be constructed according to the 2012 Standard Specifications for Construction. Any extra work required to obtain tight joints will not be paid for separately, but will be included in compensation for extending culverts.

DRAINAGE MARKER POSTS

Drainage marker posts shall not be placed in medians less than 150' wide.

TEMPORARY BULKHEADS

Temporary bulkheads may be required for the part width construction of the culverts and sewers. All cost associated with the temporary bulkheads are included in the item of the pipe.

PAVEMENT

PAVEMENT AND HMA SURFACE REMOVAL QUANTITIES

Pavement and HMA Surface removal as shown on the plans will be at the discretion of the Engineer. If in his/her judgment, areas of pavement may be left in place, or additional areas added to provide the proper cross-section and base. Changes will be made in the quantities.

SOIL BORINGS AND/OR PAVEMENT CORES

The soil boring logs and/or pavement cores represent point information. No inference should be made that subsurface or pavement conditions are the same at other locations.

FENCING

RIGHT OF WAY FENCE

Where fence is called for along the ROW, the Engineer will check the Right of Way as actually acquired before placing fence.

TURF ESTABLISHMENT

SEED MIXTURE

The symbol for the permanent turf seed mixture on this project is symbol TDS.

SIGNS

GENERAL

All signs shall be installed, removed and/or salvaged according to the current edition of "Michigan Manual on Uniform Traffic Control Devices" and the current edition of Michigan Department of Transportation (MDOT) "Standard Specifications for Construction."

All signs on the plans or in the log that do not have a recommendation are to be retained.

EXISTING SIGN RELOCATION

Any permanent signs requiring relocation due to Contractor operations shall be salvaged and reset by the Contractor at locations designated by the Engineer. Signs and posts damaged during the removal and storage operations shall be replaced with new signs and posts. The cost of this work shall be borne by the Contractor.

At least two weeks prior to construction to remove / relocate Michigan Logo or tourist oriented directional signs; the Contractor shall contact Mike Kovalchick, (888) 645-6467 from Michigan Logos.

PLAN SCALE

The final plans submitted with the proposal are not to scale. Where proposed on plan sheets, the signs and structures shall be fabricated in accordance to Typical Plans, Standards, and/or Details at locations described.

SIGN LAYOUT

Sign layouts shall be according to the current English edition of "Standard Highway Signs" manual or as detailed in plans. Legend length shall be determined using the "SignCAD" software.

SHEETING

Handling and installation of all signs shall conform to the sheeting manufacturer's specifications and guidelines.

Splice sheeting used for Type I signs with a 3" overlap.

Signs that have wrinkled or twisted sheeting may be rejected.

SIGN INSTALLATION

When attaching signs to supports, tighten the nut, not the bolt head.

Nylon washers shall be placed between the steel washer and the sign face sheeting. The nylon washers are to be considered part of the attaching devices and hardware. Nylon washers shall have a 3/8 inch inner diameter, a 7/8 inch outer diameter and a 1/16 inch thickness.

The Contractor shall attach a date sticker to the back of all signs installed on the contract. Stickers will be supplied to the Contractor at the preconstruction meeting by the Engineer. Stickers will be supplied by MDOT Operations Field Services Division Statewide Sign Shop, Lansing, which can be contacted at 517-322-3357.

REMOVAL & SALVAGE

All MDOT Adopt-A-Highway bottom panel signs called for removal in a project shall be removed and then returned to MDOT at no additional charge to the department. All MDOT Adopt-A-Highway top panel signs called for removal in a project will not be returned to MDOT.

MALI SIGNS

113-2 (mali) signs shall be installed on the right support of two support installations unless otherwise noted on the plans.

SIGNALS

PREVIOUS GENERAL NOTES

Some notes previously included in "General Notes" are now located within the Frequently Used Special Provision titled "Traffic Signal Work - Construction Methods".

MAINTAINING AGENCY CONTACT INFORMATION

- MDOT: Statewide Signal Shop (517-322-3360)

NOTIFICATIONS TO MAINTAINING AGENCIES

Contact MDOT (and any other maintaining agency) seven working days prior to start of construction and seven working days prior to signal activation.

CABINET SET UP AND CONTROLLER TIMING

Contractor shall deliver where required to the appropriate maintaining agency, the T.S. Cabinet and Controller for set up and timing. Contractor shall pick-up cabinet from the appropriate maintaining agency when ready for installation.

FACILITIES NOT ON PLANS

Existing O.H. & T.S. facilities are not necessarily shown on plans.

WOOD POLE INSTALLATION

Install wood poles so as not to interfere with traffic or future construction stages.

EXISTING STREET SIGNS


All traffic street signs such as "no parking", "no standing", etc. shall be transferred from old std. or pole to new std. or pole at same location or in close proximity by the Contractor.

CONTINUOUS TRAFFIC SIGNAL OPERATION

Proposed T.S. shall be put into operation at time of removal of existing T.S. facilities, contractor shall notify MDOT (and any other maintaining agency) if unable to maintain T.S. in an operable condition at all times.

UNDERGROUND UTILITY SEPARATION

A minimum clearance of 3'-6" horizontal & 1'-0" vertical must be maintained between proposed facilities & existing U.G. water facilities.

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										FILE: 201572_Note_20012.doc	TSC: MUSKEGON			

SIGNAL EQUIPMENT DISPOSAL

Disposal of all traffic signal equipment is included in the removal pay items and shall also include the following:

- Notification to MDOT (and any other maintaining agency) that traffic signal equipment is being removed.
- Temporary storage of equipment in a dumpster on site (or as directed by the Engineer) allowing MDOT (and any other maintaining agency) 48 hours to salvage any equipment.
- Proper disposal of any equipment containing environmentally sensitive materials (mercury relay switches for example)
- Disabling or destruction of all remaining equipment to the satisfaction of the engineer such that it cannot be reused or resold.
- Proper disposal of all remaining equipment.

PLAN DEVIATIONS DURING CONSTRUCTION

No changes from plans in location of supporting structures signal head placement or traffic signal equipment will be allowed without prior approval of the Michigan Department of Transportation, Traffic Signals Unit in Lansing, MI; (517-373-2323).

POLE BAND CLAMP ACCEPTANCE

The current basis of acceptance for this material is now part of the QPL (Qualified Product List). This can be found in the materials Acceptance Requirements Table, published in the MQAP and repeated for convenience in the Materials Source Guide.

INNERDUCT

Contractor must install a continuous flexible non-metallic tubing (innerduct) for low voltage communication type cable from the device to the controller cabinet. Innerduct is not required if communication cable is 600V rated.

SIGNAL HEAD LANDING POINT

Ensure each traffic signal head assembly has its own landing point with all neutrals connected together with a metal type jumper.

PROJECT SPECIFIC NOTES

CURB AND GUTTER TRANSITIONS

Transitioning curb and gutter types shall be done in 10' distance or as directed by the Engineer and will be considered included in payment of the proposed curb and gutter.

SAWCUTTING (204)

All existing curb and gutter, sidewalk, and pavement being removed will be saw cut at the limits of removal, regardless of thickness of material. Saw cuts will be made at an existing joint or as directed by the Engineer. The cost of this work is included in payment for related items of work.

EMBANKMENT (205)

Where Embankment is called for it shall conform to Granular Material Class II specifications.

PROTECTION OF SUBGRADE (205)

The Contractor shall use caution and exercise appropriate measures to protect the existing subgrade from becoming rutted by construction equipment. If the engineer believes that the subgrade has been rutted, then he/she shall direct the Contractor to cut trenches transversely to the pavement for the purpose of measuring the existing subgrade line to determine if rutting has taken place. All cost associated with testing for rutting and correction of the subgrade if rutting has occurred shall be the responsibility of the Contractor.

DUST CONTROL (208)

Due to the project location, the Contractor will be required to have a water truck on site at all times. The Contractor shall maintain adequate dust control measures per Section 107.15 of the 2012 MDOT Standard Specifications or as directed by the Engineer.

AGGREGATE PAID BY THE TON (300)

All aggregate supplied for the project, regardless if it is specified to be paid for by the ton, shall have an automated ticket. Manual tickets will not be accepted for payment on this project. Any additional costs to obtain an automated ticket shall be included in the cost for the aggregate item.

DEWATERING & MAINTAINING STREAM FLOW (401)

The Contractor shall submit a construction plan for dewatering and maintaining stream flow to the Engineer at least 14 Calendar Days prior to beginning work which will impact the flow of water through a culvert or storm sewer. Payment for this work shall be included in the applicable items for "Construction Dam" and "Bypass Pumping". If these items are not included in the Contract then the work under those items is considered included in the cost of the culvert or storm sewer work being undertaken. Sedimentation and erosion control items will be paid separately as indicated in the plans.

FULL DEPTH CORING METHOD (403)

All new and existing drainage structure covers, utility covers, monument boxes, and any other appurtenances which are located within the pavement surface and require adjustment to the finished grade shall be adjusted by the full depth coring method after completion of paving. Adjusting structures prior to completion of paving will not be permitted without prior approval of the Engineer. Payment for utilizing the full depth coring method on existing features is included in payment for the related adjustment item. Payment for utilizing the full depth coring method on new features is included in the payment for the new drainage structure cover, new utility cover, new monument box, etc..

UNDERDRAIN PLACEMENT (404)

All underdrain pay items include all costs for material, equipment and labor associated with the placement of the underdrain whether the underdrain is trenched or excavated in or placed as part of an undercut. If the subgrade underdrain is trenched or excavated in it shall be placed inclusively from 3 feet to 5 feet below plan grade as determined by the Engineer. If the subgrade underdrain is placed in conjunction with an undercut, the underdrain shall be placed approximately 6 inches below the undercut trench bottom on the low side of the undercut trench as determined by the Engineer.

UNDERDRAIN OUTLET

All drainage marker posts installed at underdrain outlet locations shall have a green delineator.

TRACKING OF MATERIALS (501)


Construction operations shall be conducted in such a way as to prevent tracking of HMA, tack, mud, or other debris onto public thoroughfares. The Contractor shall clean all tacked material from public streets at the end of each day. A corrective action plan shall be submitted by the Contractor and approved by the Engineer prior to undergoing any removal operations. The cost of this work shall not be paid for separately, but shall be considered included in other items.

HMA SAMPLE LOCATIONS (501)

At all HMA QA/QC loose mix sample locations the Contractor and Engineer shall agree to use one of two options for obtaining loose mix samples of the hot mixed asphalt. Option 1 requires all QA/QC samples to be taken from a mini stockpile as outlined in section 4.2.8 of MTM 313. Option 2 requires all QA/QC samples to be taken from behind the paver as outlined in MTM 324. If Option 2 is selected the Contractor shall back up the paver and pull another pass over the sample areas. Shoveling and luting mix into the sample areas is not an acceptable option to backfill sample areas. The Contractor and Engineer will agree upon a sampling option at the preproduction meeting.

PERMANENT SIGNS (810)

Any permanent signs requiring relocation due to contractor operations shall be salvaged and reset by the Contractor at locations designated by the Engineer. Signs and posts damaged during the removal and storage operations shall be replaced with new signs and posts. The cost of this work shall be borne by the Contractor.

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MISCELLANEOUS QUANTITIES

The following items of work shall be done as they apply throughout the project. These items are not detailed or included in the plan sheets.

JN 202084AJN 201572A		CAT 0001		CAT 0001	
0.7	0.3	LSUM	Mobilization, Max		
5	--	Ea	Monitoring Well, Adjust		
10	--	Ft	Exploratory Investigation, Vertical		
400	--	Cyd	Non Haz Contaminated Material Handling and Disposal, LM		
60	--	Cyd	Phragmites Plant Material Handling and Disposal, LM		
37084	10876	Dir	HMA Quality Initiative		
51500	--	Dir	Longitudinal Joint Density Quality Initiative		
3	--	Ea	Sign, Type I, Rem		
22	--	Ea	Sign, Type II, Rem		
128	--	Ea	Sign, Type III, Rem		
29250	--	Ft	Recessing Pavt Mrkg, Longit		
950	--	Sft	Recessing Pavt Mrkg, Transv		
30	--	Sft	Recessing Pavt Mrkg, Turning Guide Line		
1400	--	Ft	Pavt Mrkg, Longit, 6 inch or Less Width, Rem		
1	--	LSUM	Contractor Staking, Road Only		
49	--	Hr	Staking Plan Errors and Extras, One Person		
19	--	Hr	Staking Plan Errors and Extras, Two Person		
29	--	Hr	Staking Plan Errors and Extras, Three Person		
1	--	LSUM	ITS Grounding, Bonding, and Surge Protection		

SOIL EROSION AND SEDIMENTATION CONTROL

The following items of work shall be used throughout the project for placement of soil erosion and sedimentation control items as shown in Standard Plan R-96 series and as directed by the Engineer. These items are in addition to the items shown on the plan sheets.

JN 202084A		CAT 0001	
75	Ft	Erosion Control, Check Dam, Stone	
4	Ea	Erosion Control, Gravel Access Approach	
3	Ea	Erosion Control, Inlet Protection, Fabric Drop	
10	Cyd	Erosion Control, Maintenance, Sediment Removal	
10	Ea	Erosion Control, Sediment Trap	
500	Ft	Erosion Control, Silt Fence	

MISCELLANEOUS ESTIMATES

The following items of work shall be used throughout the project for the correction of unstable soil conditions and in areas where additional Embankment, CIP, Special may be required to achieve the desired cross section. These items are not detailed or included on the plan sheets.

JN 202084A		CAT 0001	
1000	Cyd	Subgrade Undercutting, Type II	
25	Cyd	Aggregate, 6A	
100	Cyd	Trench Undercut and Backfill	
4	Ea	Dr Structure, Tap, 6 inch	
100	Ft	Underdrain, Bank, 6 inch	
300	Ft	Underdrain, Subbase, 6 inch	
500	Ft	Underdrain, Subgrade, 6 inch	
100	Ft	Underdrain Outlet, 6 inch	
5	Ea	Underdrain, Outlet Ending, 6 inch	
200	Ft	Underdrain Outlet, 6 inch, Modified	

TURF ESTABLISHMENT

The following items of work shall be used throughout the project for slope restoration. These items are not detailed or included on the plan sheets.

JN 202084A		CAT 0001	
45000	Syd	Slope Restoration, Type A	
23000	Syd	Slope Restoration, Type B	
1000	Syd	Slope Restoration, Type C	
500	Syd	Slope Restoration, Type D	

DELINEATOR INSTALLATION

The following items of work shall be used throughout the project for delineator installation as shown in Standard Plan R-127 series and as directed by the Engineer. These items are not detailed or included on the plan sheets.

JN 202084A		CAT 0001	
40	Ea	Delineator Reflector, Red	
60	Ea	Delineator Reflector, Yellow	
180	Ea	Delineator Reflector, Green	
80	Ea	Delineator Reflector, White	
6	Ea	Delineator, Reflective Sheeting, 3 inch by 12 inch, Red	
1	Ea	Delineator, Reflective Sheeting, 3 inch by 12 inch, White	
6	Ea	Delineator, Reflective Sheeting, 3 inch by 12 inch, Yellow	
160	Ea	Delineator, Rem	
7	Ea	Post, Flexible, Delineator	
320	Ea	Post, Rigid, Delineator	

MAINTAINING TRAFFIC

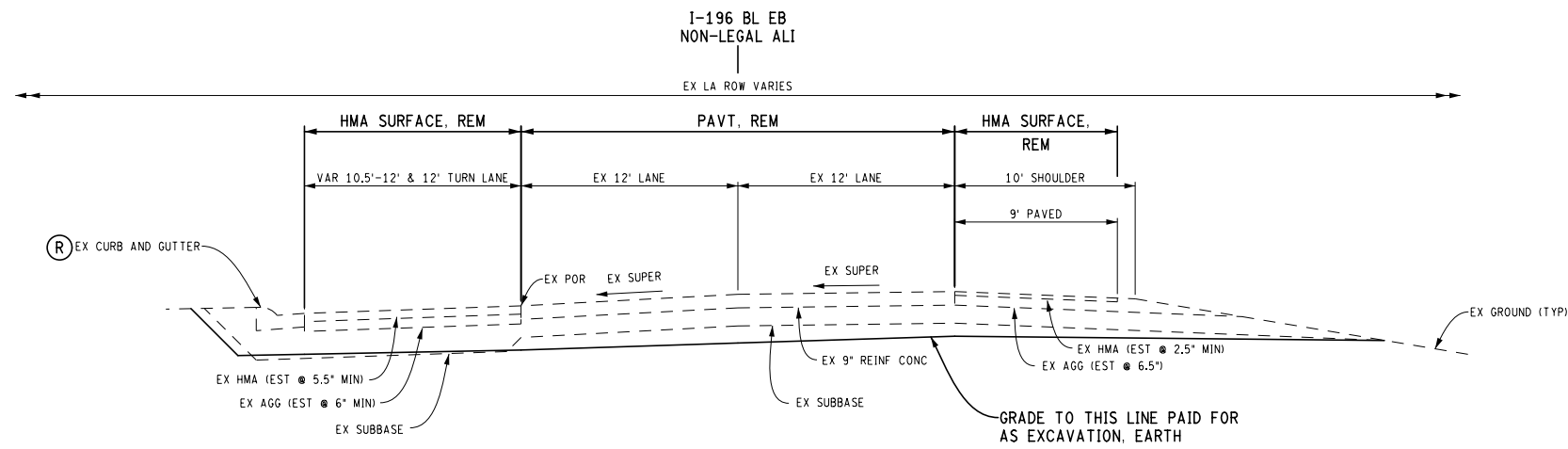
The following items of work shall be done as they apply throughout the project for maintenance of traffic. These items are not detailed or included in the plan sheets.

JN 202084AJN 201572A		CAT 0001		CAT 0001	
1	--	Ea	Culv, Rem, Less than 24 inch		
2	--	Ea	Culv, End, Rem, Less than 24 inch		
2	--	Ea	Dr Structure, Rem		
40	--	Ft	Sewer, Rem, Less than 24 inch		
40	--	Syd	Sidewalk, Rem		
43333	--	Cyd	Excavation, Earth		
190	--	Cyd	Embankment, CIP, Special		
3110	--	Cyd	Subbase, CIP		
5410	--	Syd	Aggregate Base, 6 inch		
540	--	Syd	Shoulder, CI II, 6 inch		
18	--	Sta	Trenching		
2	--	Ea	Culv End Sect, Conc, 18 inch		
70	--	Ft	Culv, CI A, Conc, 18 inch		
40	--	Ft	Sewer, CI E, 12 inch, Tr Det B		
1	--	Ea	Sewer Tap, 12 inch		
1	--	Ea	Dr Structure Cover, Type D		
1	--	Ea	Dr Structure Cover, Type G		
1	--	Ea	Dr Structure, 24 inch dia		
1	--	Ea	Dr Structure, 48 inch dia		
1	--	Ea	Dr Structure, Temp Lowering		
330	--	Syd	Cold Milling HMA Surface		
4790	--	Syd	HMA Surface, Rem		
20	--	Ton	Hand Patching		
530	--	Ton	HMA, Temp Pavt (4E3)		
540	--	Ton	HMA, Temp Pavt (5E3)		
20	--	Ft	Detectable Warning Surface		
160	--	Sft	Sidewalk Ramp, Conc, 6 inch		
140	--	Sft	Sidewalk, Conc, 4 inch		
2	--	Ea	Sign, Type II, Erect, Salv		
2230	--	Ft	Pavt Mrkg, Sprayable Thermopl, 4 inch, Yellow		
792	--	Sft	Rem Spec Mrkg		
43	--	Ea	Barricade, Type III, High Intensity, Lighted, Furn		
43	--	Ea	Barricade, Type III, High Intensity, Lighted, Oper		
0.7	0.3	LSUM	Ltg for Night Work		
0.7	0.3	LSUM	Minor Traf Devices		
500	--	Ft	Pavt Mrkg Cover, Type R, Black		
8979	--	Ft	Pavt Mrkg, Longit, 6 inch or Less Width, Rem		
820	--	Ft	Pavt Mrkg, Longit, Greater than 6 inch Width, Rem		
19660	--	Ft	Pavt Mrkg, Wet Reflective, Type NR, Paint, 4 inch, White, Temp		
15850	--	Ft	Pavt Mrkg, Wet Reflective, Type NR, Paint, 4 inch, Yellow, Temp		
5850	--	Ft	Pavt Mrkg, Wet Reflective, Type R, Tape, 4 inch, White, Temp		
3140	--	Ft	Pavt Mrkg, Wet Reflective, Type R, Tape, 4 inch, Yellow, Temp		
230	--	Ea	Plastic Drum, High Intensity, Furn		
230	--	Ea	Plastic Drum, High Intensity, Oper		
15	--	Ea	Sign Cover		
64	--	Sft	Sign, Type A, Temp, Prismatic, Furn		
64	--	Sft	Sign, Type A, Temp, Prismatic, Oper		
1385	--	Sft	Sign, Type B, Temp, Prismatic, Furn		
1385	--	Sft	Sign, Type B, Temp, Prismatic, Oper		
283	--	Sft	Sign, Type B, Temp, Prismatic, Special, Furn		
283	--	Sft	Sign, Type B, Temp, Prismatic, Special, Oper		
140	--	Ft	Pedestrian Type II Channelizer, Temp		
450	--	Ea	Tubular Marker		
100	--	Ea	Tubular Marker, Replacement		
5	--	Ea	Sign, Portable, Changeable Message, NTCIP Compliant, Furn		
5	--	Ea	Sign, Portable, Changeable Message, NTCIP Compliant, Oper		
1240	--	Syd	Slope Restoration, Type A		

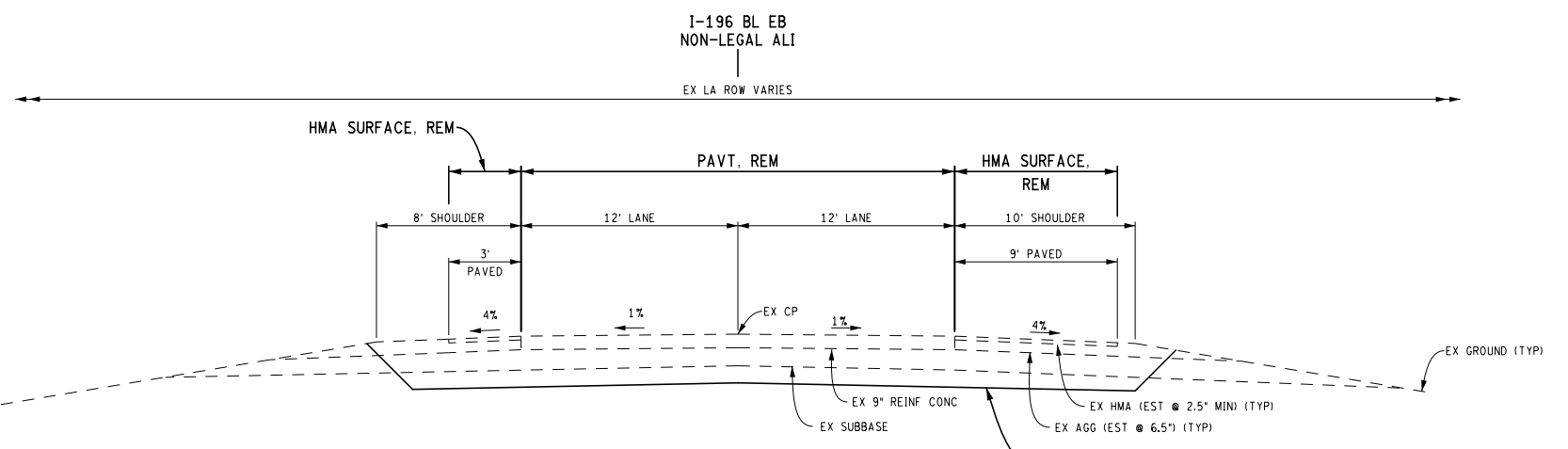


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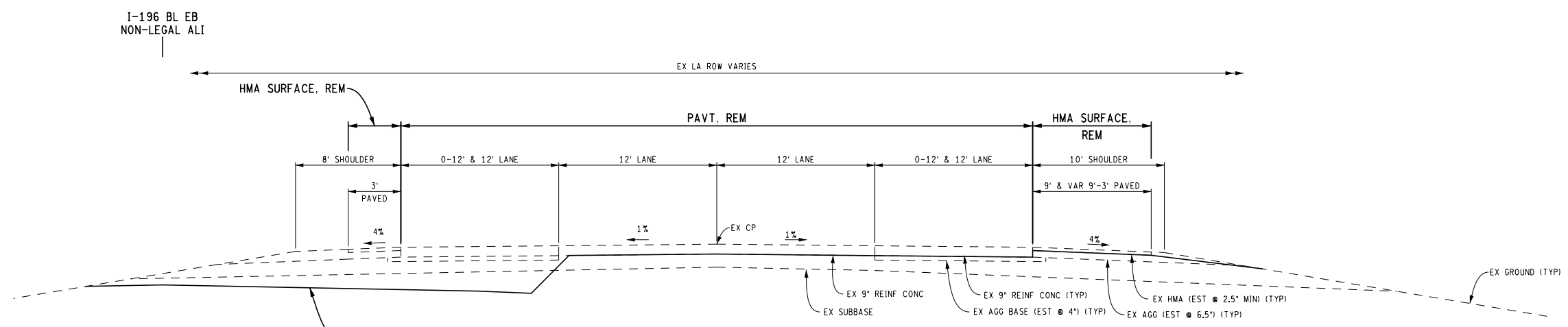
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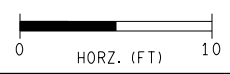


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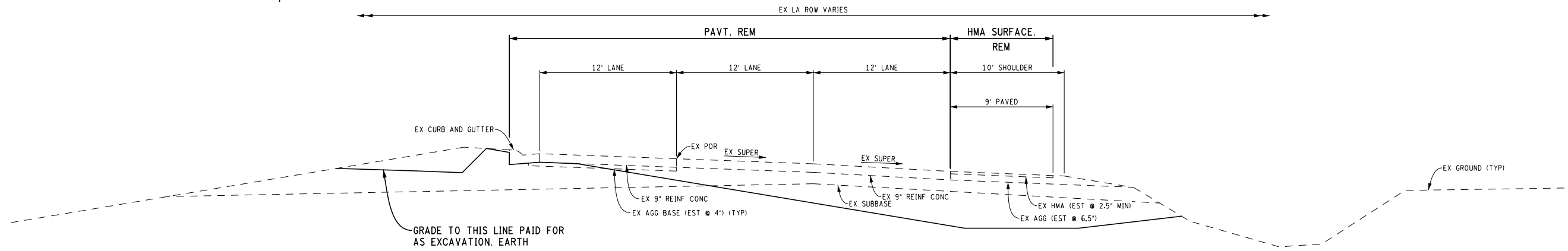
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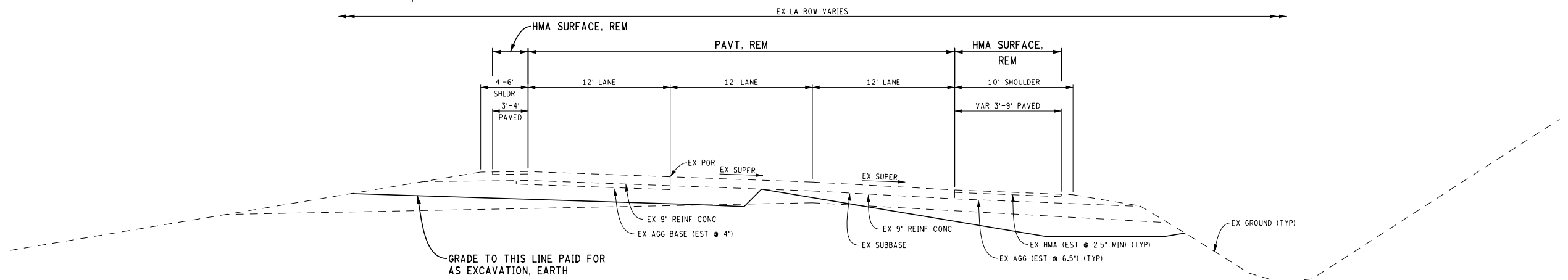
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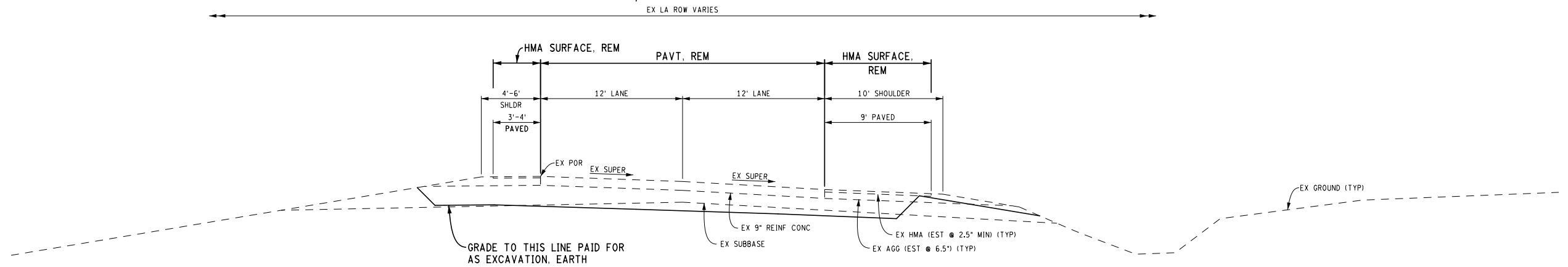
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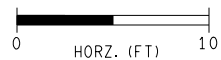
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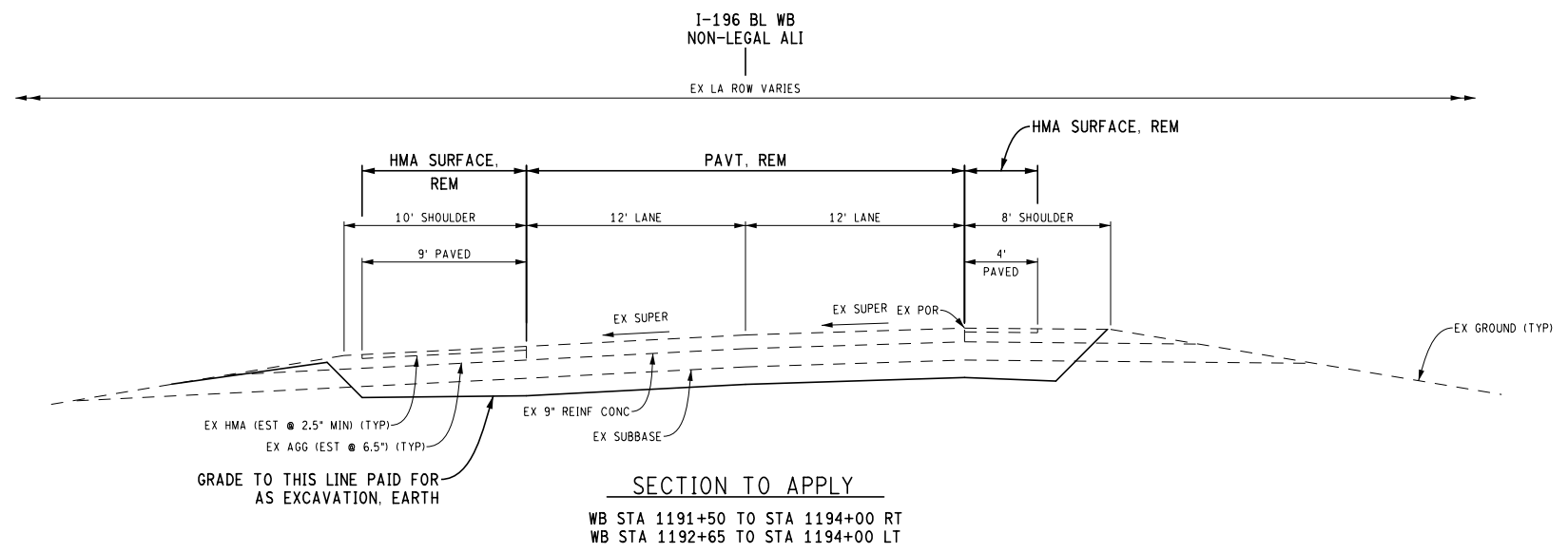
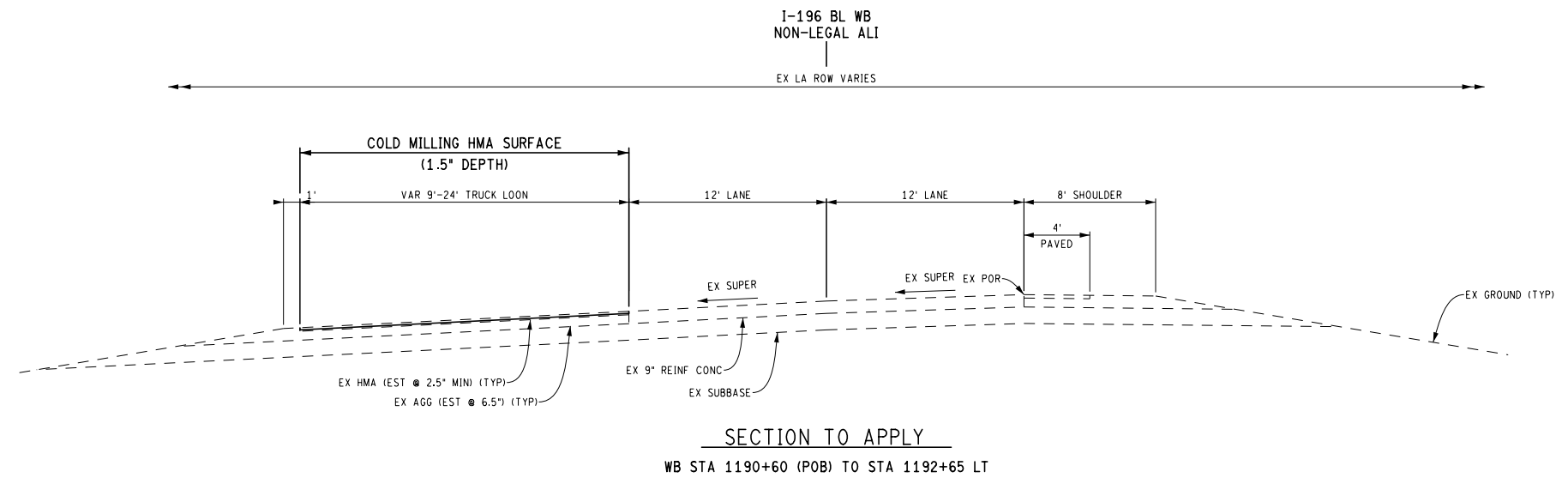
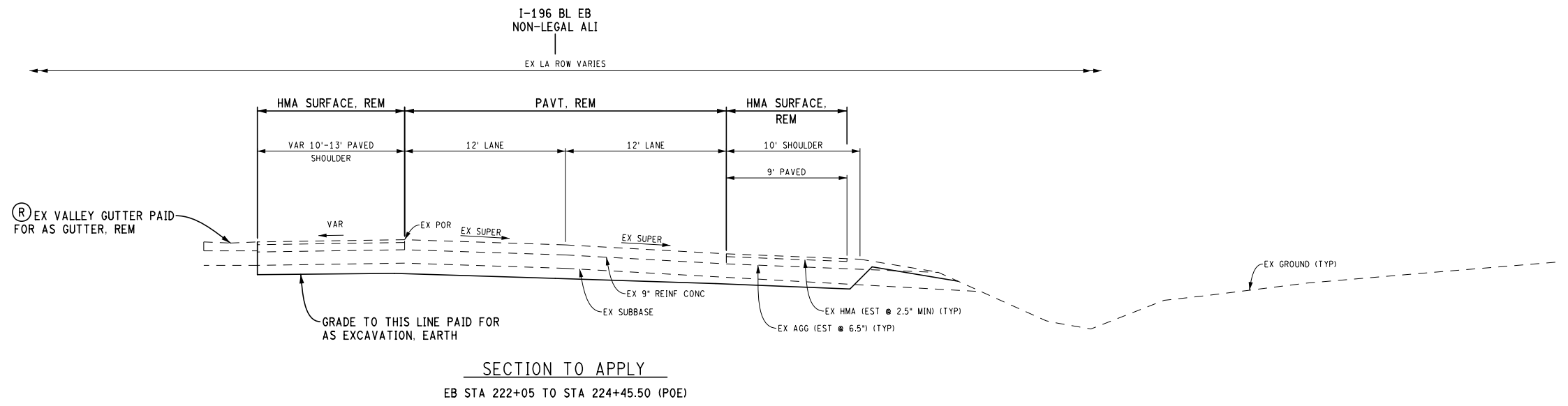
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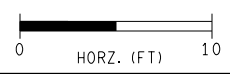
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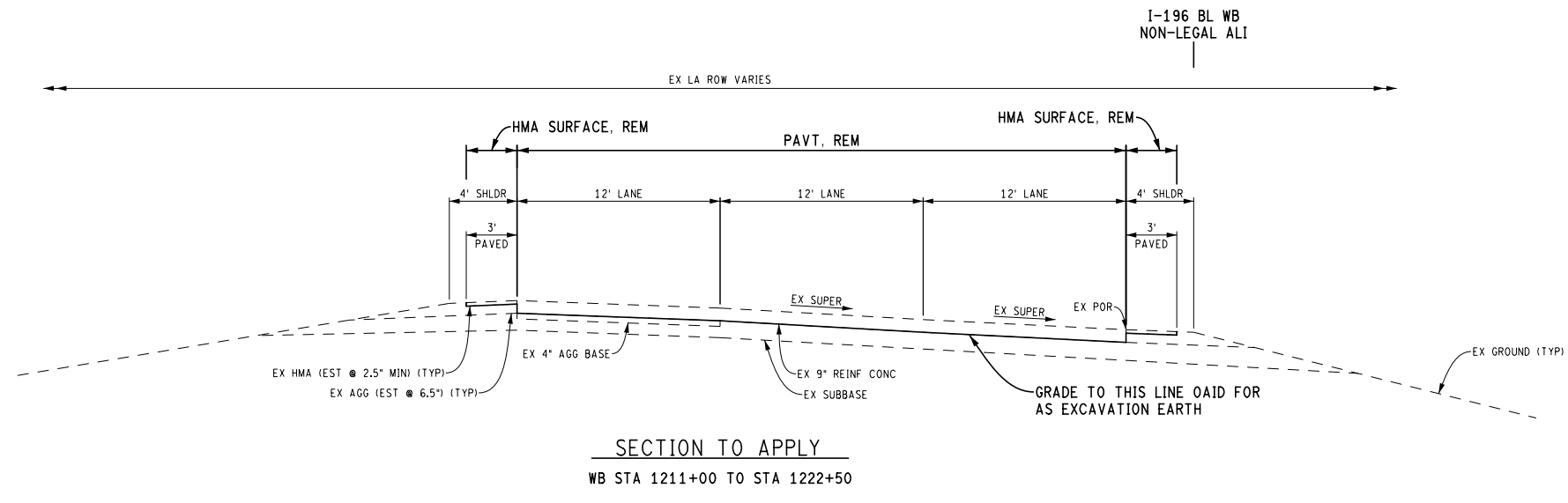
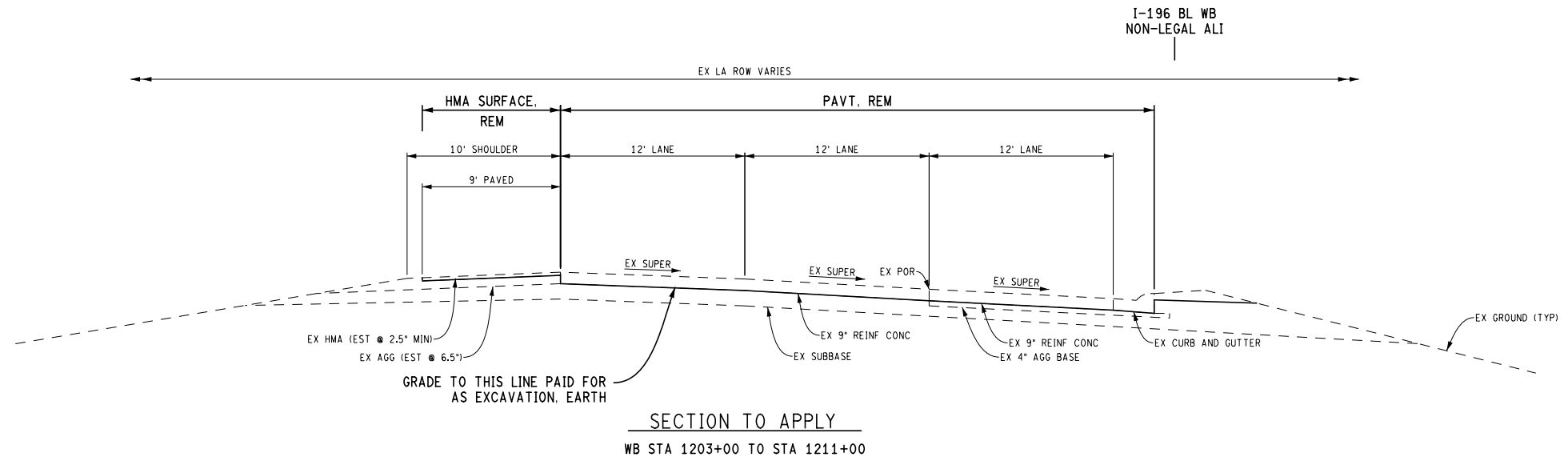
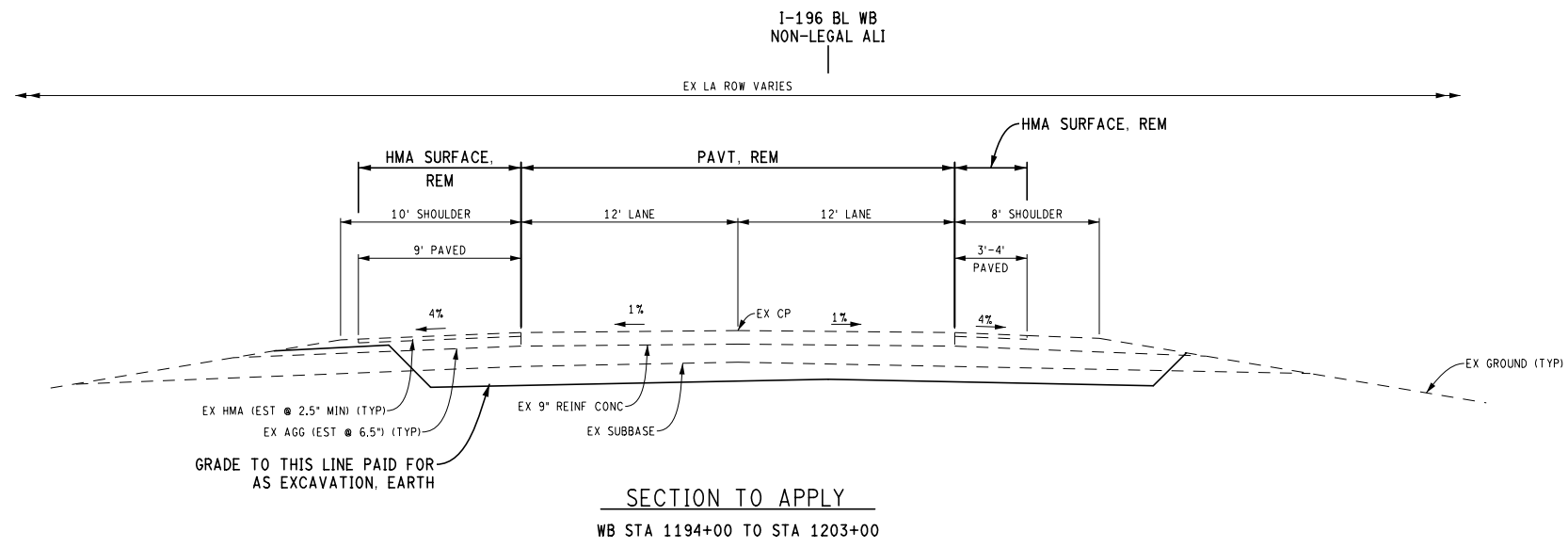
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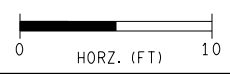
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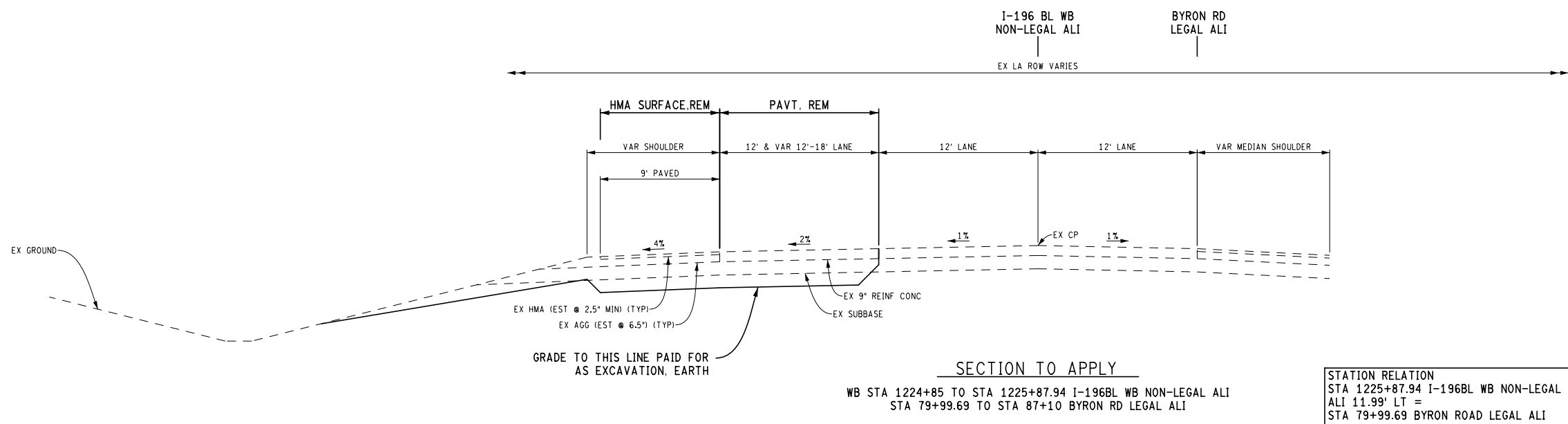
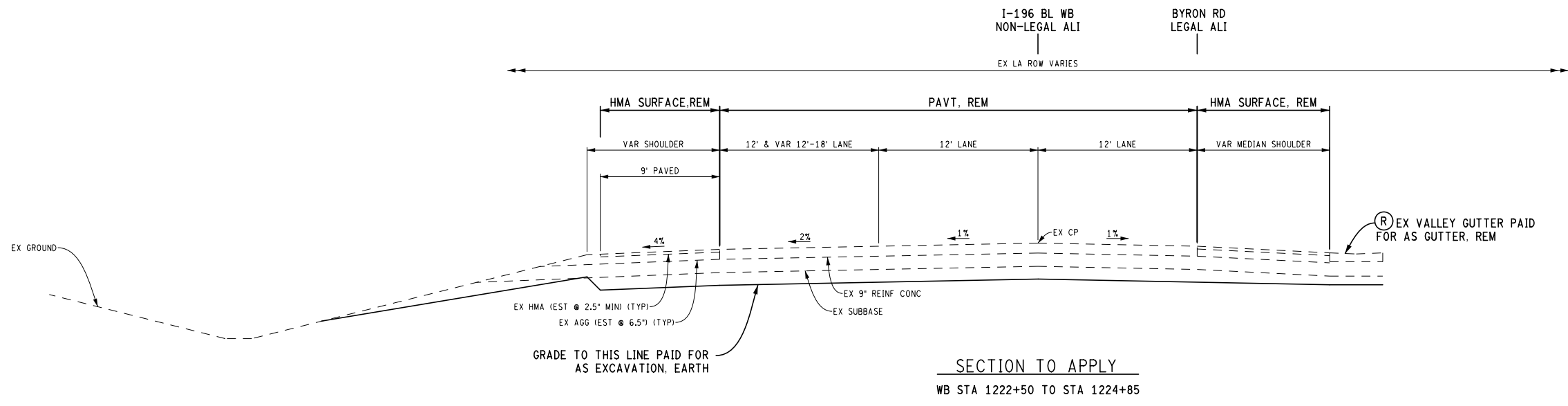
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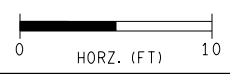
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STATION RELATION
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 STA 79+99.69 BYRON ROAD LEGAL ALI

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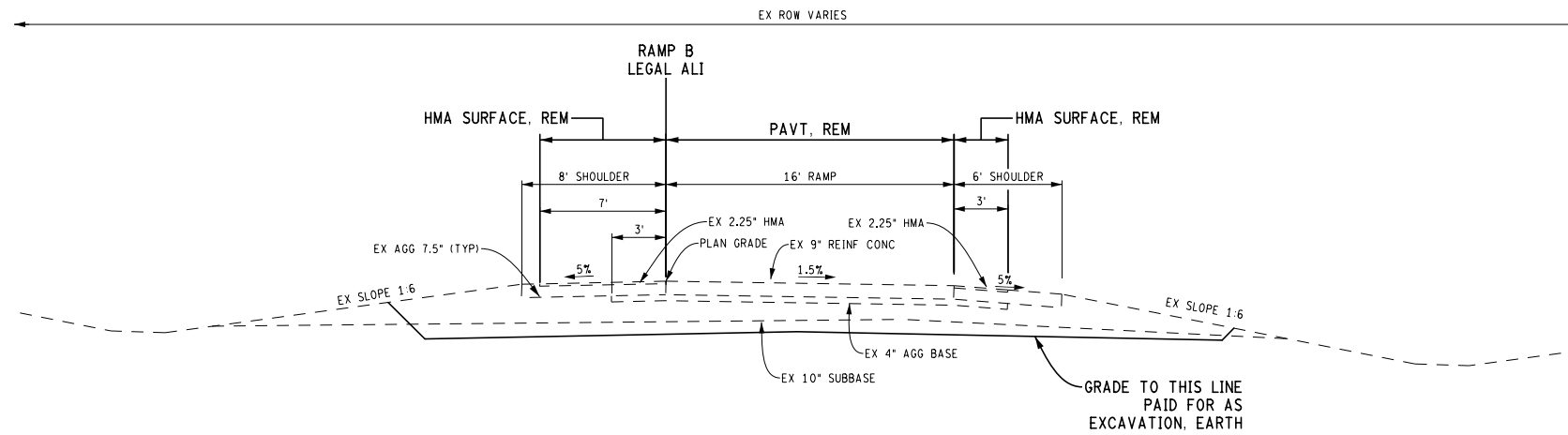
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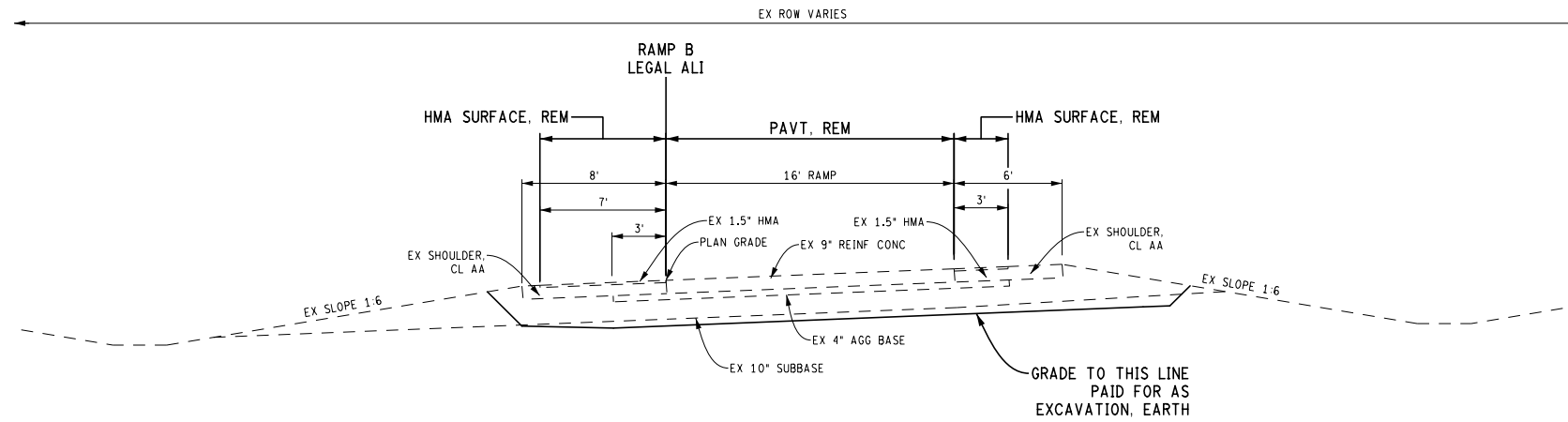
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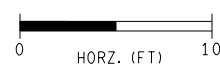


SECTION TO APPLY
RAMP B STA 20+48.26 TO STA 31+46.66



SECTION TO APPLY
RAMP B STA 31+46.66 TO STA 35+10

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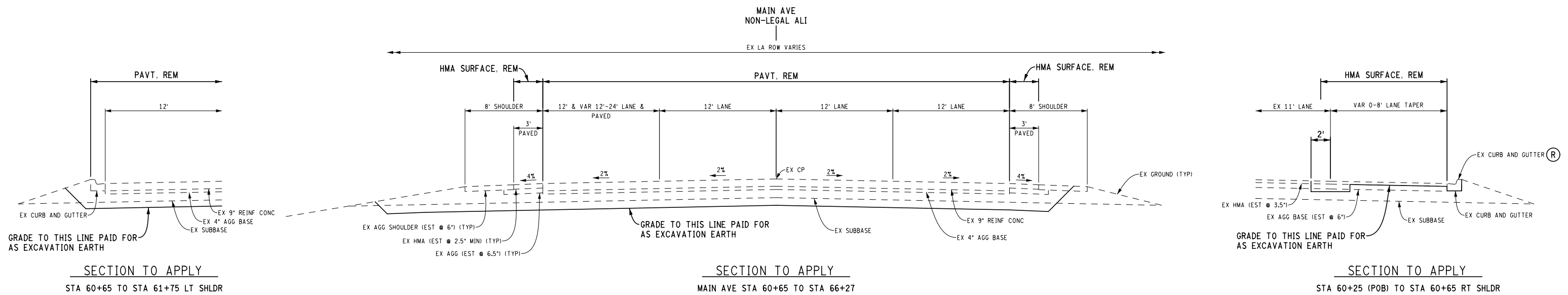
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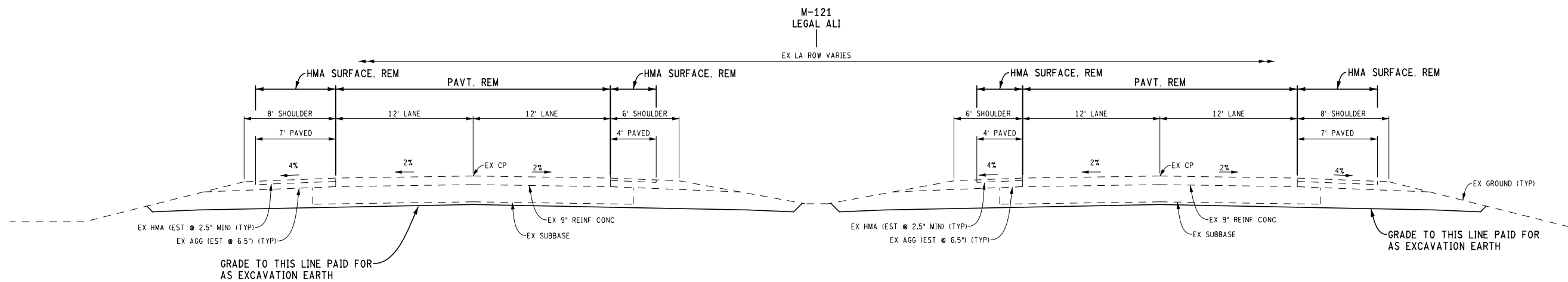
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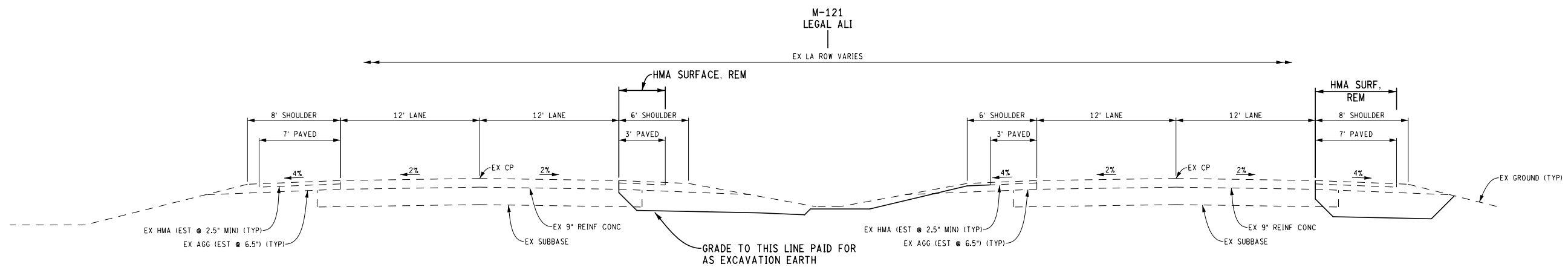
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STA 60+65 TO STA 61+75 LT SHLDR

SECTION TO APPLY
MAIN AVE STA 60+65 TO STA 66+27

SECTION TO APPLY
STA 60+25 (POB) TO STA 60+65 RT SHLDR



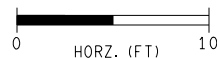
SECTION TO APPLY
M-121 STA 210+16 TO STA 211+30



SECTION TO APPLY
M-121 STA 211+30 TO STA 217+83

SECTION TO APPLY
M-121 STA 211+30 TO STA 212+28 EB RT SHLDR

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



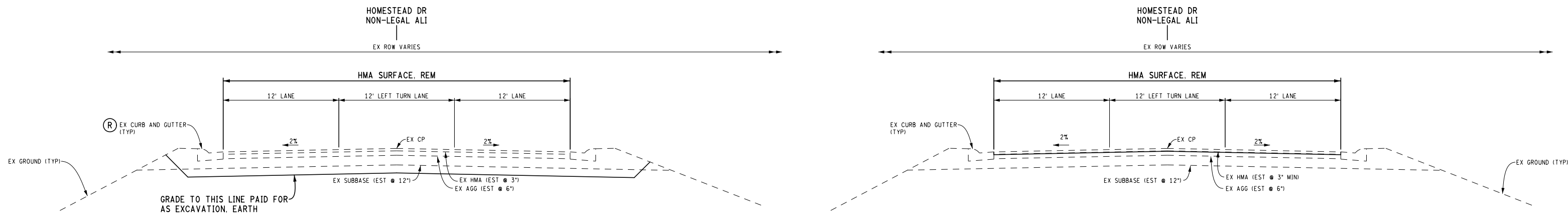
FILE: 201572_Typ.dgn

DATE: 04/10/18
DESIGN UNIT: JASINSKI
TSC: MUSKEGON

CS: 70823
JN: 201572A, 202084A

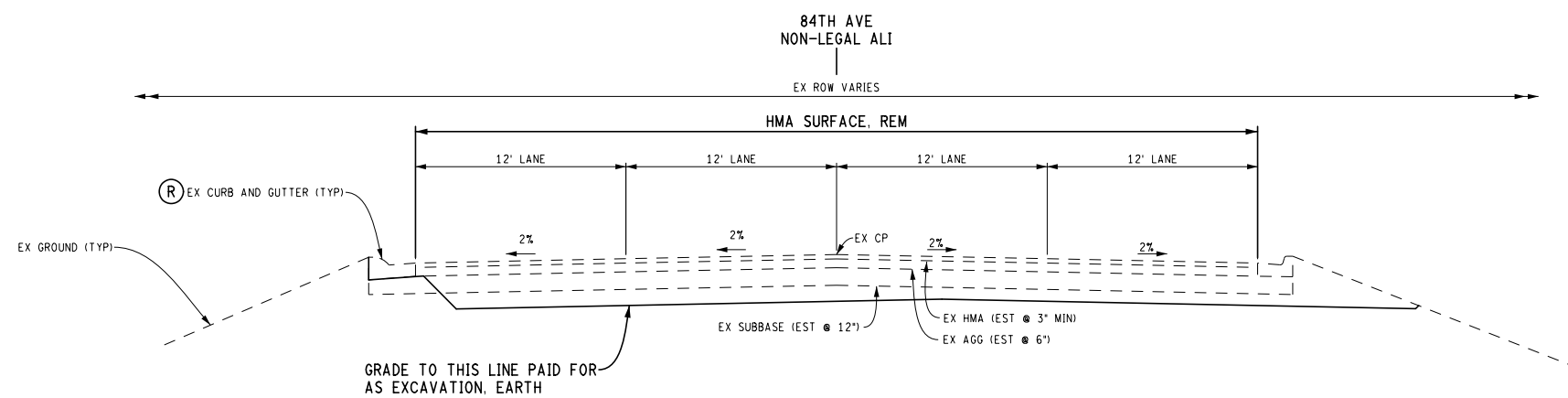
EXISTING TYPICAL CROSS SECTION
M-121

DRAWING SHEET
M-121 EX TYP 007
SECT 1
15

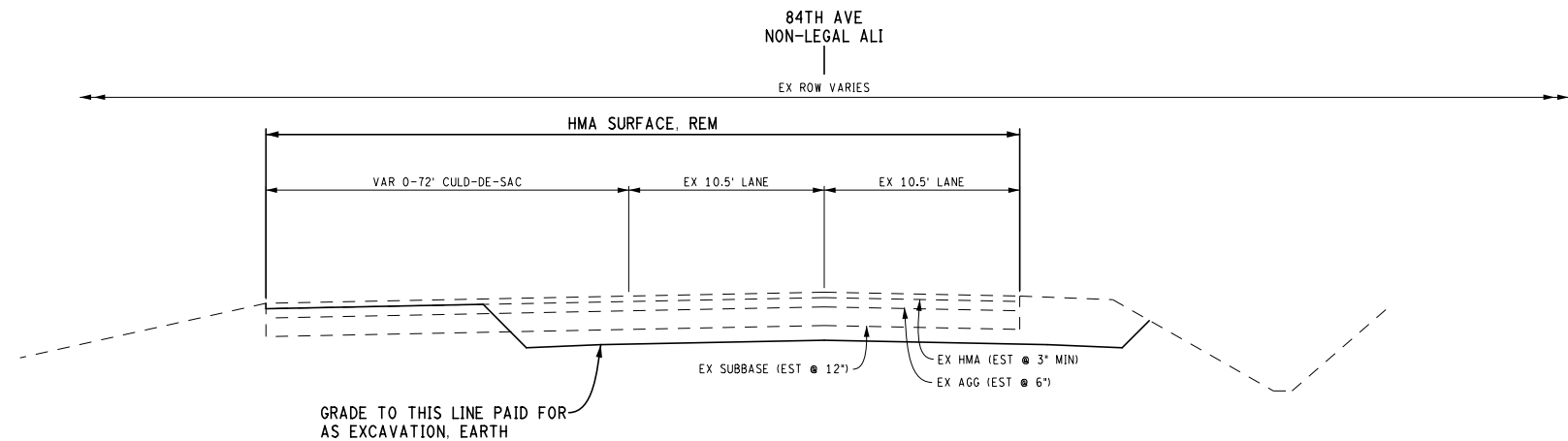


SECTION TO APPLY
HOMESTEAD DRIVE STA 100+24 TO STA 101+61

SECTION TO APPLY
HOMESTEAD DRIVE STA 101+61 TO STA 101+65

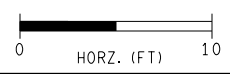


SECTION TO APPLY
84TH AVE STA 2+75 TO STA 4+74



SECTION TO APPLY
84TH AVE STA 6+90 TO STA 8+39

FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

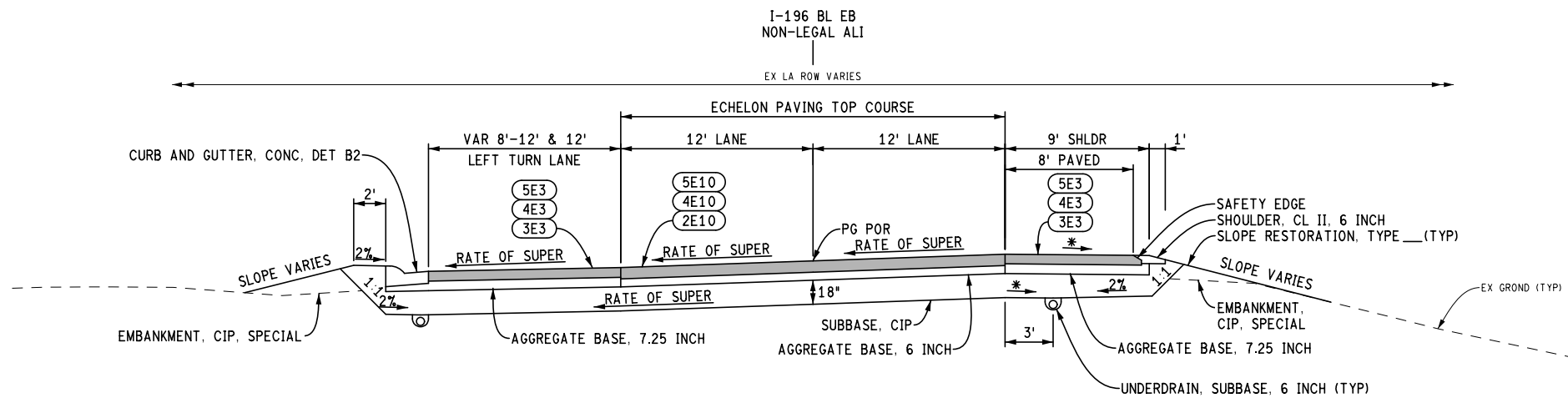


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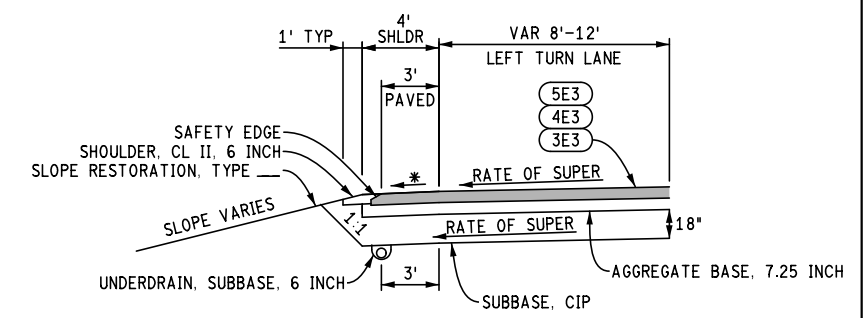
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TSC: MUSKEGON

CS: 70023
JN: 201572A, 202084A

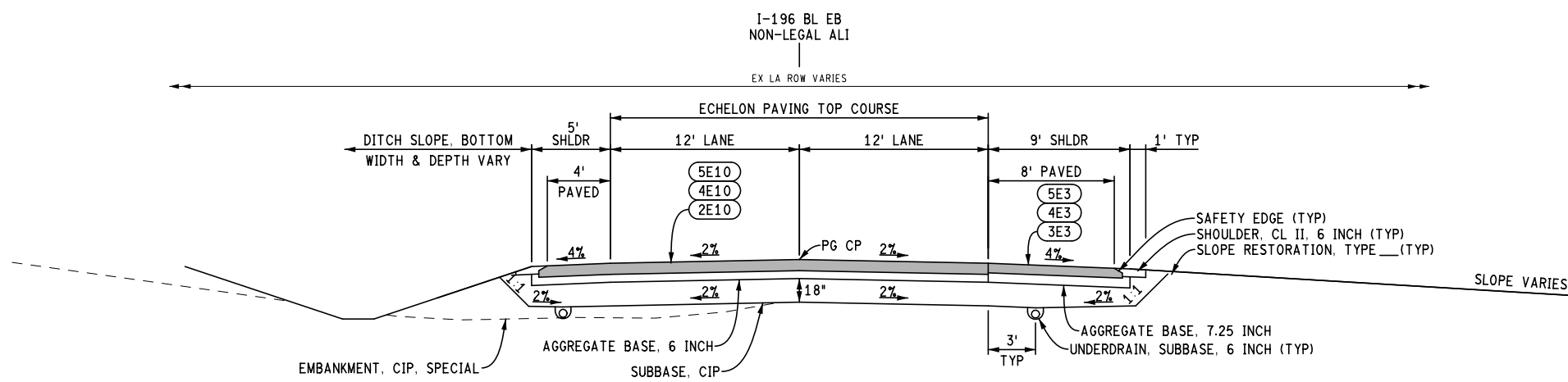
DRAWING	SHEET
EXISTING TYPICAL CROSS SECTION HOMESTEAD DR, 84TH AVE	SECT 1
I-196BL EXTYP 008	16



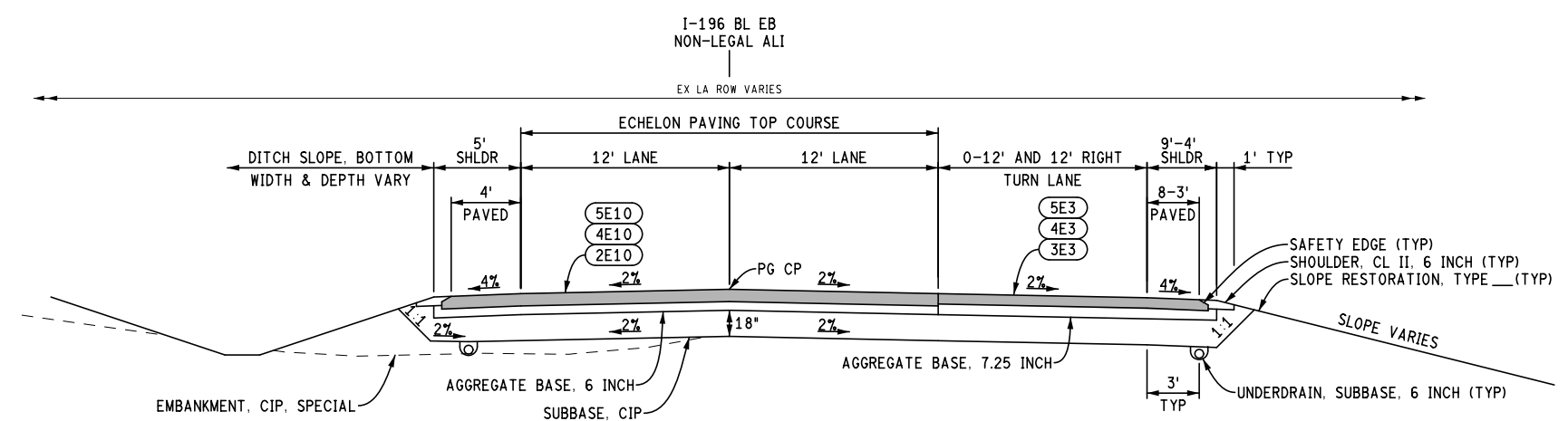
SECTION TO APPLY
EB STA 188+15 (POB) TO STA 192+30



SECTION TO APPLY
EB STA 188+15 (POB) TO STA 192+30



SECTION TO APPLY
EB STA 192+30 TO STA 197+56



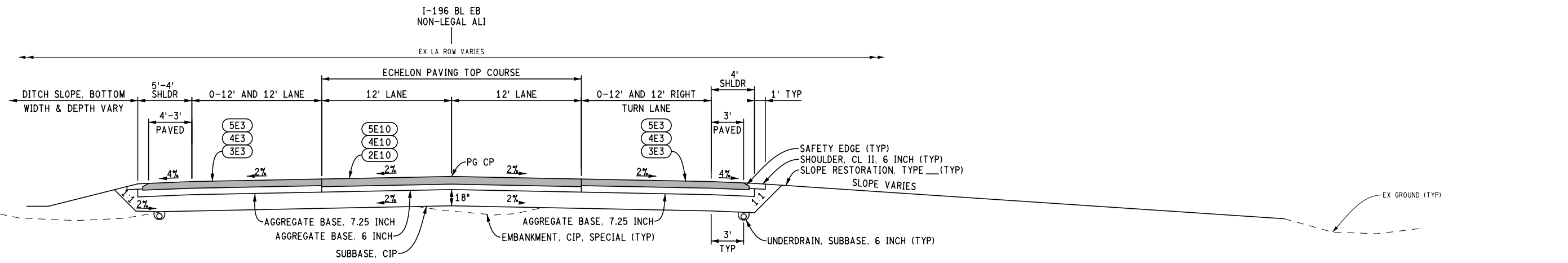
SECTION TO APPLY
EB STA 197+56 TO STA 199+55

* SLOPE PER R107 SERIES

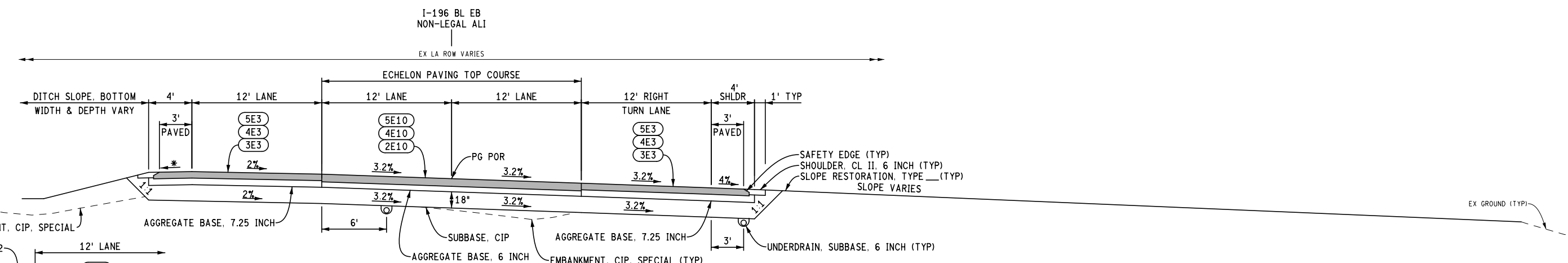
HMA APPLICATION ESTIMATE

IDENT NO.	ITEM	RATE LBS PER SYD	PERFORMANCE GRADE	REMARKS
5E10	HMA, 5E10, HIGH STRESS	170	70-28P	TOP COURSE - I-196BL AWI=260
5E3	HMA, 5E3, HIGH STRESS	170	70-28P	TOP COURSE - ALL OTHER AWI=260
5-T	HMA, TEMP PAVT (5E3)	170	64-22	TOP COURSE - TEMPORARY PAVING
4E10	HMA, 4E10, HIGH STRESS	250	70-28P	LEVELING COURSE - I-196BL
4E3	HMA, 4E3, HIGH STRESS	250	70-28P	LEVELING COURSE - ALL OTHER
4-T	HMA, TEMP PAVT (4E3)	220	64-22	LEVELING COURSE - TEMPORARY PAVING
2E10	HMA, 2E10	495	58-22	BASE COURSE - I-196BL
3E3	HMA, 3E3	360	58-22	BASE COURSE - ALL OTHER
HS-1	HMA APPROACH, HIGH STRESS	170	70-28P	IDENT: 5E3 - WB TRUCK LOON
HS-2	HMA APPROACH, HIGH STRESS	420	70-28P	IDENT: 5E3, 4E3 - APPROACHES
HA-1	HMA APPROACH	360	58-22	IDENT: 3E3 - APPROACHES
HP	HAND PATCHING	VARIES	70-28P	HMA 5E3, HIGH STRESS
	* BOND COAT	0.05-0.15 GAL		

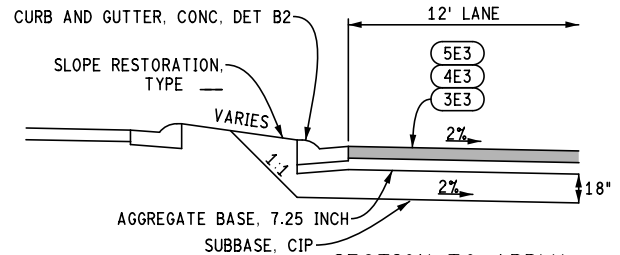
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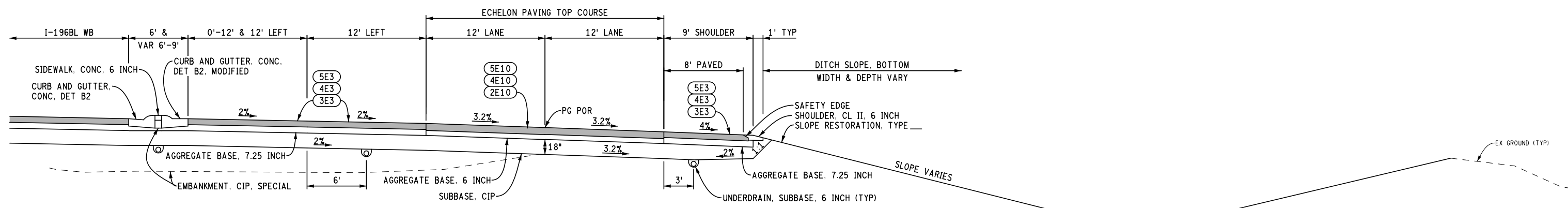
SECTION TO APPLY
EB STA 199+55 TO STA 201+90



SECTION TO APPLY
EB STA 201+90 TO STA 203+30



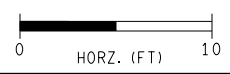
SECTION TO APPLY
EB STA 202+09 TO STA 202+80 LT



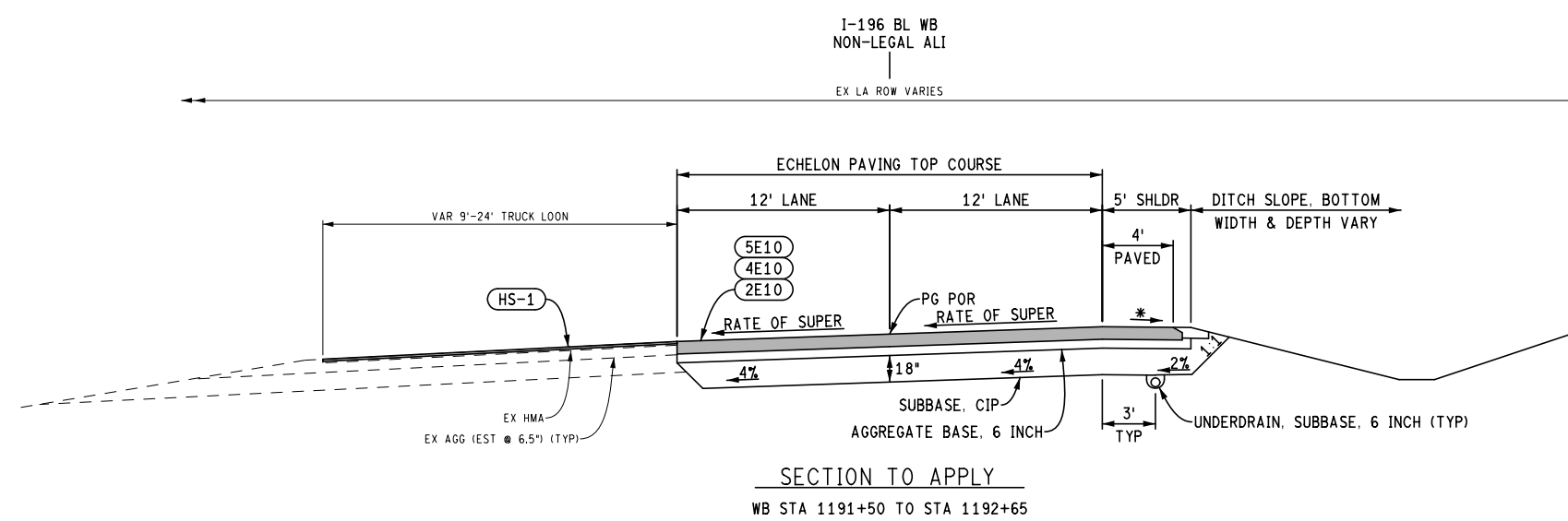
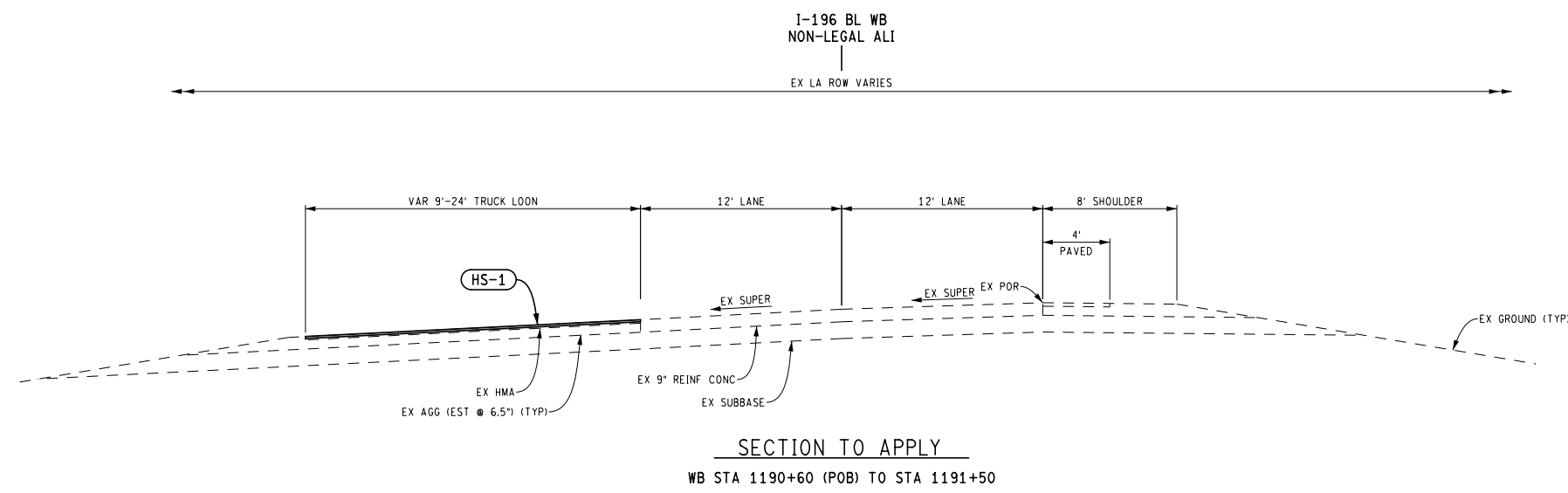
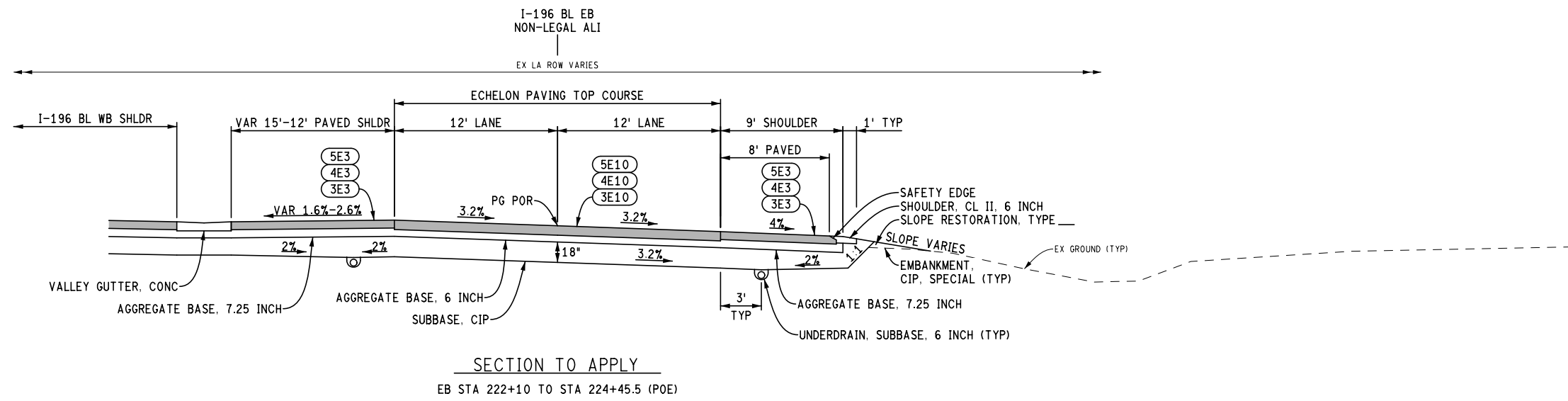
SECTION TO APPLY
EB STA 203+30 TO STA 210+47

* SLOPE PER R107 SERIES

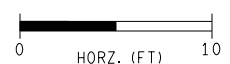
FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



DATE: 04/10/18	CS: 70023	DRAWING SHEET
DESIGN UNIT: JASINSKI	JN: 201572A, 202084A	
TSC: MUSKEGON	FILE: 201572_Typ.dgn	PROPOSED TYPICAL CROSS SECTION
		I-196BL EB
		I-196BL PRTYP 002
		SECT 1
		18



FINAL ROW PLAN REVISIONS		(SUBMITTAL DATE:)	
NO.	DATE	AUTH	DESCRIPTION

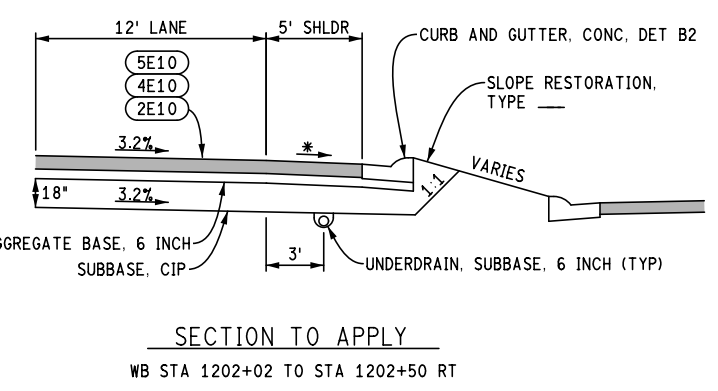
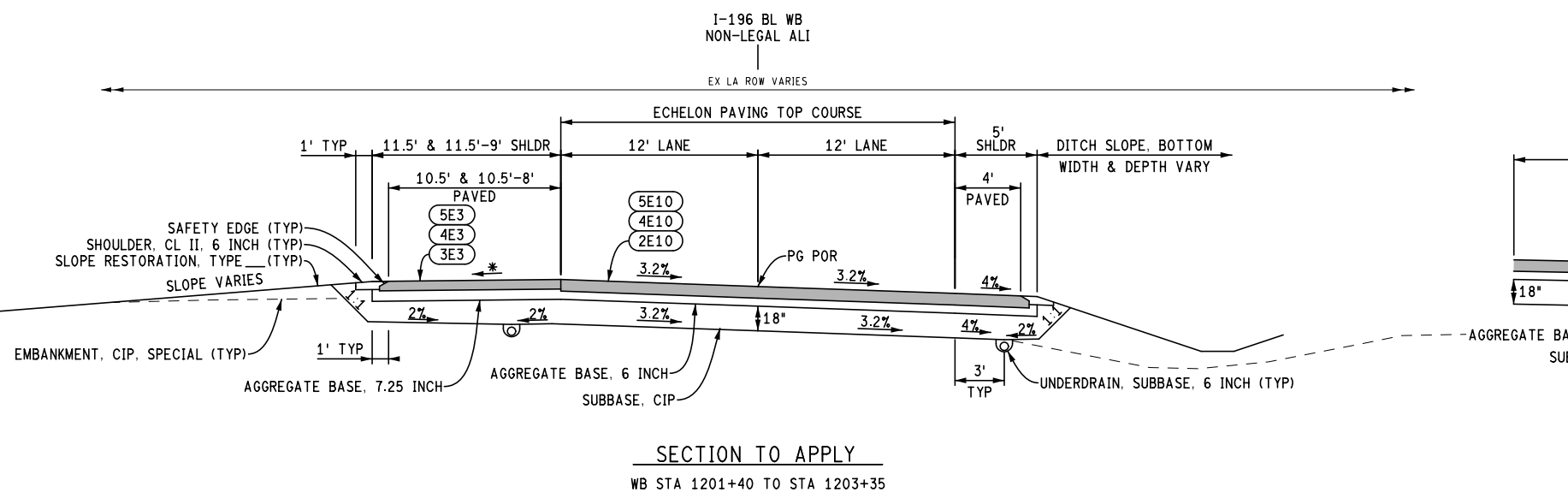
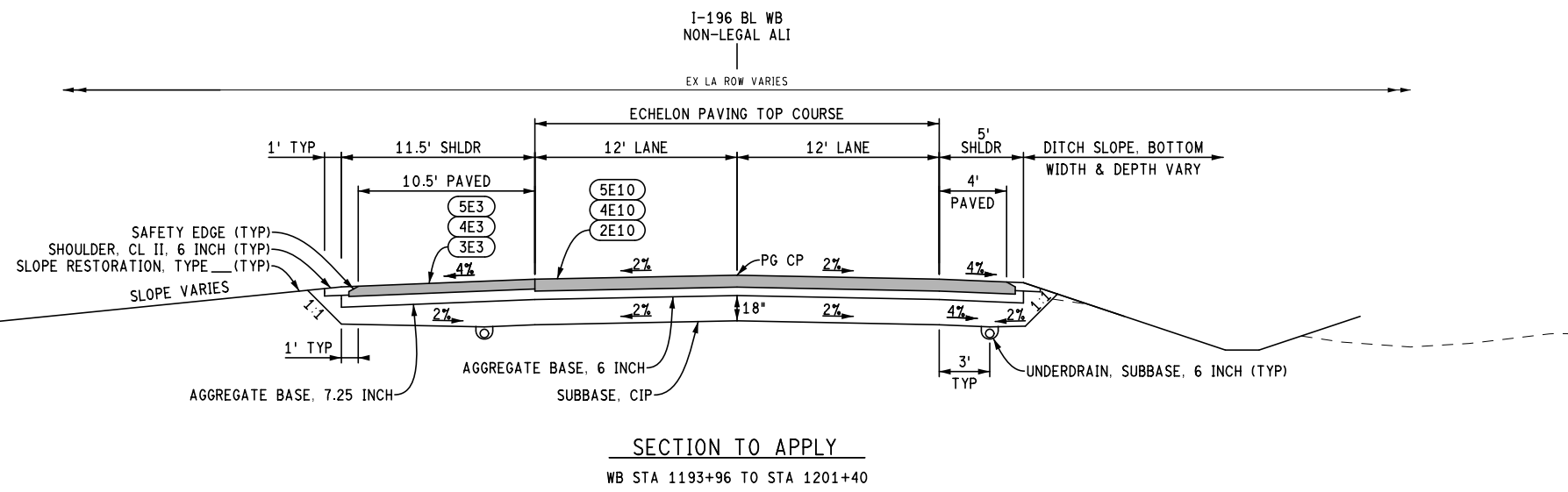
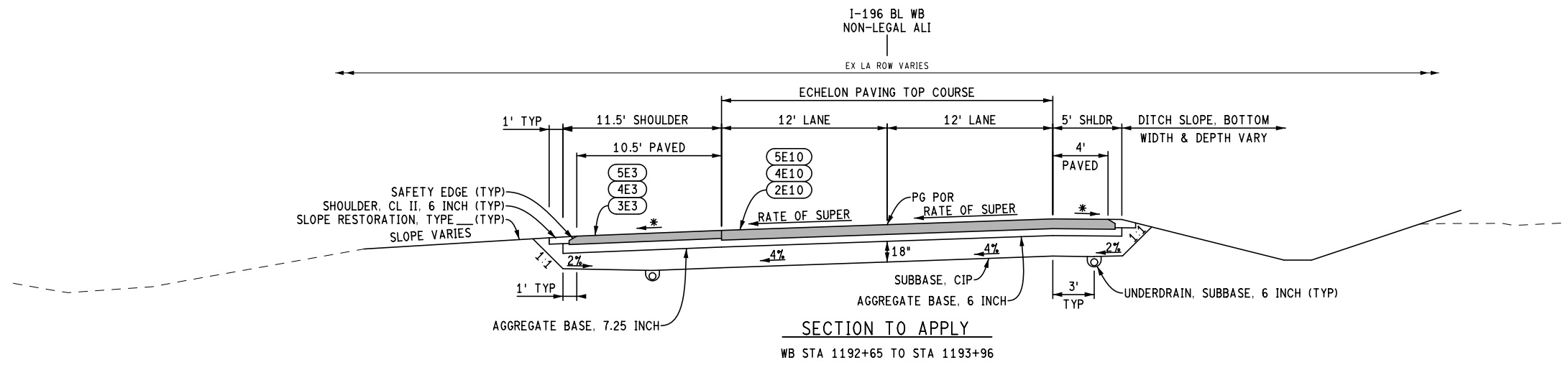


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DATE: 04/10/18
DESIGN UNIT: JASINSKI
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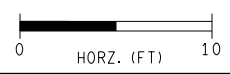
CS: 70023
JN: 201572A, 202084A

DRAWING	SHEET
PROPOSED TYPICAL CROSS SECTION I-196BL EB & WB	SECT 1 20



* SLOPE PER R107 SERIES

FINAL ROW PLAN REVISIONS		(SUBMITTAL DATE:)	
NO.	DATE	AUTH	DESCRIPTION

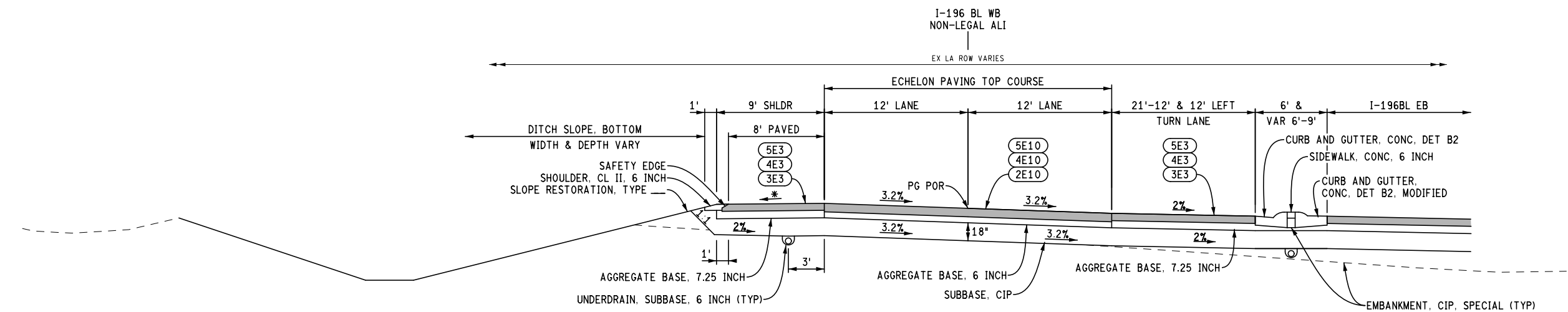


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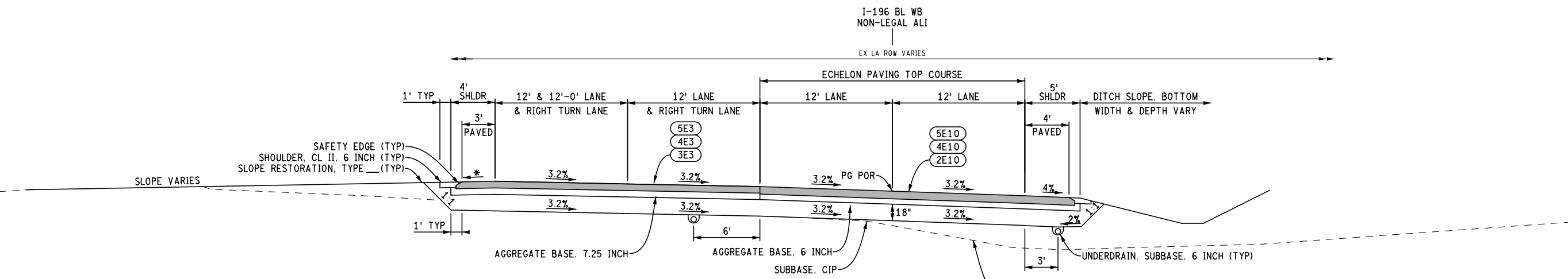
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DESIGN UNIT: JASINSKI
TSC: MUSKEGON

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JN: 201572A, 202084A

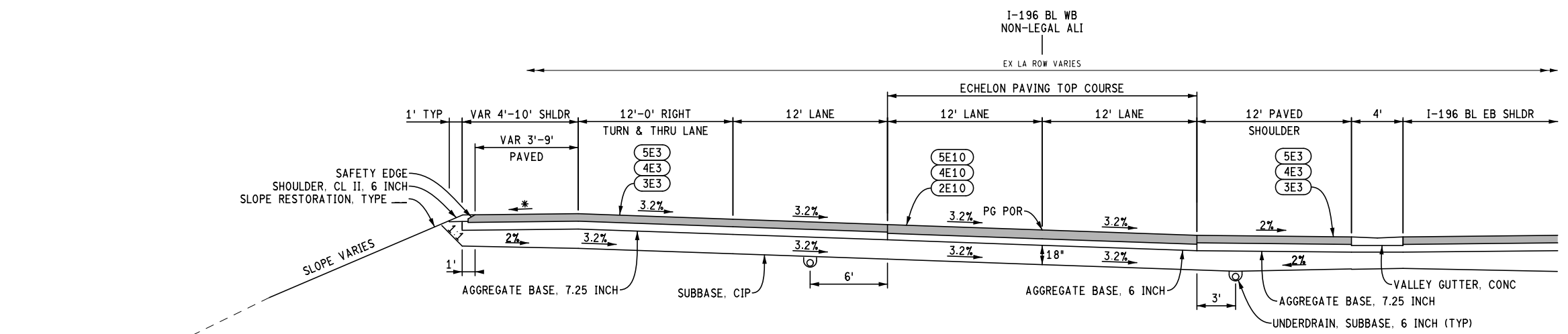
DRAWING		SHEET	
PROPOSED TYPICAL CROSS SECTION		I-196BL WB	
I-196BL	PRTYP	005	21



SECTION TO APPLY
WB STA 1203+35 TO STA 1210+56



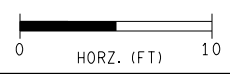
SECTION TO APPLY
WB STA 1210+56 TO STA 1222+50



SECTION TO APPLY
WB STA 1222+50 TO STA 1224+82

* SLOPE PER R107 SERIES

FINAL ROW PLAN REVISIONS		(SUBMITTAL DATE:)	
NO.	DATE	AUTH	DESCRIPTION



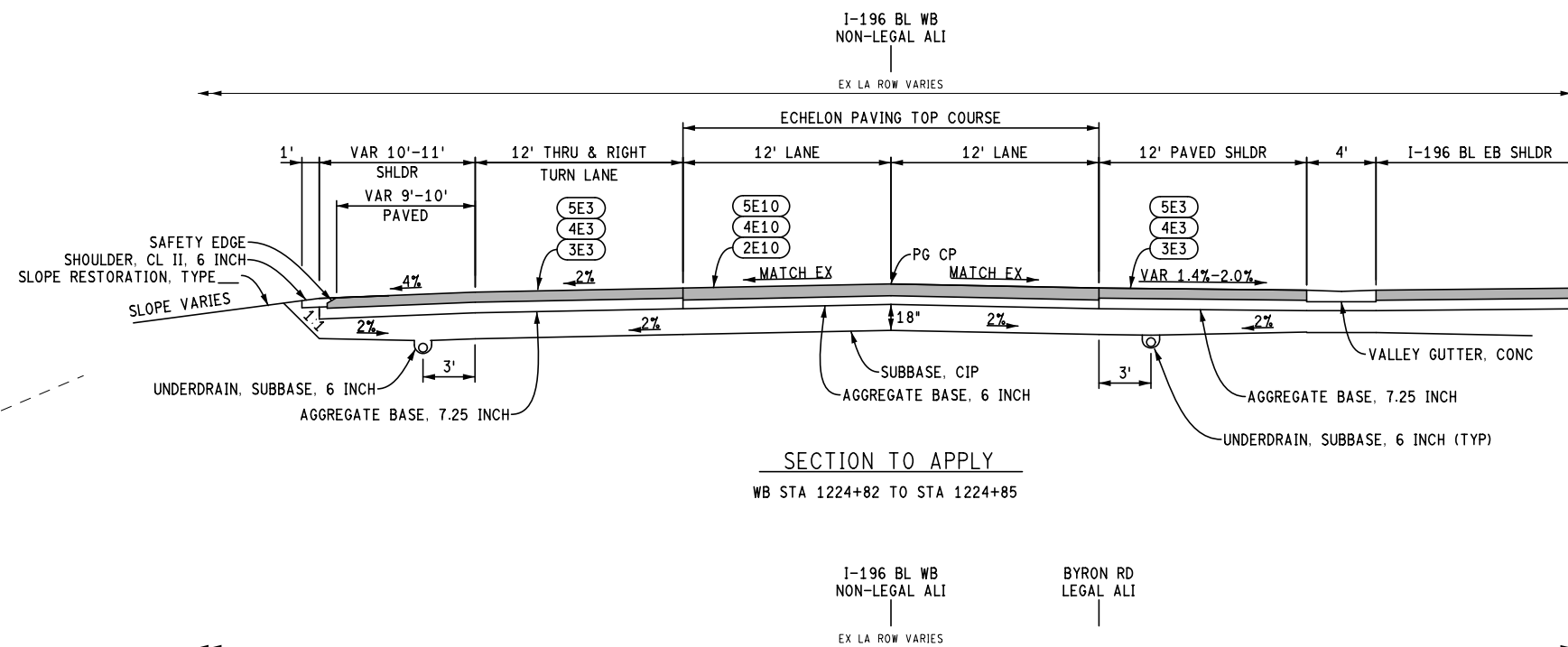
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DATE: 04/10/18
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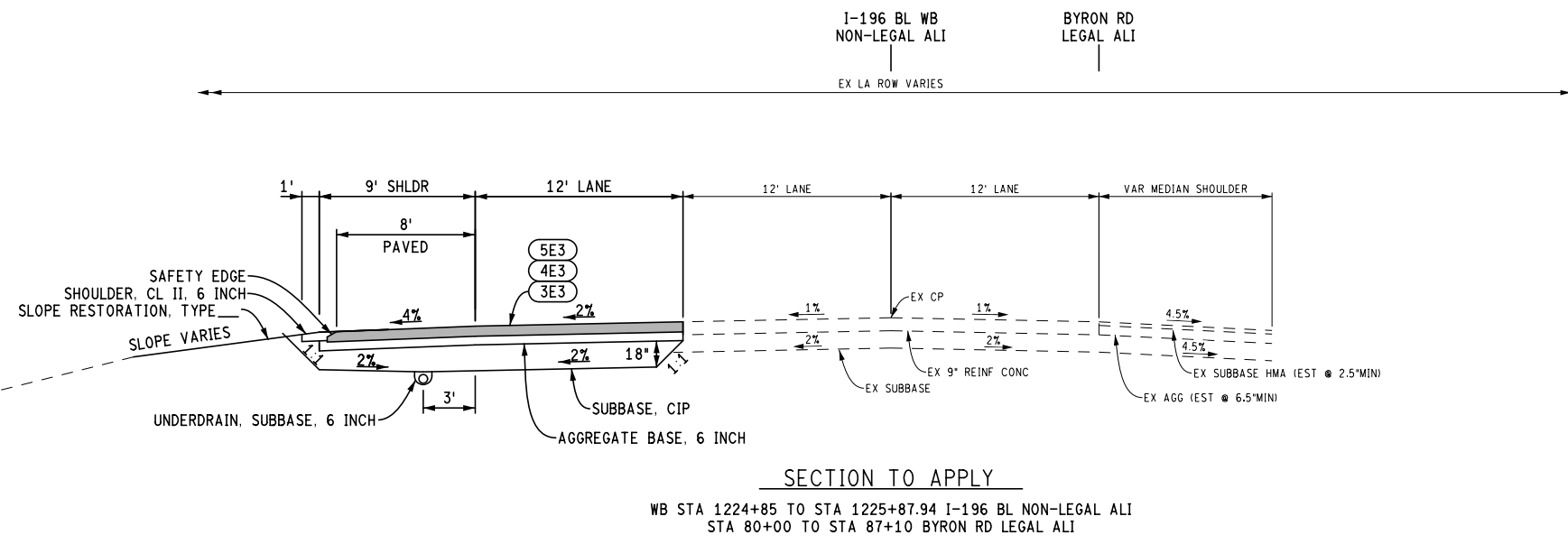
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PROPOSED TYPICAL CROSS SECTION
I-196BL WB

DRAWING SHEET
I-196BL PRTYP 006
SECT 1
22

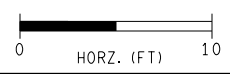


SECTION TO APPLY
WB STA 1224+82 TO STA 1224+85



SECTION TO APPLY
WB STA 1224+85 TO STA 1225+87.94 I-196 BL NON-LEGAL ALI
STA 80+00 TO STA 87+10 BYRON RD LEGAL ALI

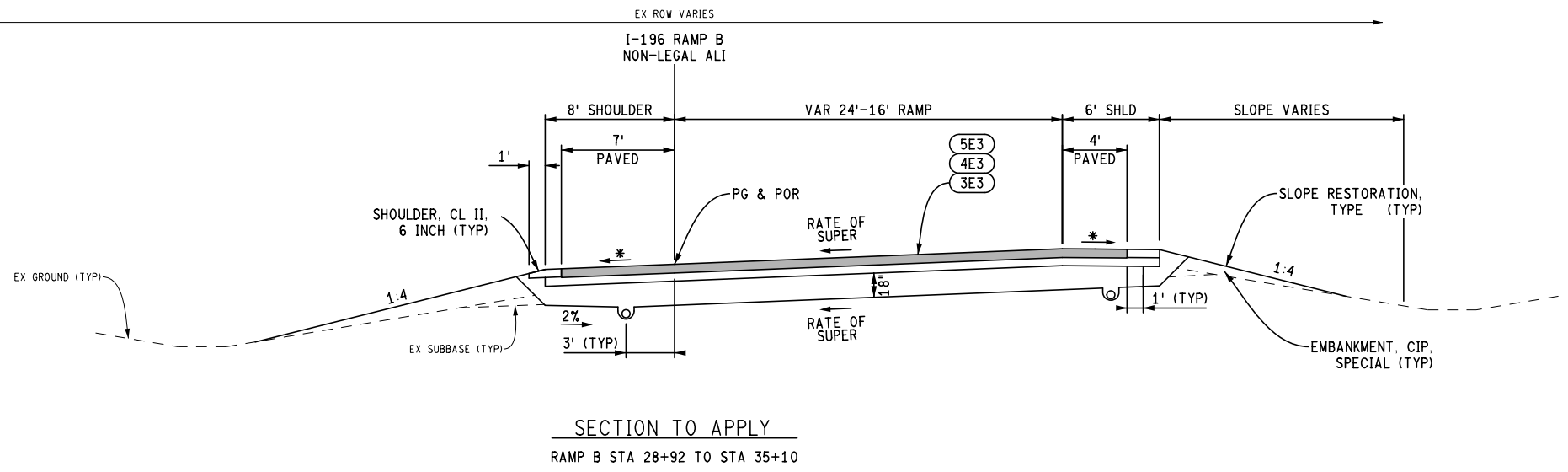
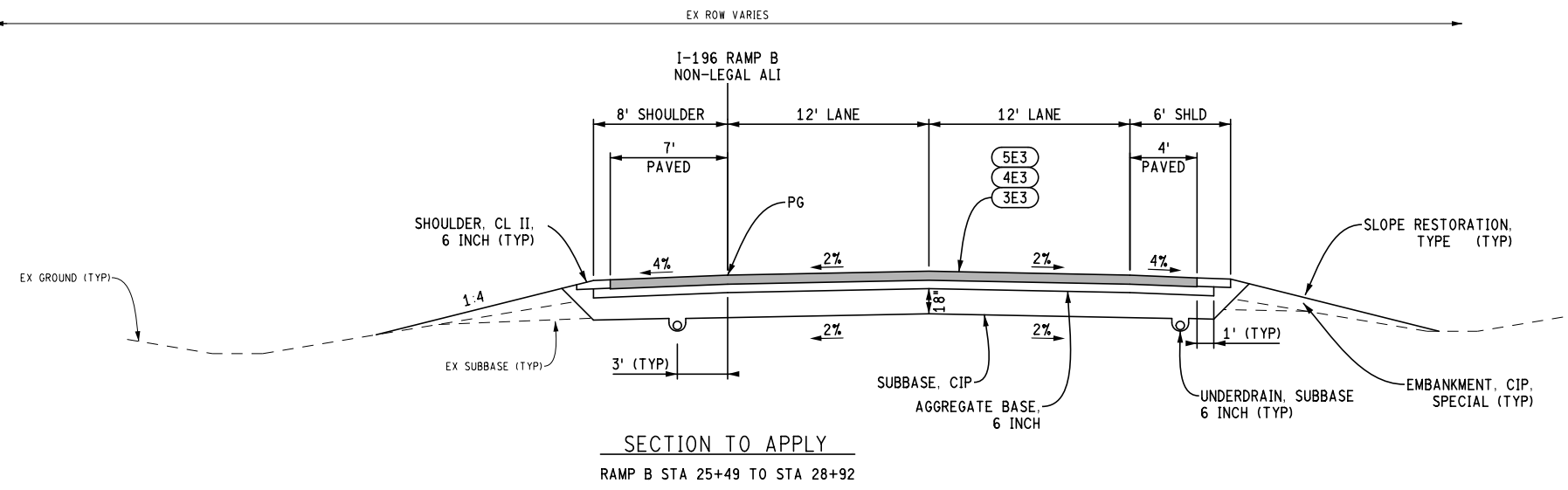
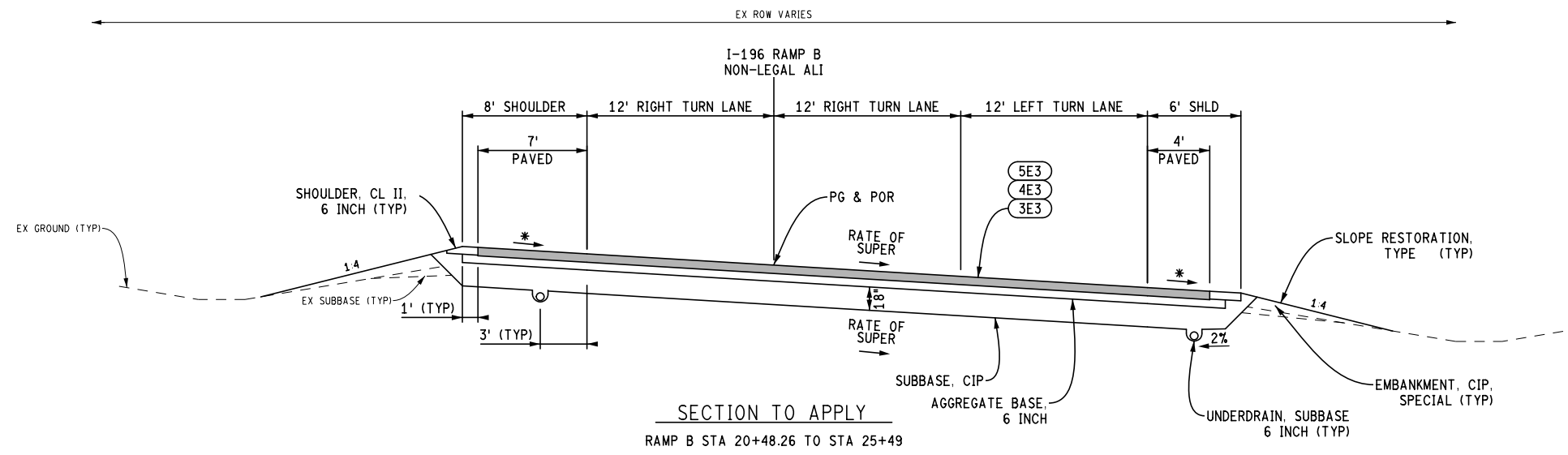
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NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



DATE: 04/10/18
 DESIGN UNIT: JASINSKI
 TSC: MUSKEGON
 FILE: 201572_Typ.dgn

CS: 70023
 JN: 201572A, 202084A

DRAWING	SHEET
PROPOSED TYPICAL CROSS SECTION I-196BL WB	SECT 1 23



* FOR SHOULDER SLOPES IN SUPER TRANSITION AND FULL SUPER SEE STANDARD PLAN R-107 SERIES

FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

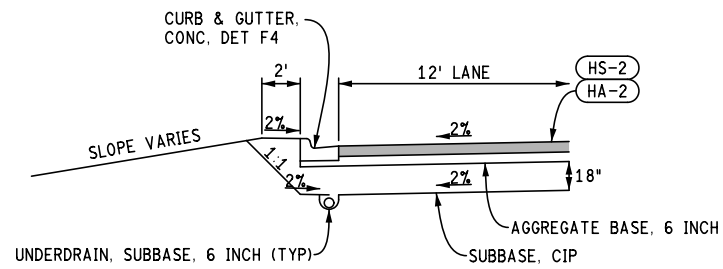
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JN: 202084A

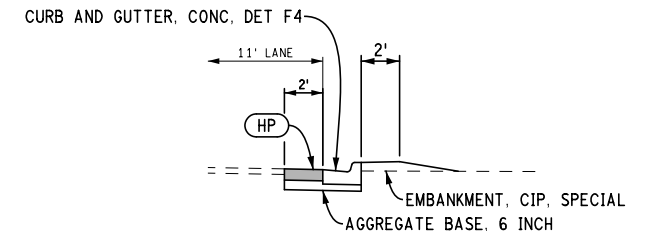
PROPOSED TYPICAL CROSS SECTION
RAMP B

DRAWING SHEET
RAMPB PRTYP 008 24

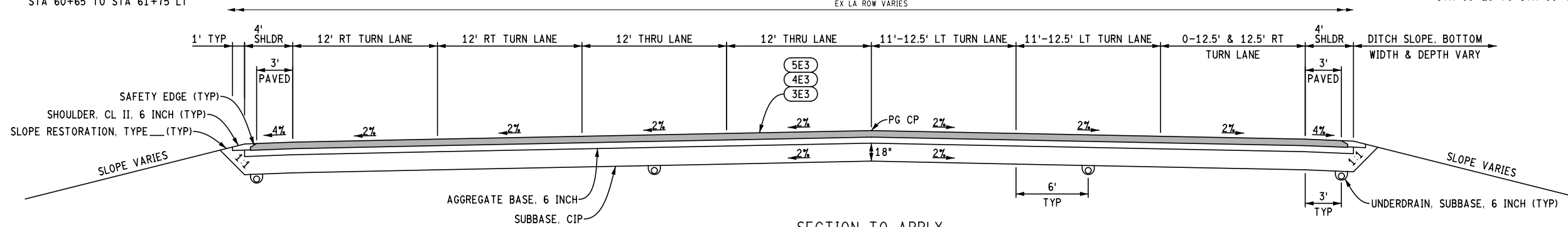
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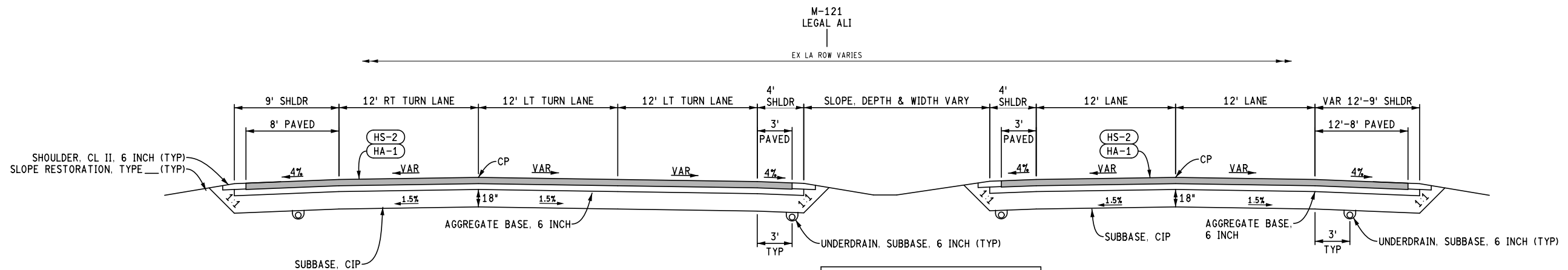
SECTION TO APPLY
STA 60+65 TO STA 61+75 LT



SECTION TO APPLY
STA 60+25 TO STA 60+65 RT



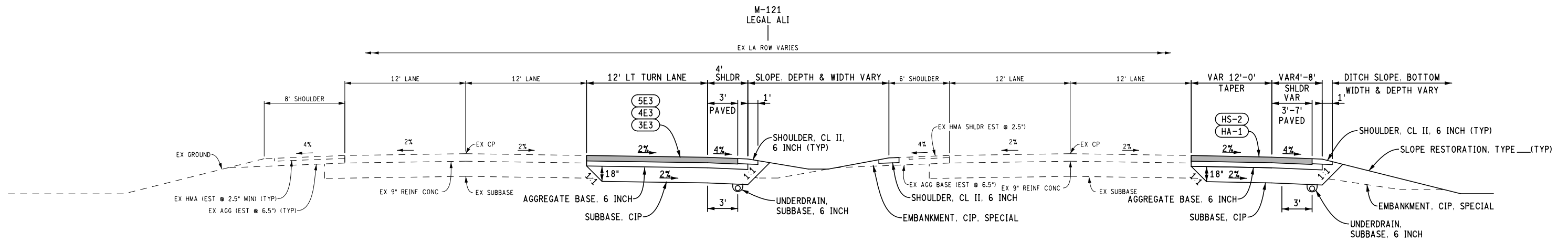
SECTION TO APPLY
MAIN AVE STA 60+65 TO STA 65+18



SECTION TO APPLY
WB STA 210+16 TO STA 211+30

SECTION TO APPLY
EB STA 210+41 TO STA 211+30

NOTE: MEDIAN HAS CURB & GUTTER FROM
STA 210+85 TO STA 211+12
NO MEDIAN TO STA 210+85

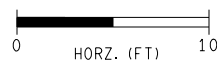


SECTION TO APPLY
WB STA 211+30 TO STA 217+83

SECTION TO APPLY
EB STA 211+30 TO STA 217+83 LT

SECTION TO APPLY
EB STA 211+30 TO STA 212+08 RT

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



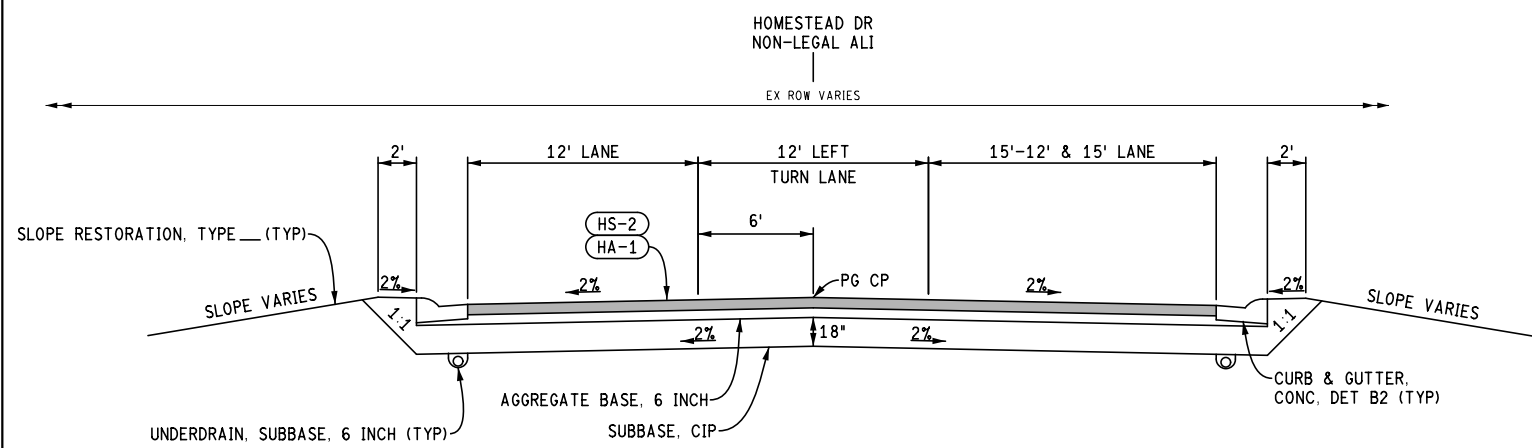
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TSC: MUSKEGON

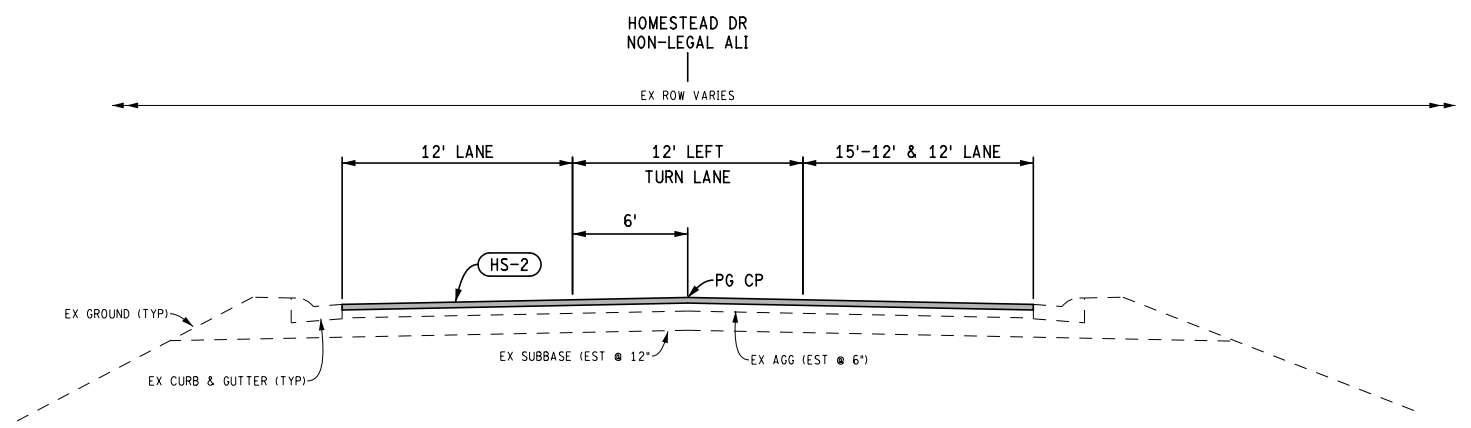
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PROPOSED TYPICAL CROSS SECTION
M-121

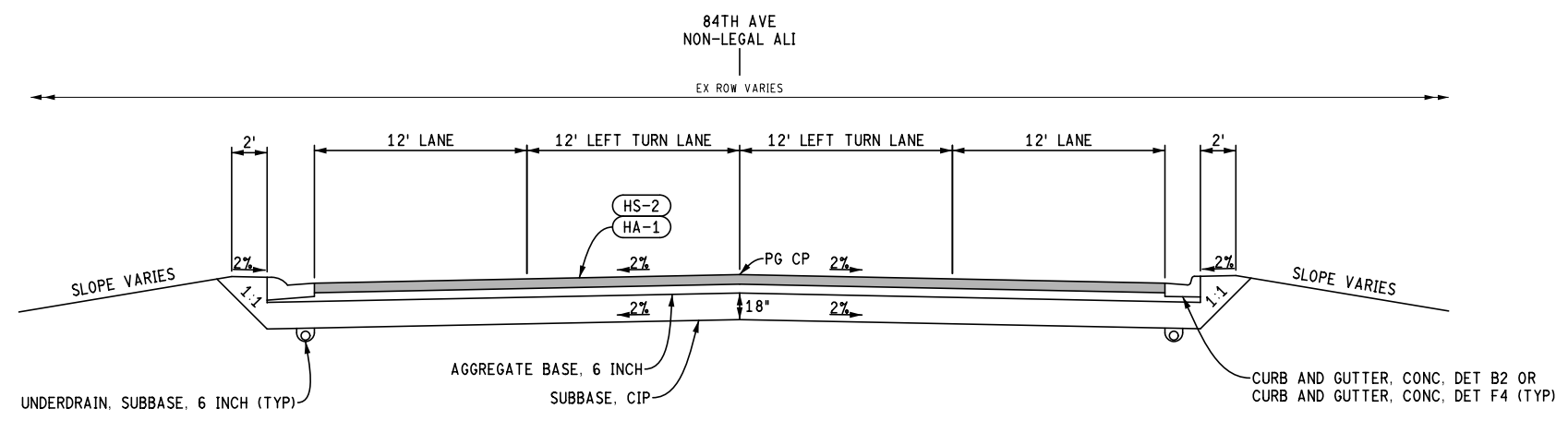
DRAWING SHEET
M-121 PRTYP 009
SECT 1
25



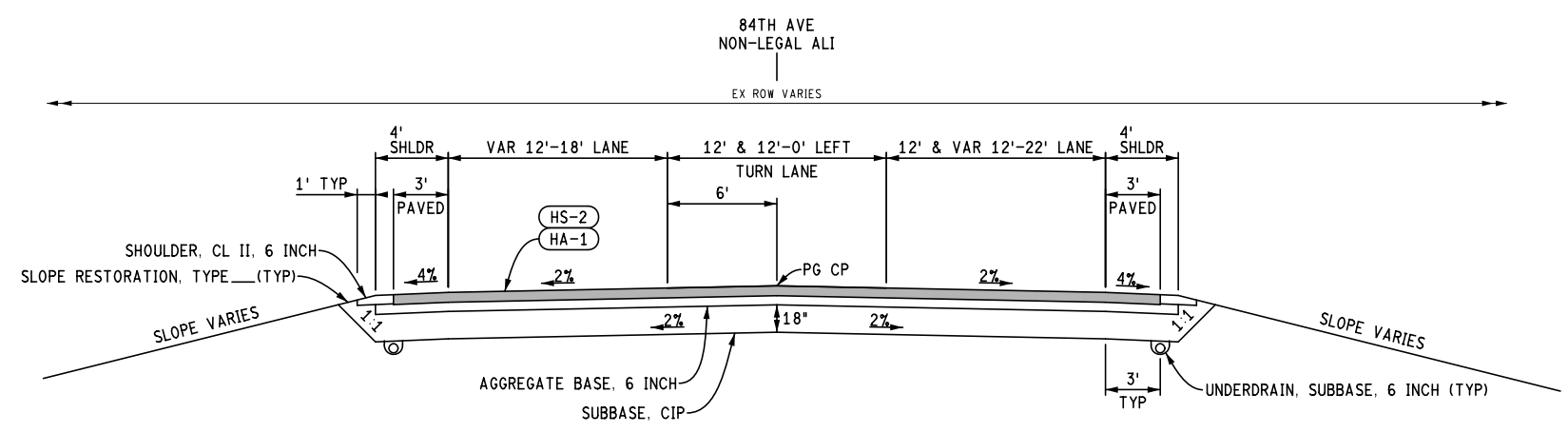
SECTION TO APPLY
HOMESTEAD DRIVE STA 100+24 TO STA 101+61



SECTION TO APPLY
HOMESTEAD DRIVE STA 101+61 TO STA 101+65

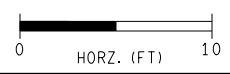


SECTION TO APPLY
84TH AVE STA 2+75 TO STA 4+74



SECTION TO APPLY
84TH STA 5+98 TO STA 8+39

FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



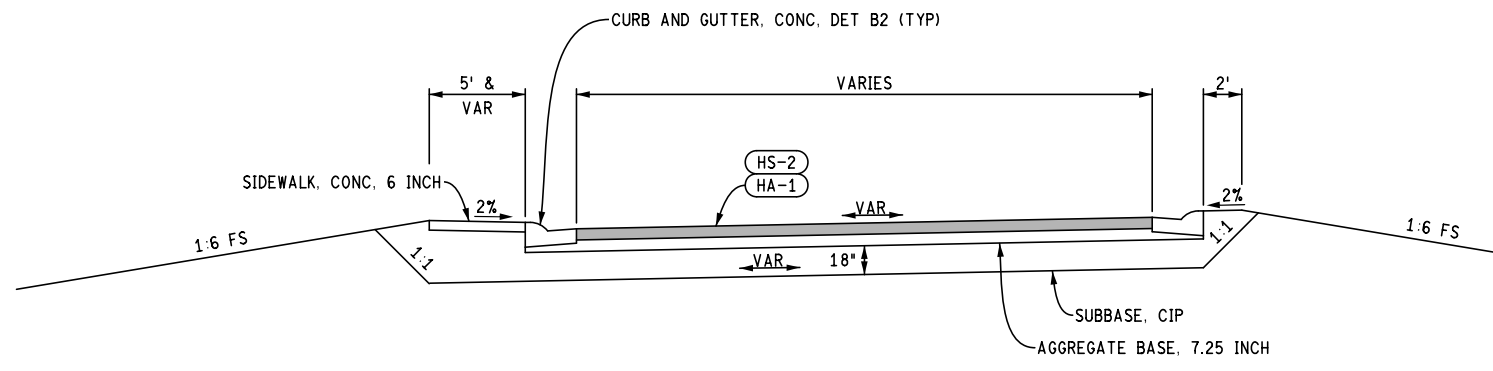
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TSC: MUSKEGON

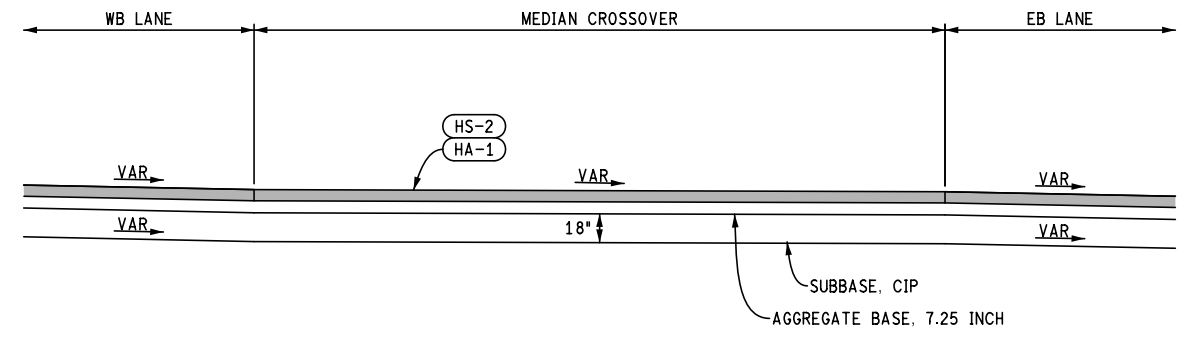
CS: 70023
JN: 201572A, 202084A

PROPOSED TYPICAL CROSS SECTION
HOMESTEAD DR, 84TH AVE

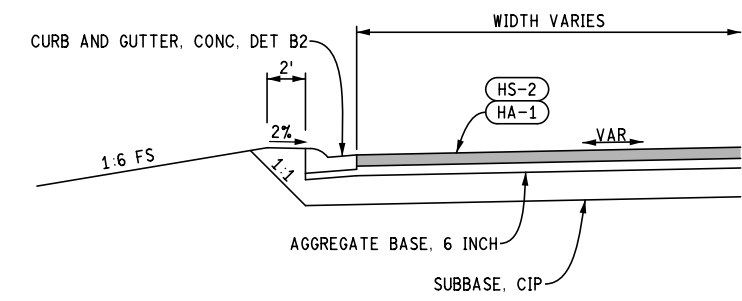
DRAWING SHEET
M-121 PRTYP 010
SECT 1
26



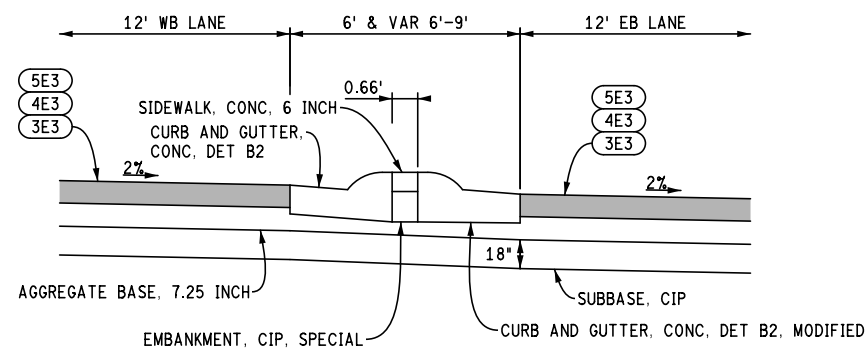
SECTION TO APPLY
INDIRECT LEFT AND MEDIAN CROSSEVERS



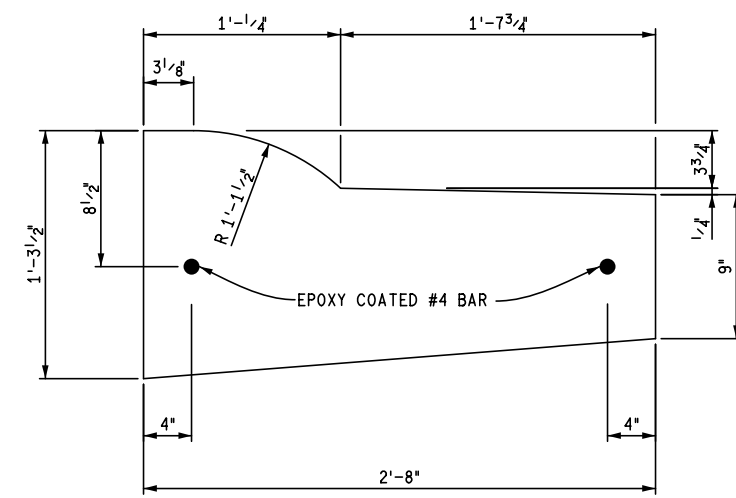
SECTION TO APPLY
INDIRECT LEFT AND MEDIAN CROSSEVERS



SECTION TO APPLY
HOMESTEAD DR, MAIN AVE, 84TH AVE APPROACHES

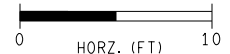


SECTION TO APPLY
MEDIAN CURB AND GUTTER (NOT TO SCALE)



SECTION TO APPLY
CURB AND GUTTER, CONC, DET B2, MODIFIED
(NOT TO SCALE)

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



FILE: 201572...Typ.dgn

DATE: 04/10/18
DESIGN UNIT: JASINSKI
TSC: MUSKEGON

CS: 70023, (70823)
JN: 201572A, 202084A

PROPOSED TYPICAL CROSS SECTION
APPROACHES AND CROSSEVERS

DRAWING SHEET
I-196BL SECT 1
PRTYP 011 27

NOTES

COORDINATE SYSTEM: STATE PLANE GRID
ZONE: MICHIGAN SOUTH 2113
ELLIPSOID: GRS 80
HORIZONTAL DATUM: NAD 83 (2011)
VERTICAL DATUM: NAVD 88
GEOID: GEOID 12B
UNITS: INTERNATIONAL FEET
SURVEYED BY: MDOT

GROUND DISTANCE CONVERSION

THE COMBINED SCALE FACTOR (CSF) FOR EACH CONTROL POINT IS INCLUDED IN THE CONTROL POINT LIST.

AVERAGE COMBINED SCALE FACTOR (ACSF) = (CSF1 + CSF2)/2
 GROUND DISTANCE = GRID DISTANCE / ACSF

PLAN ELEVATION

ELEVATIONS SHOWN ON THESE PLANS ARE BASED ON NGS MONUMENT 70101 AND LEVELED ON 09/11/2017.

STATION / OFFSETS

STATION AND OFFSETS ARE RELATIVE TO THE ACALIL1, ACALIL2, ACALIL3, ACALIL4, SALIL1 ALIGNMENTS AS NOTED.

PRIMARY CONTROL

NGS 70101

DESCRIPTION: FOUND MDOT MONUMENT IN GORE AREA BETWEEN WB I-196 AND OFF RAMP TO I-196 BL.
 COORDINATES: N= 482573.676, E= 12690011.808, ELEV= 680.790
 STANDARD DEVIATION: N= 0.002, E= 0.001, Z= 0.000
 COMBINED SCALE FACTOR: 0.99988037
 SALIL1 STATION: 93+40.48, OFFSET: 200.21' LT

INTERMEDIATE CONTROL

CP100

DESCRIPTION: SET 5/8"X36" REBAR WITH "MDOT CONTROL POINT" CAP IN NW'LY QUADRANT OF FAIRVIEW AND I-196 BL INTERSECTION.
 COORDINATES: N= 480652.831, E= 12685142.057, ELEV= 648.504
 STANDARD DEVIATION: N= 0.004, E= 0.004, Z= 0.003
 COMBINED SCALE FACTOR: 0.99988204
 ACALIL1 STATION: 185+01.01, OFFSET: 69.84' LT
 WITNESSES:
 1. N30E 21' SOUTH SIDE PP.
 2. S65W 31' N LEG PEDESTRIAN WALK SIGN.
 3. S60E 2.5' FAIRVIEW ST BACK OF CURB.

CP101

DESCRIPTION: SET 5/8"X36" REBAR WITH "MDOT CONTROL POINT" CAP IN MEDIAN I-196 BL +/-60' NE'LY OF THE C/L FIRST MEDIAN CROSSOVER EAST OF FAIRVIEW AVE.
 COORDINATES: N= 481049.862, E= 12685796.371, ELEV= 652.623
 STANDARD DEVIATION: N= 0.004, E= 0.004, Z= 0.003
 COMBINED SCALE FACTOR: 0.99988182
 ACALIL2 STATION: 192+71.31, OFFSET: 38.71' LT
 WITNESSES:
 1. N60E 112' C/L BEEHIVE CB.
 2. N18E 7' S'LY LEG "NO LEFT TURN" SIGN POST.
 3. S58W 17' "YIELD" SIGN POST.

CP102

DESCRIPTION: SET 5/8"X36" REBAR WITH "MDOT CONTROL POINT" CAP IN MEDIAN OF I-196 BL +/-105' WESTERLY OF MEDIAN CROSSOVER DIRECTLY NORTH OF HOMESTEAD AVE.
 COORDINATES: N= 481654.159, E= 12686495.401, ELEV= 655.742
 STANDARD DEVIATION: N= 0.004, E= 0.003, Z= 0.002
 COMBINED SCALE FACTOR: 0.99988163
 ACALIL2 STATION: 201+94.34, OFFSET: 81.51' LT
 WITNESSES:
 1. N70E 36' WOOD PP (BM51).
 2. N85W 32' 6" CPP EDGE DRAIN.
 3. EAST 63' WOOD GUY POLE.

CP103

DESCRIPTION: SET 5/8"X36" REBAR WITH "MDOT CONTROL POINT" CAP IN MEDIAN OF I-196 BL +/-31' W'LY OF MEDIAN CROSSOVER TO M-121 (CHICAGO DRIVE).
 COORDINATES: N= 482153.361, E= 12687207.041, ELEV= 661.828
 STANDARD DEVIATION: N= 0.003, E= 0.002, Z= 0.002
 COMBINED SCALE FACTOR: 0.99988131
 ACALIL2 STATION: 210+51.37, OFFSET: 75.27' LT
 WITNESSES:
 1. N57W 55' WOOD GUY POLE (BM52).
 2. N35W 11' WEST END 18" RCP.
 3. N71E 77' EAST END 18" RCP.

CP104

DESCRIPTION: SET 5/8"X36" REBAR WITH "MDOT CONTROL POINT" CAP IN I-196 BY MEDIAN +/- 180' EASTERLY OF 84TH ST CENTERLINE.
 COORDINATES: N= 482401.769, E= 12688036.453, ELEV= 667.841
 STANDARD DEVIATION: N= 0.004, E= 0.004, Z= 0.002
 COMBINED SCALE FACTOR: 0.99988100
 ACALIL2 STATION: 219+00.24, OFFSET: 48.05' LT
 WITNESSES:
 1. S75W 139' 18" CULVERT EAST END.
 2. S87W 162' C/L STRAIN POLE.
 3. N71E 39' S'LY LEG "WRONG WAY" SIGN POST.

CP105

DESCRIPTION: SET 5/8"X36" REBAR WITH "MDOT CONTROL POINT" CAP ON SOUTH SIDE I-196 BL +/-580' WESTERLY OF ON RAMP TO I-196 WB.
 COORDINATES: N= 482346.261, E= 12688842.333, ELEV= 667.564
 STANDARD DEVIATION: N= 0.003, E= 0.004, Z= 0.002
 COMBINED SCALE FACTOR: 0.99988102
 SALIL1 STATION: 81+79.33, OFFSET: 66.47' RT
 WITNESSES:
 1. N87W 92" N'LY LEG "GRAND RAPIDS" SIGN POST.
 2. N00E 5' I-196 BL EB ESB.
 3. N83E 66' END OF RAMP TAPER I-196 WB.

CP106

DESCRIPTION: SET 5/8"X36" REBAR WITH "MDOT CONTROL POINT" CAP IN SOUTH SIDE OF I-196 BL +/-220' EAST OF RAMP TO I-196 WB.
 COORDINATES: N= 482315.020, E= 12689635.870, ELEV= 653.590
 STANDARD DEVIATION: N= 0.006, E= 0.005, Z= 0.008
 COMBINED SCALE FACTOR: 0.99988169
 SALIL1 STATION: 89+73.46, OFFSET: 70.95' RT
 WITNESSES:
 1. N00E 8' S'LY I-196 BL ESB.
 2. S75E 76' "I-196 BL" SIGN POST.
 3. N76E 59' END OF RAMP TAPER I-196 EB.

CP107

DESCRIPTION: SET 5/8"X36" REBAR WITH "MDOT CONTROL POINT" CAP ON WEST SIDE OF ON RAMP TO I-196 WB +/-400' SOUTH OF I-196 BL.
 COORDINATES: N= 481974.796, E= 12689383.280, ELEV= 659.041
 STANDARD DEVIATION: N= 0.005, E= 0.003, Z= 0.002
 COMBINED SCALE FACTOR: 0.99988145
 ACALIL3 STATION: 31+68.97, OFFSET: 37.08' LT
 WITNESSES:
 1. N90E 29' W'LY ESB ON RAMP I-196 WB.
 2. N02W 283' PP (BM54).
 3. N06E 198' "I-196 WB" SIGN POST.

CP108

DESCRIPTION: SET 5/8"X36" REBAR WITH "MDOT CONTROL POINT" CAP IN GORE AREA BETWEEN I-196 WB AND ON RAMP TO I-196 WB +/-132' NE OF END OF GORE AREA.
 COORDINATES: N= 481016.981, E= 12689410.003, ELEV= 669.463
 STANDARD DEVIATION: N= 0.003, E= 0.004, Z= 0.002
 COMBINED SCALE FACTOR: 0.99988101
 ACALIL3 STATION: 22+16.96, OFFSET: 34.27' RT
 WITNESSES:
 1. N64E 19' NW I-196 WB ESB.
 2. S18W 67' "MERGE" SIGN POST.
 3. N86W 15' E'LY ON RAMP ESB.

CP109

DESCRIPTION: SET 5/8"X36" REBAR WITH "MDOT CONTROL POINT" CAP IN GORE AREA BETWEEN I-196 WB AND OFF RAMP TO I-196 BL.
 COORDINATES: N= 482948.290, E= 12690537.074, ELEV= 654.136
 STANDARD DEVIATION: N= 0.006, E= 0.004, Z= 0.001
 COMBINED SCALE FACTOR: 0.99988162
 ACALIL4 STATION: 33+16.18, OFFSET: 80.40' RT
 WITNESSES:
 1. S50E 4' W'LY I-196 WB ESB.
 2. N43W 8' C/L "BRIDGE ICES OVER" SIGN.
 3. N49W 44' C/L 18" RCP (BM55).

CP110

DESCRIPTION: SET 5/8"X36" REBAR WITH "MDOT CONTROL POINT" CAP ON W'LY SIDE OF I-196 WB OFF RAMP TO I-196 BL +/-950' SW OF I-196.
 COORDINATES: N= 482633.169, E= 12689534.150, ELEV= 656.740
 STANDARD DEVIATION: N= 0.005, E= 0.005, Z= 0.002
 COMBINED SCALE FACTOR: 0.99988152
 ACALIL4 STATION: 22+75.95, OFFSET: 20.42' LT
 WITNESSES:
 1. S22E 13' OFF RAMP ESB.
 2. S46W 17' "WRONG WAY" SIGN POST.
 3. S67W 157' C/L NW END 12" RCP (BM56).

CP111

DESCRIPTION: SET 5/8"X36" REBAR WITH "MDOT CONTROL POINT" CAP IN NE QUADRANT OF THE INTERSECTION OF M-121 AND EAST MAIN AVE.
 COORDINATES: N= 482609.830, E= 12687110.057, ELEV= 662.911
 STANDARD DEVIATION: N= 0.004, E= 0.001, Z= 0.003
 COMBINED SCALE FACTOR: 0.99988123
 ACALIL1 STATION: 212+47.02, OFFSET: 103.08' RT
 WITNESSES:
 1. N56W 54' E'LY M-121 ESB.
 2. N77E 99' PP (BM58).
 3. S68W 71' "ADOPT-A-HIGHWAY" SIGN POST.

CP112

DESCRIPTION: SET 5/8"X36" REBAR WITH "MDOT CONTROL POINT" CAP IN M-121 MEDIAN +/-90' NE OF C/L OF THE FIRST MEDIAN CROSSOVER NE OF EAST MAIN AVE.
 COORDINATES: N= 483398.818, E= 12687532.245, ELEV= 666.765
 STANDARD DEVIATION: N= 0.005, E= 0.003, Z= 0.002
 COMBINED SCALE FACTOR: 0.99988100
 ACALIL1 STATION: 221+37.11, OFFSET: 11.01' RT
 WITNESSES:
 1. N28E 63' BEEHIVE CB.
 2. S56E 3' N'LY ESB M-121 EB.
 3. N56W 15' S'LY ESB M-121 WB.

BENCHMARKS

BM50

DESCRIPTION: FOUND RR SPIKE SE SIDE PP IN NW'LY QUADRANT FAIRVIEW AVE AND I-196 BL INTERSECTION.
 COORDINATES: N= 480673, E= 12685149
 ELEVATION: 648.910
 STANDARD DEVIATION: Z= 0.003
 ACALIL1 STATION: 185+18, OFFSET: 83' LT

BM51

DESCRIPTION: SET YELLOW BENCH TIE IN SOUTH SIDE WOOD PP IN MEDIAN OF I-196 BL +/-70' WESTERLY OF MEDIAN CROSSOVER DIRECTLY NORTH OF HOMESTEAD AVE.
 COORDINATES: N= 481673, E= 12686527
 ELEVATION: 654.830
 STANDARD DEVIATION: Z= 0.002
 ACALIL2 STATION: 202+31, OFFSET: 76' LT

BM52

DESCRIPTION: SET YELLOW BENCH TIE IN EAST SIDE WOOD GUY POLE FIRST POLE WESTERLY OF MEDIAN CROSSOVER FOR I-196 BL IN MEDIAN DIRECTLY SOUTH OF M-121 SPUR.
 COORDINATES: N= 482173, E= 12687156
 ELEVATION: 662.425
 STANDARD DEVIATION: Z= 0.002
 ACALIL2 STATION: 210+17, OFFSET: 117' LT

BM53


DESCRIPTION: SET CHISELED SQUARE IN SE CORNER EAST END OF 18" RCP +/-62' EASTERLY OF MEDIAN CROSSOVER CENTERLINE TO 84TH ST.
 COORDINATES: N= 482373, E= 12687900
 ELEVATION: 665.839
 STANDARD DEVIATION: Z= 0.002
 ACALIL2 STATION: 217+64, OFFSET: 45' LT

BM54

DESCRIPTION: FOUND RR SPIKE IN N'LY SIDE OF PP IN THE SW QUADRANT OF I-196 BL AND RAMP TO I-196 WB.
 COORDINATES: N= 482258, E= 12689372
 ELEVATION: 657.400
 STANDARD DEVIATION: Z= 0.002
 ACALIL3 STATION: 34+52, OFFSET: 58' LT

BM55

DESCRIPTION: SET CHISELED SQUARE IN TOP C/L OF SE END 18" RCP IN GORE AREA BETWEEN I-196 WB AND OFF RAMP TO I-196 BL.
 COORDINATES: N= 482977, E= 12690504
 ELEVATION: 650.174
 STANDARD DEVIATION: Z= 0.001
 ACALIL4 STATION: 33+00, OFFSET: 40' RT

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)									NO SCALE	DATE: 09/12/2017	CS: 70023, (70024, 70823)	SURVEY INFORMATION SHEET		DRAWING	SHEET	
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION			DESIGN UNIT: JASINSKI	JN: 201572A, 202084A	I-196 BL AT M-121		I-196BL SURVEY 001	SECT 1	28
										FILE: S-132468_Survey_Info_Sheet_2017-09-12.doc	TSC: MUSKEGON	ZEELAND TOWNSHIP, OTTAWA COUNTY				

BM56

DESCRIPTION: SET CHISELED SQUARE IN NW END 12" RCP ON NW'LY SIDE OF I-196 WB OFF RAMP TO I-196 BL WB +/-135' W'LY OF THE RAMP TO EB I-196 BL.
 COORDINATES: N= 482571, E=12689390
 ELEVATION: 656.749
 STANDARD DEVIATION: Z= 0.002
 ACALIL4 STATION: 21+19, OFFSET: 18' LT

BM57

DESCRIPTION: SET CHISELED SQUARE IN N'LY END OF 12" RCP IN I-196 MEDIAN +/-650 SW OF CP108.
 COORDINATES: N= 480629, E= 12689325
 ELEVATION: 669.221
 STANDARD DEVIATION: Z= 0.002
 ACALIL3 STATION: 18+33, OFFSET: 81' RT

BM58

DESCRIPTION: SET YELLOW BENCH TIE IN NORTH SIDE PP SECOND POLE EAST OF THE M-121 SPUR TO I-196 BL.
 COORDINATES: N= 482632, E= 12687207
 ELEVATION: 665.849
 STANDARD DEVIATION: Z= 0.003
 ACALIL1 STATION: 213+20, OFFSET: 171' RT

BM59

DESCRIPTION: FOUND RR SPIKE IN SE SIDE PP ON THE SE SIDE OF M-121 +/-210' SW OF THE C/L OF SB 84TH AVE.
 COORDINATES: N= 483593, E= 12687775
 ELEVATION: 671.190
 STANDARD DEVIATION: Z= 0.002
 ACALIL1 STATION: 224+34, OFFSET: 103' RT

ALI PT 50325 – TO BE PRESERVED


DESCRIPTION: FOUND COPPER CLAD CAP IN MONUMENT BOX IN CENTERLINE OF EASTBOUND I-196BL.
 COORDINATES: N= 482383.53, E= 12688523.66
 STANDARD DEVIATION: N= 0.011, E= 0.013
 COMBINED SCALE FACTOR: 0.99988092
 ACALIL2 STATION: 223+81.61, OFFSET: 0.00'
 WITNESSES:
 1. N86E 251.52' CENTER OF CURB INLET CATCH BASIN.
 2. N61W 202.73' CENTER OF ELECTRIC MANHOLE.
 3. N81W 199.20' SOUTH EDGE OF WEST END OF CONCRETE CURB.

GOVERNMENT CORNERS**D-7 T05N-R14W – TO BE PRESERVED**

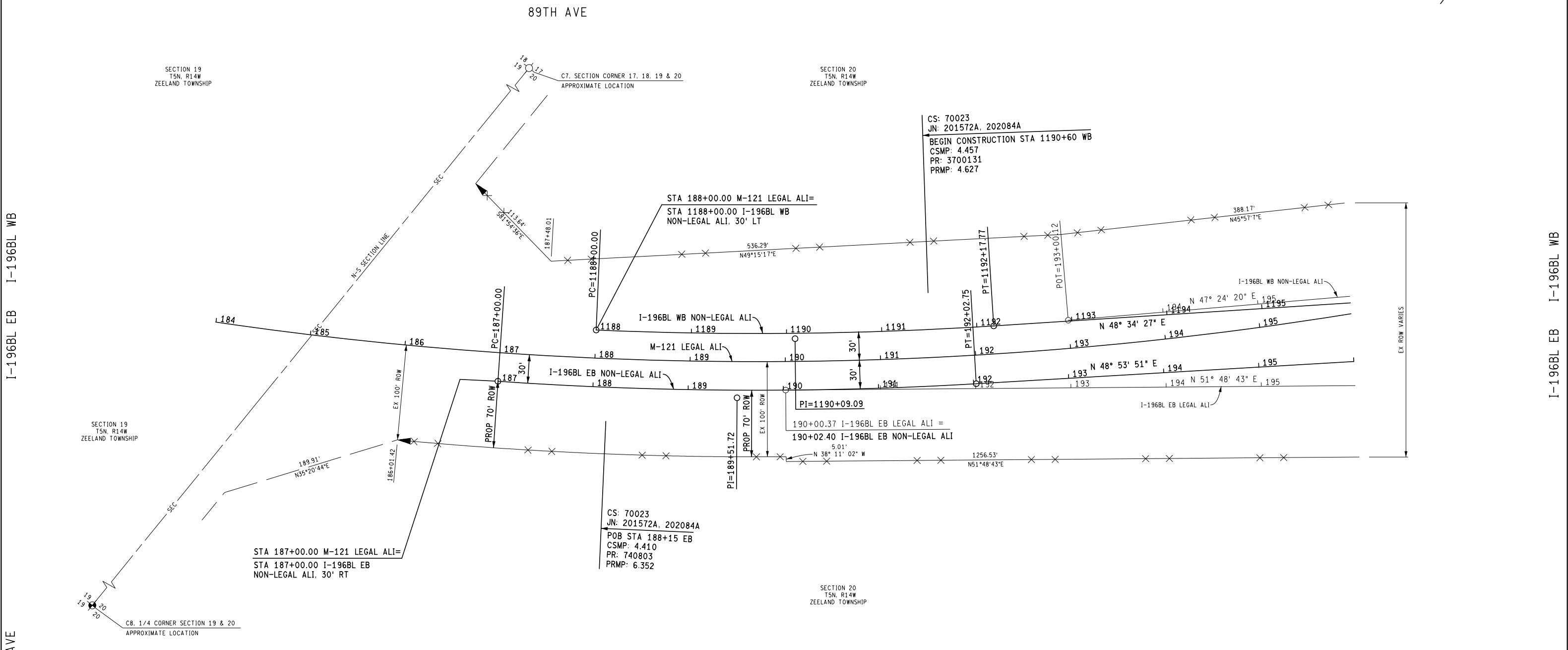
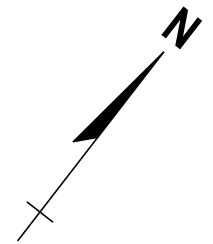
1/4 CORNER COMMON TO SECTIONS 17 & 20.
 DESCRIPTION: FOUND OTTAWA COUNTY REMON CAP IN MONUMENT BOX IN RIGHT LANE OF WESTBOUND I-196BL.
 COORDINATES: N= 482444.920, E= 12687888.390
 STANDARD DEVIATION: N= 0.030, E= 0.030
 COMBINED SCALE FACTOR: 0.9998809
 SALIL1 STATION: 72+22.61, OFFSET: 0.00'
 WITNESSES:
 1. N21W 76.61' NAIL/REMON TAG IN W. SIDE PP.
 2. N20E 85.96' NAIL/REMON TAG IN W. SIDE PP.
 3. N05W 109.81' CENTER OF MANHOLE COVER.
 4. N18E 313.65' NW CORNER OF CONCRETE BLDG. FOUNDATION.
 5. N77E 304.47' CENTER OF SW FENCE POST AROUND WATER TOWER.
 6. N00E 9.4' NORTH EDGE OF CONCRETE.
 7. N90W 4.4' CONCRETE JOINT FOR STA 218+36.

ALIGNMENT POINTS**ALI PT 50327 – TO BE PRESERVED**

DESCRIPTION: FOUND COPPER CLAD CAP IN MONUMENT BOX IN CENTERLINE OF EASTBOUND I-196BL.
 COORDINATES: N= 480851.93, E= 12685607.35
 STANDARD DEVIATION: N= 0.016, E= 0.003
 COMBINED SCALE FACTOR: 0.99988188
 ACALIL2 STATION: 190+00.37, OFFSET: 0.00'
 WITNESSES:
 1. N38W 35.13' CENTER OF BEEHIVE CATCH BASIN.
 2. S70W 89.15' WESTERLY END OF BACK OF CURB.
 3. N43E 273.69' MDOT CONTROL POINT #101 (RED CAP).

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)									NO SCALE	DATE: 09/12/2017	CS: 70023, (70024, 70823)	SURVEY INFORMATION SHEET		DRAWING	SHEET
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION			DESIGN UNIT: JASINSKI	JN: 201572A, 202084A	I-196BL SURVEY	SECT 1		
										TSC: MUSKEGON		002	29		
										ZEELAND TOWNSHIP, OTTAWA COUNTY					

ALIGNMENT KEY:
 I-196 BL & M-121 AS-CONSTRUCTED ALI LEGAL: 1955 OLD M-21 MEDIAN CONSTRUCTION CENTERLINE FROM PROJECT 70023 - 70-61 C3 C4 C5, AS RESURVEYED FOR JN 132468 IN 2017.
 BYRON RD. SURVEY ALI LEGAL: 1971 BYRON RD. SURVEY ALIGNMENT FROM CS 70023, JN 00981 AND CS 70024, JN 00983, AS RESURVEYED FOR JN 132468 IN 2017.
 I-196 BL EB AS-CONSTRUCTED ALI LEGAL: 1971 I-196 BL EB CONSTRUCTION CENTERLINE FROM CS 70023, JN 00981 AND CS 70024, JN 00983, AS RESURVEYED FOR JN 132468 IN 2017.
 I-196 BL WB AS-CONSTRUCTED ALI NON-LEGAL: 1971 I-196 BL WB CONSTRUCTION CENTERLINE FROM CS 70023, JN 00981 AND CS 70024, JN 00983, AS RESURVEYED FOR JN 132468 IN 2017.
 I-196 AT I-196 BL RAMP "A" AS-CONSTRUCTED ALI LEGAL: 1971 RAMP "A" CONSTRUCTION CENTERLINE FROM CS 70023, JN 00981 AND CS 70024, JN 00983, AS RESURVEYED FOR JN 132468 IN 2017.
 I-196 AT I-196 BL RAMP "B" AS-CONSTRUCTED ALI LEGAL: 1971 RAMP "B" CONSTRUCTION CENTERLINE FROM CS 70023, JN 00981 AND CS 70024, JN 00983, AS RESURVEYED FOR JN 132468 IN 2017.
 I-196 AT I-196 BL RAMP "B" CONNECTOR AS-CONSTRUCTED ALI NON-LEGAL: 1971 RAMP "B" CONNECTOR CONSTRUCTION CENTERLINE FROM CS 70023, JN 00981 AND CS 70024, JN 00983, AS RESURVEYED FOR JN 132468 IN 2017.
 BYRON RD. / MAIN AVE. AS-CONSTRUCTED ALI NON-LEGAL: 2001 BYRON RD. CONSTRUCTION CENTERLINE FROM JN 50745, AS RESURVEYED FOR JN 132468 IN 2017.
 MAIN AVE. NON-LEGAL ALI: MAIN AVE. CONSTRUCTION ALIGNMENT AS PROPOSED FOR JN 201572A IN 2017.
 84TH AVE. NON-LEGAL ALI: 84TH AVE. CONSTRUCTION ALIGNMENT AS PROPOSED FOR JN 201572A IN 2017.
 HOMESTEAD RD. NON-LEGAL ALI: HOMESTEAD RD. CONSTRUCTION ALIGNMENT AS PROPOSED FOR JN 201572A IN 2017.
 I-196BL EB NON-LEGAL ALI: I-196BL EB CONSTRUCTION ALIGNMENT AS PROPOSED FOR JN 201572A IN 2017.
 I-196BL WB NON-LEGAL ALI: I-196BL WB CONSTRUCTION ALIGNMENT AS PROPOSED FOR JN 201572A IN 2017.



I-196BL EB NON-LEGAL ALI		I-196BL WB NON-LEGAL ALI		M-121 LEGAL ALI	
Δ	= 7° 19' 26" (LT)	Δ	= 6° 10' 46" (LT)	Δ	= 56° 53' 35" (LT)
D	= 1° 27' 24"	D	= 1° 28' 45"	D	= 1° 28' 05"
T	= 251.72'	T	= 209.09'	T	= 2,114.51'
L	= 502.75'	L	= 417.77'	L	= 3,875.69'
R	= 3,933.13'	R	= 3,873.63'	R	= 3,903.13'
E	= 8.05'	E	= 5.64'	E	= 535.97'
PC	= 187+00.00	N	= 480,674.31	E	= 12,685,362.70
PI	= 189+51.72	N	= 480,814.27	E	= 12,685,571.93
PT	= 192+02.75	N	= 480,979.75	E	= 12,685,761.61
EX SUPER	= 5.4% LT, 1.2% RT				
PR SUPER	= 3.2%				
Δ	= 0.39%				

I-196BL WB NON-LEGAL ALI		M-121 LEGAL ALI			
Δ	= 6° 10' 46" (LT)	Δ	= 56° 53' 35" (LT)		
D	= 1° 28' 45"	D	= 1° 28' 05"		
T	= 209.09'	T	= 2,114.51'		
L	= 417.77'	L	= 3,875.69'		
R	= 3,873.63'	R	= 3,903.13'		
E	= 5.64'	E	= 535.97'		
PC	= 1188+00.00	N	= 480,780.00	E	= 12,685,411.39
PI	= 1190+09.09	N	= 480,900.66	E	= 12,685,582.15
PT	= 1192+17.77	N	= 481,039.01	E	= 12,685,738.93
EX SUPER	= 5.2% LT, 3.2% RT				
Δ	= 0.39%				

I-196BL EB LEGAL ALI		I-196BL WB LEGAL ALI			
Δ	= 51° 48' 43" E	Δ	= 48° 34' 27" E		
D	= 1° 28' 05"	D	= 1° 28' 05"		
T	= 2,114.51'	T	= 2,114.51'		
L	= 3,875.69'	L	= 3,875.69'		
R	= 3,903.13'	R	= 3,903.13'		
E	= 535.97'	E	= 535.97'		
PC	= 163+34.18	N	= 480,040.91	E	= 12,683,111.20
PI	= 184+48.69	N	= 480,005.84	E	= 12,685,225.42
PT	= 202+09.87	N	= 481,757.66	E	= 12,686,409.59

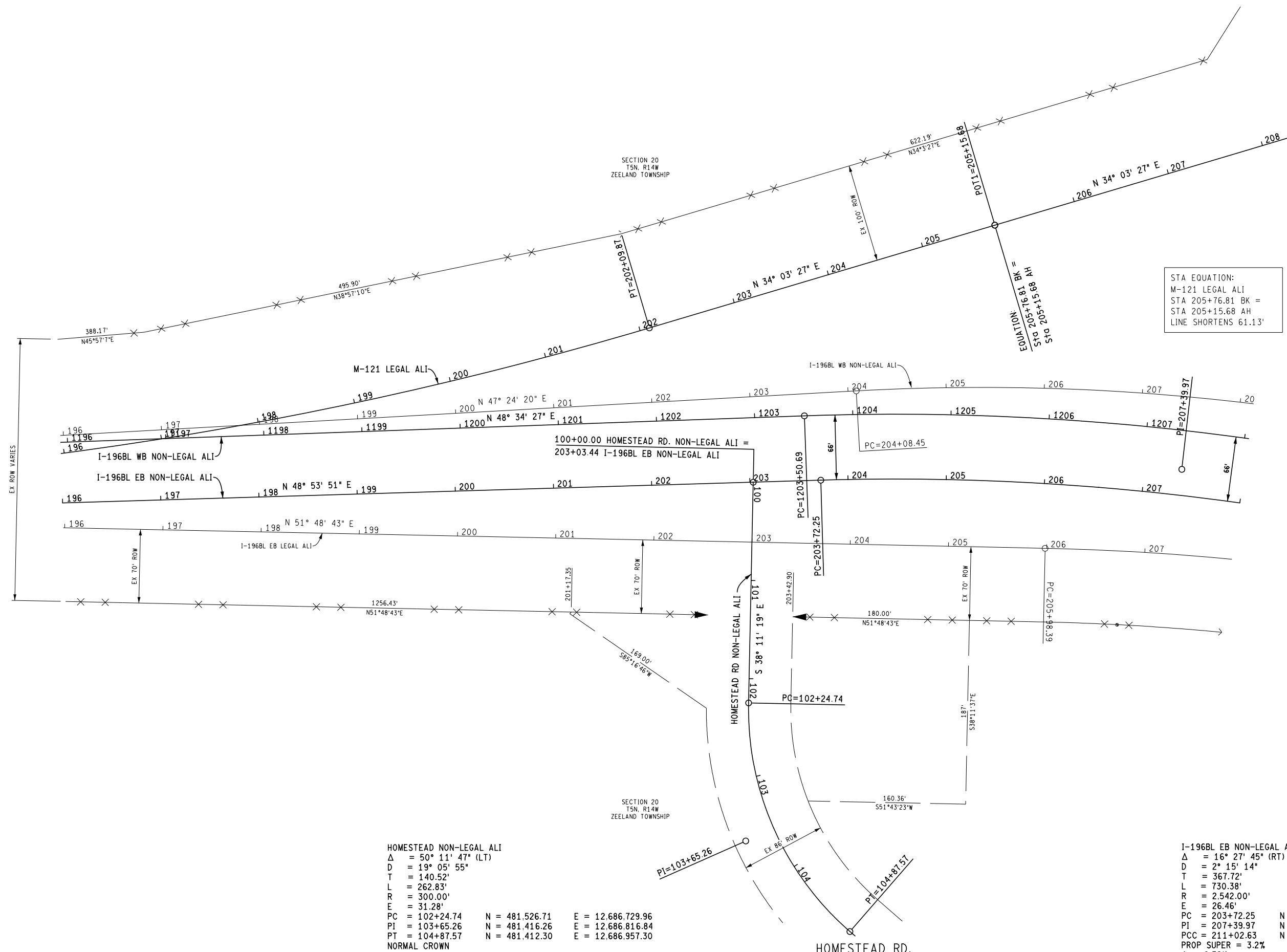
FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)						MDOT Michigan Department of Transportation	DATE: 04/10/18	CS: 70023	ALIGNMENT	DRAWING	SHEET
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE						
								JN: 201572A, 202084A	I-196BL EB STA 188+15 (POB) TO STA 196+00	I-196BL ALI 001	SECT 1 30
								TSC: MUSKEGON	I-196BL WB STA 1191+50 TO STA 1195+93		

FILE: 201572_ALI001.dgn

I-196BL EB I-196BL WB

M-121

I-196BL EB I-196BL WB



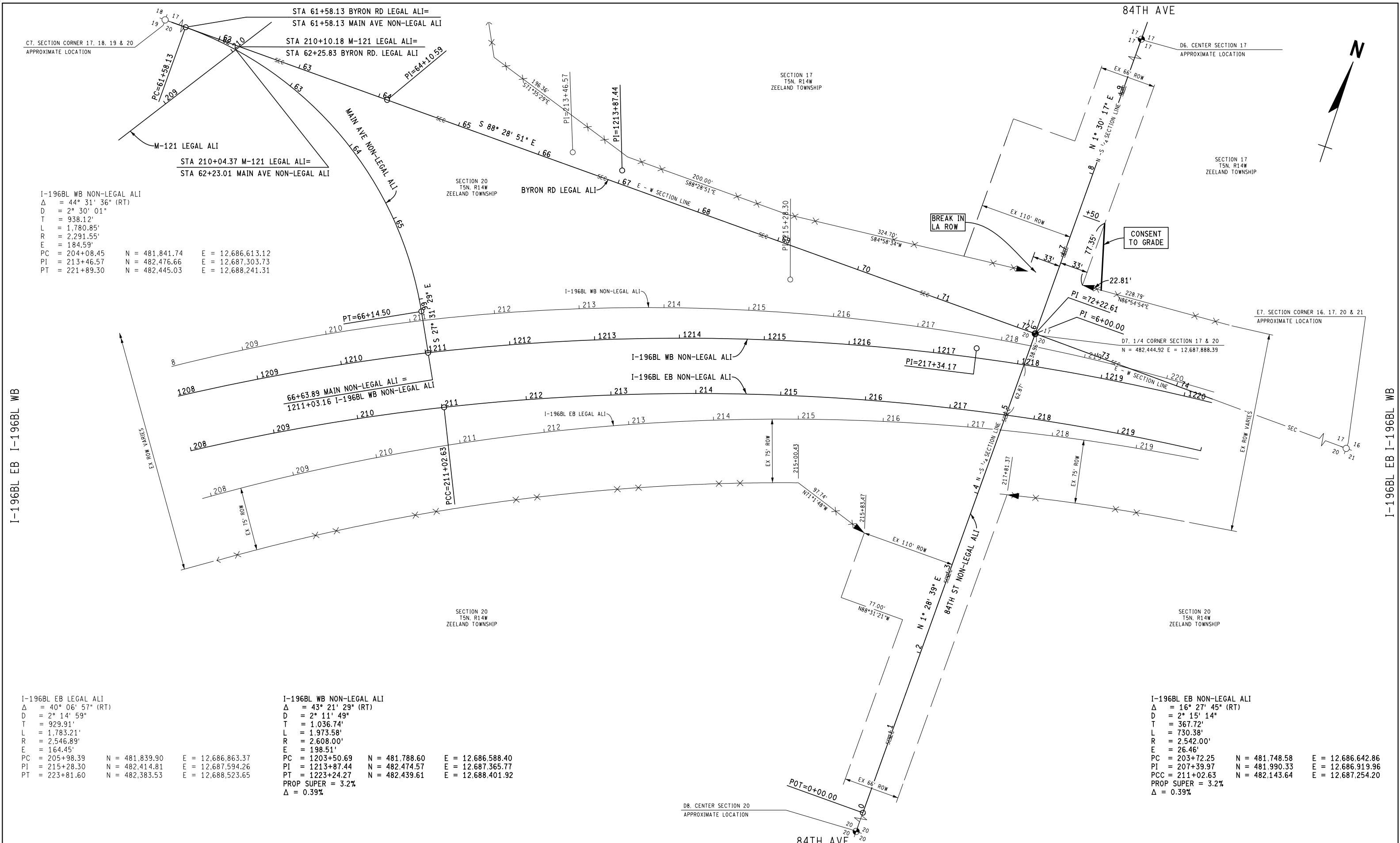
STA EQUATION:
 M-121 LEGAL ALI
 STA 205+76.81 BK =
 STA 205+15.68 AH
 LINE SHORTENS 61.13'

HOMESTEAD NON-LEGAL ALI
 Δ = 50° 11' 47" (LT)
 D = 19° 05' 55"
 T = 140.52'
 L = 262.83'
 R = 300.00'
 E = 31.28'
 PC = 102+24.74 N = 481,526.71 E = 12,686,729.96
 PI = 103+65.26 N = 481,416.26 E = 12,686,816.84
 PT = 104+87.57 N = 481,412.30 E = 12,686,957.30
 NORMAL CROWN

I-196BL EB NON-LEGAL ALI
 Δ = 16° 27' 45" (RT)
 D = 2° 15' 14"
 T = 367.72'
 L = 730.38'
 R = 2,542.00'
 E = 26.46'
 PC = 203+72.25 N = 481,748.58 E = 12,686,642.86
 PI = 207+39.97 N = 481,990.33 E = 12,686,919.96
 PCC = 211+02.63 N = 482,143.64 E = 12,687,254.20
 PROP SUPER = 3.2%
 Δ = 0.39%

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)						MDOT Michigan Department of Transportation	0 100 HORZ. (FT)	DATE: 04/10/18 DESIGN UNIT: JASINSKI TSC: MUSKEGON	CS: 70023 JN: 201572A, 202084A	ALIGNMENT I-196BL EB STA 196+00 TO STA 208+00 I-196BL WB STA 1195+93 TO STA 1208+04	DRAWING I-196BL ALI 002	SHEET 31
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE							

FILE: 201572_ALI002.dgn



I-196BL WB NON-LEGAL ALI
 $\Delta = 44^\circ 31' 36''$ (RT)
 $D = 2^\circ 30' 01''$
 $T = 938.12'$
 $L = 1,780.85'$
 $R = 2,291.55'$
 $E = 184.59'$
 $PC = 204+08.45$ $N = 481,841.74$ $E = 12,686,613.12$
 $PI = 213+46.57$ $N = 482,476.66$ $E = 12,687,303.73$
 $PT = 221+89.30$ $N = 482,445.03$ $E = 12,688,241.31$

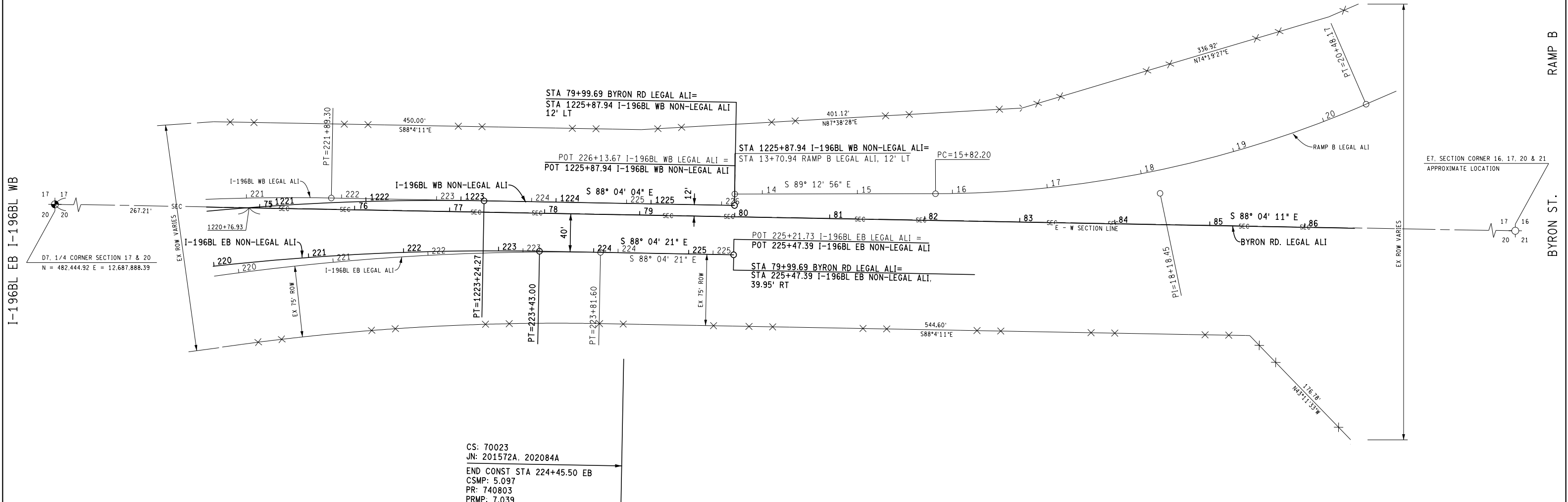
I-196BL WB NON-LEGAL ALI
 $\Delta = 43^\circ 21' 29''$ (RT)
 $D = 2^\circ 11' 49''$
 $T = 1,036.74'$
 $L = 1,973.58'$
 $R = 2,608.00'$
 $E = 198.51'$
 $PC = 1203+50.69$ $N = 481,788.60$ $E = 12,686,588.40$
 $PI = 1213+87.44$ $N = 482,474.57$ $E = 12,687,365.77$
 $PT = 1223+24.27$ $N = 482,439.61$ $E = 12,688,401.92$
 PROP SUPER = 3.2%
 $\Delta = 0.39\%$

I-196BL EB NON-LEGAL ALI
 $\Delta = 16^\circ 27' 45''$ (RT)
 $D = 2^\circ 15' 14''$
 $T = 367.72'$
 $L = 730.38'$
 $R = 2,542.00'$
 $E = 26.46'$
 $PC = 203+72.25$ $N = 481,748.58$ $E = 12,686,642.86$
 $PI = 207+39.97$ $N = 481,990.33$ $E = 12,686,919.96$
 $PCC = 211+02.63$ $N = 482,143.64$ $E = 12,687,254.20$
 PROP SUPER = 3.2%
 $\Delta = 0.39\%$

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)						MDOT Michigan Department of Transportation	DATE: 04/10/18	CS: 70023	ALIGNMENT	DRAWING SHEET
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE					
							DESIGN UNIT: JASINSKI	JN: 201572A, 202084A	I-196BL EB STA 208+00 TO STA 220+00	I-196BL ALI 003 SECT 1 32
FILE: 201572_ALI003.dgn							TSC: MUSKEGON		I-196BL WB STA 1208+04 TO STA 1220+33	

RAMP B LEGAL ALI
 $\Delta = 23^\circ 18' 03''$ (LT)
 $D = 5^\circ 00' 02''$
 $T = 236.25'$
 $L = 465.96'$
 $R = 1,145.78'$
 $E = 24.10'$
 $PC = 15+82.20$ $N = 482,439.84$ $E = 12,688,877.09$
 $PI = 18+18.45$ $N = 482,436.60$ $E = 12,689,113.32$
 $PT = 20+48.17$ $N = 482,527.07$ $E = 12,689,331.55$

SECTION 17
 T5N, R14W
 ZEELAND TOWNSHIP



CS: 70023
 JN: 201572A, 202084A
 END CONST STA 224+45.50 EB
 CSMP: 5.097
 PR: 740803
 PRMP: 7.039

SECTION 20
 T5N, R14W
 ZEELAND TOWNSHIP

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)						MDOT Michigan Department of Transportation	0 100 HORZ. (FT)	DATE: 04/10/18 DESIGN UNIT: JASINSKI TSC: MUSKEGON	CS: 70023 JN: 201572A, 202084A	ALIGNMENT I-196BL EB STA 220+00 TO STA 225+47 I-196BL WB STA 1220+33 TO STA 86+00	DRAWING I-196BL ALI 004	SHEET SECT 1 33
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE							

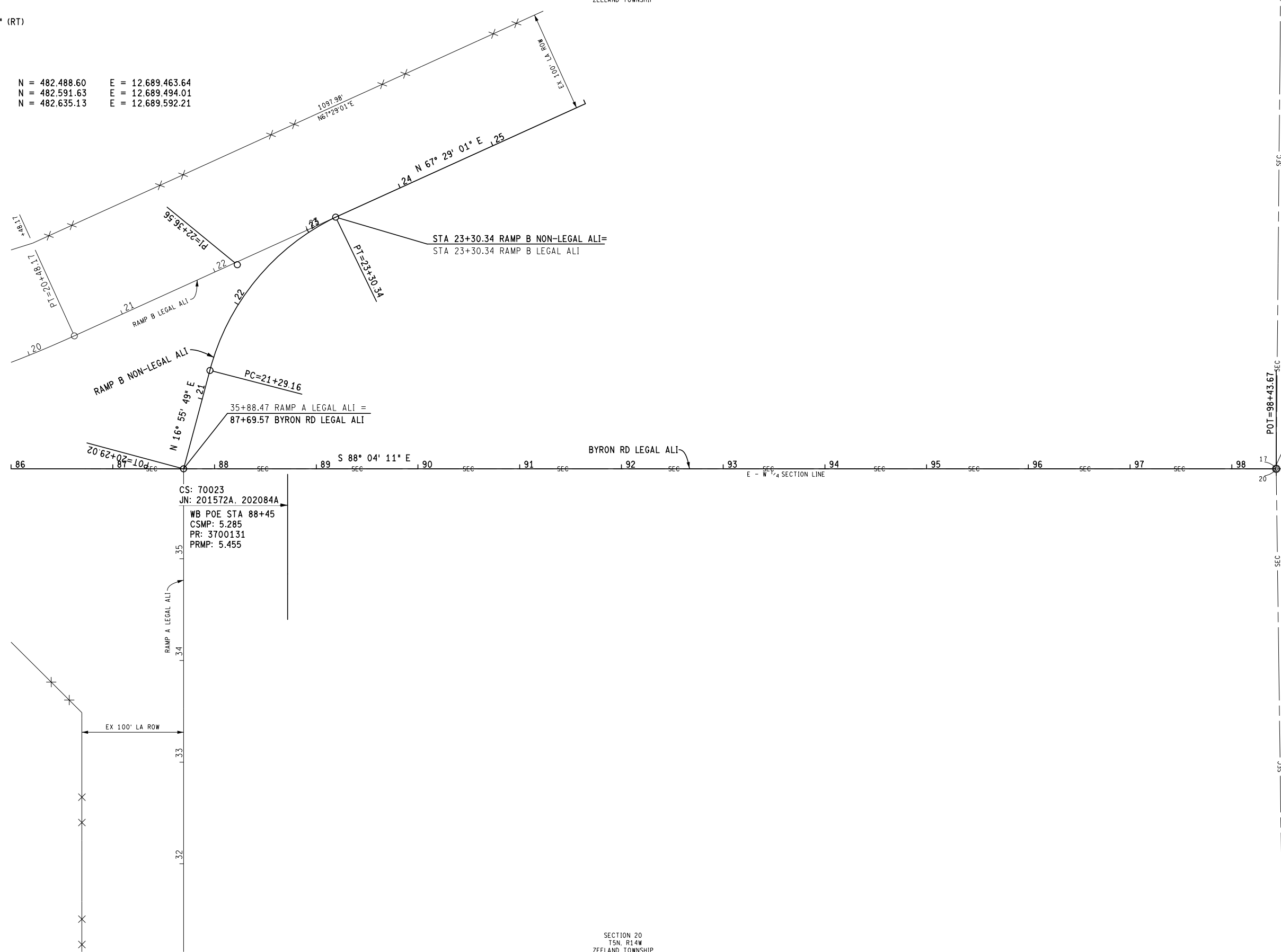
I-196BL EB I-196BL WB

RAMP B
BYRON ST.

SECTION 17
TSN. R14W
ZEELAND TOWNSHIP

RAMP B

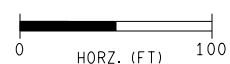
CURVE RAMP4_3
 $\Delta = 49^\circ 41' 08''$ (RT)
 $D = 24^\circ 41' 47''$
 $T = 107.41'$
 $L = 201.18'$
 $R = 232.00'$
 $E = 23.66'$
 $PC = 21+29.16$ $N = 482,488.60$ $E = 12,689,463.64$
 $PI = 22+36.56$ $N = 482,591.63$ $E = 12,689,494.01$
 $PT = 23+30.34$ $N = 482,635.13$ $E = 12,689,592.21$
 PROP SUPER = 6%
 $\Delta\% = 0.66\%$



RAMP A

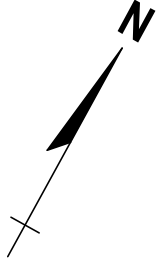
SECTION 20
TSN. R14W
ZEELAND TOWNSHIP

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



DATE: 04/10/18	CS: 70023, (70024)	ALIGNMENT	DRAWING	SHEET
DESIGN UNIT: JASINSKI	JN: 201572A, 202084A	I-196 BL STA 86+00 TO STA 98+00	I-196BL	SECT 1
TSC: MUSKEGON		RAMP B STA 20+29 TO STA 26+00	ALI	34
			005	

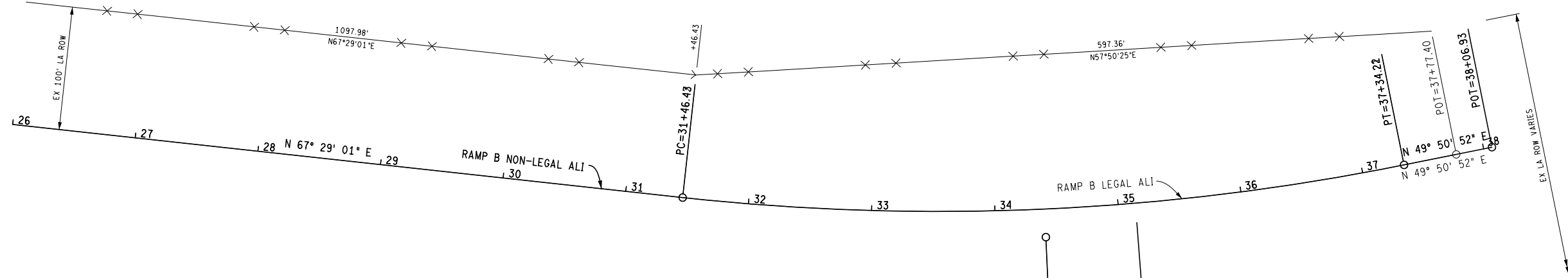
FILE: 201572_ALI005.dgn



SECTION 17
TSN. R14W
ZEELAND TOWNSHIP

RAMP B

RAMP B



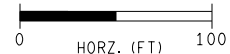
SECTION 17
TSN. R14W
ZEELAND TOWNSHIP

CS: 70023
JN: 202084A
POE STA 35+14.00
CSMP: 4.601
PR: 794309
PRMP: 0.000

RAMP B NON-LEGAL ALI
 $\Delta = 17^\circ 38' 09''$ (LT)
 $D = 3^\circ 00' 01''$
 $T = 296.24'$
 $L = 587.79'$
 $R = 1,909.63'$
 $E = 22.84'$
 $PC = 31+46.43$
 $PI = 34+42.66$
 $PT = 37+34.22$
 PROP SUPER = 4%
 $\Delta\% = 0.44\%$

RAMP B LEGAL ALI
 $\Delta = 17^\circ 38' 09''$ (LT)
 $D = 3^\circ 00' 01''$
 $T = 296.24'$
 $L = 587.79'$
 $R = 1,909.63'$
 $E = 22.84'$
 $PC = 31+46.42$
 $PI = 34+42.66$
 $PT = 37+34.21$
 EX SUPER = 4%

FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



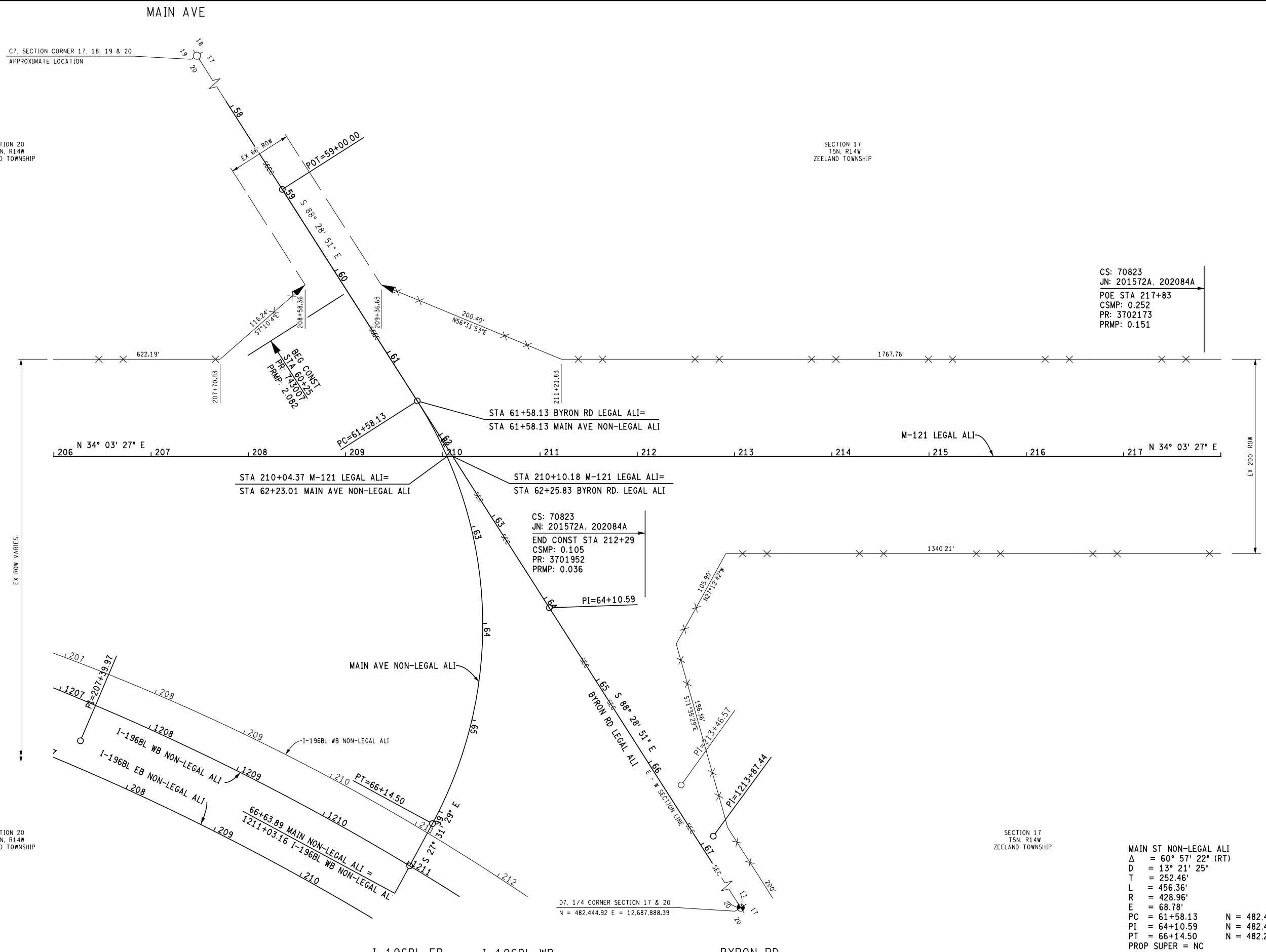
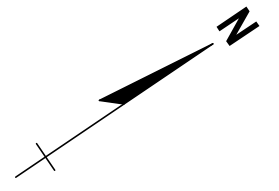
FILE: 201572_ALI006.dgn

DATE: 04/10/18
DESIGN UNIT: JASINSKI
TSC: MUSKEGON

CS: 70023
JN: 202084A

ALIGNMENT
RAMP B STA 26+00 TO STA 35+14

DRAWING SHEET
RAMPB ALI 006 SECT 1 35



CS: 70823
 JN: 201572A, 202084A
 POE STA 217+83
 CSMP: 0.252
 PR: 3702173
 PRMP: 0.151

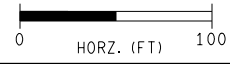
CS: 70823
 JN: 201572A, 202084A
 END CONST STA 212+29
 CSMP: 0.105
 PR: 3701952
 PRMP: 0.036

MAIN ST NON-LEGAL ALI
 $\Delta = 60^\circ 57' 22''$ (RT)
 $D = 13^\circ 21' 25''$
 $T = 252.46'$
 $L = 456.36'$
 $R = 428.96'$
 $E = 68.78'$
 PC = 61+58.13 N = 482.473.14 E = 12.686.824.29
 PI = 64+10.59 N = 482.466.45 E = 12.687.076.66
 PT = 66+14.50 N = 482.242.57 E = 12.687.193.32
 PROP SUPER = NC

M-121
I-196BL EB I-196BL WB

M-121

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

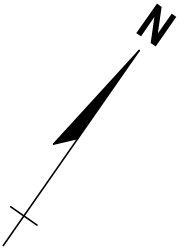


DATE: 04/10/18
 DESIGN UNIT: JASINSKI
 TSC: MUSKOGON
 FILE: 201572_ALI007.dgn

CS: 70023, (70823)
 JN: 201572A, 202084A

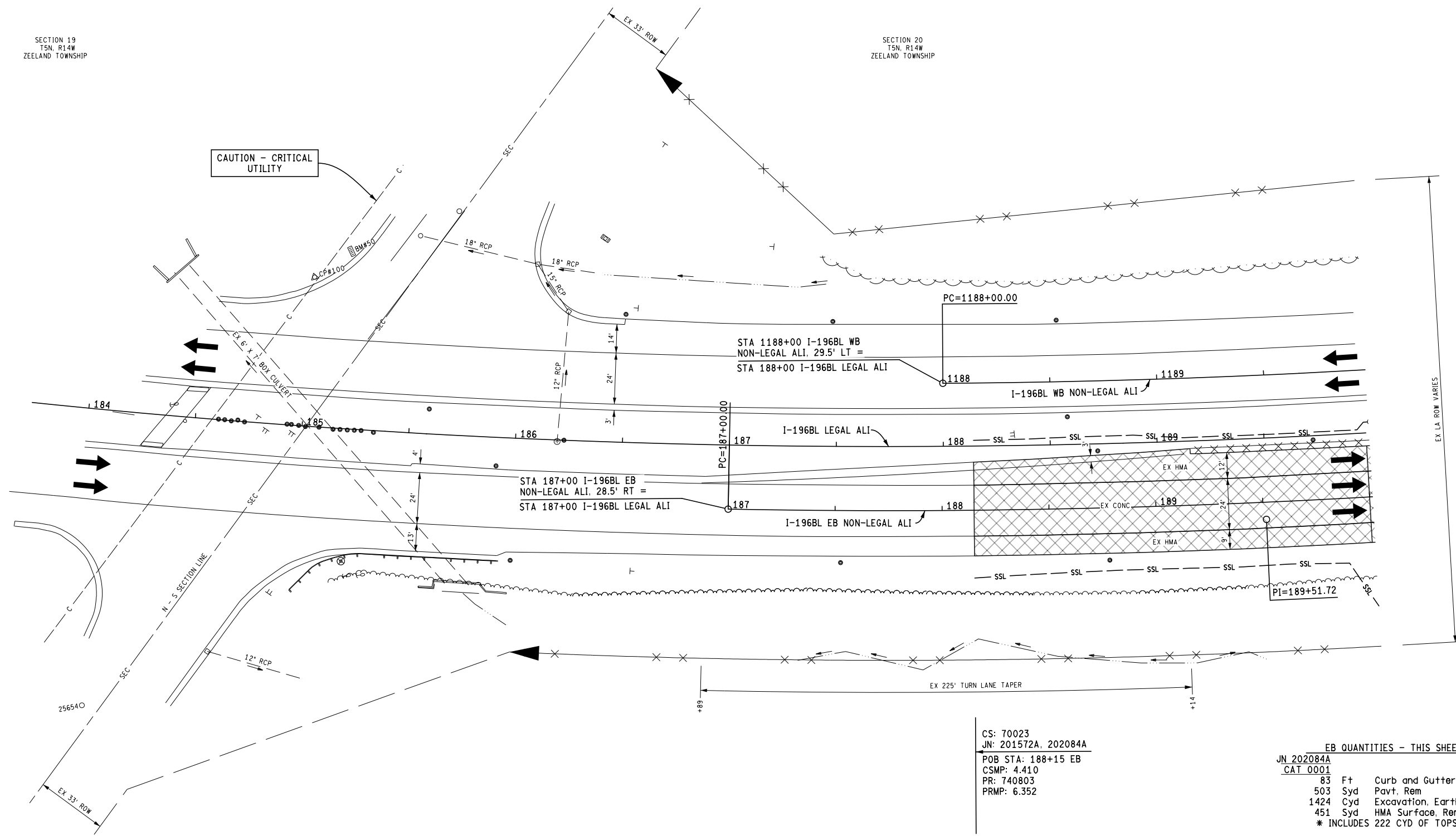
ALIGNMENT		DRAWING	SHEET
MAIN ST STA 61+00 TO STA 66+64		I-196BL ALI 007	SECT 1
M-121 STA 210+10 TO STA 218+00			36

N FAIRVIEW RD



SECTION 19
T5N, R14W
ZEELAND TOWNSHIP

SECTION 20
T5N, R14W
ZEELAND TOWNSHIP



SECTION 19
T5N, R14W
ZEELAND TOWNSHIP

SECTION 20
T5N, R14W
ZEELAND TOWNSHIP

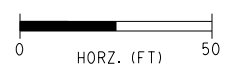
88TH AVE

CS: 70023
JN: 201572A, 202084A
POB STA: 188+15 EB
CSMP: 4.410
PR: 740803
PRMP: 6.352

EB QUANTITIES - THIS SHEET

JN 202084A	83	Ft	Curb and Gutter, Rem
CAT 0001	503	Syd	Pavt, Rem
	1424	Cyd	Excavation, Earth*
	451	Syd	HMA Surface, Rem
* INCLUDES 222 CYD OF TOPSOIL STRIPPING			

FINAL ROW PLAN REVISIONS		(SUBMITTAL DATE:)	
NO.	DATE	AUTH	DESCRIPTION

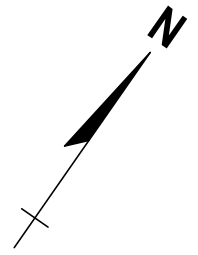


DATE: 04/10/18
DESIGN UNIT: JASINSKI
TSC: MUSKEGON
FILE: 201572_I-196BL_Rem001.dgn

CS: 70023
JN: 201572A, 202084A

REMOVAL
I-196BL EB STA 188+15 (POB) TO STA 190+00

DRAWING SHEET
I-196BL REM 001 SECT 1 37



SECTION 19
T5N, R14W
ZEELAND TOWNSHIP

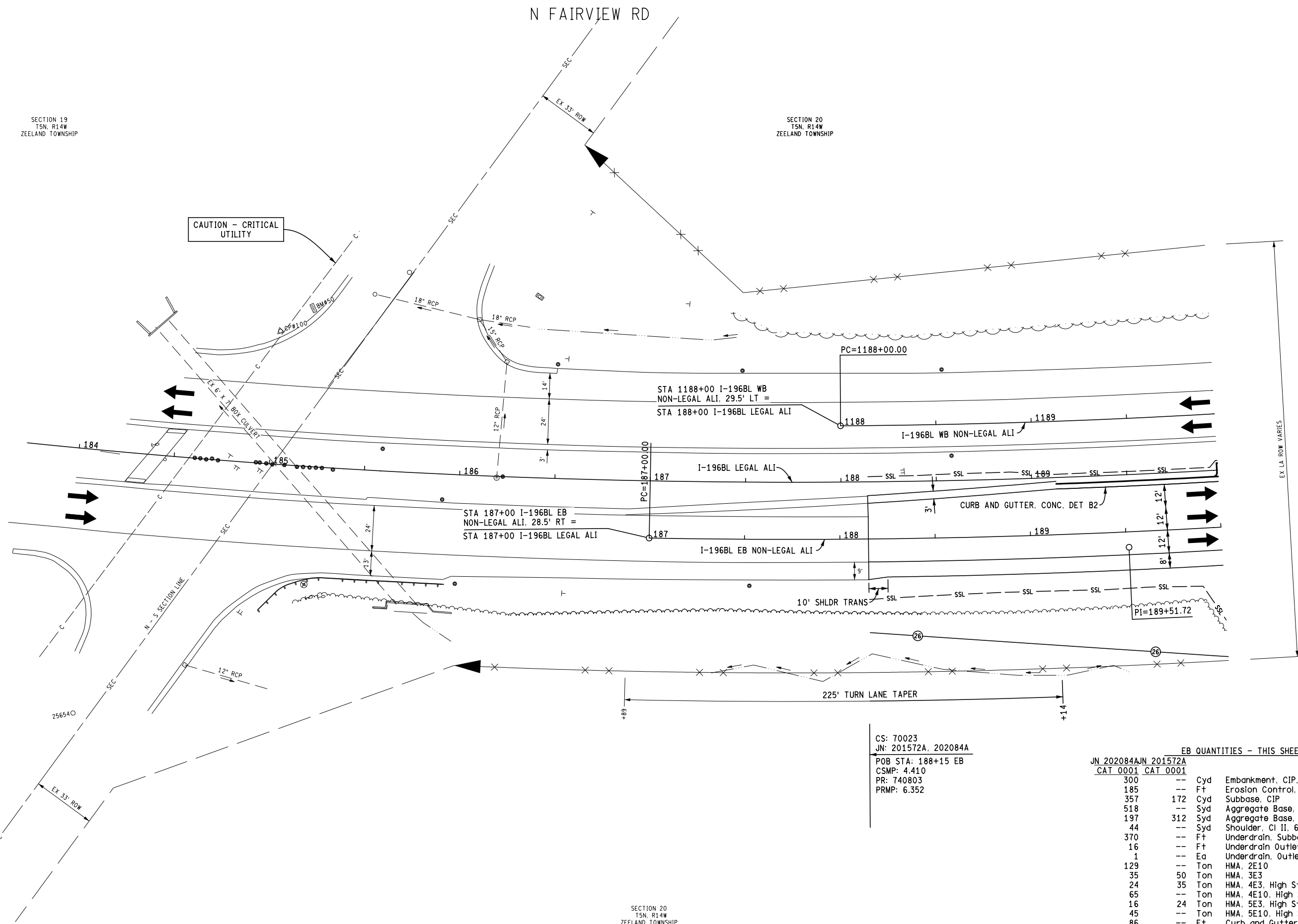
SECTION 20
T5N, R14W
ZEELAND TOWNSHIP

I-196BL WB

I-196BL WB

I-196BL EB

I-196BL EB



CAUTION - CRITICAL UTILITY

STA 1188+00 I-196BL WB
NON-LEGAL ALI. 29.5' LT =
STA 188+00 I-196BL LEGAL ALI

STA 187+00 I-196BL EB
NON-LEGAL ALI. 28.5' RT =
STA 187+00 I-196BL LEGAL ALI

CS: 70023
JN: 201572A, 202084A
POB STA: 188+15 EB
CSMP: 4.410
PR: 740803
PRMP: 6.352

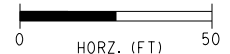
EB QUANTITIES - THIS SHEET

JN 202084A	JN 201572A	DESCRIPTION
CAT 0001	CAT 0001	
300	--	Cyd Embankment, CIP, Special
185	--	Ft Erosion Control, Silt Fence
357	172	Cyd Subbase, CIP
518	--	Syd Aggregate Base, 6 inch
197	312	Syd Aggregate Base, 7.25 inch
44	--	Syd Shoulder, Cl II, 6 inch
370	--	Ft Underdrain, Subbase, 6 inch
16	--	Ft Underdrain Outlet, 6 inch
1	--	Ea Underdrain, Outlet Ending, 6 inch
129	--	Ton HMA, 2E10
35	50	Ton HMA, 3E3
24	35	Ton HMA, 4E3, High Stress
65	--	Ton HMA, 4E10, High Stress
16	24	Ton HMA, 5E3, High Stress
45	--	Ton HMA, 5E10, High Stress
86	--	Ft Curb and Gutter, Conc. Det B2

SECTION 20
T5N, R14W
ZEELAND TOWNSHIP

88TH AVE

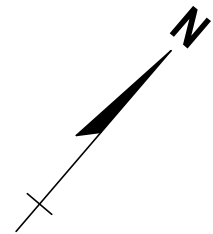
FINAL ROW PLAN REVISIONS		(SUBMITTAL DATE:)	
NO.	DATE	AUTH	DESCRIPTION



DATE: 04/10/18	CS: 70023	CONSTRUCTION	DRAWING	SHEET
DESIGN UNIT: JASINSKI	JN: 201572A, 202084A	I-196BL EB STA 188+15 (POB) TO STA 190+00	I-196BL CON 001	SECT 1 38
TSC: MUSKEGON	FILE: 201572_I-196BL_Con001.dgn			

WB QUANTITIES - THIS SHEET

JN 202084A	1206	Syd	Pavt, Rem
CAT 0001	1938	Cyd	Excavation, Earth*
	590	Syd	Cold Milling HMA Surface
	661	Syd	HMA Surface, Rem
	* INCLUDES 262 CYD OF TOPSOIL STRIPPING		



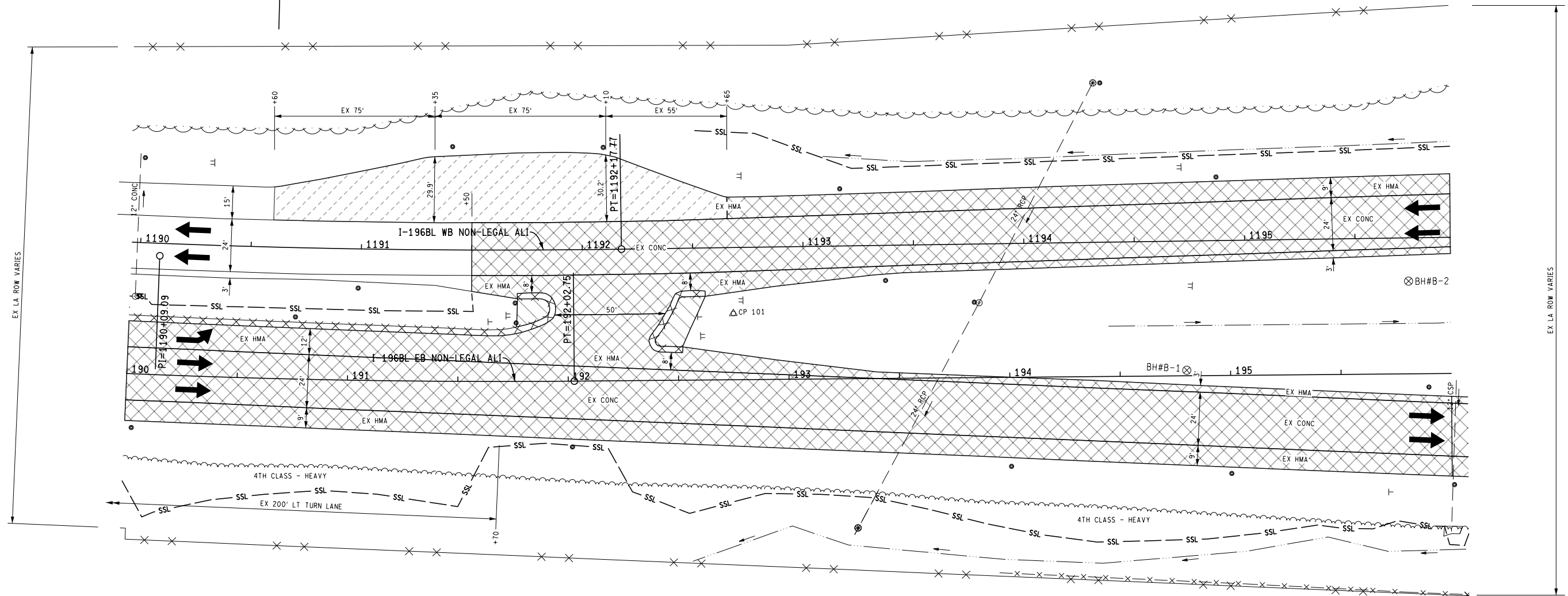
CS: 70023
JN: 201572A, 202084A
BEGIN CONSTRUCTION STA: 1190+60 WB
CSMP: 4.457
PR: 3700131
PRMP: 4.627

I-196BL EB

I-196BL WB

I-196BL WB

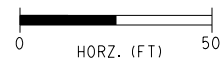
I-196BL EB



EB QUANTITIES - THIS SHEET

JN 202084A	267	Ft	Curb and Gutter, Rem
CAT 0001	1637	Syd	Pavt, Rem
	48	Syd	Sidewalk, Rem
	4555	Cyd	Excavation, Earth*
	1189	Syd	HMA Surface, Rem
	* INCLUDES 222 CYD OF TOPSOIL STRIPPING		

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



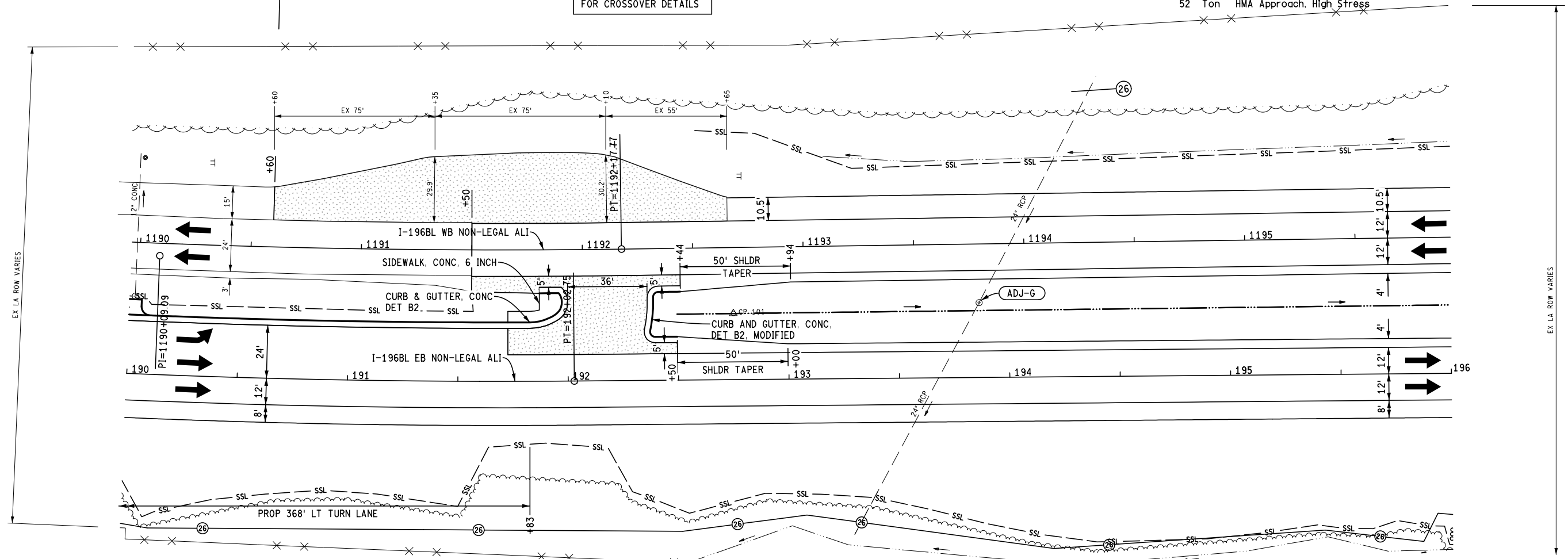
DATE: 04/10/18	CS: 70023	DRAWING	SHEET
DESIGN UNIT: JASINSKI	JN: 201572A, 202084A	REMOVAL	I-196BL WB STA 1191+50 (POB) TO STA 1195+93
TSC: MUSKEGON			I-196BL EB STA 190+00 TO STA 196+00
FILE: 201572_I-196BL_Rem002.dgn			I-196BL REM 002
			40

WB QUANTITIES - THIS SHEET

JN 202084A	CAT 0001	Quantity	Unit	Description
		555	Cyd	Embankment, CIP, Special
		20	Ft	Erosion Control, Silt Fence
		1581	Cyd	Subbase, CIP
		1482	Syd	Aggregate Base, 6 inch
		443	Syd	Aggregate Base, 7.25 inch
		156	Syd	Shoulder, CI II, 6 inch
		900	Ft	Underdrain, Subbase, 6 inch
		60	Ft	Underdrain Outlet, 6 inch
		3	Ea	Underdrain, Outlet Ending, 6 inch
		357	Ton	HMA, 2E10
		82	Ton	HMA, 3E3
		55	Ton	HMA, 4E3, High Stress
		181	Ton	HMA, 4E10, High Stress
		36	Ton	HMA, 5E3, High Stress
		123	Ton	HMA, 5E10, High Stress
		52	Ton	HMA Approach, High Stress

CS: 70023
JN: 201572A, 202084A
BEGIN CONSTRUCTION STA: 1190+60 WB
CSMP: 4.457
PR: 3700131
PRMP: 4.627

SEE DETAIL SHEET
FOR CROSSOVER DETAILS



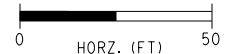
CROSSOVER QUANTITIES

JN 201572A	CAT 0001	Quantity	Unit	Description
		247	Syd	Aggregate Base, 7.25 inch
		45	Ton	HMA Approach
		51	Ton	HMA Approach, High Stress
		55	Ft	Curb and Gutter, Conc, Det B2
		53	Ft	Curb and Gutter, Conc, Det B2, Modified
		378	Sft	Sidewalk, Conc, 6 inch

EB QUANTITIES - THIS SHEET

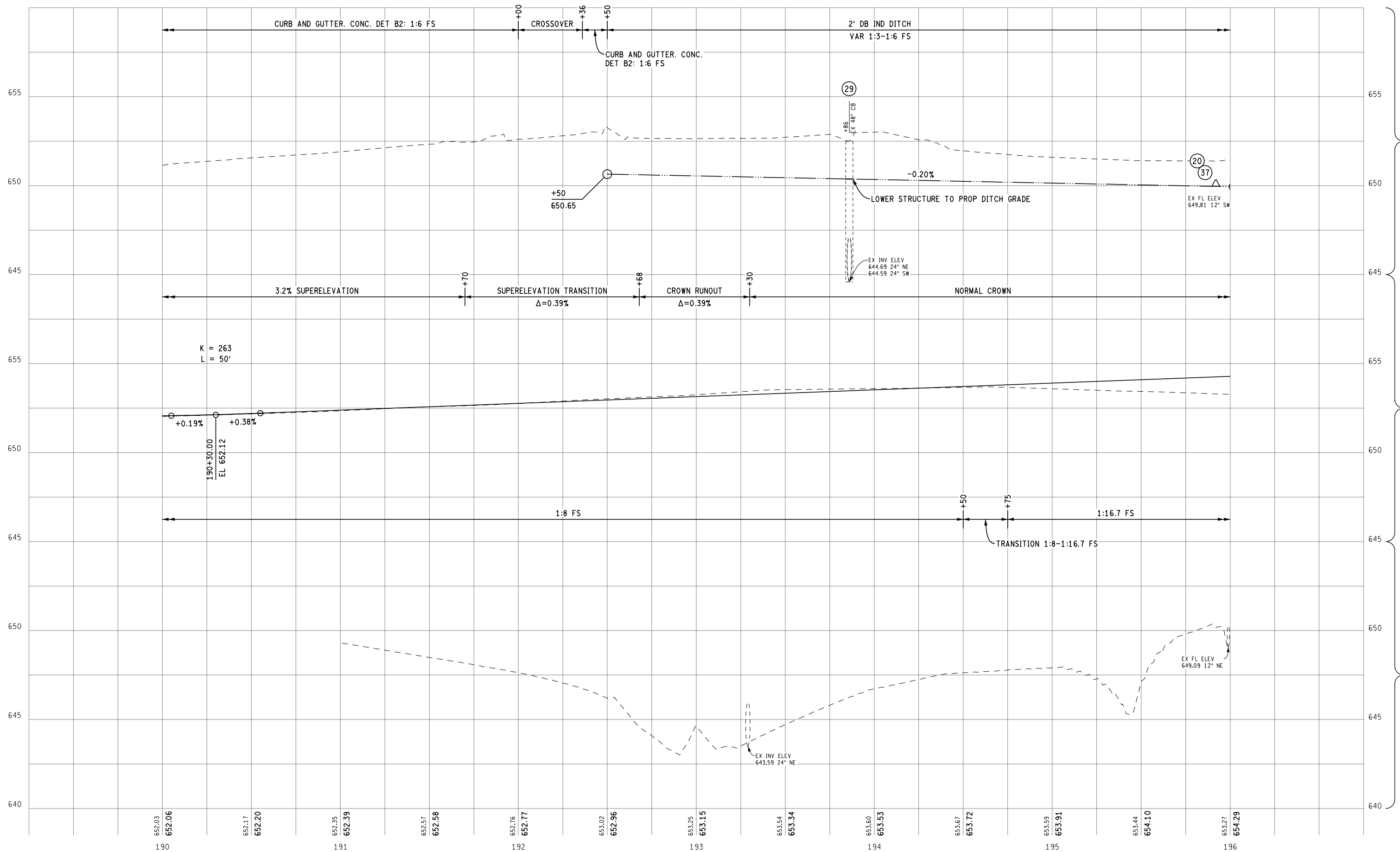
JN 202084A	JN 201572A	CAT 0001	CAT 0001	Quantity	Unit	Description
				1232	--	Cyd Embankment, CIP, Special
				6	--	Ft Erosion Control, Check Dam, Stone
				2	--	Ea Erosion Control, Inlet Protection, Fabric Drop
				1	--	Ea Erosion Control, Sediment Trap
				620	--	Ft Erosion Control, Silt Fence
				1648	162	Cyd Subbase, CIP
				3307	--	Syd Aggregate Base, 6 inch
				629	293	Syd Aggregate Base, 7.25 inch
				223	--	Syd Shoulder, CI II, 6 inch
				1	--	Ea Dr Structure Cover, Type G
				3	--	Ft Dr Structure, Adj, Add Depth
				1200	--	Ft Underdrain, Subbase, 6 inch
				80	--	Ft Underdrain Outlet, 6 inch
				4	--	Ea Underdrain, Outlet Ending, 6 inch
				459	--	Ton HMA, 2E10
				114	43	Ton HMA, 3E3
				76	30	Ton HMA, 4E3, High Stress
				232	--	Ton HMA, 4E10, High Stress
				49	21	Ton HMA, 5E3, High Stress
				158	--	Ton HMA, 5E10, High Stress
				160	--	Ft Curb and Gutter, Conc, Det B2
				1	--	Ea Shoulder, Conc, Det 1
				3	--	Ft Spillway, Conc

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

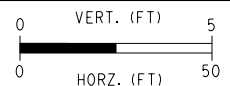


DATE: 04/10/18	CS: 70023
DESIGN UNIT: JASINSKI	JN: 201572A, 202084A
TSC: MUSKEGON	

CONSTRUCTION		DRAWING	SHEET
I-196BL EB STA 190+00 TO STA 196+00		I-196BL	SECT 1
I-196BL WB STA 1191+50 (POB) TO STA 1195+93		CON	002
			41



FINAL ROW PLAN REVISIONS		(SUBMITTAL DATE:)	
NO.	DATE	AUTH	DESCRIPTION

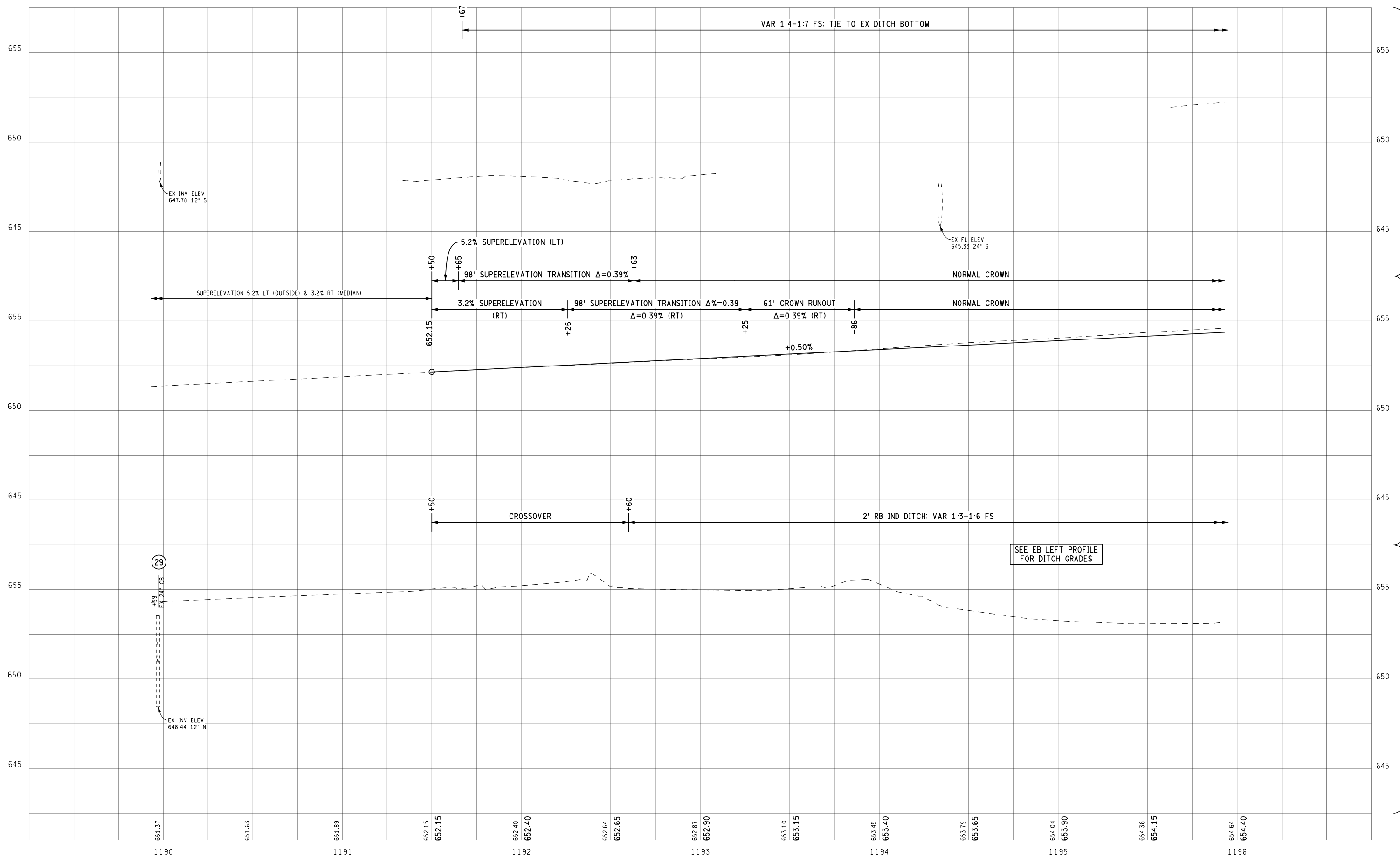


DATE: 04/10/18
 DESIGN UNIT: JASINSKI
 TSC: MUSKEGON
 FILE: 201572_I-196BL_EB_Prof002.dgn

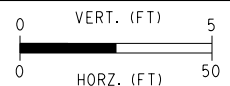
CS: 70023
 JN: 201572A, 202084A

PROFILE
 I-196BL EB STA 190+00 TO STA 196+00

DRAWING SHEET
 I-196BL PROF 002 SECT 1
42



FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

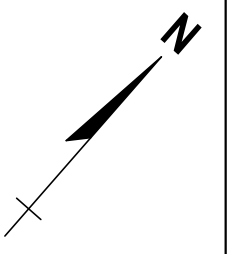


DATE: 04/10/18
 DESIGN UNIT: JASINSKI
 TSC: MUSKEGON
 FILE: 201572_I-196BL_WB_Prof002.dgn

CS: 70023
 JN: 201572A, 202084A

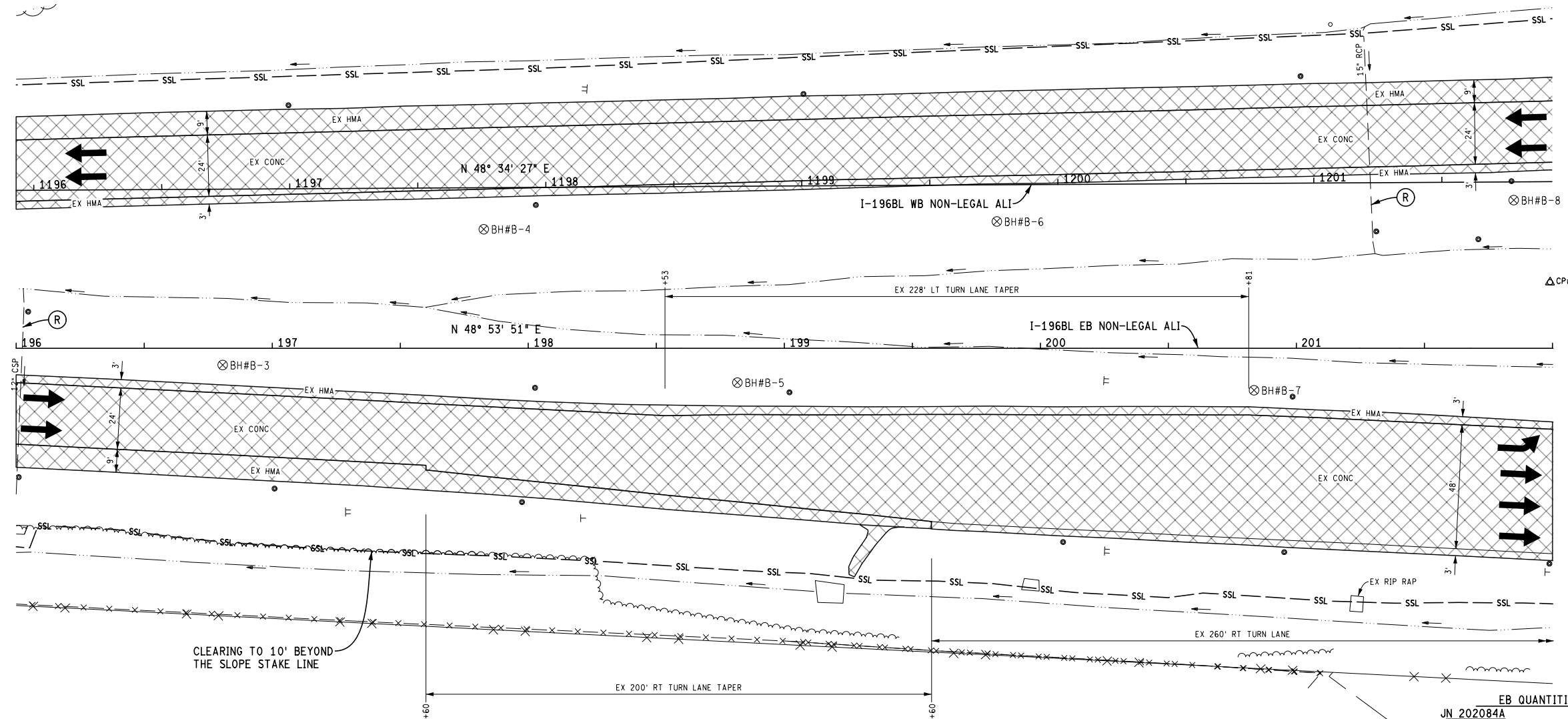
PROFILE
 I-196BL WB STA 1191+50 TO STA 1195+93

DRAWING SHEET
 I-196BL PROF 002 SECT 1
43



WB QUANTITIES - THIS SHEET
 JN 202084A
 CAT 0001
 1 Ea Culv. Rem. Less than 24 inch
 1634 Syd Pavt. Rem
 2960 Cyd Excavation, Earth*
 832 Syd HMA Surface, Rem
 * INCLUDES 449 CYD OF TOPSOIL STRIPPING

SECTION 20
 T5N, R14W
 ZEELAND TOWNSHIP



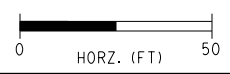
EB QUANTITIES - THIS SHEET
 JN 202084A
 CAT 0001
 1 Ea Culv. Rem. Less than 24 inch
 2527 Syd Pavt. Rem
 5383 Cyd Excavation, Earth*
 509 Syd HMA Surface, Rem
 * INCLUDES 199 CYD OF TOPSOIL STRIPPING

SECTION 20
 T5N, R14W
 ZEELAND TOWNSHIP

I-196BL WB
I-196BL EB

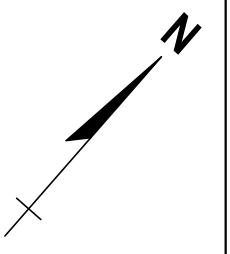
I-196BL WB
I-196BL EB

FINAL ROW PLAN REVISIONS		(SUBMITTAL DATE:)	
NO.	DATE	AUTH	DESCRIPTION



DATE: 04/10/18
 DESIGN UNIT: JASINSKI
 TSC: MUSKEGON
 CS: 70023
 JN: 201572A, 202084A
 FILE: 201572_I-196BL_Rem003.dgn

REMOVAL		DRAWING	SHEET
I-196BL EB STA 196+00 TO STA 202+00		I-196BL	SECT 1
I-196BL WB STA 1195+93 TO STA 1201+93		REM 003	44



I-196BL WB

I-196BL EB

I-196BL WB

I-196BL EB

SECTION 20
TSN: R14W
ZEELAND TOWNSHIP

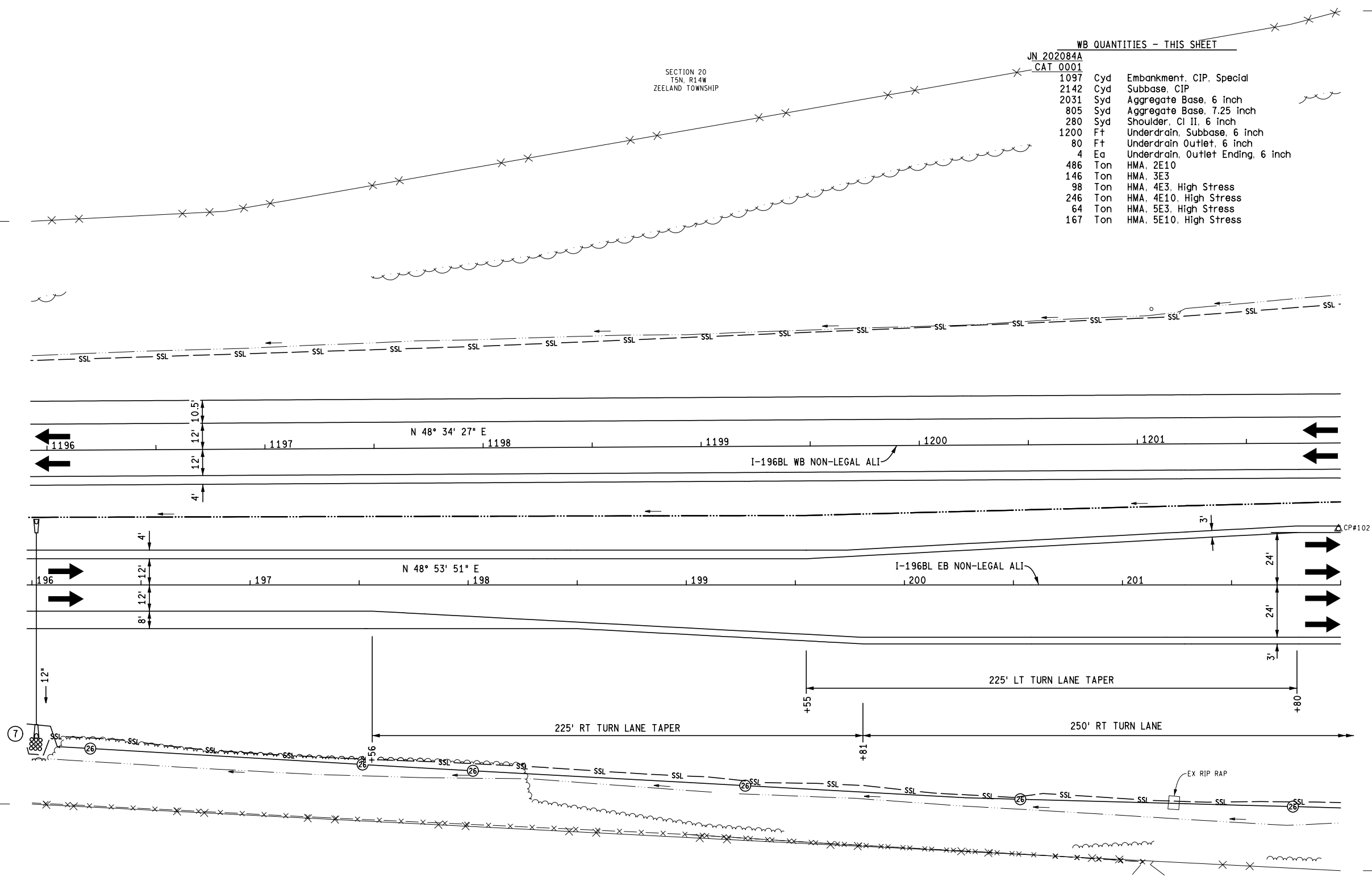
JN 202084A
CAT 0001

WB QUANTITIES - THIS SHEET

1097	Cyd	Embankment, CIP, Special
2142	Cyd	Subbase, CIP
2031	Syd	Aggregate Base, 6 inch
805	Syd	Aggregate Base, 7.25 inch
280	Syd	Shoulder, CI II, 6 inch
1200	Ft	Underdrain, Subbase, 6 inch
80	Ft	Underdrain Outlet, 6 inch
4	Ea	Underdrain, Outlet Ending, 6 inch
486	Ton	HMA, 2E10
146	Ton	HMA, 3E3
98	Ton	HMA, 4E3, High Stress
246	Ton	HMA, 4E10, High Stress
64	Ton	HMA, 5E3, High Stress
167	Ton	HMA, 5E10, High Stress

EX. L.A. ROW VARIES

EX. L.A. ROW VARIES



JN 202084A
CAT 0001

EB QUANTITIES - THIS SHEET

1220	--	Cyd	Embankment, CIP, Special
18	--	Ft	Erosion Control, Check Dam, Stone
1	--	Ea	Erosion Control, Inlet Protection, Fabric Drop
3	--	Ea	Erosion Control, Sediment Trap
600	--	Ft	Erosion Control, Silt Fence
1646	550	Cyd	Subbase, CIP
1887	--	Syd	Aggregate Base, 6 inch
165	1000	Syd	Aggregate Base, 7.25 inch
280	--	Syd	Shoulder, CI II, 6 inch
2	--	Ea	Culv End Sect, 12 inch
88	--	Ft	Culv, CI A, 12 inch
1200	--	Ft	Underdrain, Subbase, 6 inch

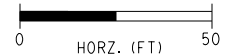
JN 202084A
CAT 0001

EB QUANTITIES - THIS SHEET

80	--	Ft	Underdrain Outlet, 6 inch
4	--	Ea	Underdrain, Outlet Ending, 6 inch
457	--	Ton	HMA, 2E10
40	166	Ton	HMA, 3E3
24	116	Ton	HMA, 4E3, High Stress
231	--	Ton	HMA, 4E10, High Stress
14	79	Ton	HMA, 5E3, High Stress
157	--	Ton	HMA, 5E10, High Stress
3	--	Syd	Riprap, Plain

SECTION 20
TSN: R14W
ZEELAND TOWNSHIP

FINAL ROW PLAN REVISIONS		(SUBMITTAL DATE:)	
NO.	DATE	AUTH	DESCRIPTION



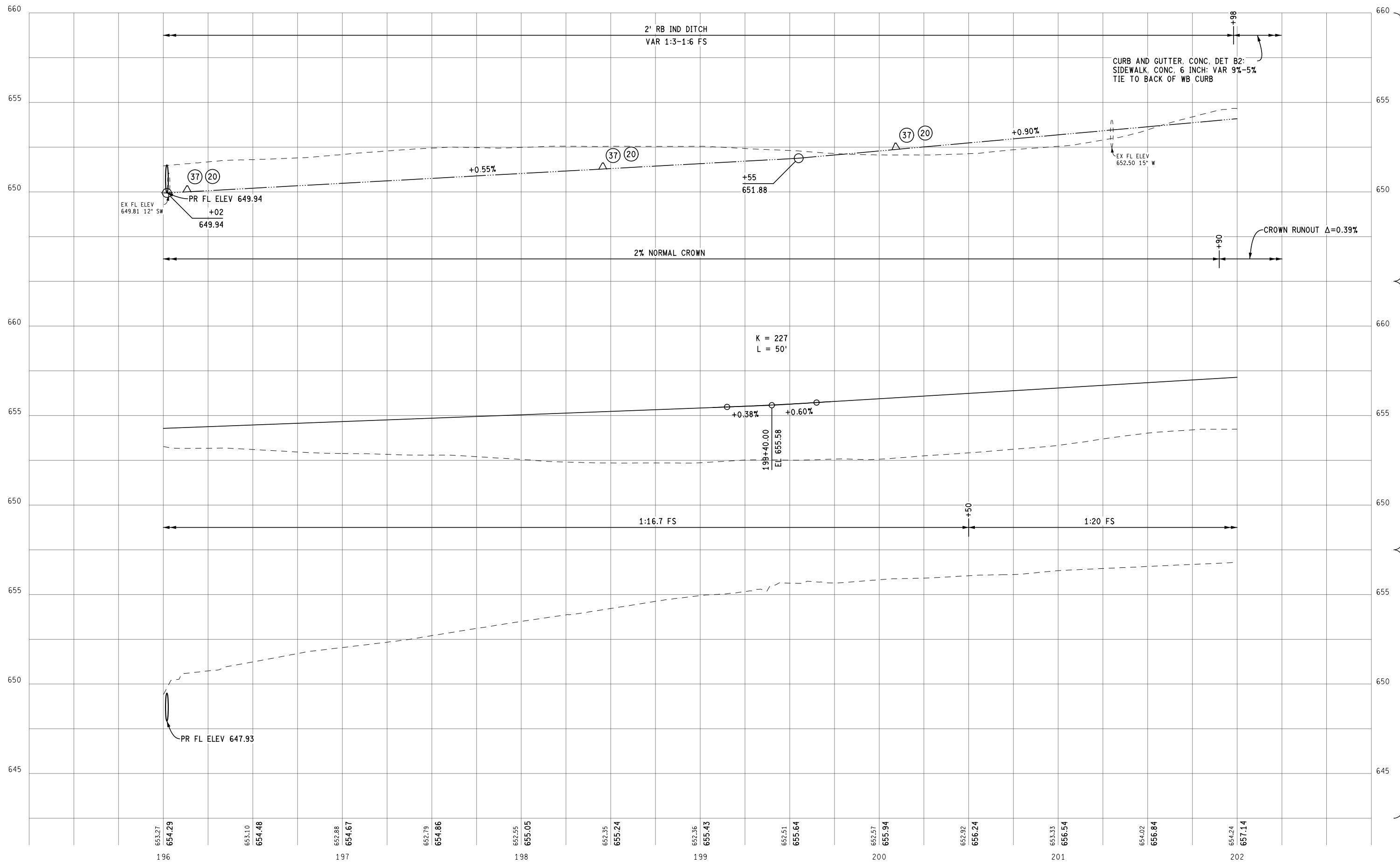
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DATE: 04/10/18
DESIGN UNIT: JASINSKI
TSC: MUSKEGON

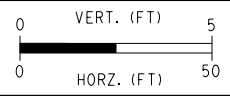
CS: 70023
JN: 201572A, 202084A

CONSTRUCTION
I-196BL EB STA 196+00 TO STA 202+00
I-196BL WB STA 1195+93 TO STA 1201+93

DRAWING SHEET
I-196BL CON 003 SECT 1 45



FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

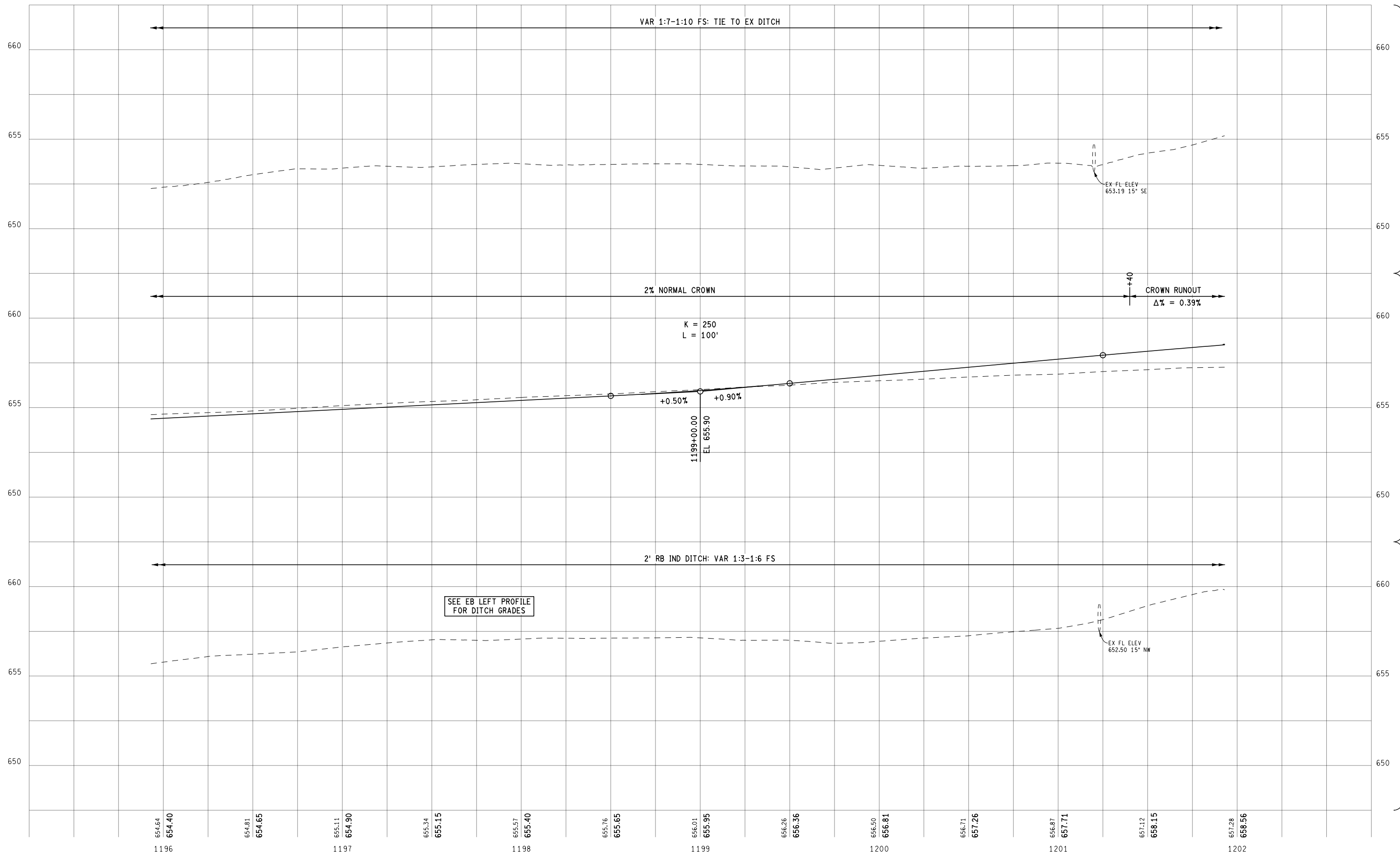


DATE: 04/10/18
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 FILE: 201572_I-196BL_EB_Prof003.dgn

CS: 70023
 JN: 201572A, 202084A

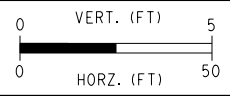
PROFILE
 I-196BL EB STA 196+00 TO STA 202+00

DRAWING SHEET
 I-196BL PROF 003 SECT 1
 46



EX GROUND PROFILE 60' LT ---
EX GROUND PROFILE AT I-196BL WB NON-LEGAL ALI ---
PROP PLAN GRADE AT I-196BL WB NON-LEGAL ALI ---
EX GROUND PROFILE 33' RT ---

FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

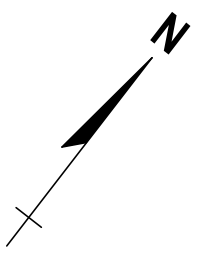


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FILE: 201572_I-196BL_WB_Prof003.dgn

CS: 70023
JN: 201572A, 202084A

PROFILE
I-196BL WB STA 1195+93 TO STA 1201+93

DRAWING SHEET
I-196BL PROF 003 SECT 1
47



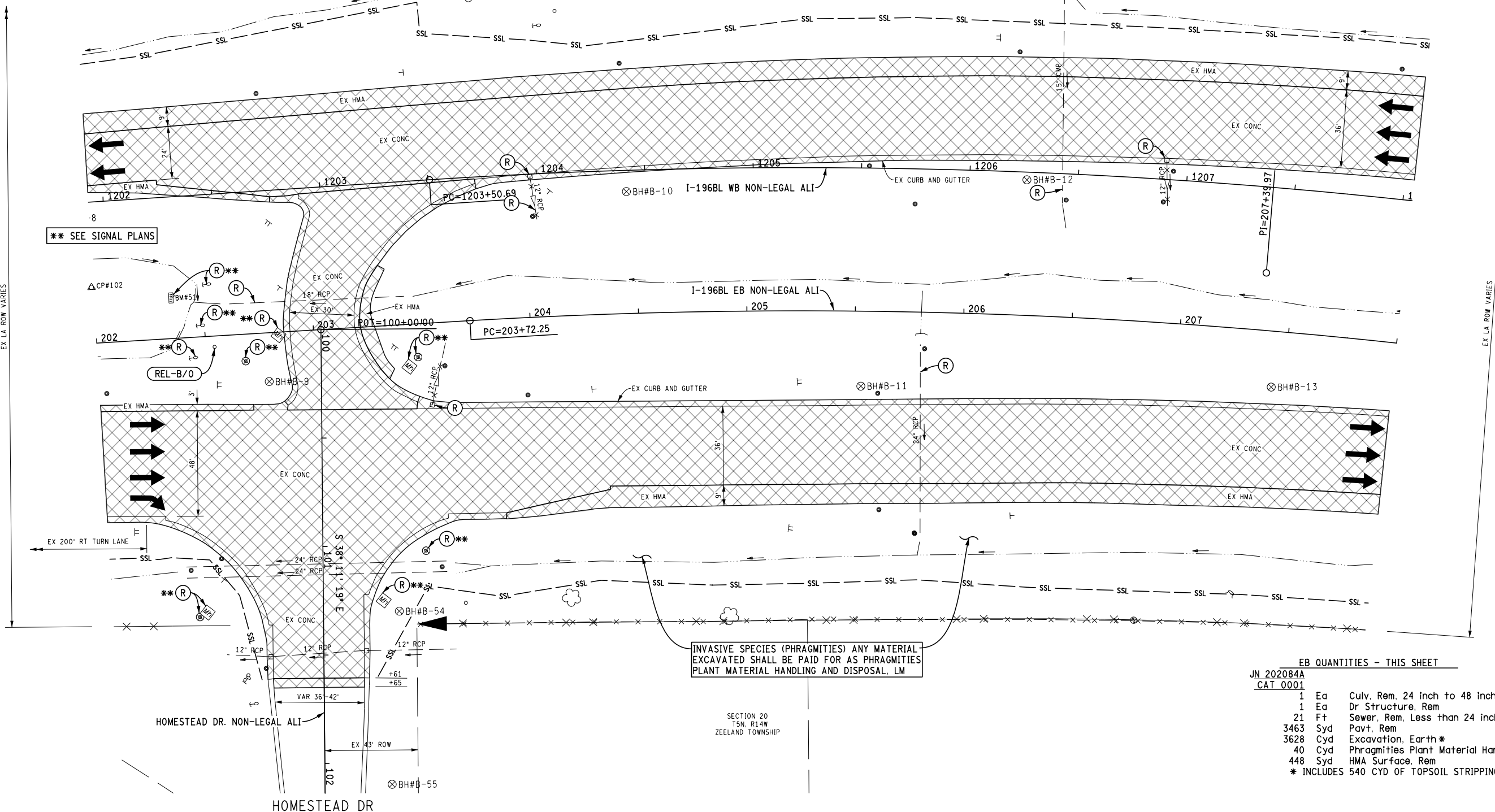
WB QUANTITIES - THIS SHEET
 JN 202084A
 CAT 0001

2	Ea	Culv. Rem. Less than 24 inch
2	Ea	Dr Structure, Rem
43	Ft	Sewer, Rem. Less than 24 inch
353	Ft	Curb and Gutter, Rem
3125	Syd	Pavt. Rem
2560	Cyd	Excavation, Earth*
699	Syd	HMA Surface, Rem
* INCLUDES 509 CYD OF TOPSOIL STRIPPING		

SECTION 20
 T5N, R14W
 ZEELAND TOWNSHIP

I-196BL EB

I-196BL WB

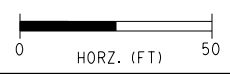


EB QUANTITIES - THIS SHEET
 JN 202084A
 CAT 0001

1	Ea	Culv. Rem. 24 inch to 48 inch
1	Ea	Dr Structure, Rem
21	Ft	Sewer, Rem. Less than 24 inch
3463	Syd	Pavt. Rem
3628	Cyd	Excavation, Earth*
40	Cyd	Phragmites Plant Material Handling and Disposal, LM
448	Syd	HMA Surface, Rem
* INCLUDES 540 CYD OF TOPSOIL STRIPPING		

SECTION 20
 T5N, R14W
 ZEELAND TOWNSHIP

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



DATE: 04/10/18
 DESIGN UNIT: JASINSKI
 TSC: MUSKEGON
 CS: 70023
 JN: 201572A, 202084A
 FILE: 201572_I-196BL_Rem004.dgn

REMOVAL		DRAWING	SHEET
I-196BL EB STA 202+00 TO STA 208+00		I-196BL REM 004	SECT 1
I-196BL WB STA 1201+93 TO STA 1208+04			48

DRAINAGE STRUCTURE AND SEWER TABLE					Culv End Sect, 24 inch	Sewer, CI A, 12 inch, Tr Det B	Sewer, CI A, 18 inch, Tr Det B	Sewer, CI A, 24 inch, Tr Det B	Dr Structure Cover, Type G	Dr Structure Cover, Type J	Dr Structure, 48 inch dia	Dr Structure, Add Depth of 48 inch dia, 8 foot to 15 foot
STRUCT NO.	ALIGNMENT	STATION	OFFSET	RIM ELEV								
			FT		Ea	F+	F+	F+	Ea	Ea	Ea	F+
10	I-196BL WB	1205+79	54.64 LT	655.94				80	1		1	
11	I-196BL WB	1205+79	130.00 RT		1							
6	I-196BL WB	1207+15	24.58 RT	661.05			135		1	1	1	
7	I-196BL WB	1205+79	25.24 RT	660.19				105	1	1	1	4
8	I-196BL WB	1204+57	27.30 RT	659.41		121			1	1	1	2
9	I-196BL WB	1203+38	33.21 RT	658.59		112			1	1	1	1
JN 201572A CAT0001 - TOTAL					1	233	135	185	1	4	5	8

SECTION 20
T5N, R14W
ZEELAND TOWNSHIP

WB QUANTITIES - THIS SHEET

JN 202084A CAT 0001	JN 201572A CAT 0001	Quantity	Unit	Description
1103		1103	Cyd	Embankment, CIP, Special
16		16	Ft	Erosion Control, Check Dam, Stone
4		4	Ea	Erosion Control, Inlet Protection, Fabric Drop
2		2	Ea	Erosion Control, Sediment Trap
1396	626	1396	Cyd	Subbase, CIP
1742		1742	Syd	Aggregate Base, 6 inch
695	1138	695	Syd	Aggregate Base, 7.25 inch
144		144	Syd	Shoulder, CI II, 6 inch
1222		1222	Ft	Underdrain, Subbase, 6 inch
80		80	Ft	Underdrain Outlet, 6 inch
4		4	Ea	Underdrain, Outlet Ending, 6 inch
432		432	Ton	HMA, 2E10
122	134	122	Ton	HMA, 3E3
82	93	82	Ton	HMA, 4E3, High Stress
218		218	Ton	HMA, 4E10, High Stress
53	64	53	Ton	HMA, 5E3, High Stress
149		149	Ton	HMA, 5E10, High Stress
	489		Ft	Curb and Gutter, Conc, Det B2
1		1	Ea	Shoulder Gutter, Conc, Det 2
6		6	Ft	Spillway, Conc
	315		Sft	Sidewalk, Conc, 6 inch
6		6	Syd	Riprap, Plain

CROSSOVER QUANTITIES

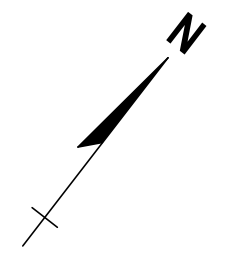
JN 201572A CAT 0001	Quantity	Unit	Description
252	Syd	Aggregate Base, 7.25 inch	
43	Ton	HMA Approach	
51	Ton	HMA Approach, High Stress	
174	Ft	Curb and Gutter, Conc, Det B2	
369	Sft	Sidewalk, Conc, 6 inch	

I-196BL WB

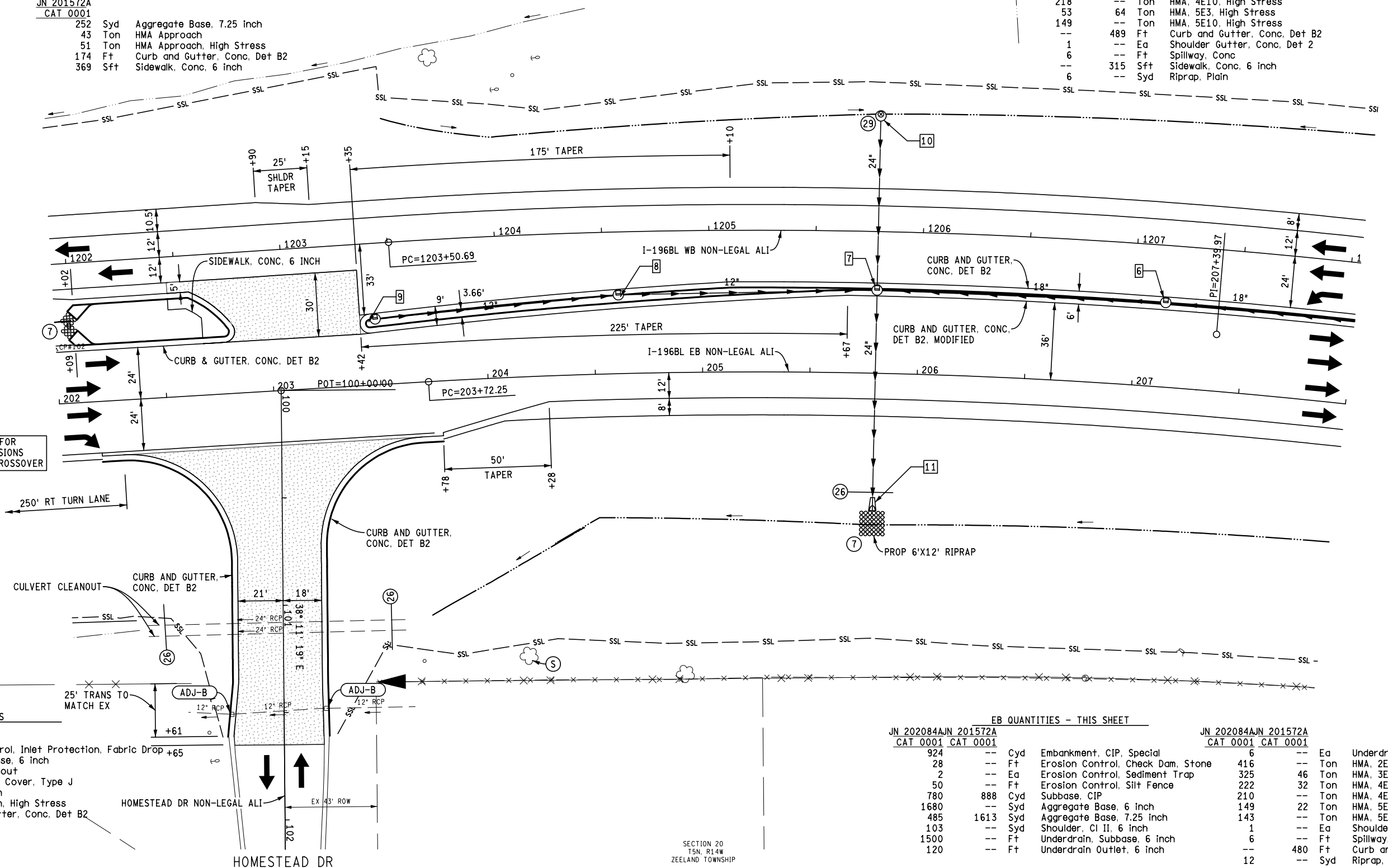
I-196BL EB

I-196BL WB

I-196BL EB



SEE DETAIL GRADE SHEET FOR
DETAIL GRADES AND DIMENSIONS
FOR HOMESTEAD DR AND CROSSOVER



HOMESTEAD QUANTITIES

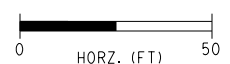
JN 202084A CAT 0001	Quantity	Unit	Description
2	Ea	Erosion Control, Inlet Protection, Fabric Drop	
849	Syd	Aggregate Base, 6 inch	
240	Ft	Culvert Cleanout	
2	Ea	Dr Structure Cover, Type J	
138	Ton	HMA Approach	
161	Ton	HMA Approach, High Stress	
327	Ft	Curb and Gutter, Conc, Det B2	

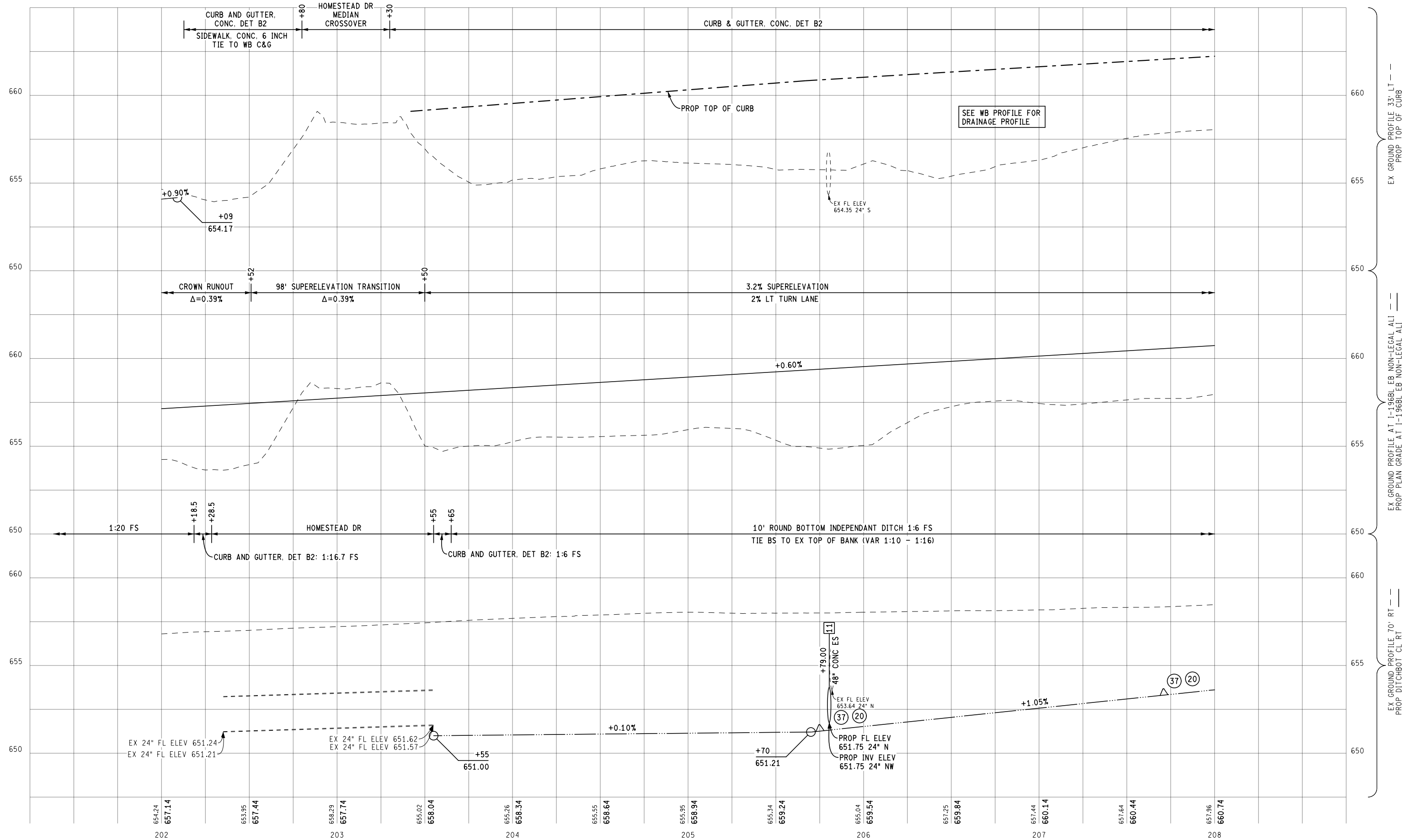
EB QUANTITIES - THIS SHEET

JN 202084A CAT 0001	JN 201572A CAT 0001	Quantity	Unit	Description
924		924	Cyd	Embankment, CIP, Special
28		28	Ft	Erosion Control, Check Dam, Stone
2		2	Ea	Erosion Control, Sediment Trap
50		50	Ft	Erosion Control, Silt Fence
780	888	780	Cyd	Subbase, CIP
1680		1680	Syd	Aggregate Base, 6 inch
485	1613	485	Syd	Aggregate Base, 7.25 inch
103		103	Syd	Shoulder, CI II, 6 inch
1500		1500	Ft	Underdrain, Subbase, 6 inch
120		120	Ft	Underdrain Outlet, 6 inch

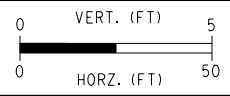
JN 202084A CAT 0001	JN 201572A CAT 0001	Quantity	Unit	Description
6		6	Ea	Underdrain, Outlet Ending, 6 inch
416		416	Ton	HMA, 2E10
325	46	325	Ton	HMA, 3E3
222	32	222	Ton	HMA, 4E3, High Stress
210		210	Ton	HMA, 4E10, High Stress
149	22	149	Ton	HMA, 5E3, High Stress
143		143	Ton	HMA, 5E10, High Stress
1		1	Ea	Shoulder Gutter, Conc, Det 2
6		6	Ft	Spillway, Conc
	480		Ft	Curb and Gutter, Conc, Det B2, Modified
12		12	Syd	Riprap, Plain

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION





FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

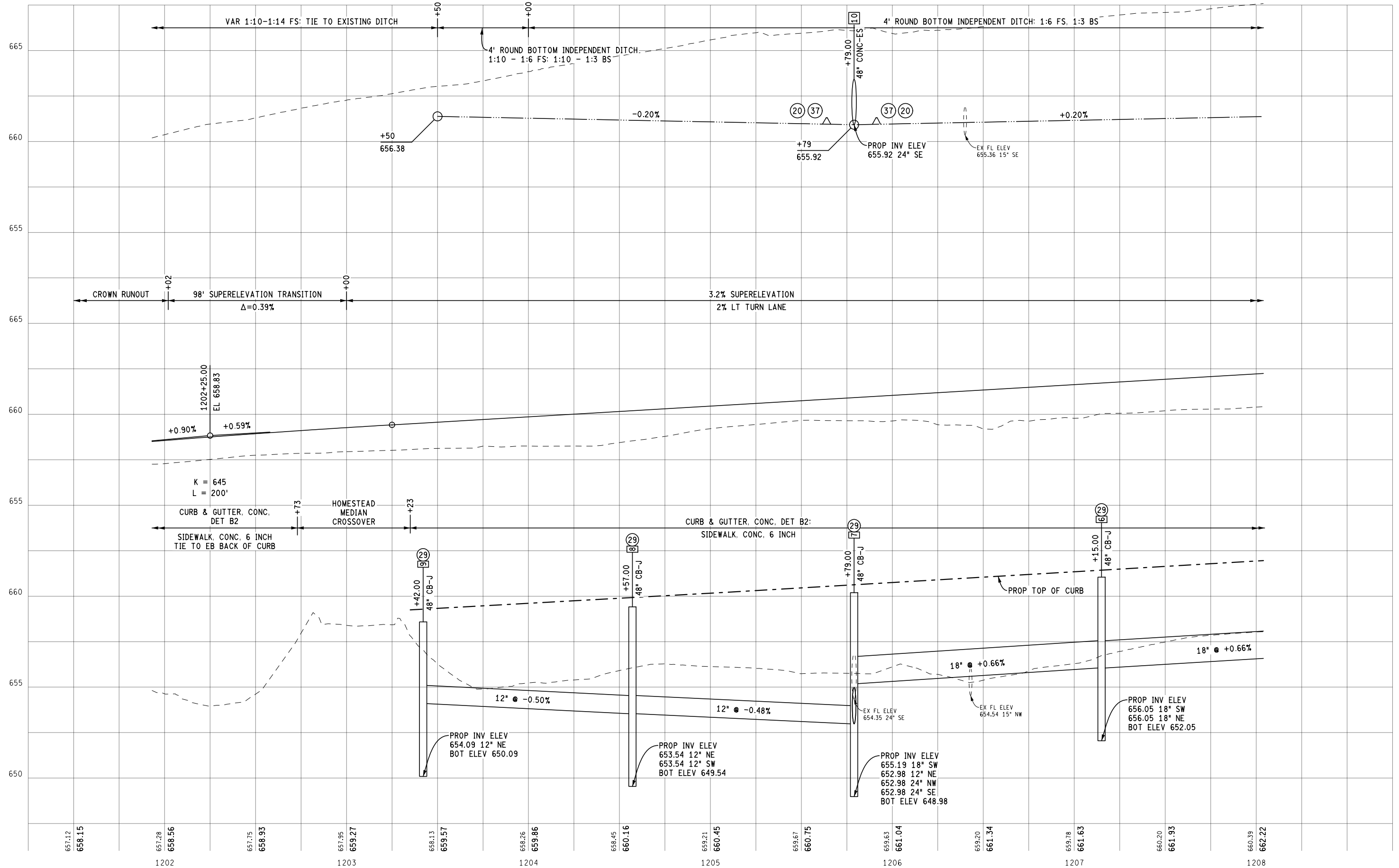


DATE: 04/10/18
 DESIGN UNIT: JASINSKI
 TSC: MUSKEGON
 FILE: 201572_I-196BL_EB_Prof004.dgn

CS: 70023
 JN: 201572A, 202084A

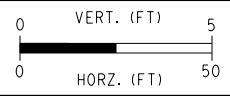
PROFILE
 I-196BL EB STA 202+00 TO STA 208+00

DRAWING SHEET
 I-196BL PROF 004 SECT 1
50



--- EX GROUND PROFILE 60' LT
 - - - PROP DITCH BOT CL LT
 --- EX GROUND PROFILE 60' RT
 - - - PROP DITCH BOT CL RT
 --- EX GRD PROF AT I-196BL NON-LGL ALI
 - - - PROP PLAN GRD I-196BL NON-LGL ALI
 --- EX GROUND PROFILE 33' RT
 - - - PROP DRAIN SEWER RT
 - - - PROP TOP OF CURB RT

FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

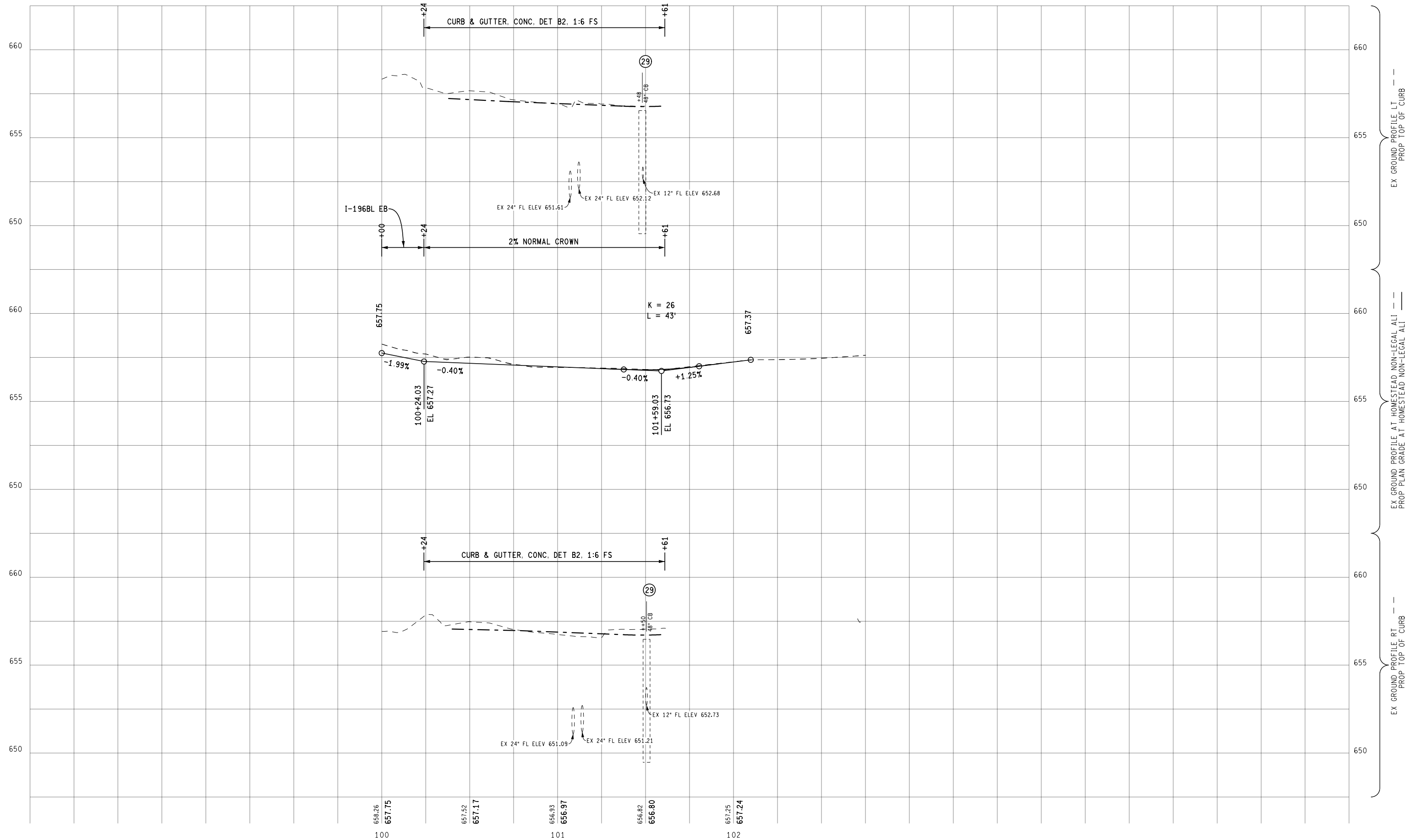


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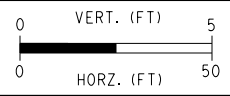
CS: 70023
 JN: 201572A, 202084A

PROFILE
 I-196BL WB STA 1201+93 TO STA 1208+04

DRAWING SHEET
 I-196BL PROF 004
 SECT 1
 51



FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



DATE: 04/10/18
 DESIGN UNIT: JASINSKI
 TSC: MUSKEGON
 FILE: 201572_Homestead_Prof001.dgn

CS: 70023
 JN: 201572A, 202084A

PROFILE
 HOMESTEAD DRIVE STA 100+00 TO STA 101+60

DRAWING SHEET
 HOME PROF 001
 SECT 1
 52

- WB QUANTITIES - THIS SHEET**
 JN 202084A
 CAT 0001
- 1 Ea Culv. Rem. Less than 24 inch
 - 1 Ea Dr Structure, Rem
 - 22 Ft Sewer, Rem. Less than 24 inch
 - 3963 Syd Pavt. Rem
 - 3316 Cyd Excavation, Earth*
 - 296 Syd HMA Surface, Rem
- * INCLUDES 458 CYD OF TOPSOIL STRIPPING

SECTION 20
 T5N, R14W
 ZEELAND TOWNSHIP

SECTION 20
 T5N, R14W
 ZEELAND TOWNSHIP

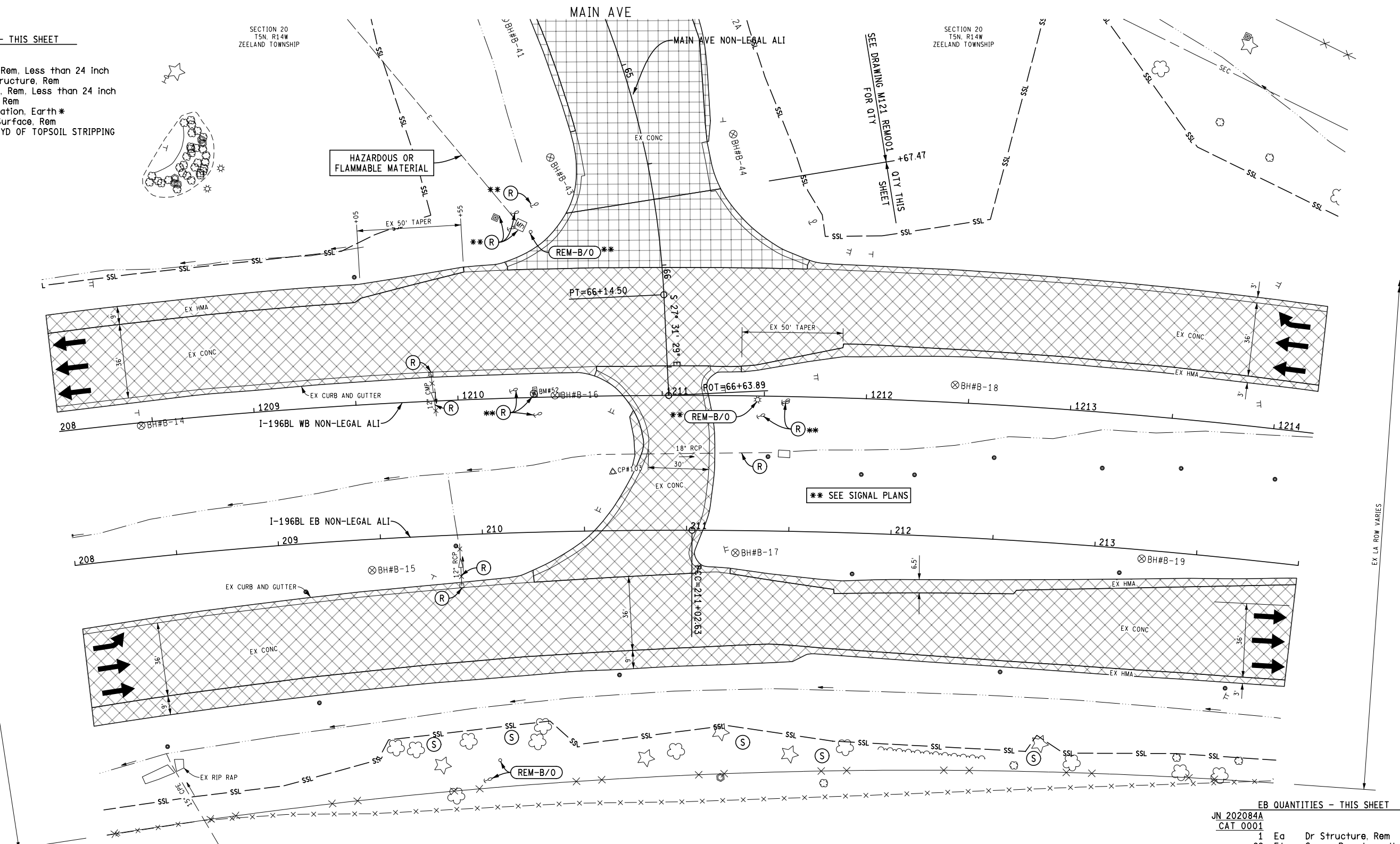
SECTION 20
 T5N, R14W
 ZEELAND TOWNSHIP

I-196BL WB

I-196BL WB

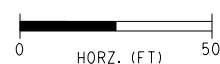
I-196BL EB

I-196BL EB



- EB QUANTITIES - THIS SHEET**
 JN 202084A
 CAT 0001
- 1 Ea Dr Structure, Rem
 - 22 Ft Sewer, Rem. Less than 24 inch
 - 2483 Syd Pavt. Rem
 - 4400 Cyd Excavation, Earth*
 - 591 Syd HMA Surface, Rem
- * INCLUDES 607 CYD OF TOPSOIL STRIPPING

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



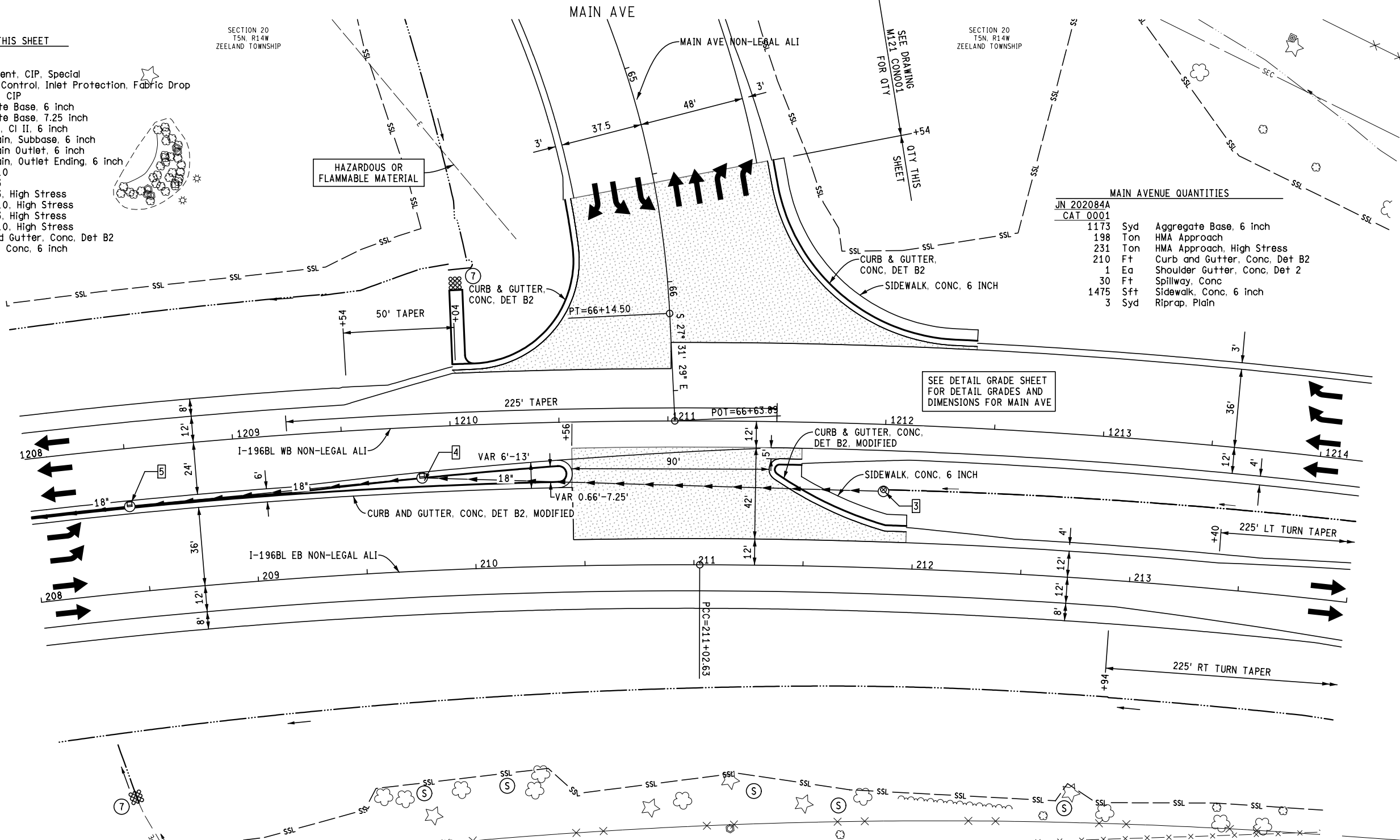
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TSC: MUSKEGON	FILE: 201572_I-196BL_Rem005.dgn	I-196BL WB STA 1208+04 TO STA 1214+19	REM	005
				53

WB QUANTITIES - THIS SHEET

QTY	UNIT	DESCRIPTION
1586	--	Cyd Embankment, CIP, Special
3	--	Ea Erosion Control, Inlet Protection, Fabric Drop
1848	939	Cyd Subbase, CIP
1880	--	Syd Aggregate Base, 6 inch
155	1706	Syd Aggregate Base, 7.25 inch
159	--	Syd Shoulder, CI II, 6 inch
1430	--	Ft Underdrain, Subbase, 6 inch
120	--	Ft Underdrain Outlet, 6 inch
6	--	Ea Underdrain, Outlet Ending, 6 inch
458	--	Ton HMA, 2E10
38	267	Ton HMA, 3E3
23	185	Ton HMA, 4E3, High Stress
232	--	Ton HMA, 4E10, High Stress
13	126	Ton HMA, 5E3, High Stress
158	--	Ton HMA, 5E10, High Stress
250	--	Ft Curb and Gutter, Conc, Det B2
--	175	Sft Sidewalk, Conc, 6 inch

SECTION 20
T5N, R14W
ZEELAND TOWNSHIP

SECTION 20
T5N, R14W
ZEELAND TOWNSHIP



MAIN AVENUE QUANTITIES

QTY	UNIT	DESCRIPTION
1173	Syd	Aggregate Base, 6 inch
198	Ton	HMA Approach
231	Ton	HMA Approach, High Stress
210	Ft	Curb and Gutter, Conc, Det B2
1	Ea	Shoulder Gutter, Conc, Det 2
30	Ft	Spillway, Conc
1475	Sft	Sidewalk, Conc, 6 inch
3	Syd	Riprap, Plain

I-196BL WB
I-196BL EB

I-196BL WB
I-196BL EB

CROSSOVER QUANTITIES

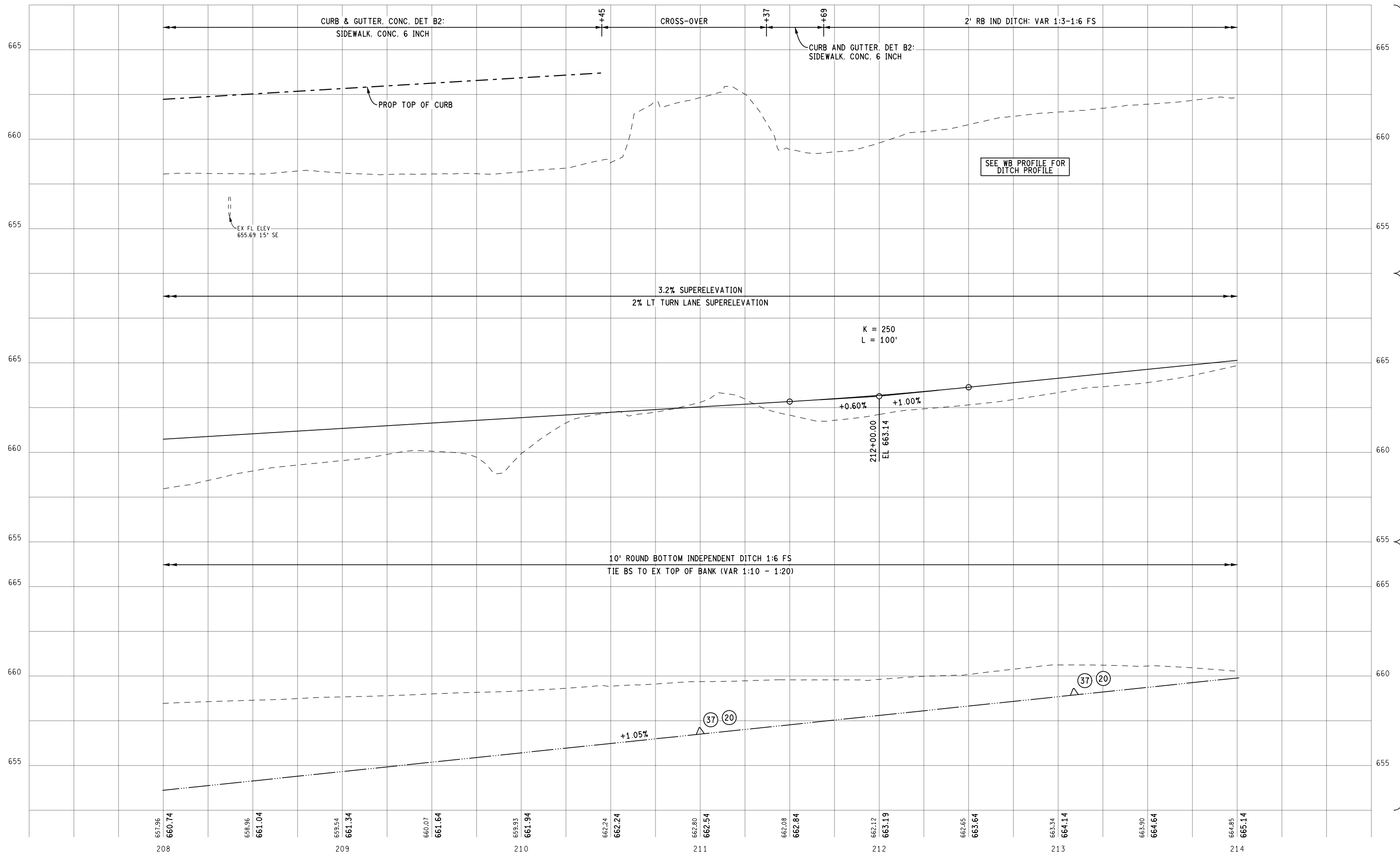
QTY	UNIT	DESCRIPTION
549	Syd	Aggregate Base, 7.25 inch
100	Ton	HMA Approach
116	Ton	HMA Approach, High Stress
15	Ft	Curb and Gutter, Conc, Det B2
45	Ft	Curb and Gutter, Conc, Det B2, Modified
405	Sft	Sidewalk, Conc, 6 inch

DRAINAGE STRUCTURE AND SEWER TABLE

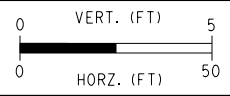
STRUCT NO.	ALIGNMENT	STATION	OFFSET	RIM ELEV	Sewer, CI A, 18 inch, Tr Det B		Dr Structure Cover, Type G		Dr Structure Cover, Type J		Dr Structure, 48 inch dia		Dr Structure, Add Depth of 48 inch dia, 8 foot to 15 foot	
					Ft	Ea	Ea	Ea	Ea	Ft	Ft			
3	I-196BL WB	1212+00	30.00 RT	661.08	210	1	1	1	1	1	1	1	1	1
4	I-196BL WB	1209+86	21.32 RT	662.65	135	--	1	1	1	1	1	1	1	1
5	I-196BL WB	1208+50	24.58 RT	661.85	134	--	1	1	1	1	1	1	1	1
JN 201572A CAT0001 - TOTAL					479	1	2	3	2	2	2	2	2	2

EB QUANTITIES - THIS SHEET

QTY	UNIT	DESCRIPTION
1227	--	Cyd Embankment, CIP, Special
12	--	Ft Erosion Control, Check Dam, Stone
2	--	Ea Erosion Control, Sediment Trap
1191	464	Cyd Subbase, CIP
1749	--	Syd Aggregate Base, 6 inch
488	843	Syd Aggregate Base, 7.25 inch
193	--	Syd Shoulder, CI II, 6 inch
1200	--	Ft Underdrain, Subbase, 6 inch
80	--	Ft Underdrain Outlet, 6 inch
4	--	Ea Underdrain, Outlet Ending, 6 inch
429	--	Ton HMA, 2E10
95	148	Ton HMA, 3E3
63	103	Ton HMA, 4E3, High Stress
217	--	Ton HMA, 4E10, High Stress
40	70	Ton HMA, 5E3, High Stress
148	--	Ton HMA, 5E10, High Stress
--	250	Ft Curb and Gutter, Conc, Det B2, Modified



FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
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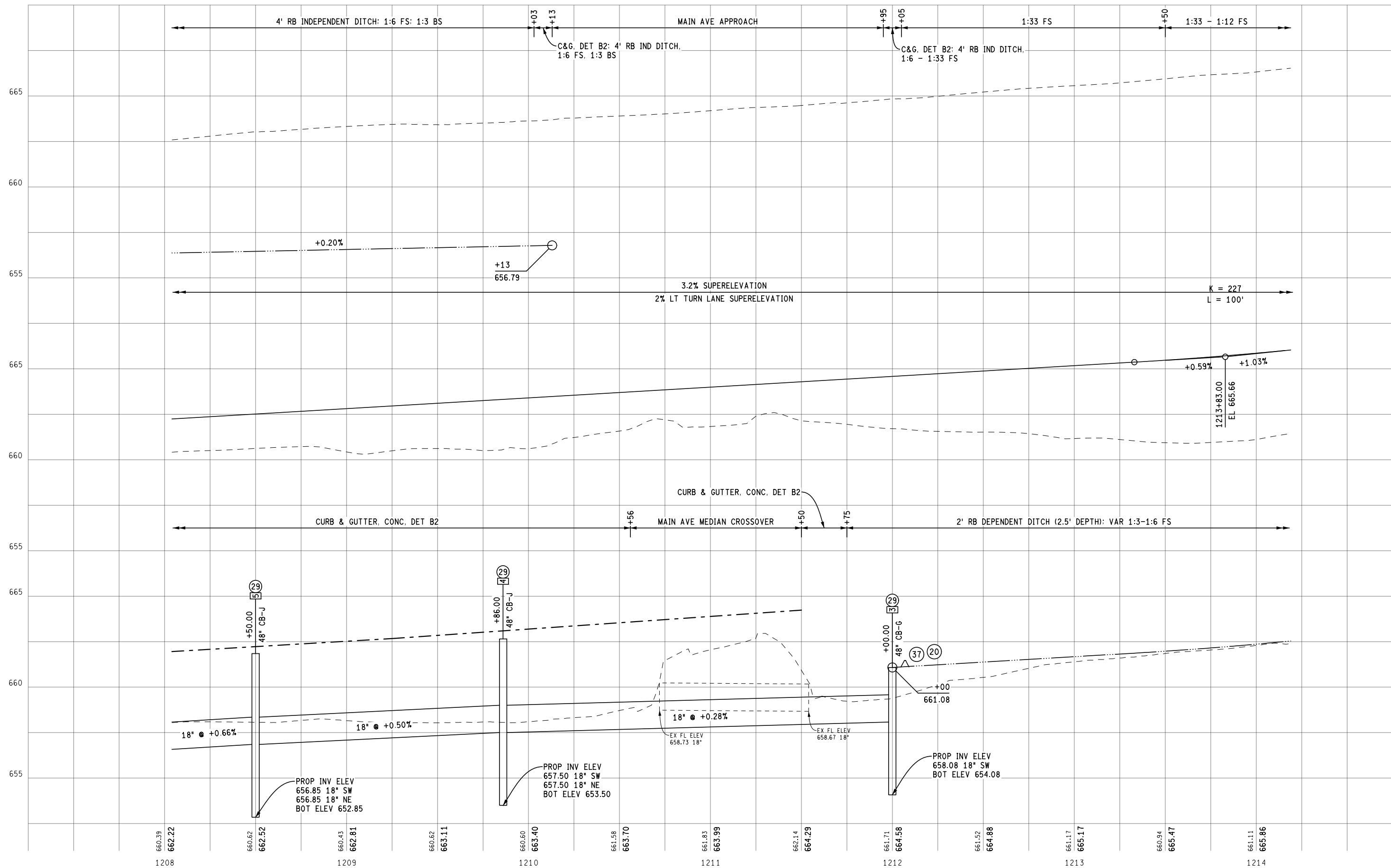


DATE: 04/10/18
DESIGN UNIT: JASINSKI
TSC: MUSKEGON
FILE: 201572_I-196BL_EB_Prof005.dgn

CS: 70023
JN: 201572A, 202084A

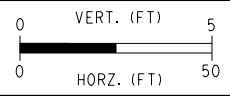
PROFILE
I-196BL EB STA 208+00 TO STA 214+00

DRAWING SHEET
I-196BL PROF 005 SECT 1
55



EX GROUND PROFILE 60' LT
 PROP DITCHBOT CL LT
 EX GROUND PROFILE AT 1-196BL NON-LEGAL ALI
 PROP PLAN GRADE AT 1-196BL NON-LEGAL ALI
 EX GROUND PROFILE 33' RT
 PROP DITCH BOTTOM RT
 PROP TOP OF CURB RT

FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



DATE: 04/10/18
 DESIGN UNIT: JASINSKI
 TSC: MUSKEGON
 FILE: 201572_I-196BL_WB_Prof005.dgn

CS: 70023
 JN: 201572A, 202084A

PROFILE
 I-196BL WB STA 1208+04 TO STA 1214+19

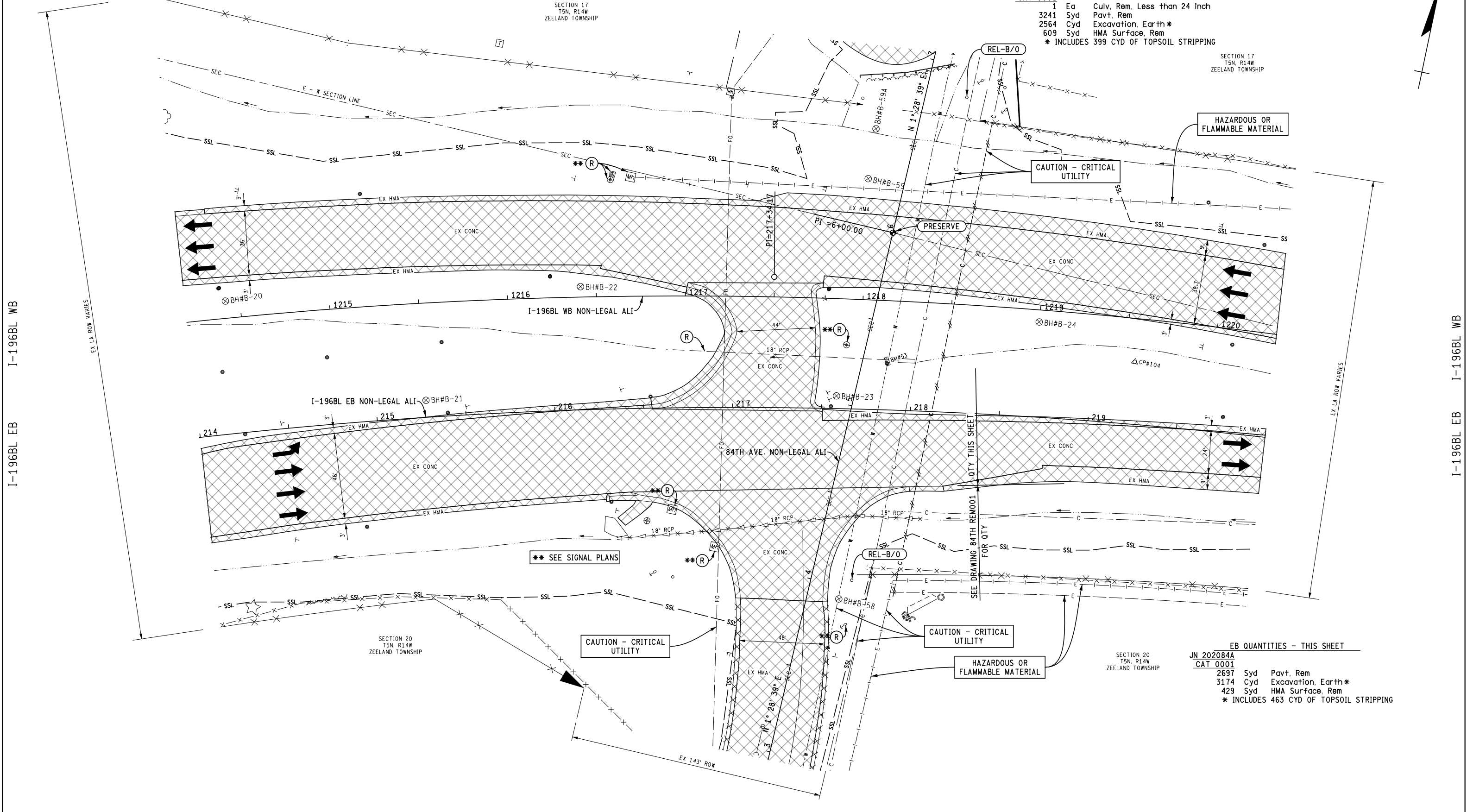
DRAWING SHEET
 I-196BL PROF 005 SECT 1
 56



SEE 84TH REM001 FOR QUANTITIES

WB QUANTITIES - THIS SHEET
 JN 202084A
 CAT 0001
 1 Ea Culv. Rem. Less than 24 inch
 3241 Syd Pavt. Rem
 2564 Cyd Excavation, Earth*
 609 Syd HMA Surface, Rem
 * INCLUDES 399 CYD OF TOPSOIL STRIPPING

SECTION 17
 T5N, R14W
 ZEELAND TOWNSHIP



** SEE SIGNAL PLANS

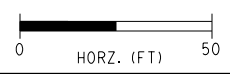
SEE DRAWING 84TH REM001 FOR QTY

EB QUANTITIES - THIS SHEET
 JN 202084A
 CAT 0001
 2697 Syd Pavt. Rem
 3174 Cyd Excavation, Earth*
 429 Syd HMA Surface, Rem
 * INCLUDES 463 CYD OF TOPSOIL STRIPPING

SECTION 20
 T5N, R14W
 ZEELAND TOWNSHIP

84TH AVE.

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



DATE: 04/10/18	CS: 70023	REMOVAL	DRAWING	SHEET
DESIGN UNIT: JASINSKI	JN: 201572A, 202084A	I-196BL EB STA 214+00 TO STA 220+00	I-196BL	SECT 1
TSC: MUSKEGON		I-196BL WB STA 1214+19 TO STA 1220+33	REM	006
				57

I-196BL EB I-196BL WB

I-196BL EB I-196BL WB

EX LA ROW VARIES

EX LA ROW VARIES



CROSSOVER QUANTITIES

JN 201572A			
CAT 0001			
498	Syd	Aggregate Base, 7.25 inch	
84	Ton	HMA Approach	
98	Ton	HMA Approach, High Stress	
120	Ft	Curb and Gutter, Conc. Det B2	
1056	Sft	Sidewalk, Conc. 6 inch	

WB QUANTITIES - THIS SHEET

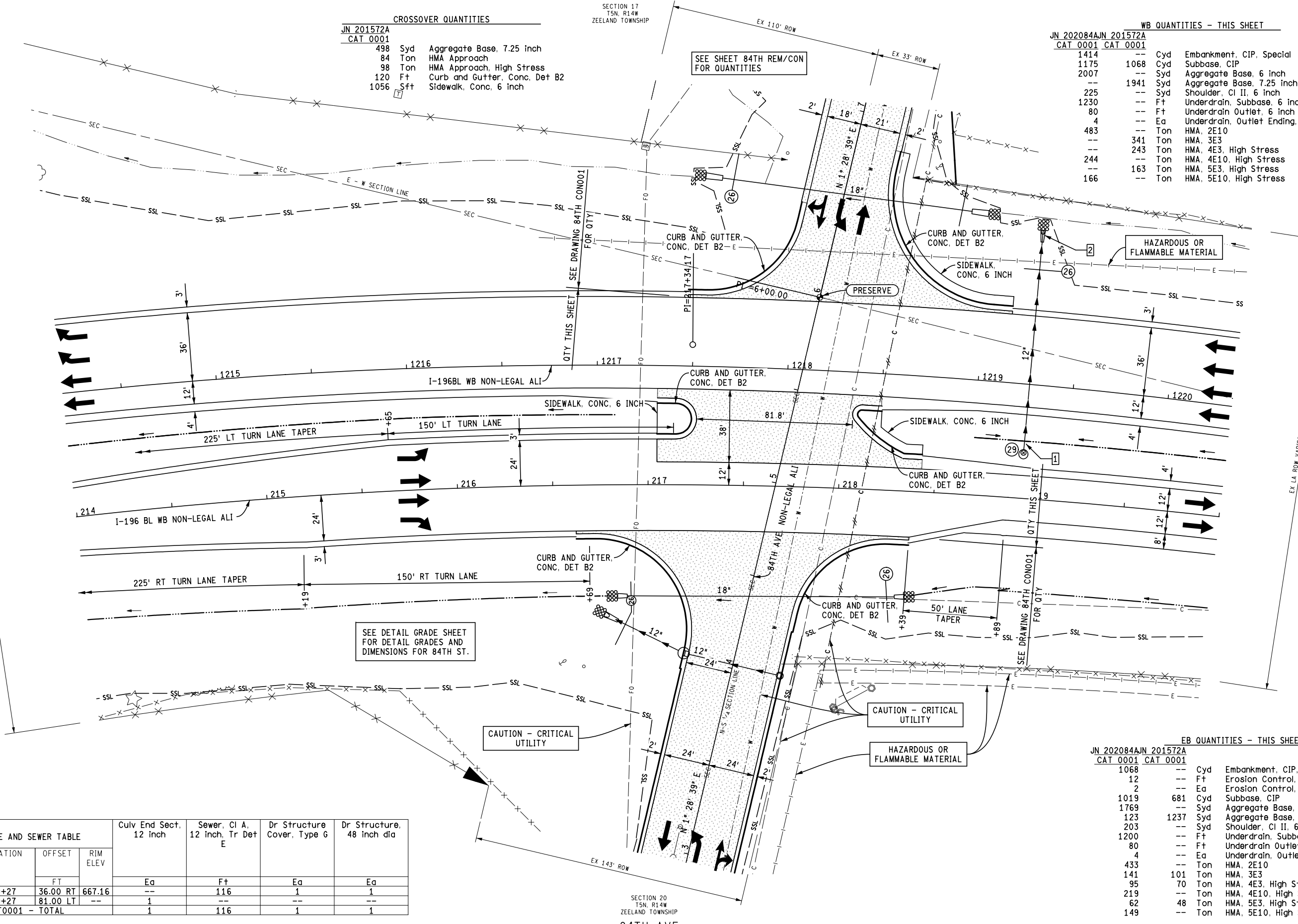
JN 202084A	JN 201572A		
CAT 0001	CAT 0001		
1414	--	Cyd	Embankment, CIP, Special
1175	1068	Cyd	Subbase, CIP
2007	--	Syd	Aggregate Base, 6 inch
--	1941	Syd	Aggregate Base, 7.25 inch
225	--	Syd	Shoulder, CI II, 6 inch
1230	--	Ft	Underdrain, Subbase, 6 inch
80	--	Ft	Underdrain Outlet, 6 inch
4	--	Ea	Underdrain, Outlet Ending, 6 inch
483	--	Ton	HMA, 2E10
--	341	Ton	HMA, 3E3
--	243	Ton	HMA, 4E3, High Stress
244	--	Ton	HMA, 4E10, High Stress
--	163	Ton	HMA, 5E3, High Stress
166	--	Ton	HMA, 5E10, High Stress

I-196BL WB

I-196BL WB

I-196BL EB

I-196BL EB



SEE DETAIL GRADE SHEET FOR DETAIL GRADES AND DIMENSIONS FOR 84TH ST.

CAUTION - CRITICAL UTILITY

CAUTION - CRITICAL UTILITY

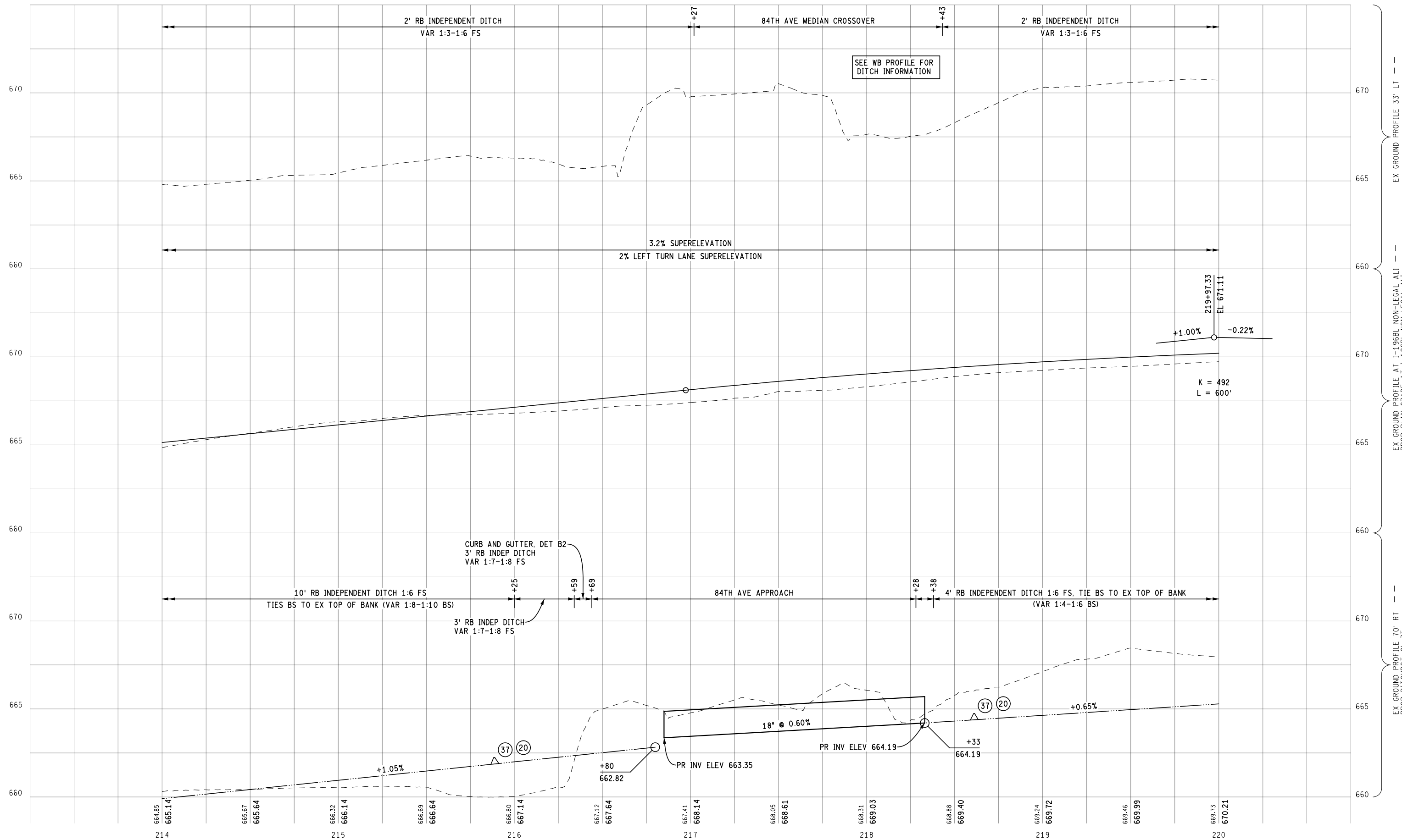
HAZARDOUS OR FLAMMABLE MATERIAL

DRAINAGE STRUCTURE AND SEWER TABLE

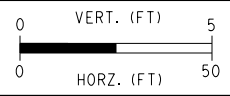
STRUCT NO.	ALIGNMENT	STATION	OFFSET	RIM ELEV	Culv End Sect, 12 inch		Sewer, CI A, 12 inch, Tr Det E		Dr Structure Cover, Type G		Dr Structure, 48 inch dia	
					Ea	Ft	Ea	Ft	Ea	Ft	Ea	Ft
1	I-196BL WB	1219+27	36.00 RT	667.16	--	116	--	1	1	1	1	
2	I-196BL WB	1219+27	81.00 LT	--	1	--	--	1	1	1	1	
JN 201572A CAT0001 - TOTAL					1	116	1	1	1	1	1	

EB QUANTITIES - THIS SHEET

JN 202084A	JN 201572A		
CAT 0001	CAT 0001		
1068	--	Cyd	Embankment, CIP, Special
12	--	Ft	Erosion Control, Check Dam, Stone
2	--	Ea	Erosion Control, Sediment Trap
1019	681	Cyd	Subbase, CIP
1769	--	Syd	Aggregate Base, 6 inch
123	1237	Syd	Aggregate Base, 7.25 inch
203	--	Syd	Shoulder, CI II, 6 inch
1200	--	Ft	Underdrain, Subbase, 6 inch
80	--	Ft	Underdrain Outlet, 6 inch
4	--	Ea	Underdrain, Outlet Ending, 6 inch
433	--	Ton	HMA, 2E10
141	101	Ton	HMA, 3E3
95	70	Ton	HMA, 4E3, High Stress
219	--	Ton	HMA, 4E10, High Stress
62	48	Ton	HMA, 5E3, High Stress
149	--	Ton	HMA, 5E10, High Stress



FINAL ROW PLAN REVISIONS		(SUBMITTAL DATE:)	
NO.	DATE	AUTH	DESCRIPTION

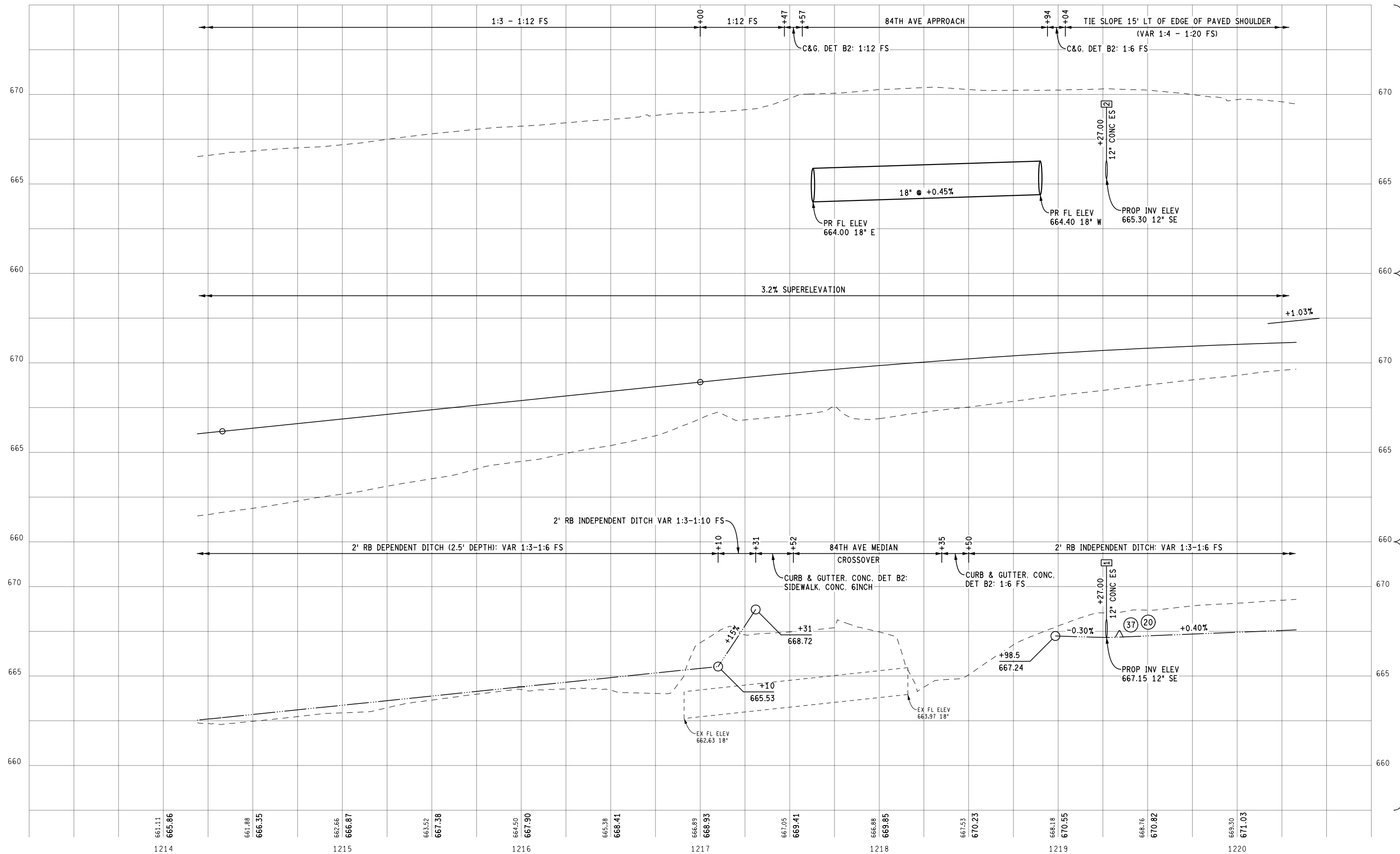


DATE: 04/10/18
 DESIGN UNIT: JASINSKI
 TSC: MUSKEGON
 FILE: 201572_I-196BL_EB_Prof006.dgn

CS: 70023
 JN: 201572A, 202084A

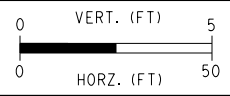
PROFILE
 I-196BL EB STA 214+00 TO STA 220+00

DRAWING SHEET
 I-196BL PROF 006 SECT 1
 59



661.11 665.86 1214
 661.88 666.35
 662.66 666.87 1215
 663.52 667.38
 664.50 667.90 1216
 665.38 668.41
 666.89 668.93 1217
 667.05 669.41
 666.88 669.85 1218
 667.53 670.23
 668.18 670.55 1219
 668.76 670.82
 669.30 671.03 1220

FINAL ROW PLAN REVISIONS		(SUBMITTAL DATE:)	
NO.	DATE	AUTH	DESCRIPTION



DATE: 04/10/18
 DESIGN UNIT: JASINSKI
 TSC: MUSKEGON
 FILE: 201572_I-196BL_WB_Prof006.dgn

CS: 70023
 JN: 201572A, 202084A

PROFILE
 I-196BL WB STA 1214+19 TO STA 1220+33

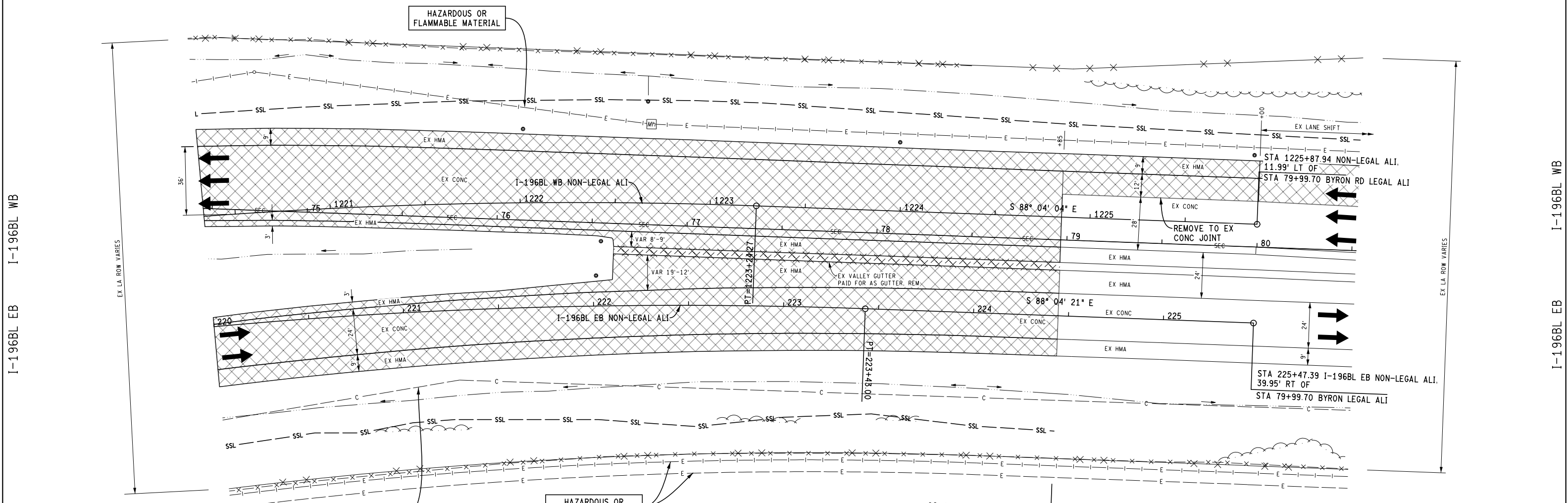
DRAWING SHEET
 I-196BL PROF 006
 SECT 1
 60

WB QUANTITIES - THIS SHEET

JN 202084A
CAT 0001

235	Ft	Gutter, Rem
2200	Syd	Pavt, Rem
2485	Cyd	Excavation, Earth*
859	Syd	HMA Surface, Rem

* INCLUDES 310 CYD OF TOPSOIL STRIPPING



CS: 70023
JN: 201572A, 202084A
END CONSTRUCTION
I-196 BL EB STA 224+44.50
CSMP: 5.097
PR: 740803
PRMP: 7.039

EB QUANTITIES - THIS SHEET

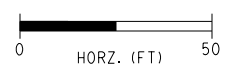
JN 202084A
CAT 0001

1212	Syd	Pavt, Rem
4078	Cyd	Excavation, Earth*
925	Syd	HMA Surface, Rem

* INCLUDES 241 CYD OF TOPSOIL STRIPPING

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)

NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



DATE: 04/10/18	CS: 70023	REMOVAL	DRAWING	SHEET
DESIGN UNIT: JASINSKI	JN: 201572A, 202084A	I-196BL EB STA 220+00 TO STA 224+45	I-196BL	SECT 1
TSC: MUSKEGON		I-196BL WB STA 1220+33 TO STA 1225+88	REM	61
FILE: 201572_I-196BL_Rem007.dgn			007	

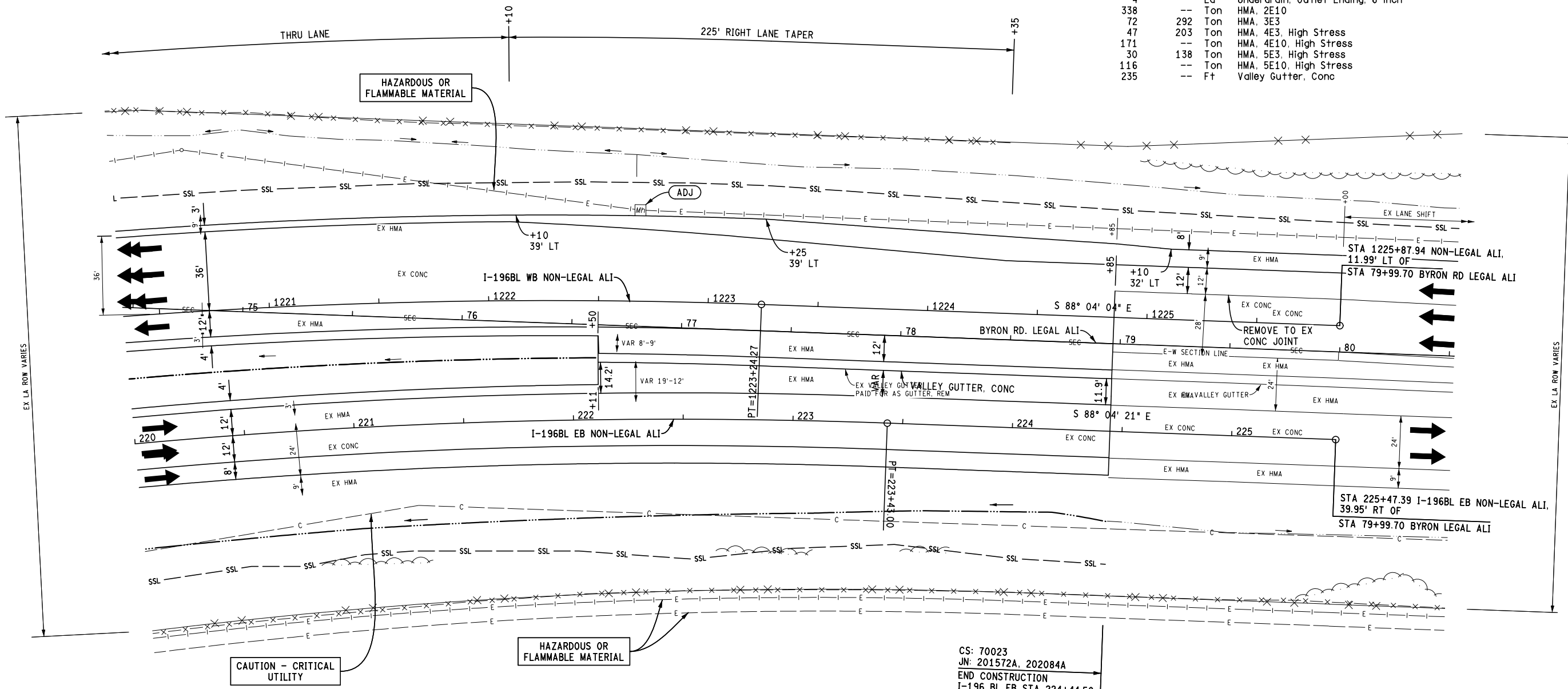
WB QUANTITIES - THIS SHEET

JN 202084A	JN 201572A	CAT 0001	CAT 0001	Quantity	Unit	Description
				896	--	Cyd Embankment, CIP, Special
				948	787	Cyd Subbase, CIP
				1643	--	Syd Aggregate Base, 6 inch
				441	1430	Syd Aggregate Base, 7.25 inch
				180	--	Syd Shoulder, CI II, 6 inch
				1	--	Ea Dr Structure Cover, Adj, Case 2
				1110	--	Ft Underdrain, Subbase, 6 inch
				80	--	Ft Underdrain Outlet, 6 inch
				4	--	Ea Underdrain, Outlet Ending, 6 inch
				338	--	Ton HMA, 2E10
				72	292	Ton HMA, 3E3
				47	203	Ton HMA, 4E3, High Stress
				171	--	Ton HMA, 4E10, High Stress
				30	138	Ton HMA, 5E3, High Stress
				116	--	Ton HMA, 5E10, High Stress
				235	--	Ft Valley Gutter, Conc



I-196BL EB

I-196BL WB

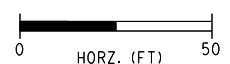


CS: 70023
JN: 201572A, 202084A
END CONSTRUCTION
I-196 BL EB STA 224+44.50
CSMP: 5.097
PR: 740803
PRMP: 7.039

EB QUANTITIES - THIS SHEET

JN 202084A	CAT 0001	Quantity	Unit	Description
		1089	Cyd	Embankment, CIP, Special
		12	Ft	Erosion Control, Check Dam, Stone
		2	Ea	Erosion Control, Sediment Trap
		1735	Cyd	Subbase, CIP
		1368	Syd	Aggregate Base, 6 inch
		807	Syd	Aggregate Base, 7.25 inch
		144	Syd	Shoulder, CI II, 6 inch
		820	Ft	Underdrain, Subbase, 6 inch
		80	Ft	Underdrain Outlet, 6 inch
		4	Ea	Underdrain, Outlet Ending, 6 inch
		333	Ton	HMA, 2E10
		148	Ton	HMA, 3E3
		100	Ton	HMA, 4E3, High Stress
		168	Ton	HMA, 4E10, High Stress
		66	Ton	HMA, 5E3, High Stress
		115	Ton	HMA, 5E10, High Stress

FINAL ROW PLAN REVISIONS		(SUBMITTAL DATE:)	
NO.	DATE	AUTH	DESCRIPTION

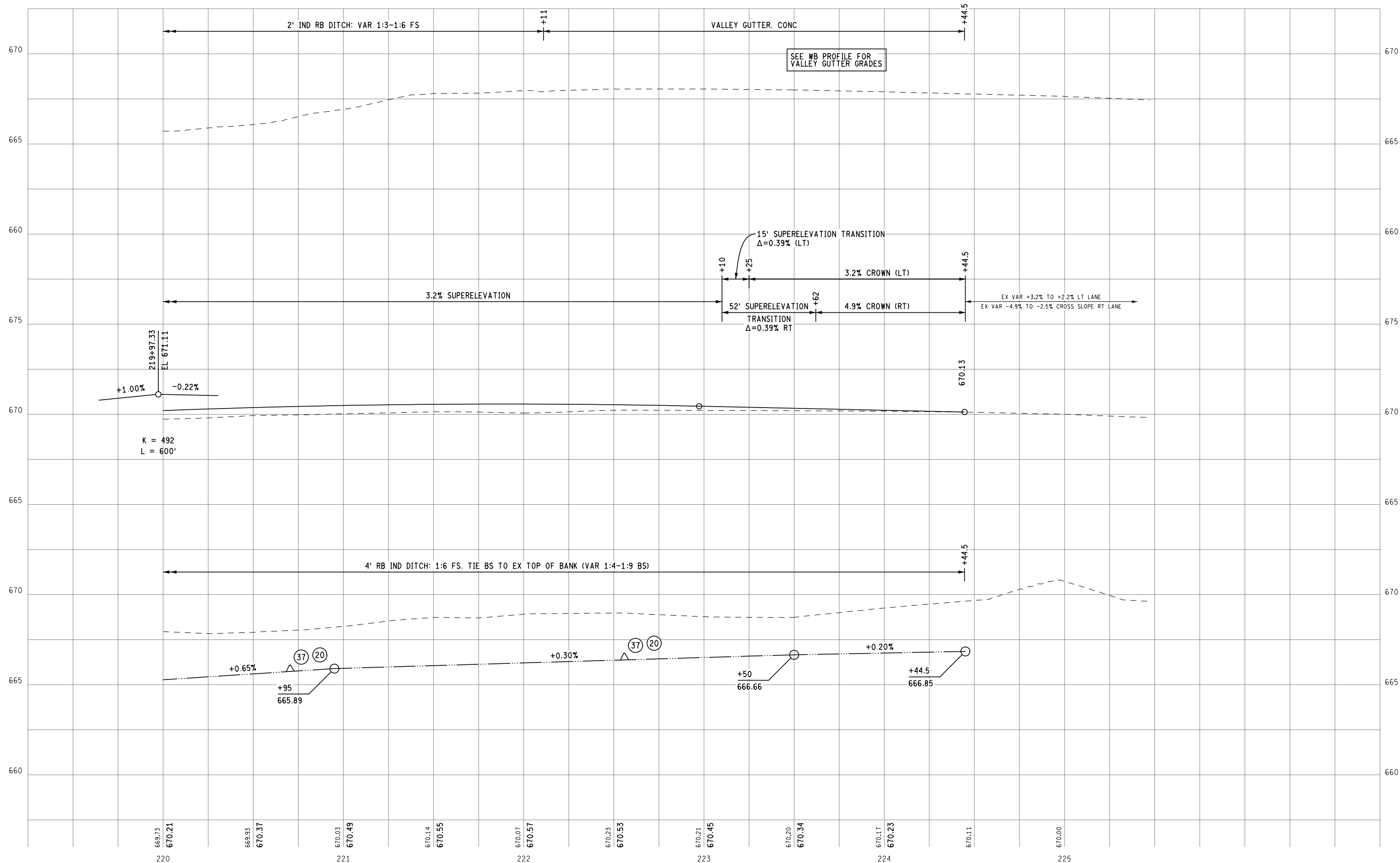


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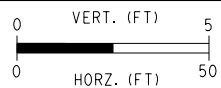
DATE: 04/10/18
DESIGN UNIT: JASINSKI
TSC: MUSKEGON

CS: 70023
JN: 201572A, 202084A

CONSTRUCTION		DRAWING	SHEET
I-196BL EB STA 220+00 TO STA 224+45		I-196BL	SECT 1
I-196BL WB STA 1220+33 TO STA 1225+88		BDM 007	62



FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

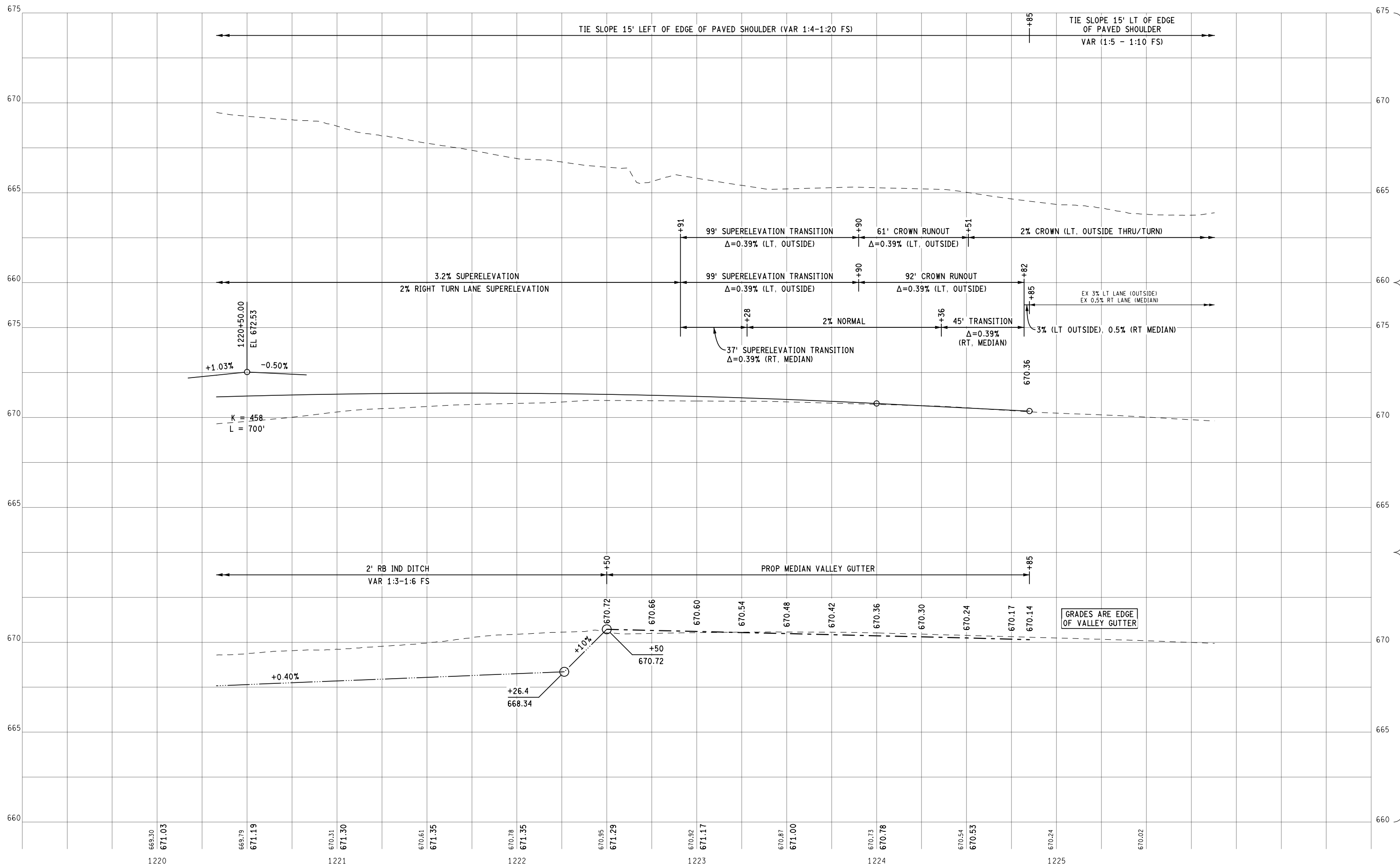


DATE: 04/10/18
 DESIGN UNIT: JASINSKI
 TSC: MUSKEGON
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CS: 70023
 JN: 201572A, 202084A

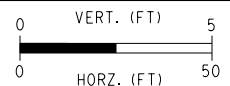
PROFILE
 I-196BL EB STA 220+00 TO STA 224+45

DRAWING SHEET
 I-196BL PROF 007 SECT 1
63



EX GROUND PROFILE 60' LT — — —
 EX GROUND PROFILE 33' RT — — —
 EX PLAN GRADE AT I-196BL NON-LEGAL ALI — — —
 EX DITCHBOT CL RT — — —
 PROP PLAN GRADE AT I-196BL NON-LEGAL ALI — — —
 PROP DITCHBOT CL RT — — —
 PROP VALLEY GUTTER . . .

FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



DATE: 04/10/18
 DESIGN UNIT: JASINSKI
 TSC: MUSKEGON
 FILE: 201572_I-196BL_WB_Prof007.dgn

CS: 70023
 JN: 201572A, 202084A

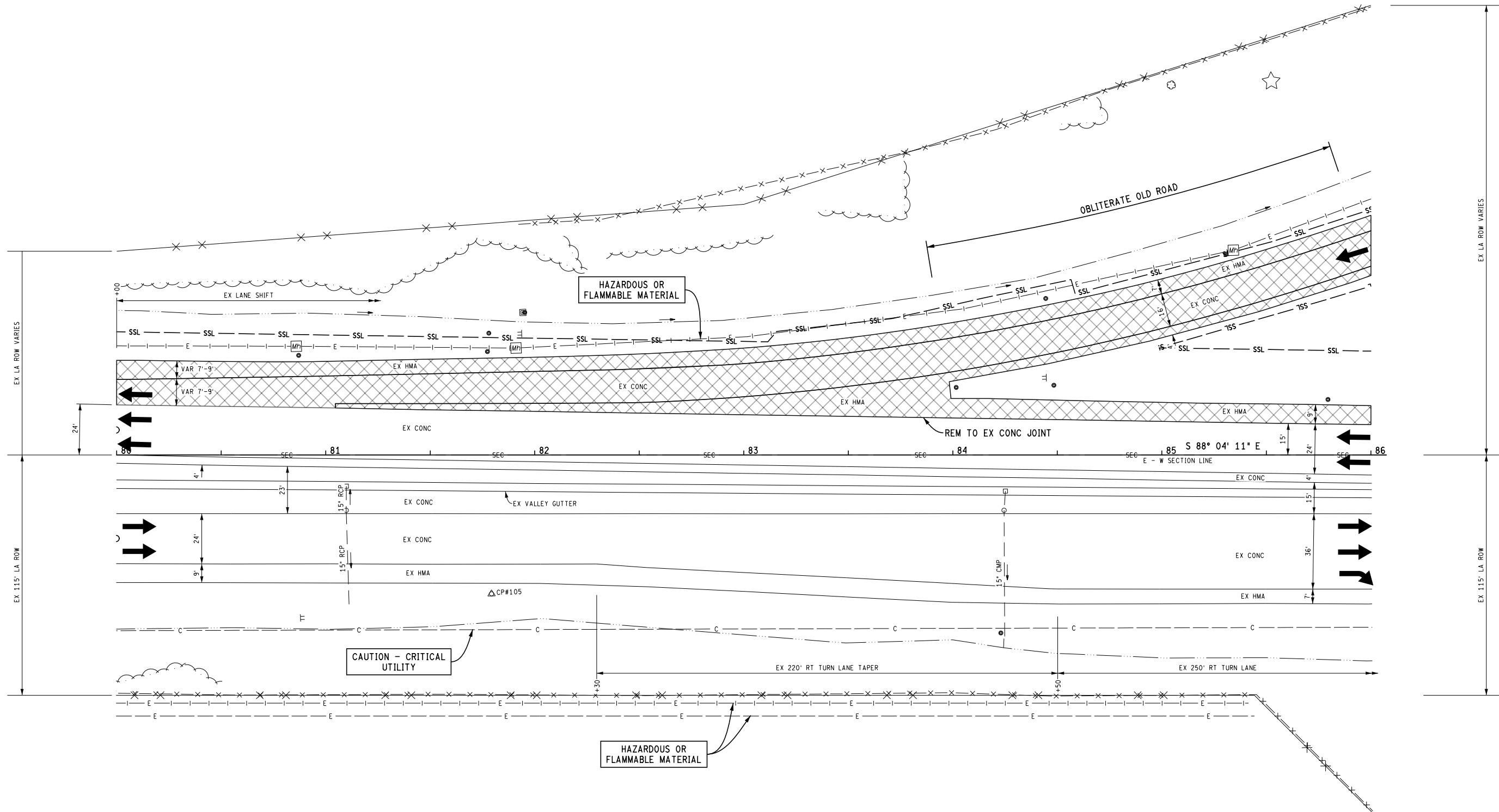
PROFILE
 I-196BL WB STA 1220+33 TO STA 1225+88

DRAWING SHEET
 I-196BL PROF 007
 SECT 1
 64

SECTION 17
TSN. R14W
ZEELAND TOWNSHIP



I-196BL WB
I-196BL EB



RAMP B
I-196BL WB
I-196BL EB

QUANTITIES - THIS SHEET

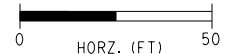
JN 201572A
CAT 0001

1055	Syd	Pavt, Rem
581	Cyd	Excavation, Earth*
2	Sta	Obliterate Old Road
1067	Syd	HMA Surface, Rem

* INCLUDES 231 CYD OF TOPSOIL STRIPPING

SECTION 20
TSN. R14W
ZEELAND TOWNSHIP

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

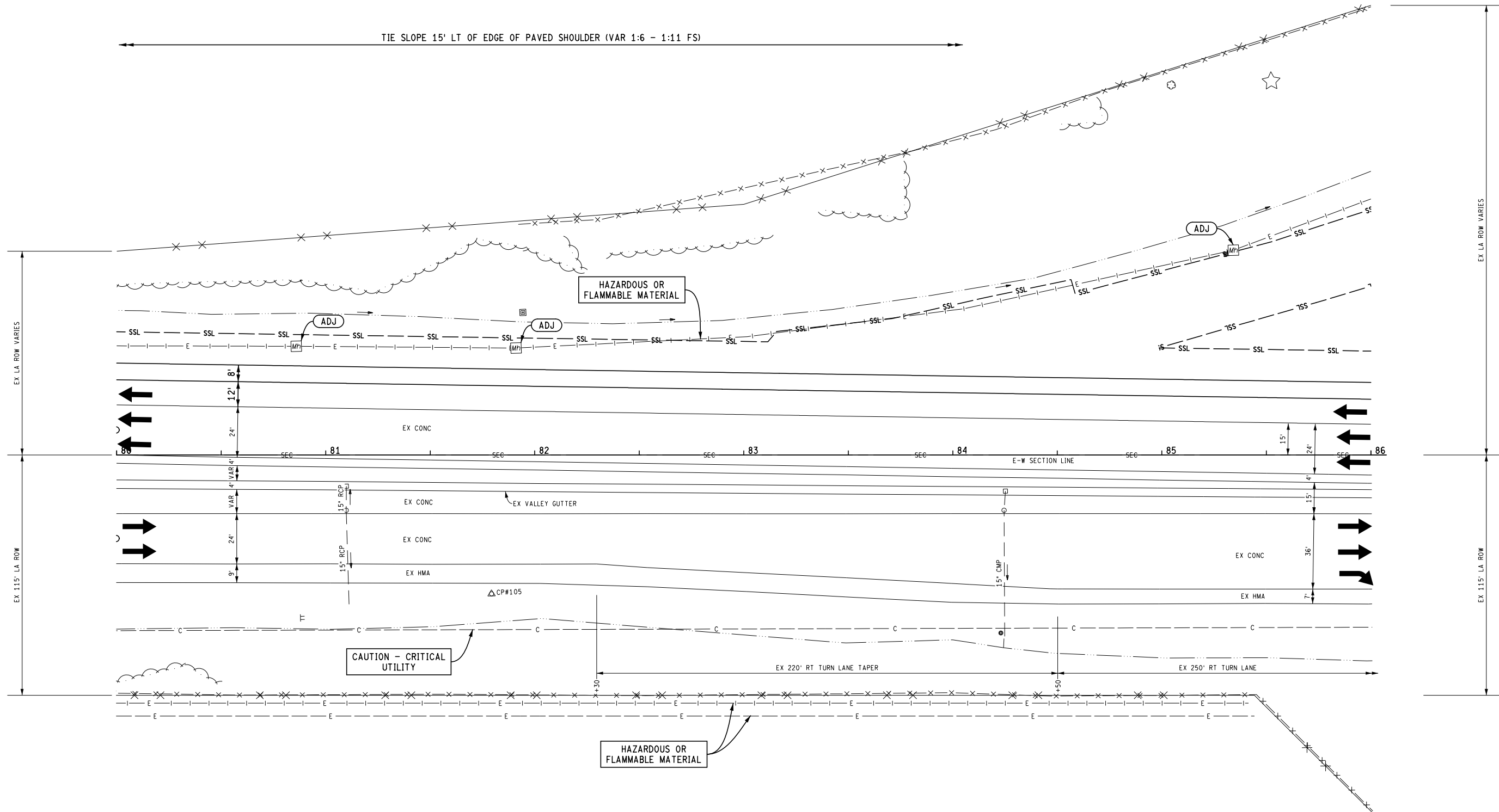


DATE: 04/10/18	CS: 70023	DRAWING SHEET I-196BL STA 80+00 TO STA 86+00 I-196BL REM 008 65
DESIGN UNIT: JASINSKI	JN: 201572A, 202084A	
FILE: 201572_I-196BL_Rem008.dgn		TSC: MUSKEGON

SECTION 17
T5N, R14W
ZEELAND TOWNSHIP



I-196BL WB
I-196BL EB



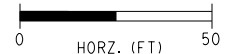
RAMP B
I-196BL WB
I-196BL EB

QUANTITIES - THIS SHEET

JN 201572A CAT 0001		
61	Cyd	Embankment, CIP, Special
691	Cyd	Subbase, CIP
1470	Syd	Aggregate Base, 6 inch
140	Syd	Shoulder, Cl II, 6 inch
3	Ea	Dr Structure Cover, Adj, Case 2
600	Ft	Underdrain, Subbase, 6 inch
40	Ft	Underdrain Outlet, 6 inch
2	Ea	Underdrain, Outlet Ending, 6 inch
253	Ton	HMA, 3E3
182	Ton	HMA, 4E3, High Stress
121	Ton	HMA, 5E3, High Stress

SECTION 20
T5N, R14W
ZEELAND TOWNSHIP

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



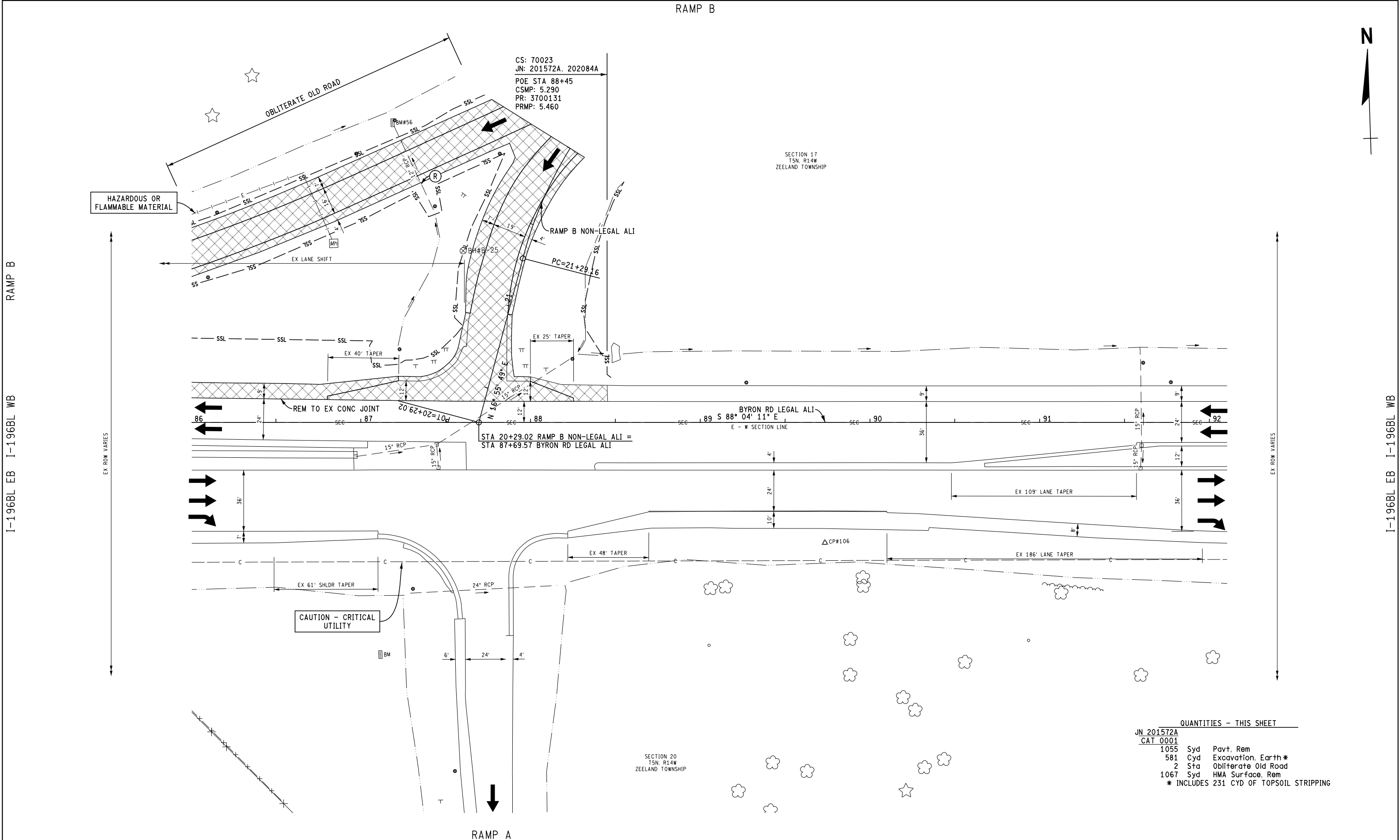
FILE: 201572_I-196BL_Con008.dgn

DATE: 04/10/18
DESIGN UNIT: JASINSKI
TSC: MUSKEGON

CS: 70023
JN: 201572A, 202084A

CONSTRUCTION		DRAWING	SHEET
I-196BL STA 80+00 TO STA 86+00		I-196BL CON 008	SECT 1 66

RAMP B



CS: 70023
 JN: 201572A, 202084A
 POE STA 88+45
 CSMP: 5.290
 PR: 3700131
 PRMP: 5.460

SECTION 17
 T5N, R14W
 ZEELAND TOWNSHIP

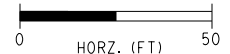
STA 20+29.02 RAMP B NON-LEGAL ALI =
 STA 87+69.57 BYRON RD LEGAL ALI

SECTION 20
 T5N, R14W
 ZEELAND TOWNSHIP

QUANTITIES - THIS SHEET

JN 201572A	1055	Syd	Pavt. Rem
CAT 0001	581	Cyd	Excavation, Earth*
	2	Sta	Obliterate Old Road
	1067	Syd	HMA Surface, Rem
* INCLUDES 231 CYD OF TOPSOIL STRIPPING			

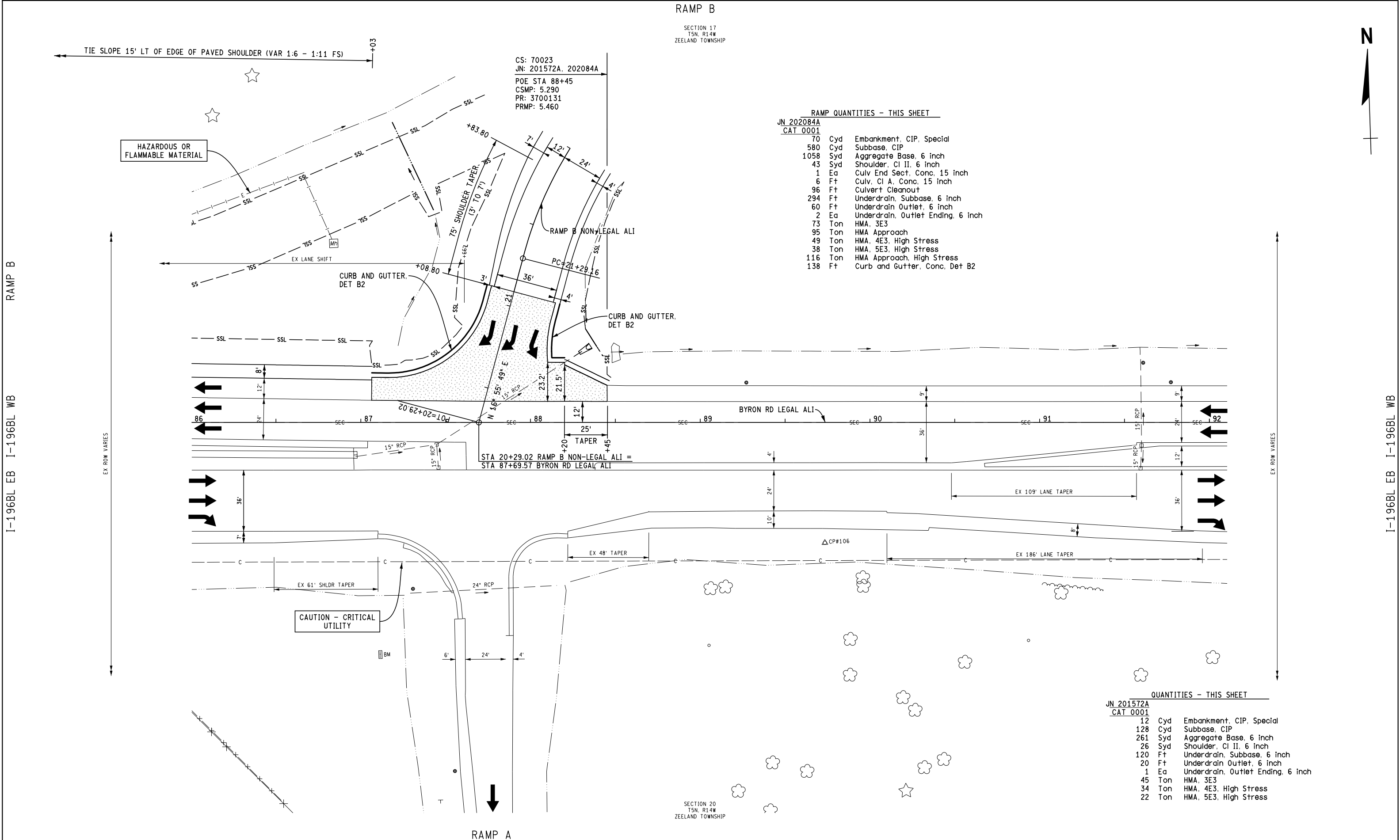
FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



DATE: 04/10/18	CS: 70023, (70024)	REMOVAL	DRAWING	SHEET
DESIGN UNIT: JASINSKI	JN: 201572A, 202084A	I-196BL STA 86+00 TO STA 92+00	I-196BL	SECT 1
TSC: MUSKEGON		RAMP B STA 20+29 TO STA 22+00	REM	009
FILE: 201572_I-196BL_Rem009.dgn				67

RAMP B

SECTION 17
TSN. R14W
ZEELAND TOWNSHIP



RAMP QUANTITIES - THIS SHEET

JN 202084A		CAT 0001	
70	Cyd	Embankment, CIP, Special	
580	Cyd	Subbase, CIP	
1058	Syd	Aggregate Base, 6 inch	
43	Syd	Shoulder, CI II, 6 inch	
1	Ea	Culv End Sect, Conc, 15 inch	
6	Ft	Culv, CI A, Conc, 15 inch	
96	Ft	Culvert Cleanout	
294	Ft	Underdrain, Subbase, 6 inch	
60	Ft	Underdrain Outlet, 6 inch	
2	Ea	Underdrain, Outlet Ending, 6 inch	
73	Ton	HMA, 3E3	
95	Ton	HMA Approach	
49	Ton	HMA, 4E3, High Stress	
38	Ton	HMA, 5E3, High Stress	
116	Ton	HMA Approach, High Stress	
138	Ft	Curb and Gutter, Conc, Det B2	

QUANTITIES - THIS SHEET

JN 201572A		CAT 0001	
12	Cyd	Embankment, CIP, Special	
128	Cyd	Subbase, CIP	
261	Syd	Aggregate Base, 6 inch	
26	Syd	Shoulder, CI II, 6 inch	
120	Ft	Underdrain, Subbase, 6 inch	
20	Ft	Underdrain Outlet, 6 inch	
1	Ea	Underdrain, Outlet Ending, 6 inch	
45	Ton	HMA, 3E3	
34	Ton	HMA, 4E3, High Stress	
22	Ton	HMA, 5E3, High Stress	

CS: 70023
JN: 201572A, 202084A
POE STA 88+45
CSMP: 5.290
PR: 3700131
PRMP: 5.460

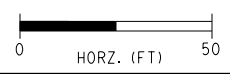
STA 20+29.02 RAMP B NON-LEGAL ALI =
STA 87+69.57 BYRON RD LEGAL ALI

SECTION 20
TSN. R14W
ZEELAND TOWNSHIP

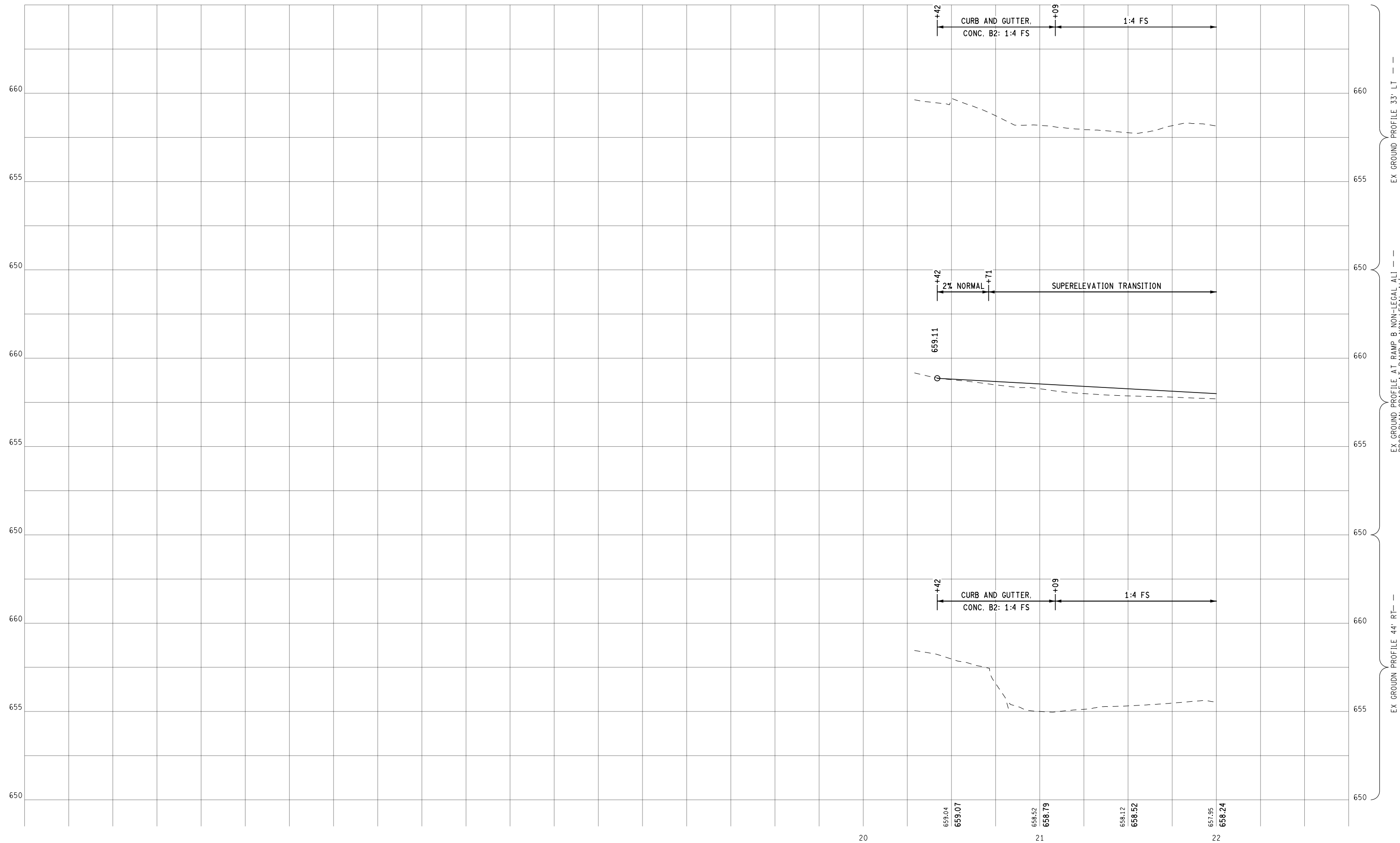
RAMP B
I-196BL EB I-196BL WB

I-196BL EB I-196BL WB

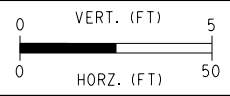
FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



DATE: 04/10/18	CS: 70023, (70024)	CONSTRUCTION	DRAWING	SHEET
DESIGN UNIT: JASINSKI	JN: 201572A, 202084A	I-196BL STA 86+00 TO STA 92+00	I-196BL	SECT 1
TSC: MUSKOGON		RAMP B STA 20+29 TO STA 22+00	CON	009
				68



FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



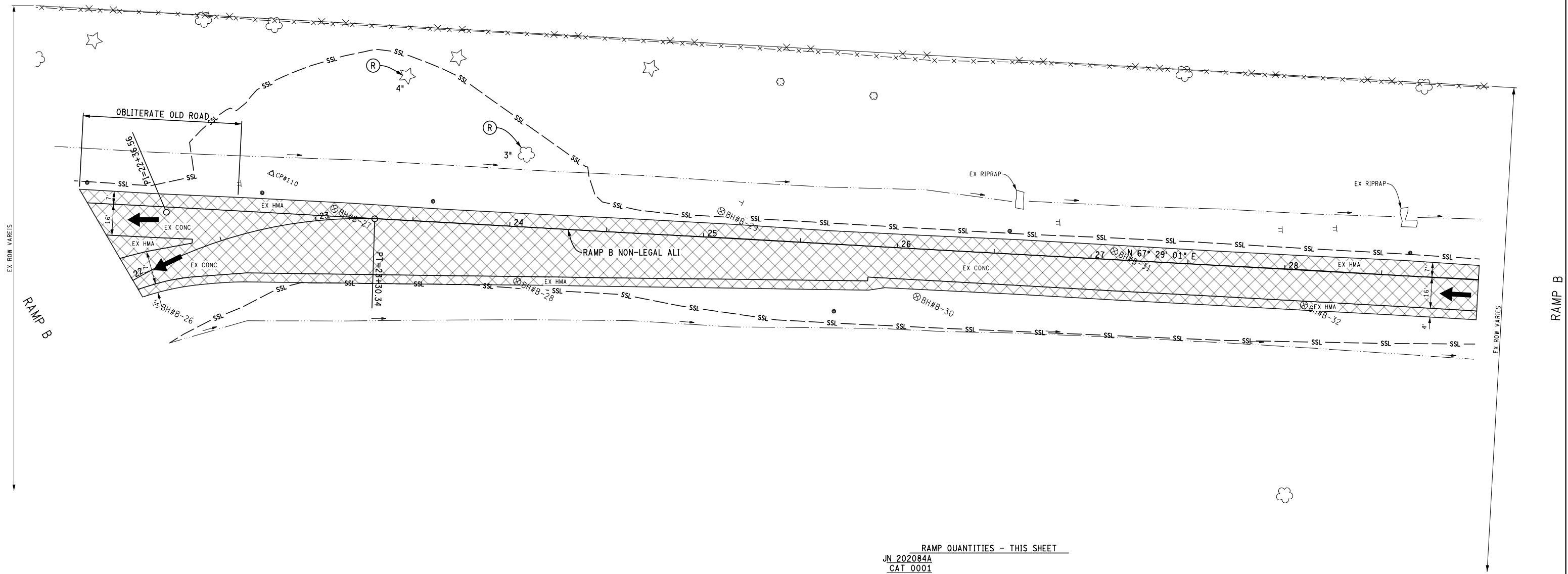
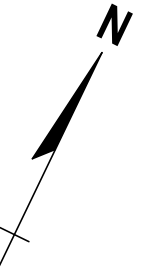
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DATE: 04/10/18
DESIGN UNIT: JASINSKI
TSC: MUSKEGON

CS: 70024
JN: 202084A

PROFILE
RAMP B STA 20+29 TO STA 22+00

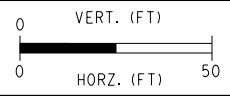
DRAWING SHEET
RAMPB PROF 009
SECT 1
69



RAMP QUANTITIES - THIS SHEET

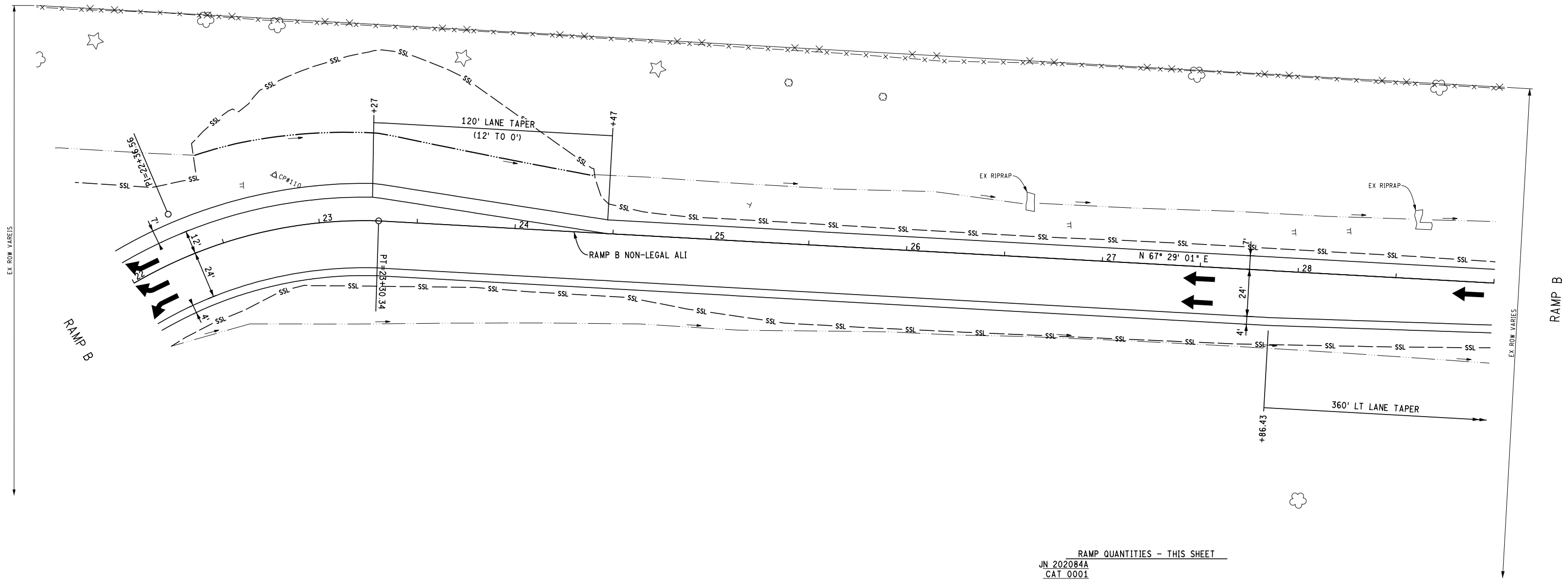
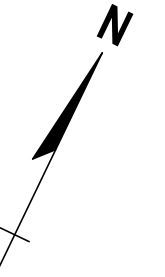
JN 202084A		
CAT 0001		
1738	Syd	Pavt. Rem
2276	Cyd	Excavation, Earth*
1	Sta	Obliterate Old Road
977	Syd	HMA Surface, Rem
* INCLUDES 270 CYD OF TOPSOIL STRIPPING		

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



DATE: 04/10/18	CS: 70024	DRAWING SHEET RAMPB REM 001	SHEET 70
DESIGN UNIT: JASINSKI	JN: 202084A		
FILE: 201572_Ramp_Rem001.dgn	TSC: MUSKEGON	REMOVAL RAMP B STA 22+00 TO STA 29+00	

SECTION 17
 T5N, R14W
 ZEELAND TOWNSHIP



RAMP QUANTITIES - THIS SHEET

JN 202084A		
CAT 0001		
90	Cyd	Embankment, CIP, Special
1820	Cyd	Subbase, CIP
3120	Syd	Aggregate Base, 6 inch
327	Syd	Shoulder, Cl II, 6 inch
1400	Ft	Underdrain, Subbase, 6 inch
150	Ft	Underdrain Outlet, 6 inch
6	Ea	Underdrain, Outlet Ending, 6 inch
561	Ton	HMA, 3E3
360	Ton	HMA, 4E3, High Stress
266	Ton	HMA, 5E3, High Stress

SECTION 17
 T5N, R14W
 ZEELAND TOWNSHIP

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

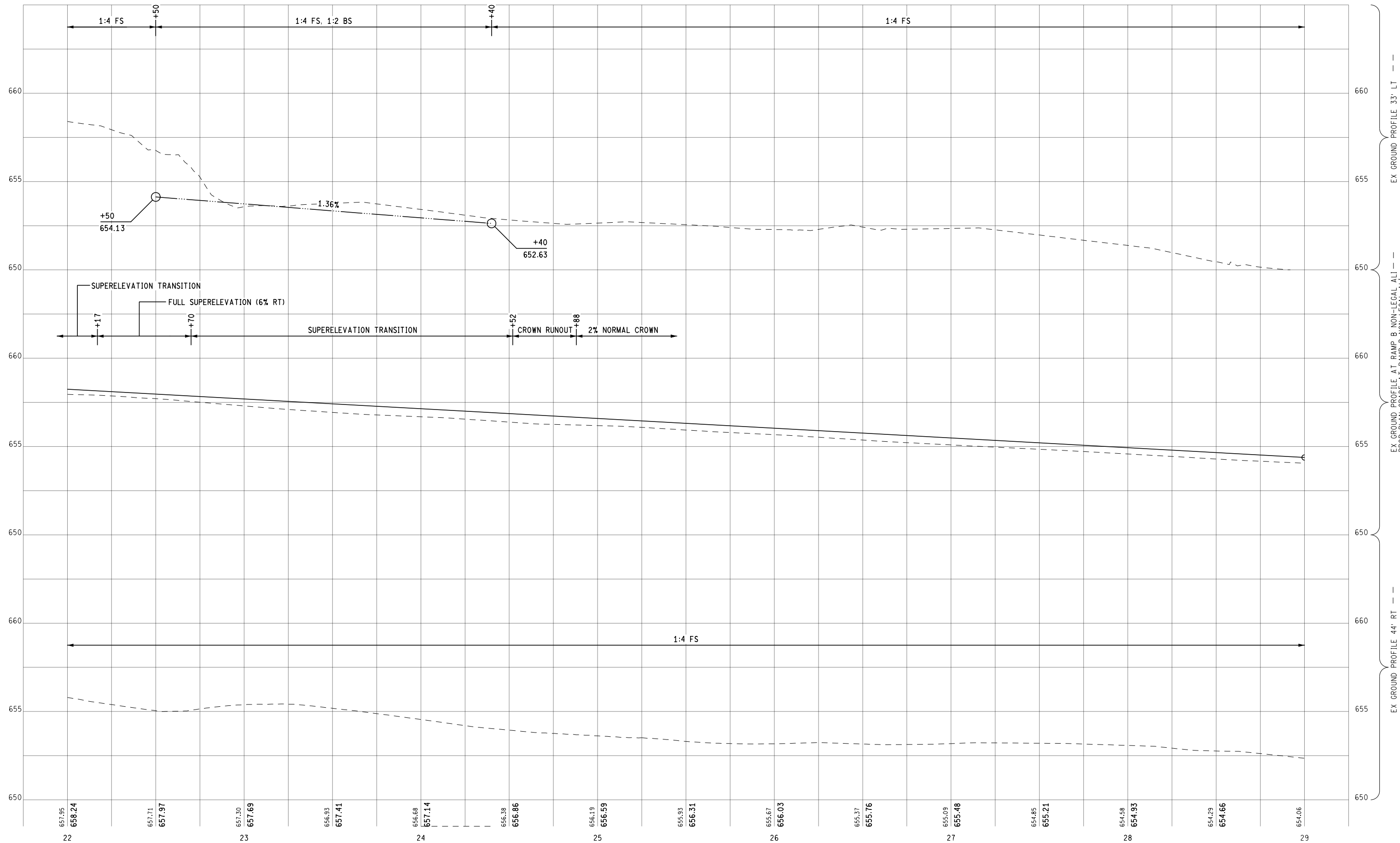


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 TSC: MUSKEGON
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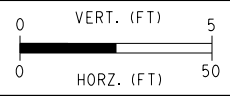
CS: 70024
 JN: 202084A

CONSTRUCTION
 RAMP B STA 22+00 TO STA 29+00

DRAWING SHEET
 RAMPB CON 001 SECT 1
 71



FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



FILE: 201572_Ramp_Prof002.dgn

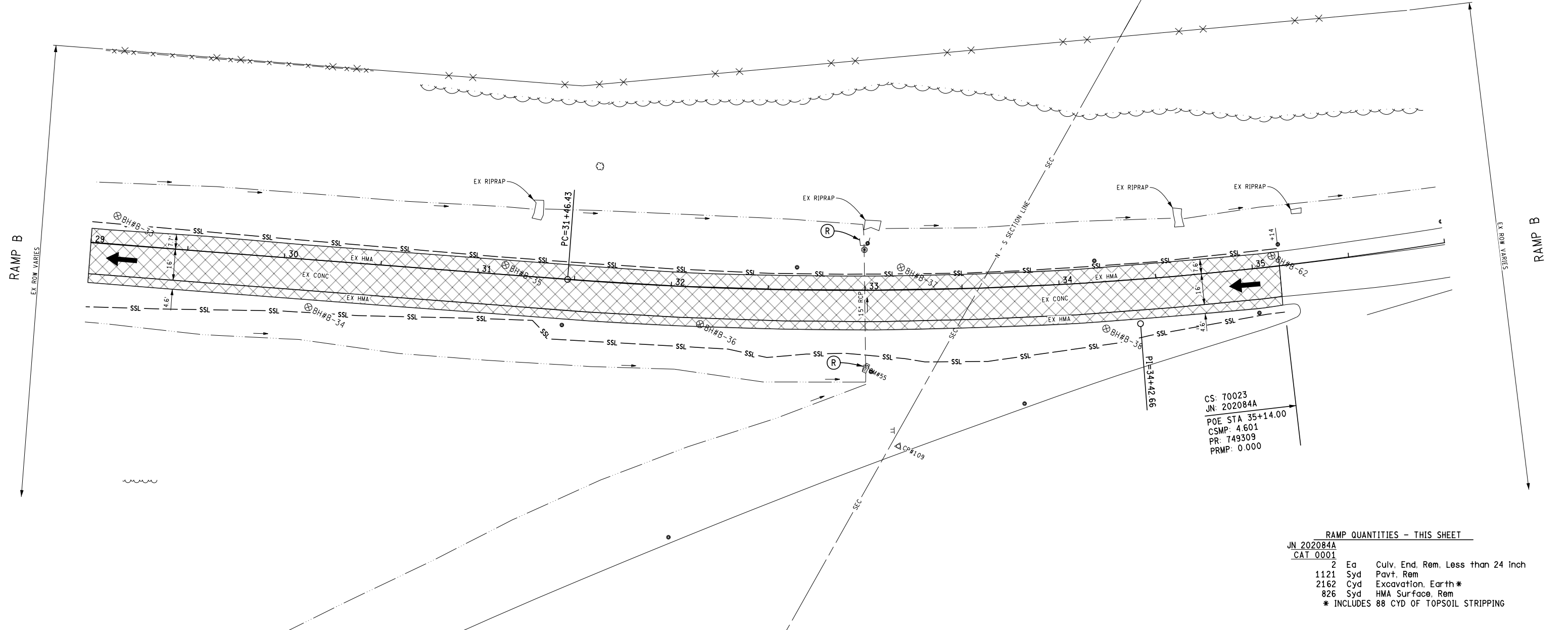
DATE: 04/10/18
 DESIGN UNIT: JASINSKI
 TSC: MUSKEGON

CS: 70024
 JN: 202084A

PROFILE
 RAMP B STA 22+00 TO STA 29+00

DRAWING SHEET
 RAMPB PROF 001
 SECT 1
 72

SECTION 17
T5N, R14W
ZEELAND TOWNSHIP



CS: 70023
JN: 202084A
POE STA 35+14.00
CSMP: 4.601
PR: 749309
PRMP: 0.000

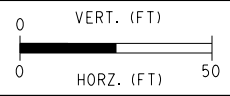
RAMP QUANTITIES - THIS SHEET

JN 202084A		
CAT 0001		
2	Ea	Culv. End. Rem. Less than 24 inch
1121	Syd	Pavt. Rem
2162	Cyd	Excavation, Earth*
826	Syd	HMA Surface, Rem
* INCLUDES 88 CYD OF TOPSOIL STRIPPING		

I-196

SECTION 17
T5N, R14W
ZEELAND TOWNSHIP

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



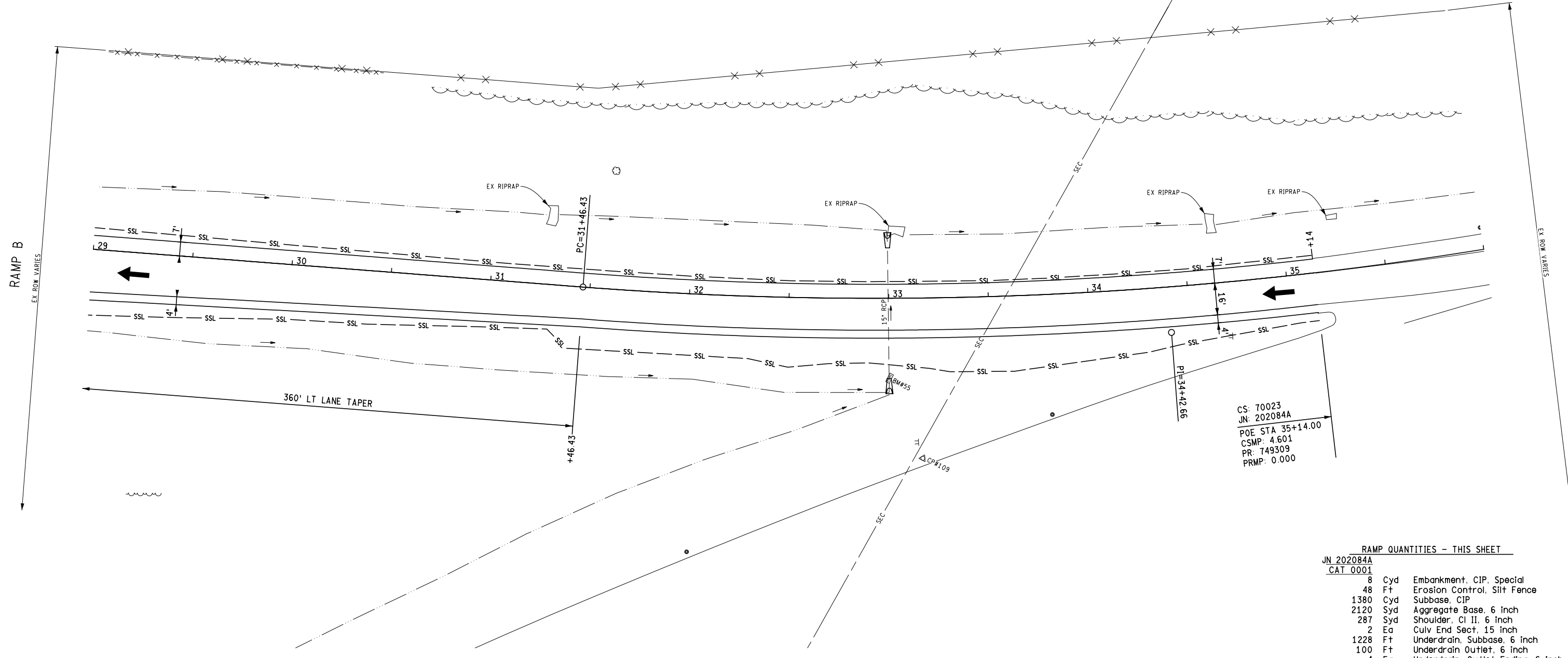
DATE: 04/10/18
DESIGN UNIT: JASINSKI
TSC: MUSKEGON
FILE: 201572_Ramp_Rem002.dgn

CS: 70024
JN: 202084A

REMOVAL
RAMP B STA 29+00 TO STA 35+14

DRAWING SHEET
RAMPB REM 002 SECT 1
73

SECTION 17
T5N, R14W
ZEELAND TOWNSHIP



CS: 70023
JN: 202084A
POE STA 35+14.00
CSMP: 4.601
PR: 749309
PRMP: 0.000

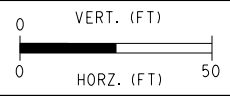
RAMP QUANTITIES - THIS SHEET

JN 202084A		
CAT 0001		
8	Cyd	Embankment, CIP, Special
48	Ft	Erosion Control, Silt Fence
1380	Cyd	Subbase, CIP
2120	Syd	Aggregate Base, 6 inch
287	Syd	Shoulder, CI II, 6 inch
2	Ea	Culv End Sect, 15 inch
1228	Ft	Underdrain, Subbase, 6 inch
100	Ft	Underdrain Outlet, 6 inch
4	Ea	Underdrain, Outlet Ending, 6 inch
365	Ton	HMA, 3E3
252	Ton	HMA, 4E3, High Stress
172	Ton	HMA, 5E3, High Stress

I-196

SECTION 17
T5N, R14W
ZEELAND TOWNSHIP

FINAL ROW PLAN REVISIONS		(SUBMITTAL DATE:)	
NO.	DATE	AUTH	DESCRIPTION

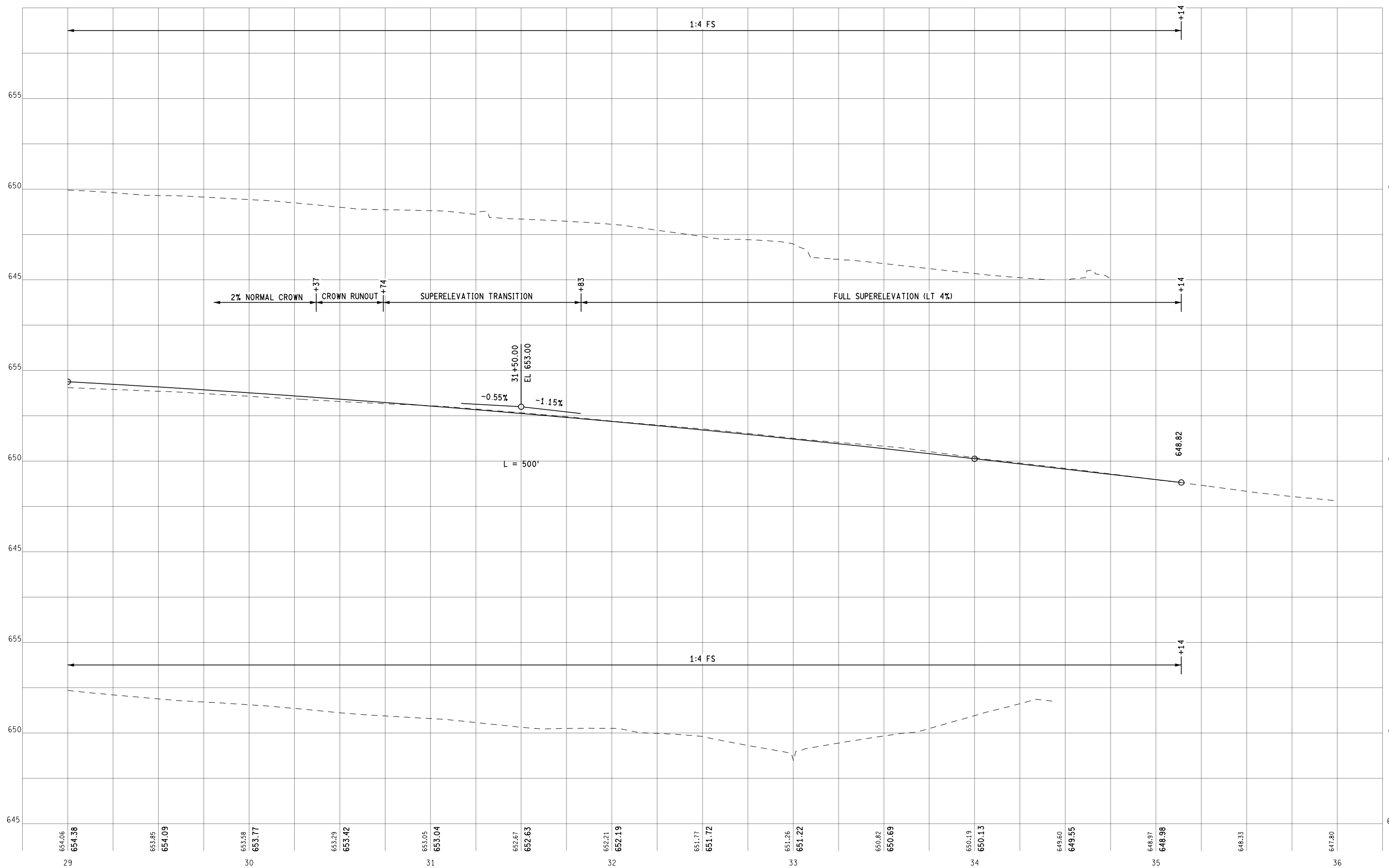


DATE: 04/10/18
DESIGN UNIT: JASINSKI
TSC: MUSKEGON
FILE: 201572_Ramp_Con002.dgn

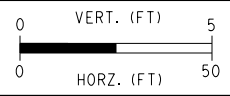
CS: 70024
JN: 202084A

CONSTRUCTION
RAMP B STA 29+00 TO STA 35+14

DRAWING SHEET
RAMPB CON 002
SECT 1
74



FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



DATE: 04/10/18

DESIGN UNIT: JASINSKI

TSC: MUSKEGON

FILE: 201572_Ramp_Prof003.dgn

CS: 70024

JN: 202084A

PROFILE

RAMP B STA 29+00 TO STA 35+14

DRAWING SHEET

RAMPB PROF 003

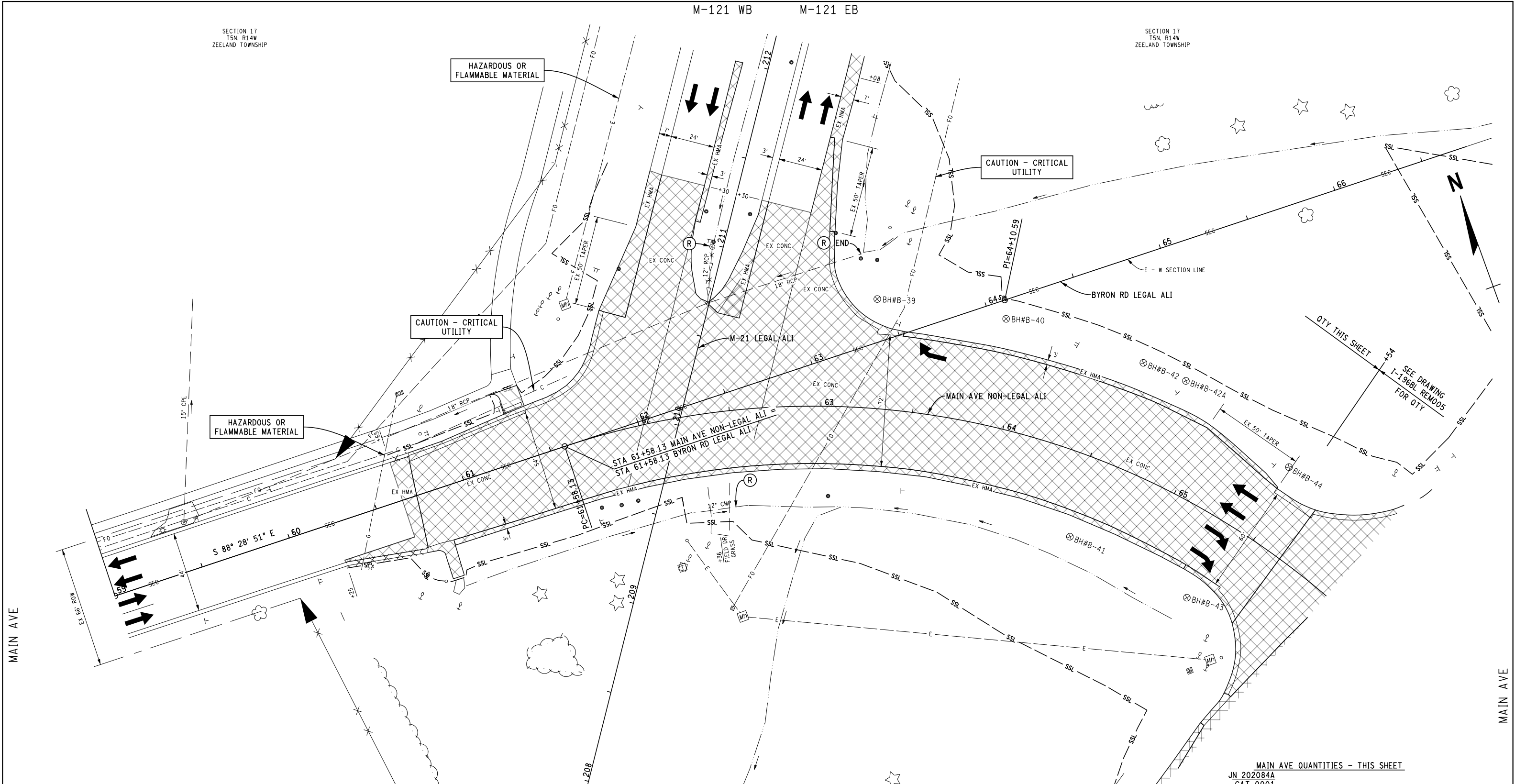
SECT 1

75

SECTION 17
T5N, R14W
ZEELAND TOWNSHIP

SECTION 17
T5N, R14W
ZEELAND TOWNSHIP

M-121 WB M-121 EB



MAIN AVE

MAIN AVE

SECTION 20
T5N, R14W
ZEELAND TOWNSHIP

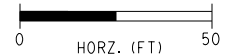
SECTION 20
T5N, R14W
ZEELAND TOWNSHIP

MAIN AVE QUANTITIES - THIS SHEET

JN 202084A
CAT 0001

1	Ea	Culv. Rem, Less than 24 inch
1	Ea	Culv. End, Rem, Less than 24 inch
1	Ea	Dr Structure, Rem
32	Ft	Sewer, Rem, Less than 24 inch
16	Ft	Curb and Gutter, Rem
4694	Syd	Pavt. Rem
17	Syd	Sidewalk, Rem
4269	Cyd	Excavation, Earth*
488	Syd	HMA Surface, Rem
* INCLUDES 295 CYD OF TOPSOIL STRIPPING		

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



DATE: 04/10/18	CS: 70823	REMOVAL MAIN ST STA 60+25 TO STA 65+54 M-121 STA 210+00 TO STA 212+00	DRAWING SHEET M-121 REM 001 76
DESIGN UNIT: JASINSKI	JN: 201572A, 202084A		
TSC: MUSKEGON	FILE: 201572_M-121_Rem001.dgn		

WB QUANTITIES - THIS SHEET

JN 202084A
CAT 0001

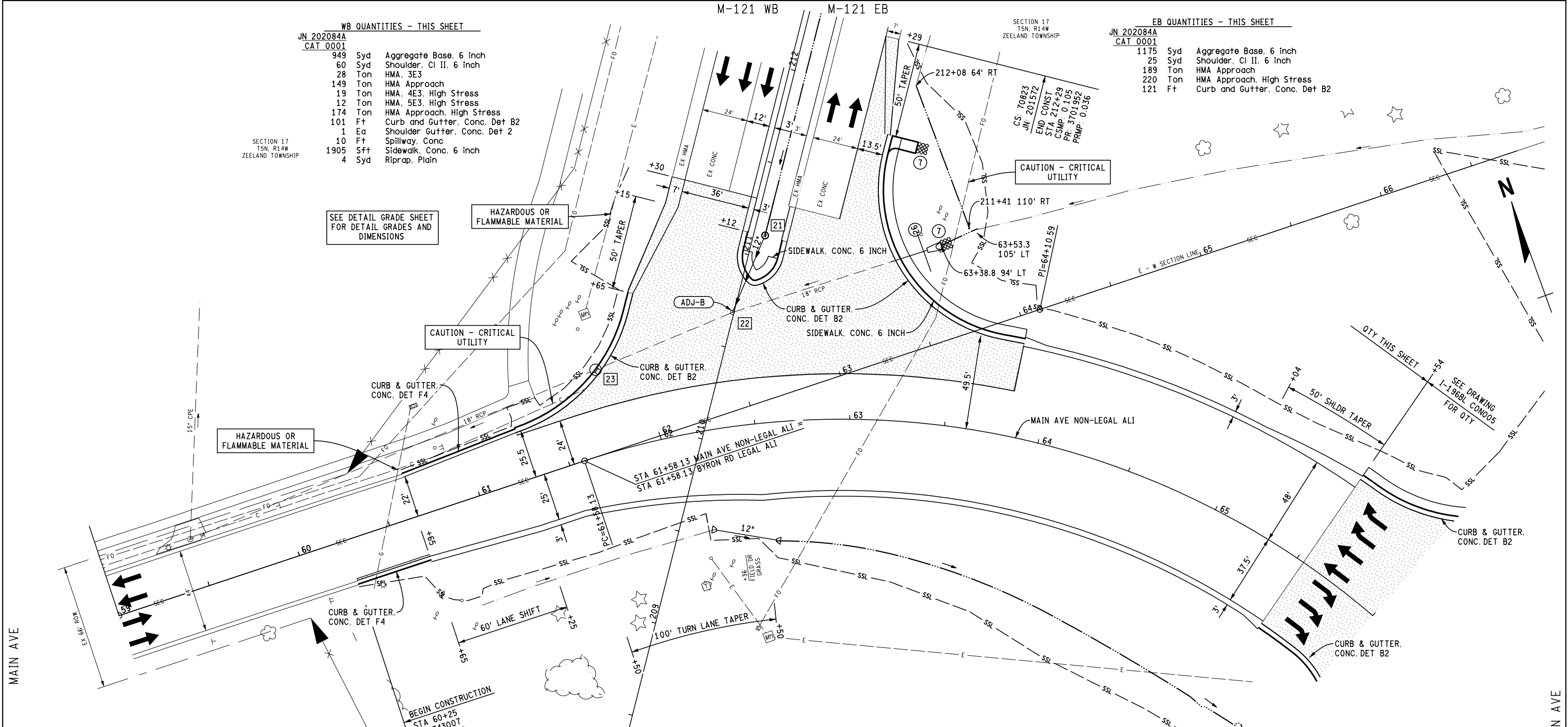
949	Syd	Aggregate Base, 6 inch
60	Syd	Shoulder, Cl II, 6 inch
28	Ton	HMA, 3E3
149	Ton	HMA Approach
19	Ton	HMA, 4E3, High Stress
12	Ton	HMA, 5E3, High Stress
174	Ton	HMA Approach, High Stress
101	Ft	Curb and Gutter, Conc. Det B2
1	Ea	Shoulder Gutter, Conc. Det 2
10	Ft	Spillway, Conc
1905	Sft	Sidewalk, Conc. 6 inch
4	Syd	Riprap, Plain

SECTION 17
T5N, R14W
ZEELAND TOWNSHIP

EB QUANTITIES - THIS SHEET

JN 202084A
CAT 0001

1175	Syd	Aggregate Base, 6 inch
25	Syd	Shoulder, Cl II, 6 inch
189	Ton	HMA Approach
220	Ton	HMA Approach, High Stress
121	Ft	Curb and Gutter, Conc. Det B2



MAIN AVE QUANTITIES - THIS SHEET

JN 202084A
CAT 0001

1762	Cyd	Embankment, CIP, Special
3	Ea	Erosion Control, Inlet Protection, Fabric Drop
3250	Cyd	Subbase, CIP
4125	Syd	Aggregate Base, 6 inch
178	Syd	Shoulder, Cl II, 6 inch
2	Ea	Culv End Sect, 12 inch
32	Ft	Culv, Cl F, 12 inch
1	Ea	Culv, Slip End Sect, 1 on 6, 18 inch, Transv
8	Ft	Sewer, Cl A, 18 inch, Tr Det B
1500	Ft	Underdrain, Subbase, 6 inch
160	Ft	Underdrain Outlet, 6 inch
8	Ea	Underdrain, Outlet Ending, 6 inch
2	Ton	Hand Patching
744	Ton	HMA, 3E3
514	Ton	HMA, 4E3, High Stress
347	Ton	HMA, 5E3, High Stress
105	Ft	Curb and Gutter, Conc. Det F4
4	Syd	Riprap, Plain

DRAINAGE STRUCTURE AND SEWER TABLE

STRUCT NO.	ALIGNMENT	STATION	OFFSET FT	RIM ELEV	Sewer, Cl A, 12 inch, Tr Det B	Sewer, Cl A, 18 inch, Tr Det B	Sewer Tap, 18 inch	Dr Structure Cover, Adj, Case 1	Dr Structure Cover, Type B	Dr Structure Cover, Type G	Dr Structure Cover, Type J	Dr Structure, 24 inch dia	Dr Structure, 48 inch dia	Dr Structure, Tap, 12 inch
					Ft	Ft	Ea	Ea	Ea	Ea	Ea	Ea	Ea	Ea
21	M-121	211+12	6.00 RT	661.24	44	--	--	--	--	1	--	1	--	--
22	M-121	210+68	1.00 LT	660.20	--	--	--	1	1	--	--	--	--	1
23	M-121	61+76.80	44.13 LT	660.40	--	20	1	--	--	1	1	1	1	--
JN 202084A CAT0001 - TOTAL					44	20	1	1	1	1	1	1	1	1

SECTION 20
T5N, R14W
ZEELAND TOWNSHIP

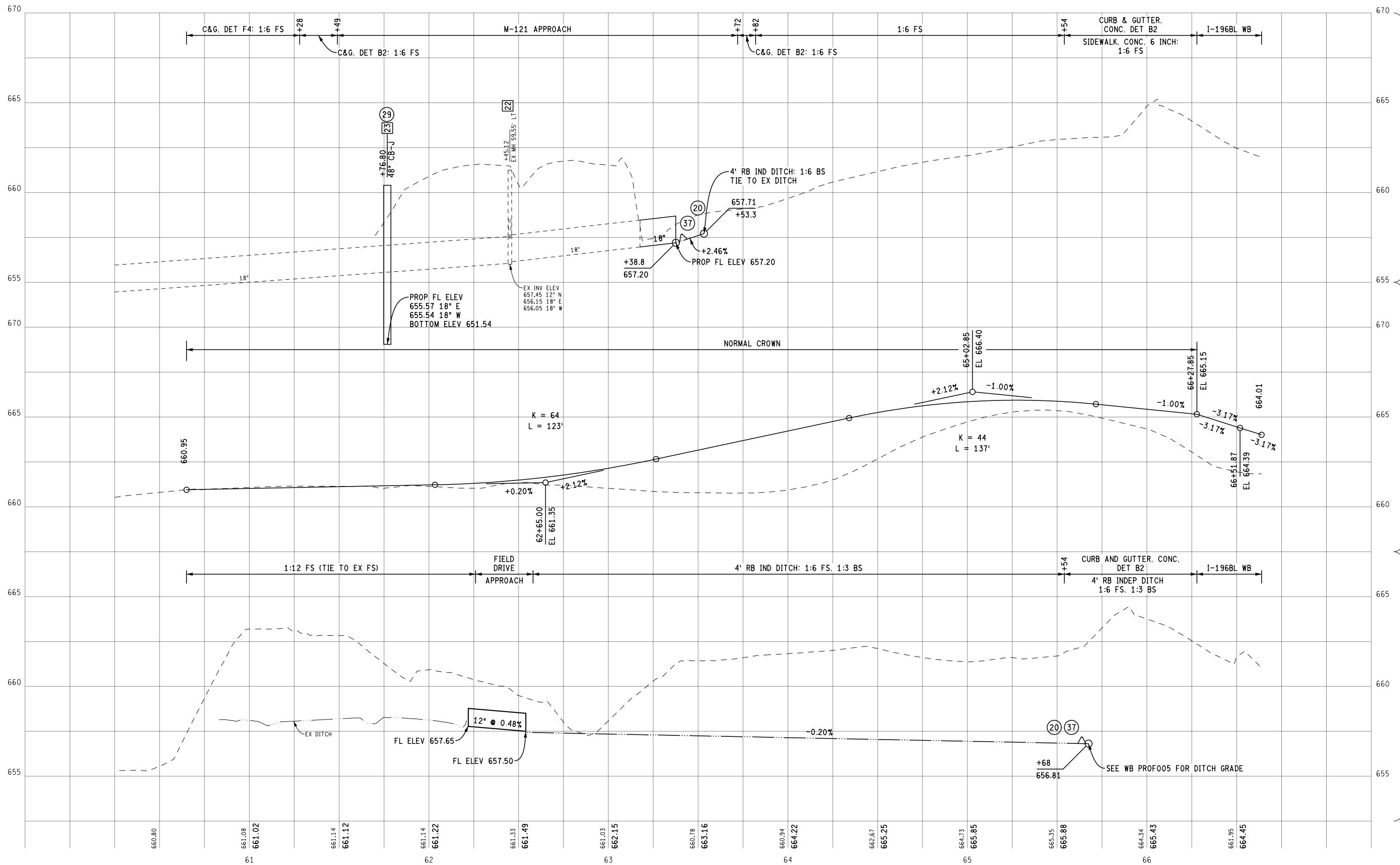
DATE: 04/10/18
DESIGN UNIT: JASINSKI
TSC: MUSKEGON

CS: 70823
JN: 201572A, 202084A

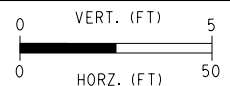
CONSTRUCTION
MAIN ST STA 60+25 TO STA 65+54
M-121 STA 210+00 TO STA 212+00

DRAWING SHEET
M-121 CON 001 77

FILE: 201572_M-121_Con001.dgn



FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

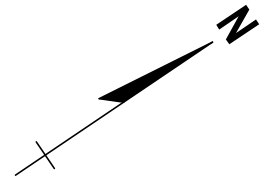


DATE: 04/10/18
 DESIGN UNIT: JASINSKI
 TSC: MUSKEGON
 FILE: 201572_M-121_Prof001.dgn

CS: 70823
 JN: 201572A, 202084A

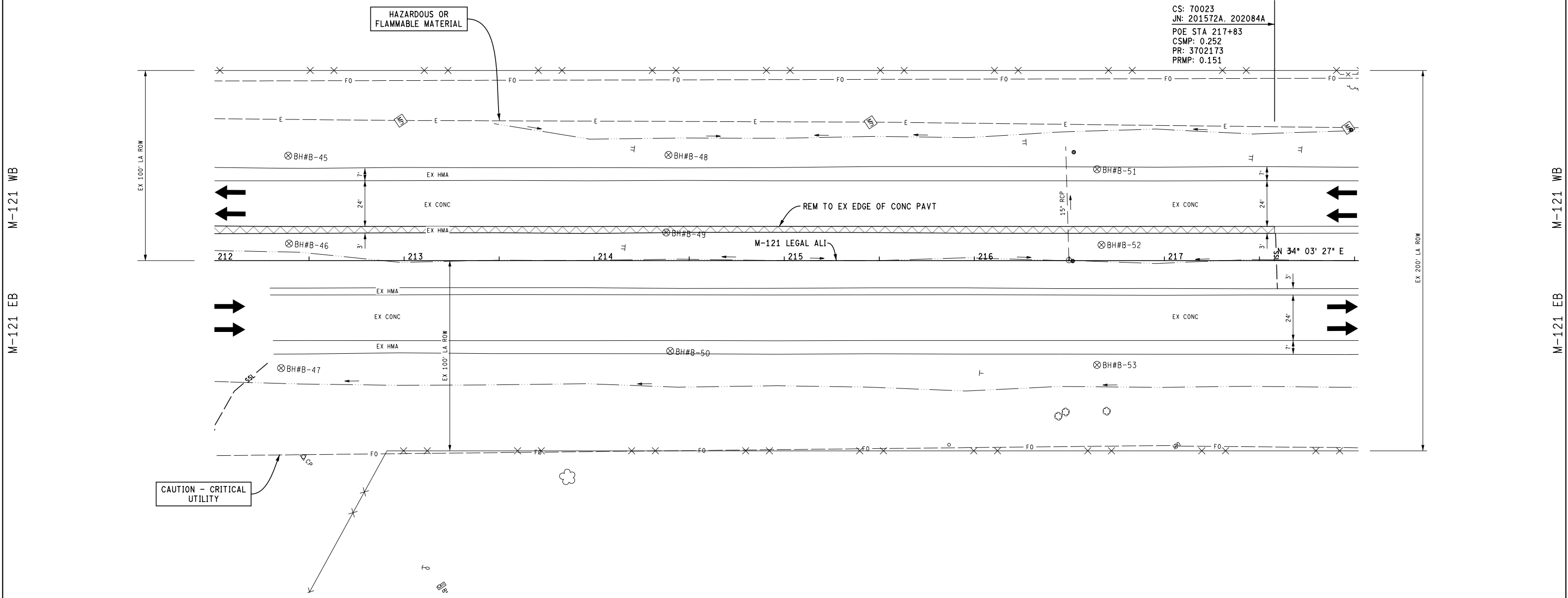
PROFILE
 MAIN ST STA 60+25 TO STA 65+54

DRAWING SHEET
 M-121 SECT 1
 PROF 001 78

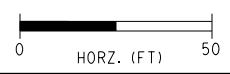


WB QUANTITIES - THIS SHEET
 JN 201572A
 CAT 0001
 939 Cyd Excavation, Earth *
 216 Syd HMA Surface, Rem
 * INCLUDES 218 CYD OF TOPSOIL STRIPPING

CS: 70023
 JN: 201572A, 202084A
 POE STA 217+83
 CSMP: 0.252
 PR: 3702173
 PRMP: 0.151



FINAL ROW PLAN REVISIONS		(SUBMITTAL DATE:)	
NO.	DATE	AUTH	DESCRIPTION



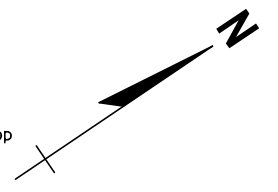
DATE: 04/10/18
 DESIGN UNIT: JASINSKI
 TSC: MUSKEGON
 FILE: 201572_M-121_Rem002.dgn

CS: 70823
 JN: 201572A, 202084A

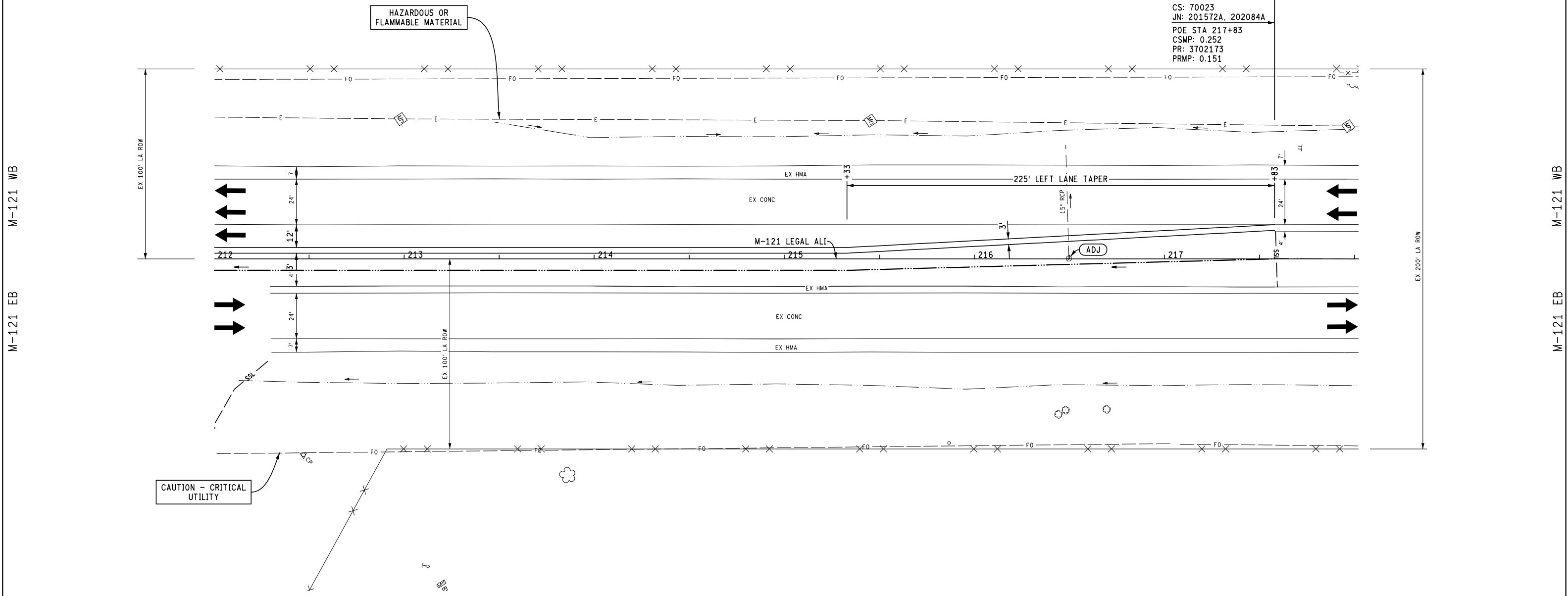
DRAWING	SHEET
M-121 REM 002	SECT 1 79

WB QUANTITIES - THIS SHEET

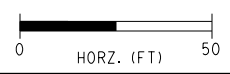
JN. 201572A	4	Cyd	Embankment, CIP, Special
CAT 0001	4	Ft	Erosion Control, Check Dam, Stone
	1	Ea	Erosion Control, Inlet Protection, Fabric Drop
	1	Ea	Erosion Control, Sediment Trap
	506	Cyd	Subbase, CIP
	884	Syd	Aggregate Base, 6 inch
	257	Syd	Shoulder, CI II, 6 inch
	1	Ea	Dr Structure Cover, Adj, Case 2
	300	Ft	Underdrain, Subbase, 6 inch
	20	Ft	Underdrain Outlet, 6 inch
	2	Ea	Underdrain, Outlet Ending, 6 inch
	160	Ton	HMA, 3E3
	71	Ton	HMA, 5E3, High Stress



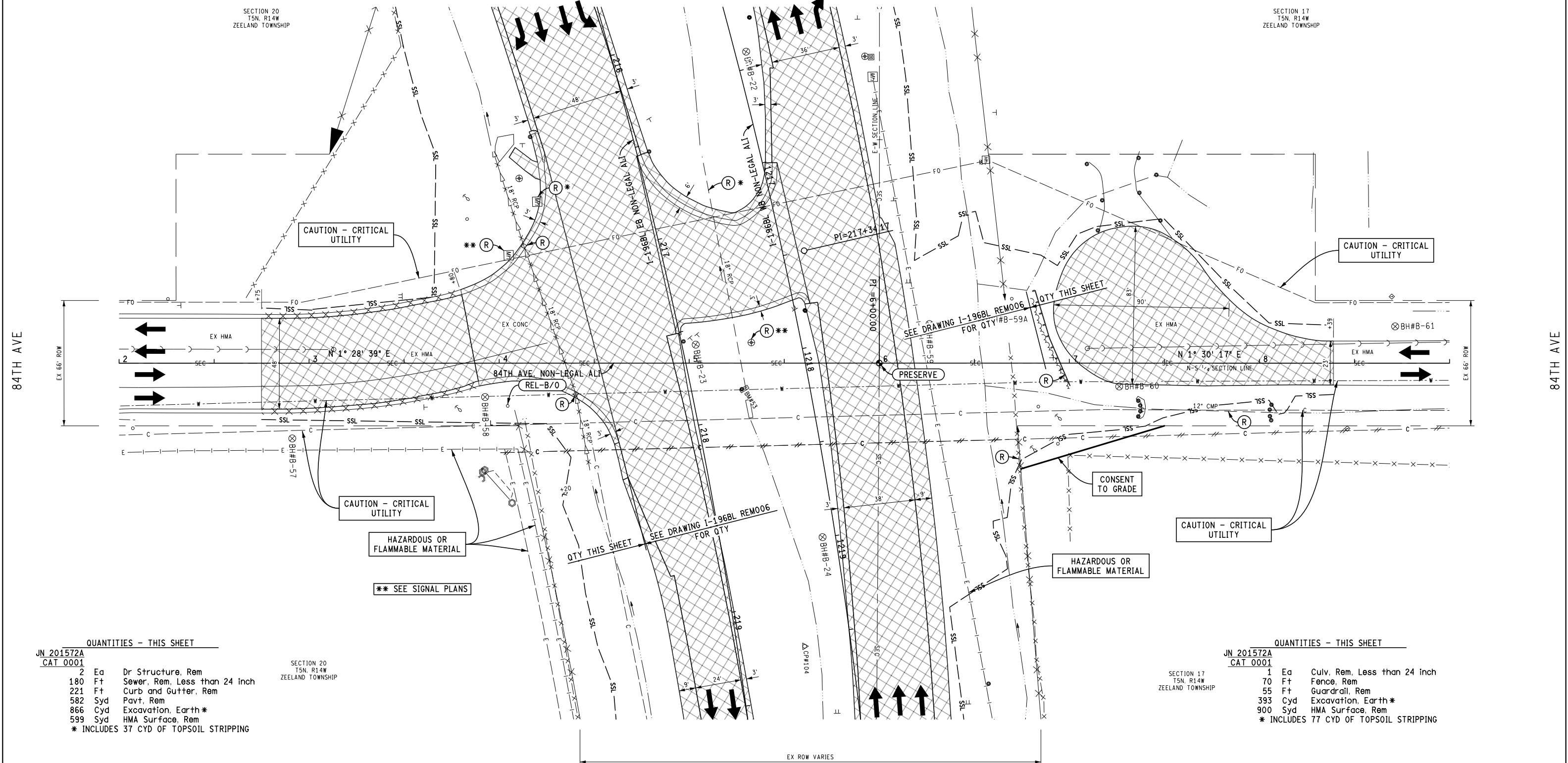
CS: 70023
JN: 201572A, 202084A
POE STA 217+83
CSMP: 0.252
PR: 3702173
PRMP: 0.151



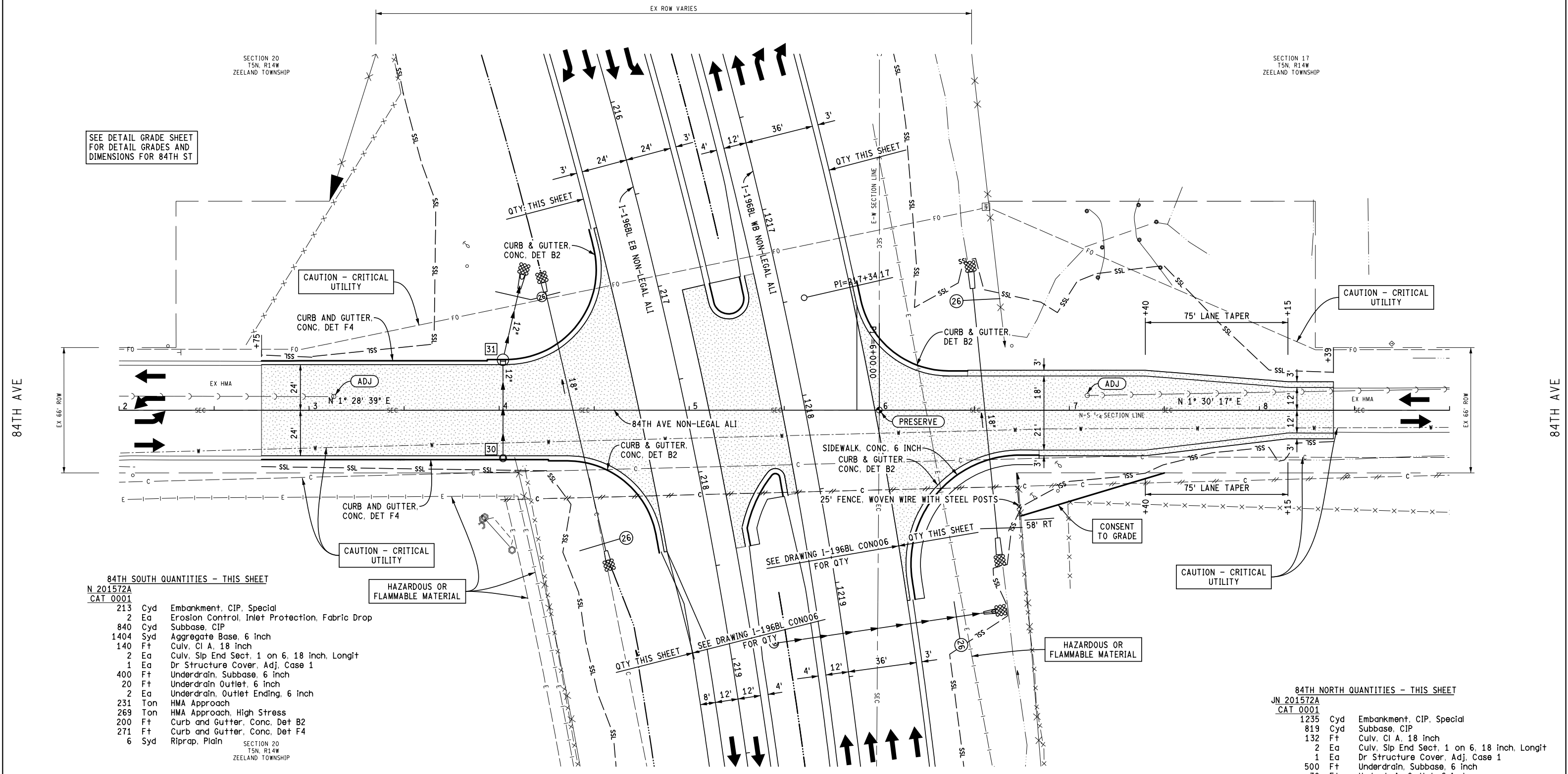
FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



DATE: 04/10/18	CS: 70823	CONSTRUCTION	DRAWING SHEET
DESIGN UNIT: JASINSKI	JN: 201572A, 202084A		
TSC: MUSKEGON	FILE: 201572_M-121_Con002.dgn	M-121 STA 212+00 TO STA 217+83	M-121 CON 002
			SHEET 80



FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)						MDOT Michigan Department of Transportation	DATE: 04/10/18 DESIGN UNIT: JASINSKI TSC: MUSKEGON	CS: 70023 JN: 201572A, 202084A	DRAWING SHEET 84TH REM 001 82
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE				
								REMOVAL 84TH AVE STA 2+00 TO STA 9+00	



SEE DETAIL GRADE SHEET FOR DETAIL GRADES AND DIMENSIONS FOR 84TH ST

SECTION 20
T5N, R14W
ZEELAND TOWNSHIP

SECTION 17
T5N, R14W
ZEELAND TOWNSHIP

84TH AVE

84TH AVE

84TH SOUTH QUANTITIES - THIS SHEET
N 201572A
CAT 0001

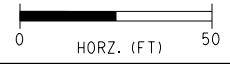
213	Cyd	Embankment, CIP, Special
2	Ea	Erosion Control, Inlet Protection, Fabric Drop
840	Cyd	Subbase, CIP
1404	Syd	Aggregate Base, 6 inch
140	Ft	Culv. CI A, 18 inch
2	Ea	Culv. Slip End Sect. 1 on 6, 18 inch, Longit
1	Ea	Dr Structure Cover, Adj. Case 1
400	Ft	Underdrain, Subbase, 6 inch
20	Ft	Underdrain Outlet, 6 inch
2	Ea	Underdrain, Outlet Ending, 6 inch
231	Ton	HMA Approach
269	Ton	HMA Approach, High Stress
200	Ft	Curb and Gutter, Conc. Det B2
271	Ft	Curb and Gutter, Conc. Det F4
6	Syd	Riprap, Plain

84TH NORTH QUANTITIES - THIS SHEET
JN 201572A
CAT 0001

1235	Cyd	Embankment, CIP, Special
819	Cyd	Subbase, CIP
132	Ft	Culv. CI A, 18 inch
2	Ea	Culv. Slip End Sect. 1 on 6, 18 inch, Longit
1	Ea	Dr Structure Cover, Adj. Case 1
500	Ft	Underdrain, Subbase, 6 inch
30	Ft	Underdrain Outlet, 6 inch
2	Ea	Underdrain, Outlet Ending, 6 inch
235	Ton	HMA Approach
274	Ton	HMA Approach, High Stress
195	Ft	Curb and Gutter, Conc. Det B2
1260	Sft	Sidewalk, Conc. 6 inch
25	Ft	Fence, Woven Wire with Steel Post
9	Syd	Riprap, Plain
1	Ea	Monument Box
1	Ea	Monument Preservation

DRAINAGE STRUCTURE AND SEWER TABLE					Culv End Sect, 12 inch	Sewer, CI A, 12 inch, Tr Det B	Dr Structure Cover, Type J	Dr Structure Cover, Type K	Dr Structure, 24 inch dia	Dr Structure, 48 inch dia
STRUCT NO.	ALIGNMENT	STATION	OFFSET	RIM ELEV	Ea	Ft	Ea	Ea	Ea	Ea
				FT						
30	84TH	4+02.00	24.00 RT	666.81	--	48	--	1	1	--
31	84TH	4+02.00	24.17 LT	666.81	1	40	1	--	--	1
JN 201572A CAT0001 - TOTAL					1	88	1	1	1	1

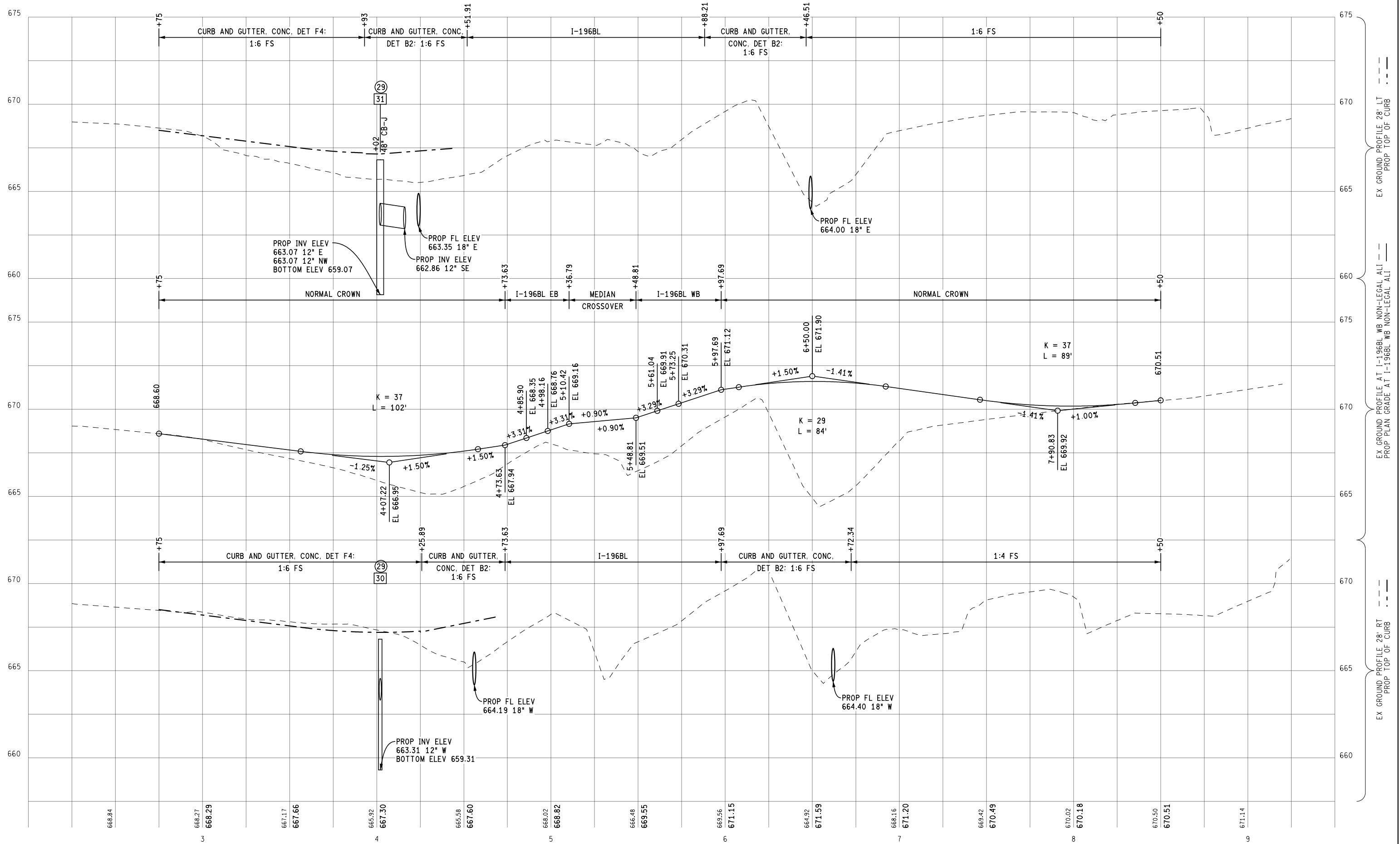
FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



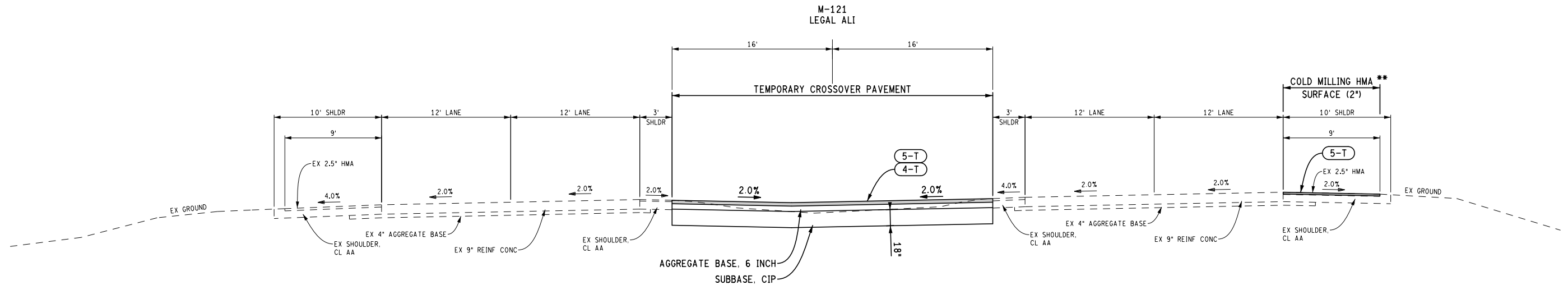
DATE: 04/10/18
DESIGN UNIT: JASINSKI
TSC: MUSKOGON
FILE: 201572_84th_CON001.dgn

CS: 70023
JN: 201572A, 202084A

CONSTRUCTION
84TH AVE STA 2+00 TO STA 9+00
DRAWING SHEET
84TH CON 001 83

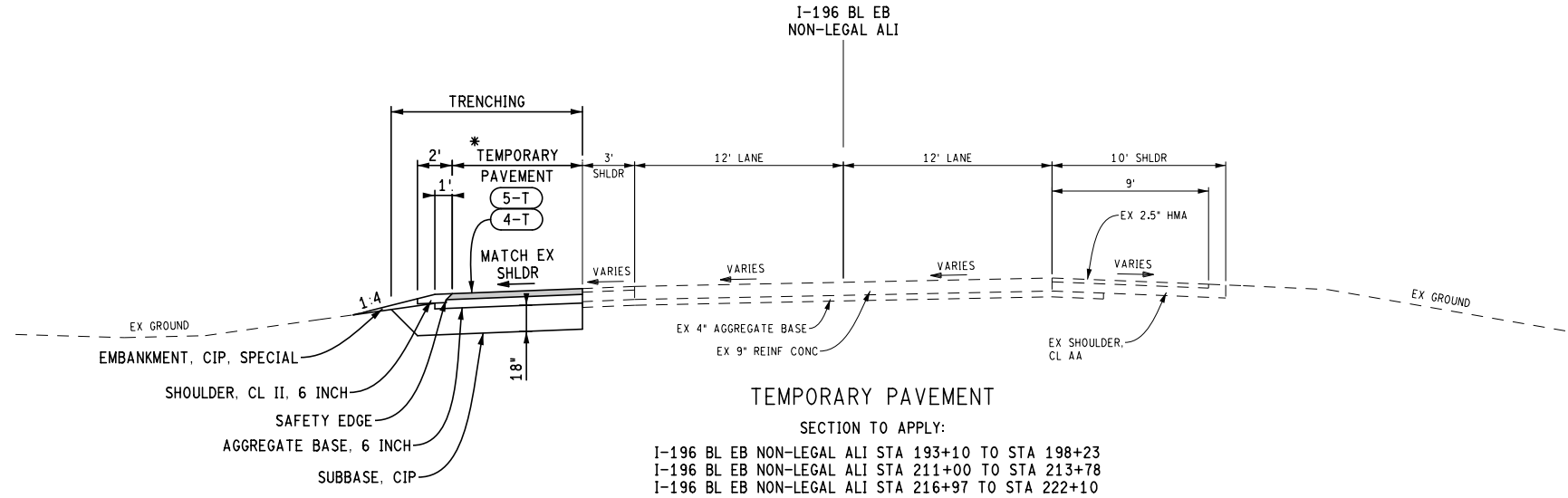


FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)										VERT. (FT) 0 5 HORZ. (FT) 0 50		DATE: 04/10/18 DESIGN UNIT: JASINSKI TSC: MUSKEGON		CS: 70023 JN: 201572A, 202084A		PROFILE 84TH AVE STA 2+00 TO STA 9+00		DRAWING SHEET 84TH PROF 001 84	
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION												

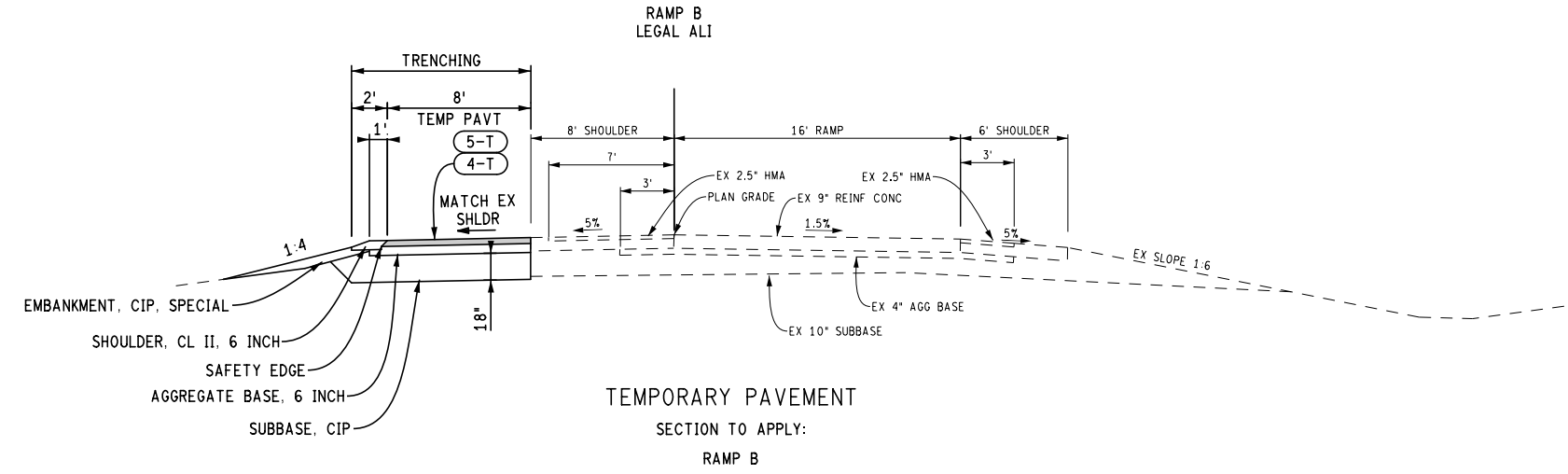


TEMPORARY CROSSOVER
SECTION TO APPLY:
M-121 LEGAL ALI STA 179+92 TO STA 188+90

NOTE:
REFER TO MOT SHEETS FOR MORE DETAILS
**COLD MILLING HMA SURFACE FROM I-196 BL EB NON-LEGAL ALI STA 203+00 TO POE



TEMPORARY PAVEMENT
SECTION TO APPLY:
I-196 BL EB NON-LEGAL ALI STA 193+10 TO STA 198+23
I-196 BL EB NON-LEGAL ALI STA 211+00 TO STA 213+78
I-196 BL EB NON-LEGAL ALI STA 216+97 TO STA 222+10

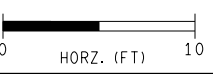


TEMPORARY PAVEMENT
SECTION TO APPLY:
RAMP B

* TEMPORARY PAVEMENT WIDTHS:

STATION RANGE	WIDTH
193+10 TO 198+23	0' TO 2'
211+00 TO 213+78	0' TO 11'
217+65 TO 222+10	10' TO 13.5'

FINAL ROW PLAN REVISIONS		(SUBMITTAL DATE:)	
NO.	DATE	AUTH	DESCRIPTION



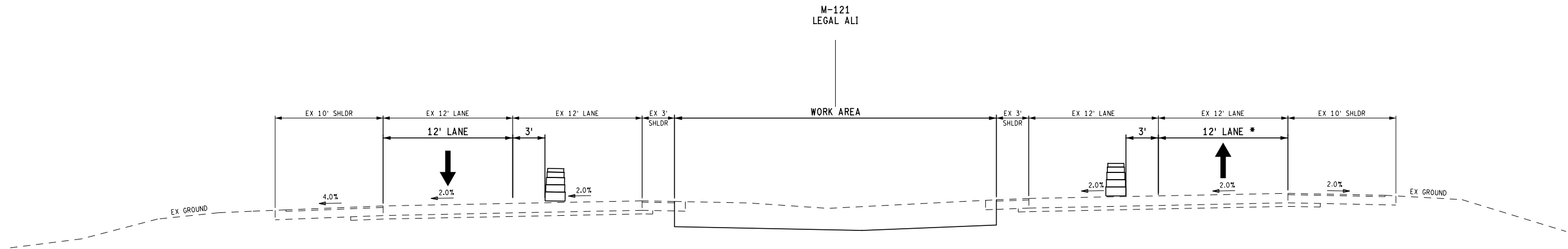
FILE: MOT_TYP.dgn

DATE: 1/31/18
DESIGN UNIT: ROZEMA
TSC: MUSKEGON

CS: 70023
JN: 201572A, 202084A

MAINTAINING TRAFFIC
I-196 BL
STAGE 1 TYPICAL SECTIONS

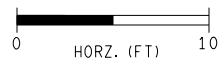
DRAWING SHEET
TYP MOT 01
85



MOT STAGE 1
SECTION TO APPLY:
M-121 LEGAL ALI STA 179+92 TO STA 188+90

* SINGLE LANE CLOSURES WILL ALSO BE USED FOR TEMPORARY PAVEMENT CONSTRUCTION ON EB I-196 BL AT STA 193+10 TO 198+22.5 AND STA 211+14 TO 222+10

FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



FILE: MOT_TYP.dgn

DATE: 1/31/18

DESIGN UNIT: ROZEMA

TSC: MUSKEGON

CS: 70023

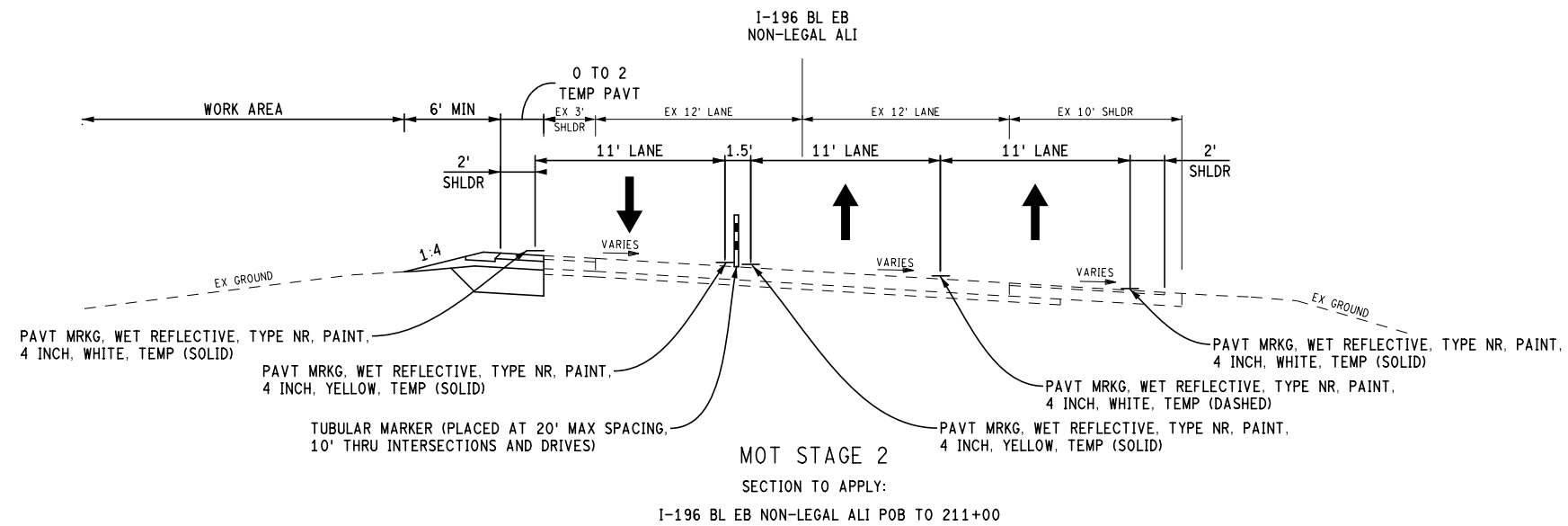
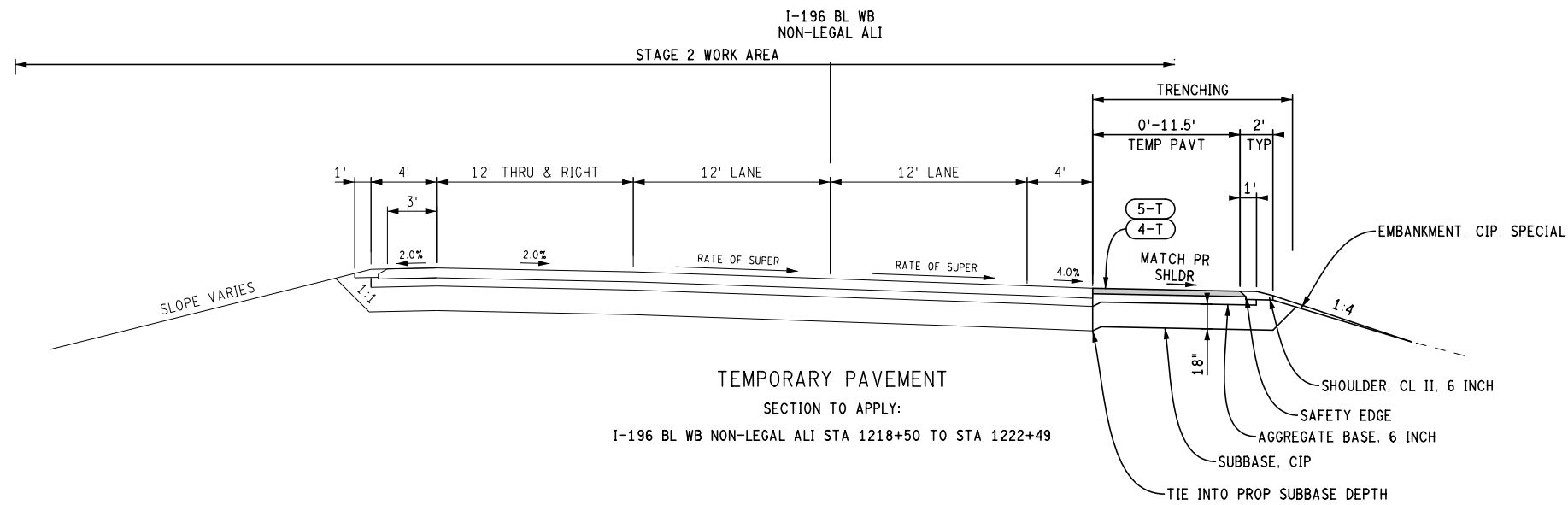
JN: 201572A, 202084A

MAINTAINING TRAFFIC

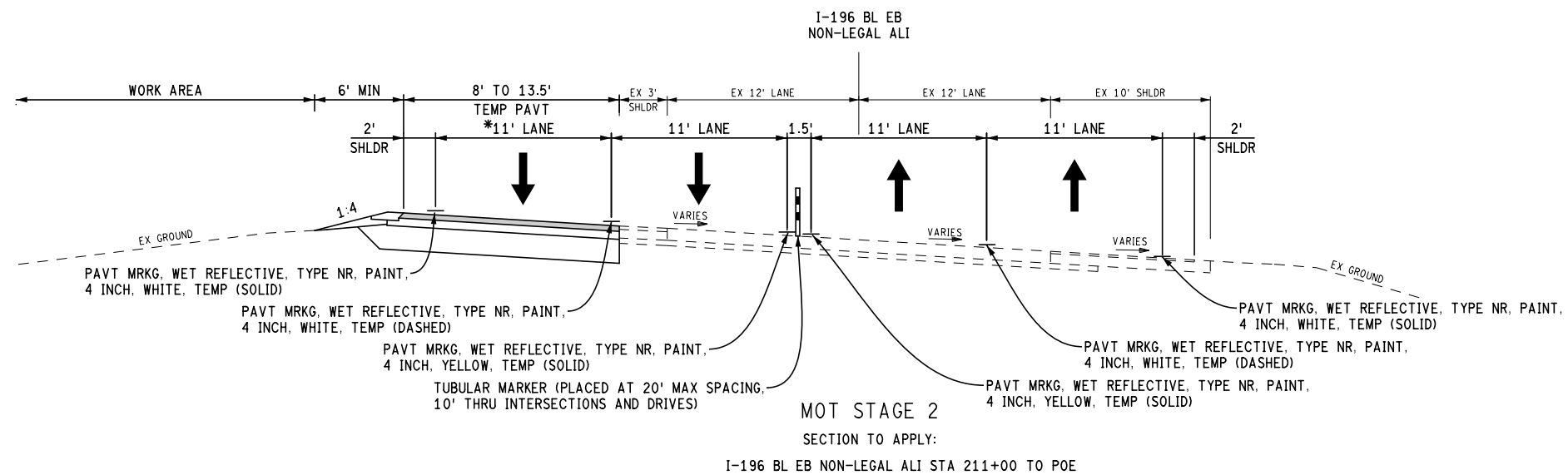
I-196 BL

STAGE 1 TYPICAL SECTIONS

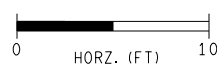
DRAWING	SHEET
TYP MOT 02	SECT 86



* OUTSIDE I-196 BL WB LANE WILL BECOME RIGHT TURN ONLY LANE AT MAIN AVE FOR STAGE 2A, AND AT 84TH AVE FOR STAGE 2B.



FINAL ROW PLAN REVISIONS		(SUBMITTAL DATE:)	
NO.	DATE	AUTH	DESCRIPTION



FILE: MOT_TYP.dgn

DATE: 1/31/18

DESIGN UNIT: ROZEMA

TSC: MUSKEGON

CS: 70023

JN: 201572A, 202084A

MAINTAINING TRAFFIC

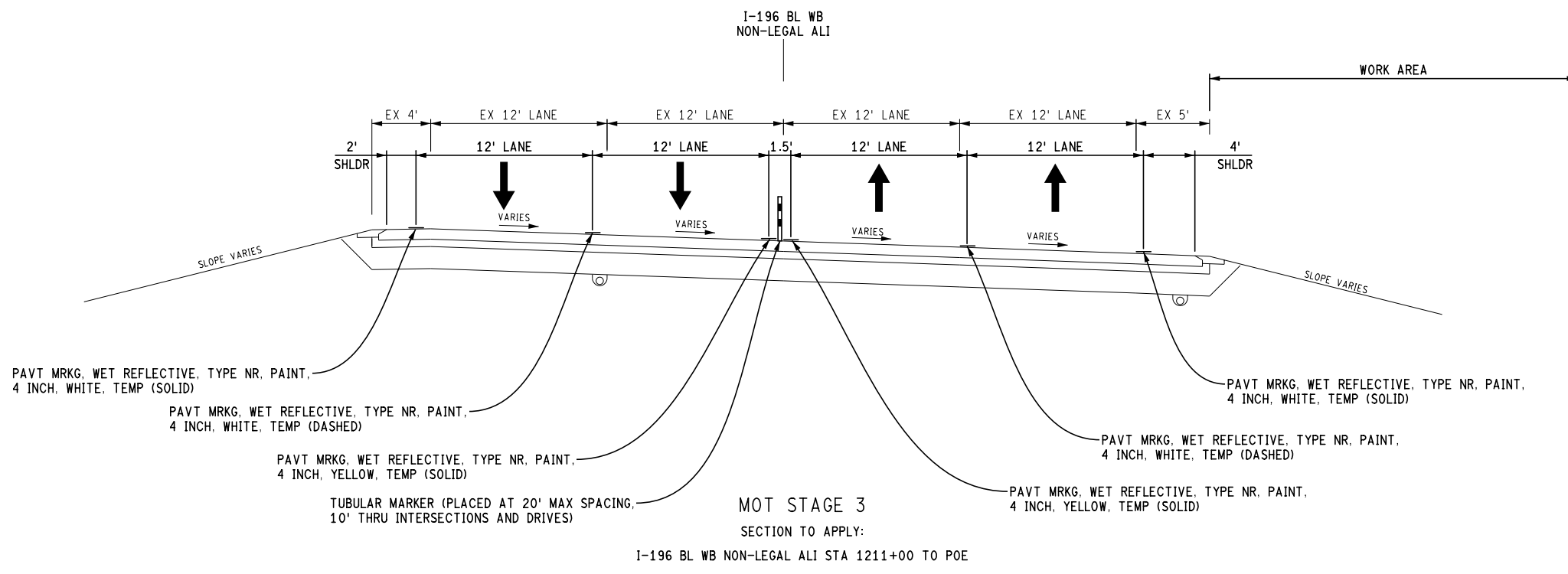
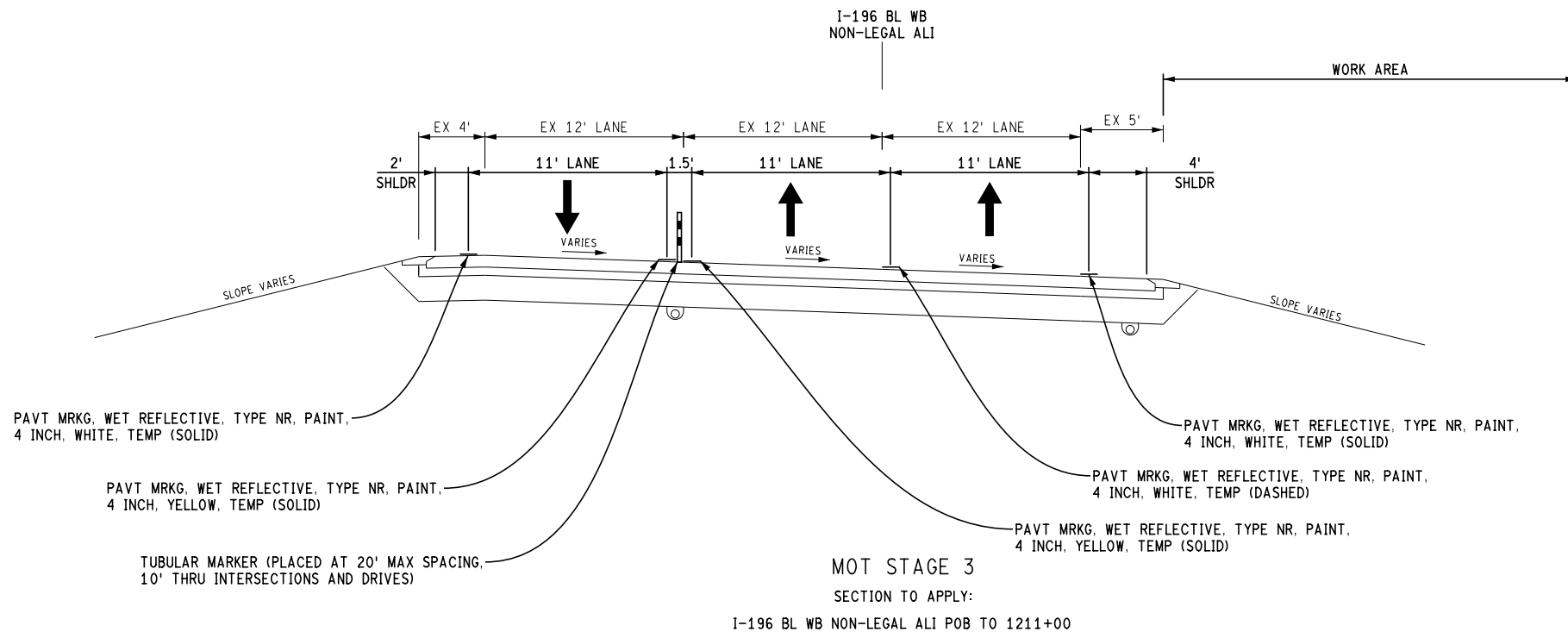
I-196 BL

STAGE 2 TYPICAL SECTIONS

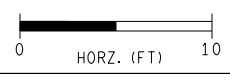
DRAWING SHEET

TYP MOT 03

87



FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



FILE: MOT_TYP.dgn

DATE: 1/31/18
DESIGN UNIT: ROZEMA
TSC: MUSKEGON

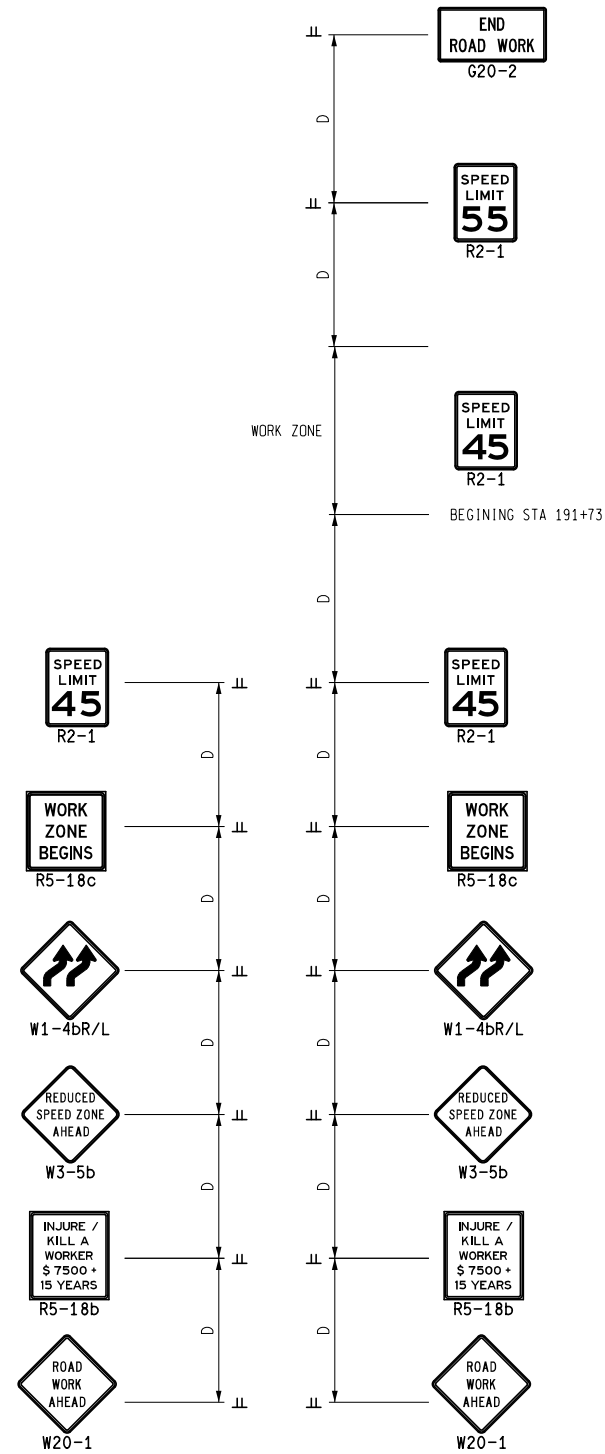
CS: 70023
JN: 201572A, 202084A

MAINTAINING TRAFFIC
I-196 BL
STAGE 3 TYPICAL SECTIONS

DRAWING	SHEET
TYP MOT 04	88

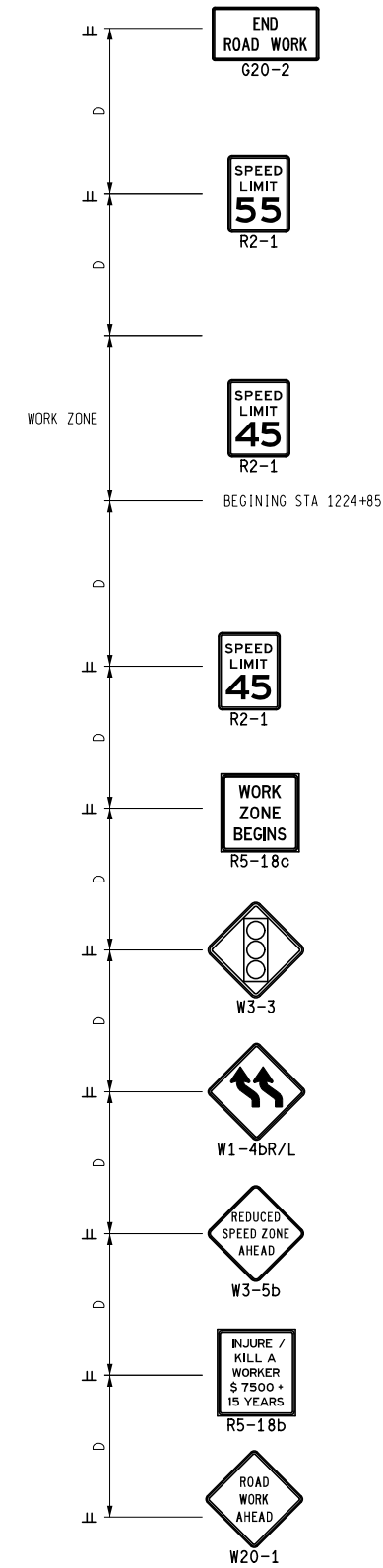
ADVANCE CONSTRUCTION SIGN SEQUENCE A

SCHEME FROM M0070a, M0232c



ADVANCE CONSTRUCTION SIGN SEQUENCE B

SCHEME FROM M0040a, M0190a, M0232c



DISTANCE BETWEEN TRAFFIC CONTROL DEVICES "D"
AND LENGTH OF LONGITUDINAL BUFFER SPACE ON
"WHERE WORKERS PRESENT" SEQUENCES

"D" DISTANCES	POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA)									
	25	30	35	40	45	50	55	60	65	70
D (FEET)	250	300	350	400	450	500	550	600	650	700

FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



NO SCALE

FILE: MOT_Adv_Sign.dgn

DATE: 1/31/18

DESIGN UNIT: ROZEMA

TSC: MUSKEGON

CS: 70023

JN: 201572A, 202084A

ADVANCE CONSTRUCTION SIGN SEQUENCE

I-196 BL

DRAWING SHEET

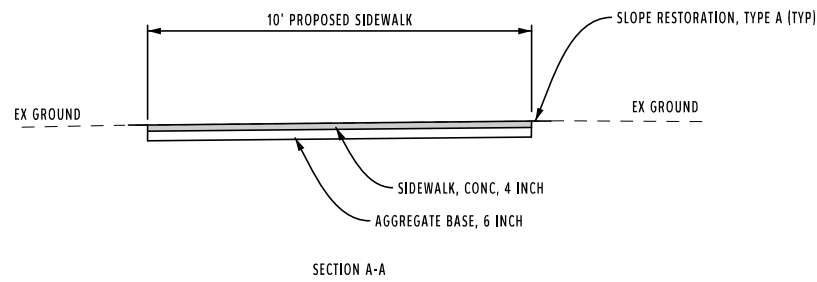
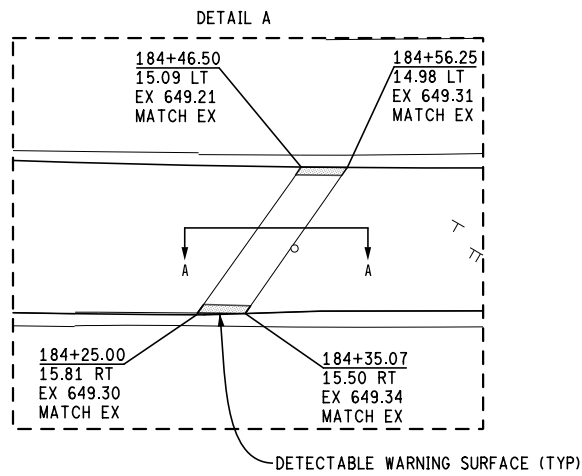
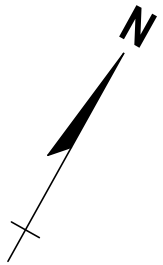
I-196BL
MOT
05
89

FAIRVIEW RD

LEGEND



TEMP PAVT

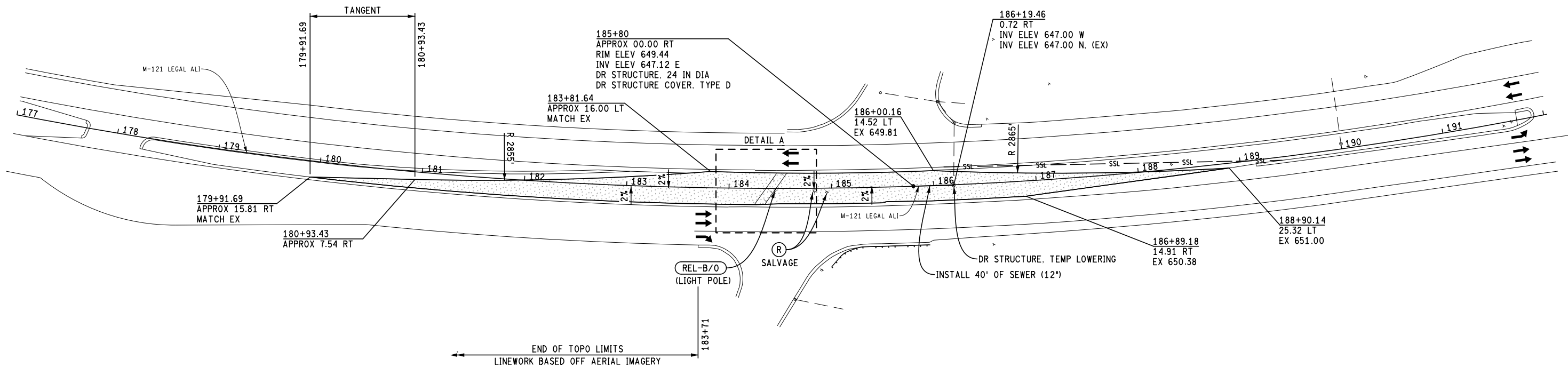


STAGE 1:

- CONSTRUCT TEMPORARY PAVEMENT, TEMPORARY SIGNAL EAST OF 84TH AVENUE AND I-196 WB RAMP B AS DESCRIBED IN SPECIAL PROVISION

I-196 BL

I-196 BL



NOTES:

CONSTRUCT TEMPORARY CROSSOVERS IN TWO SEGMENTS USING SINGLE LANE CLOSURES. THE FIRST SEGMENT WILL BE FROM STA 184+50 TO STA 188+90. AFTER THIS IS COMPLETED, TEMPORARILY SHIFT THE PEDESTRIAN CROSSWALK EAST AND FINISH SEGMENT TWO FROM STA 179+92 TO STA 184+50.

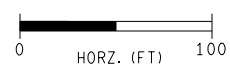
STAGE 1 TO BE CONSTRUCTED UNDER SINGLE LANE CLOSURES. REFER TO SPECIAL PROVISION.

PLASTIC DRUM SPACING TO BE:
 -40' CENTER-TO-CENTER, TANGENTS, SHIFTS, AND TAPERS
 -10' CENTER-TO-CENTER, WHERE TIGHTER TRAFFIC CONTROL IS REQUIRED BY THE ENGINEER

TUBULAR MARKER SPACING TO BE:
 -20' CENTER-TO-CENTER MAXIMUM
 -10' CENTER-TO-CENTER, INTERSECTIONS AND DRIVES

88TH AVE

FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

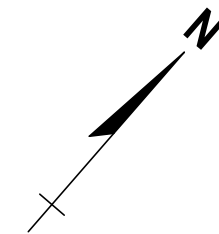


DATE: 1/31/18	CS: 70023	DRAWING SHEET
DESIGN UNIT: ROZEMA	JN: 201572A, 202084A	
TSC: MUSKEGON	FILE: MT_Stage_1_Sta_177.dgn	DRAWING SHEET
STAGE 1 TEMPORARY PAVEMENT WIDENING		I-196 BL
		90

LEGEND



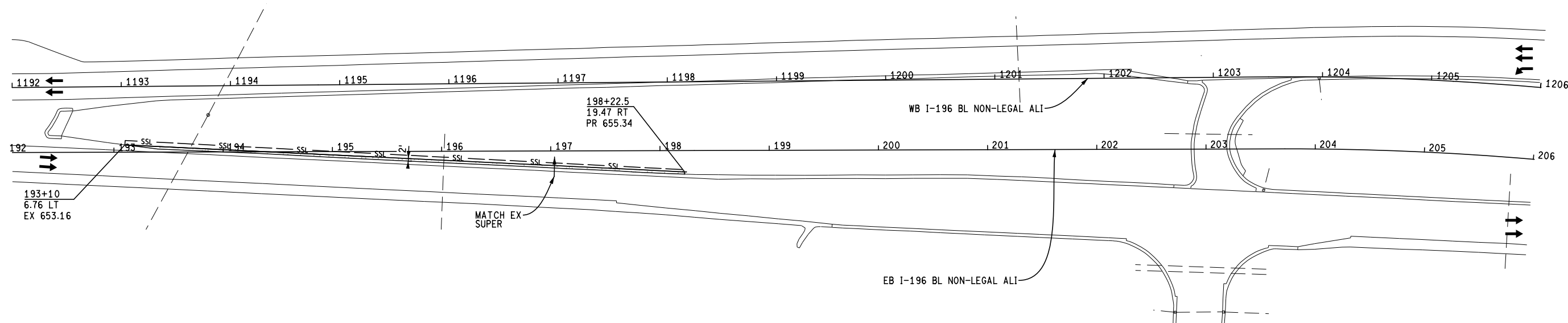
TEMP PAVT



STAGE 1:

- CONSTRUCT TEMPORARY PAVEMENT, TEMPORARY SIGNAL EAST OF 84TH AVENUE AND I-196 WB RAMP B AS DESCRIBED IN SPECIAL PROVISION

I-196 BL



I-196 BL

NOTES:

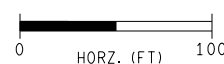
STAGE 1 TO BE CONSTRUCTED UNDER SINGLE LANE CLOSURES. REFER TO SPECIAL PROVISION.

PLASTIC DRUM SPACING TO BE:
-40' CENTER-TO-CENTER, TANGENTS, SHIFTS, AND TAPERS
-10' CENTER-TO-CENTER, WHERE TIGHTER TRAFFIC CONTROL IS REQUIRED BY THE ENGINEER

TUBULAR MARKER SPACING TO BE:
-20' CENTER-TO-CENTER MAXIMUM
-10' CENTER-TO-CENTER, INTERSECTIONS AND DRIVES

HOMESTEAD DR

FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



DATE: 1/31/18	CS: 70023
DESIGN UNIT: ROZEMA	JN: 201572A, 202084A
TSC: MUSKEGON	FILE: MT_Stage_1_Sta_192.dgn

DATE: 1/31/18	CS: 70023
DESIGN UNIT: ROZEMA	JN: 201572A, 202084A
TSC: MUSKEGON	FILE: MT_Stage_1_Sta_192.dgn

MAINTAINING TRAFFIC	
I-196 BL	
STAGE 1 TEMPORARY PAVEMENT WIDENING	

DRAWING	SHEET
I-196BL	SECT
MOT	07
91	

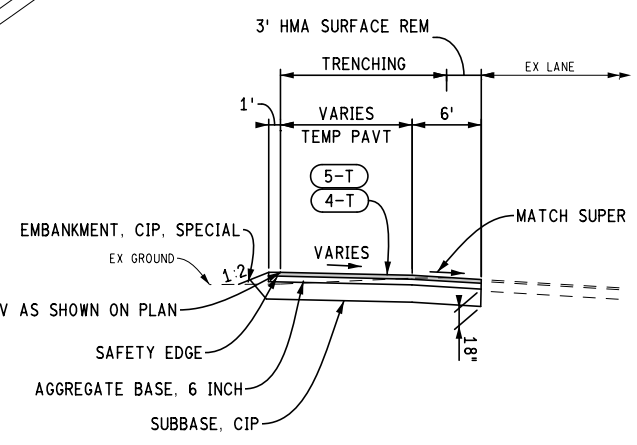


LEGEND
TEMP PAVT



STAGE 1:
- CONSTRUCT TEMPORARY PAVEMENT, TEMPORARY SIGNAL EAST OF 84TH AVENUE AND I-196 WB RAMP B AS DESCRIBED IN SPECIAL PROVISION

NOTES:
STAGE 1 TO BE CONSTRUCTED UNDER SINGLE LANE CLOSURES. REFER TO SPECIAL PROVISION.
PLASTIC DRUM SPACING TO BE:
-40' CENTER-TO-CENTER, TANGENTS, SHIFTS, AND TAPERS
-10' CENTER-TO-CENTER, WHERE TIGHTER TRAFFIC CONTROL IS REQUIRED BY THE ENGINEER
TUBULAR MARKER SPACING TO BE:
-20' CENTER-TO-CENTER MAXIMUM
-10' CENTER-TO-CENTER, INTERSECTIONS AND DRIVES

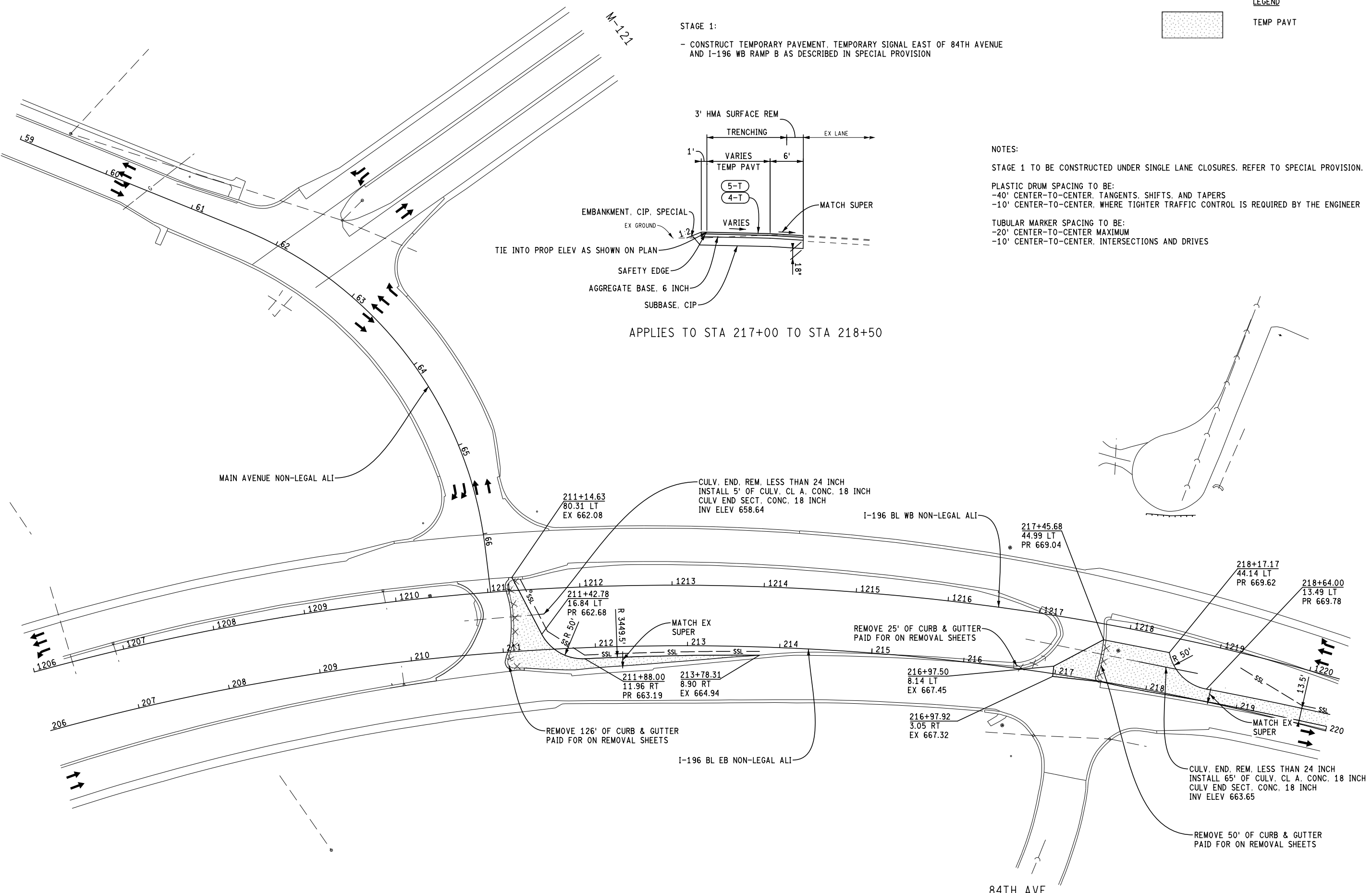


APPLIES TO STA 217+00 TO STA 218+50

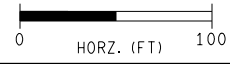
MAIN AVE

I-196 BL

I-196 BL



FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



FILE: MT_Sstage_1_Sta_206.dgn

DATE: 1/31/18
DESIGN UNIT: ROZEMA
TSC: MUSKEGON

CS: 70023
JN: 201572A, 202084A

MAINTAINING TRAFFIC
I-196 BL
STAGE 1 TEMPORARY PAVEMENT WIDENING

DRAWING SHEET
I-196BL
MOT
08
92



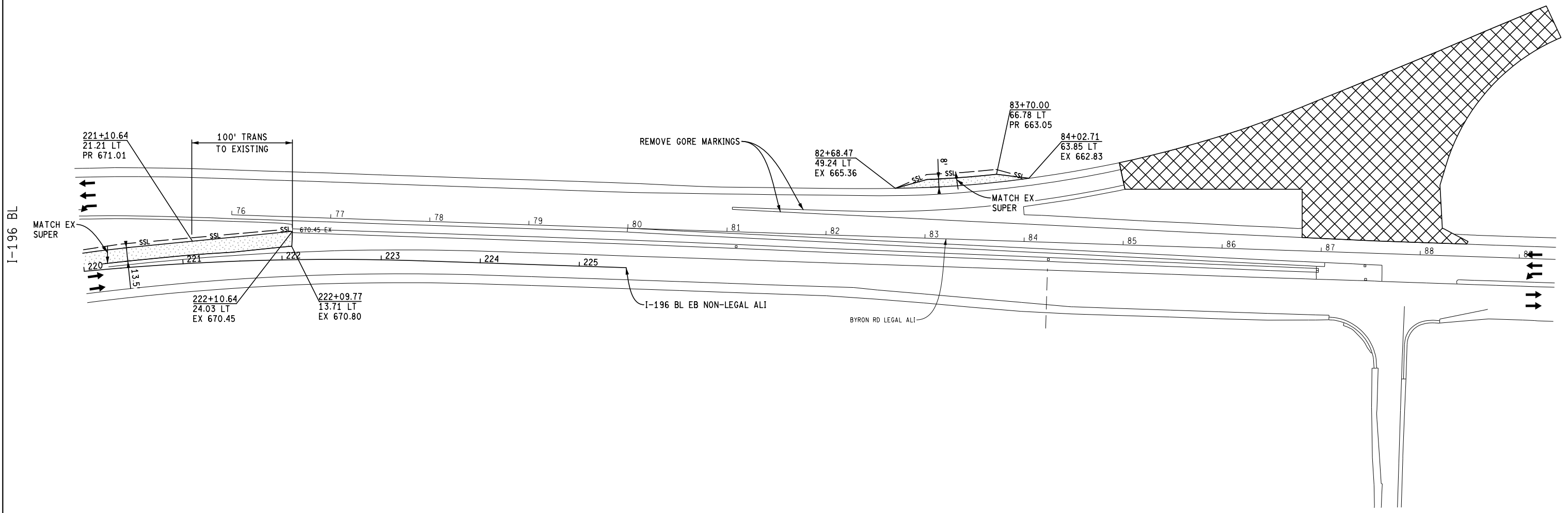
WB I-196 EXIT RAMP B

I-196 BL

- LEGEND**
- TEMP PAVT
 - WORK AREA

STAGE 1:

- CONSTRUCT TEMPORARY PAVEMENT, TEMPORARY SIGNAL EAST OF 84TH AVENUE AND I-196 WB RAMP B AS DESCRIBED IN SPECIAL PROVISION
- DETOUR WB I-196 RAMP B AS SHOWN ON DRAWING DETOUR MOT 27



NOTES:

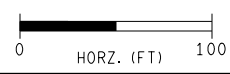
STAGE 1 TO BE CONSTRUCTED UNDER SINGLE LANE CLOSURES. REFER TO SPECIAL PROVISION.

PLASTIC DRUM SPACING TO BE:
 -40' CENTER-TO-CENTER, TANGENTS, SHIFTS, AND TAPERS
 -10' CENTER-TO-CENTER, WHERE TIGHTER TRAFFIC CONTROL IS REQUIRED BY THE ENGINEER

TUBULAR MARKER SPACING TO BE:
 -20' CENTER-TO-CENTER MAXIMUM
 -10' CENTER-TO-CENTER, INTERSECTIONS AND DRIVES

WB I-196 ENTRANCE RAMP

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION



FILE: MT_Stage_1_Sta_220.dgn

DATE: 1/31/18
 DESIGN UNIT: ROZEMA
 TSC: MUSKEGON

CS: 70023
 JN: 201572A, 202084A








MAINTAINING TRAFFIC
 I-196 BL
 STAGE 1 TEMPORARY PAVEMENT WIDENING

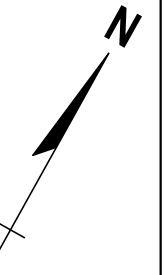
DRAWING	SHEET
I-196BL	SECT
MOT	09
09	93

FAIRVIEW RD

STAGE 2A:

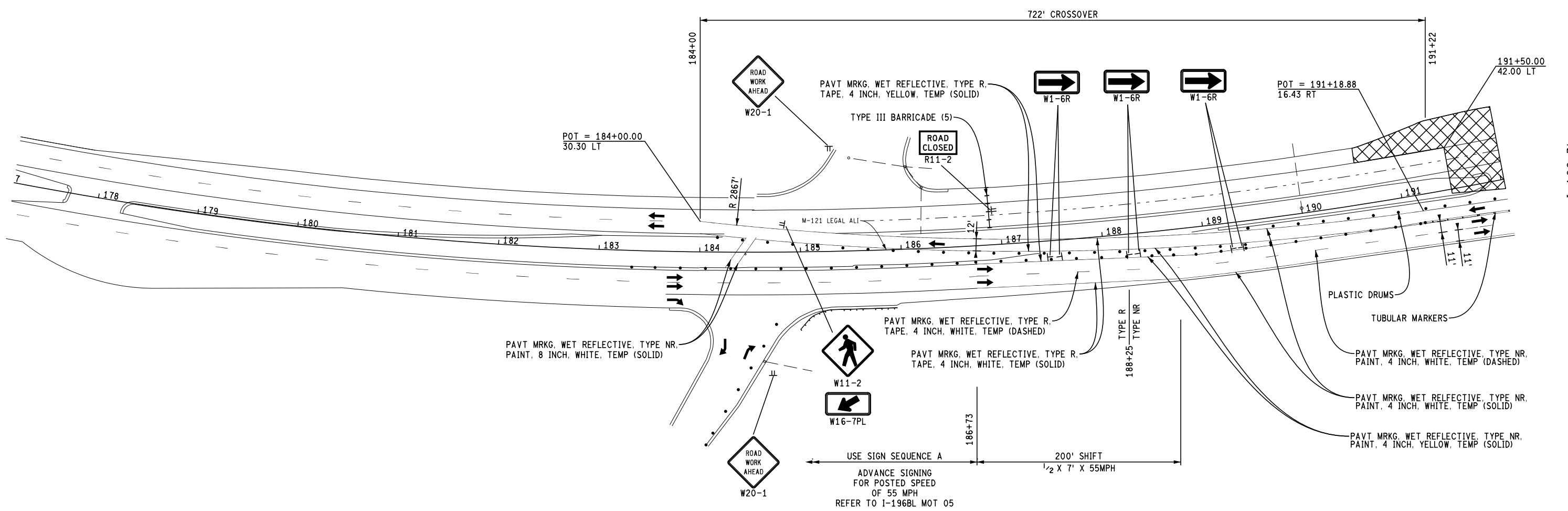
- CONSTRUCT I-196 BL WB. PORTIONS OF I-196 BL EB AND NORTH LEG OF 84TH AVE
GAPPING OUT MAIN AVE INTERSECTION AS DESCRIBED IN SPECIAL PROVISION

LEGEND	
	TEMP PAVT
	WORK AREA
	TEMPORARY SIGN
	TYPE III BARRICADE (DOUBLE SIDED)
	TRAFFIC FLOW
	CHANNELIZING DEVICES
	TUBULAR MARKERS



I-196 BL

I-196 BL

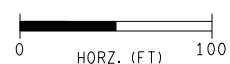


NOTES:

- PLASTIC DRUM SPACING TO BE:
-40' CENTER-TO-CENTER, TANGENTS, SHIFTS, AND TAPERS
-10' CENTER-TO-CENTER, WHERE TIGHTER TRAFFIC CONTROL IS REQUIRED BY THE ENGINEER
- TUBULAR MARKER SPACING TO BE:
-20' CENTER-TO-CENTER MAXIMUM
-10' CENTER-TO-CENTER, INTERSECTIONS AND DRIVES

88TH AVE








FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



FILE: MT_Stage_2A_Sta.177.dgn	DATE: 1/31/18	CS: 70023	MAINTAINING TRAFFIC	DRAWING	SHEET
TSC: MUSKEGON	DESIGN UNIT: ROZEMA	JN: 201572A, 202084A	I-196 BL	I-196BL	SECT
			STAGE 2A	MOT	94
				10	



LEGEND

-  TEMP PAVT
-  WORK AREA
-  TEMPORARY SIGN
-  TYPE III BARRICADE
-  TRAFFIC FLOW
-  CHANNELIZING DEVICES
-  TUBULAR MARKERS

STAGE 2A:

- CONSTRUCT I-196 BL WB. PORTIONS OF I-196 BL EB AND NORTH LEG OF 84TH AVE GAPPING OUT MAIN AVE INTERSECTION AS DESCRIBED IN SPECIAL PROVISION

NOTES:

PLASTIC DRUM SPACING TO BE:
 -40' CENTER-TO-CENTER, TANGENTS, SHIFTS, AND TAPERS
 -10' CENTER-TO-CENTER, WHERE TIGHTER TRAFFIC CONTROL IS REQUIRED BY THE ENGINEER

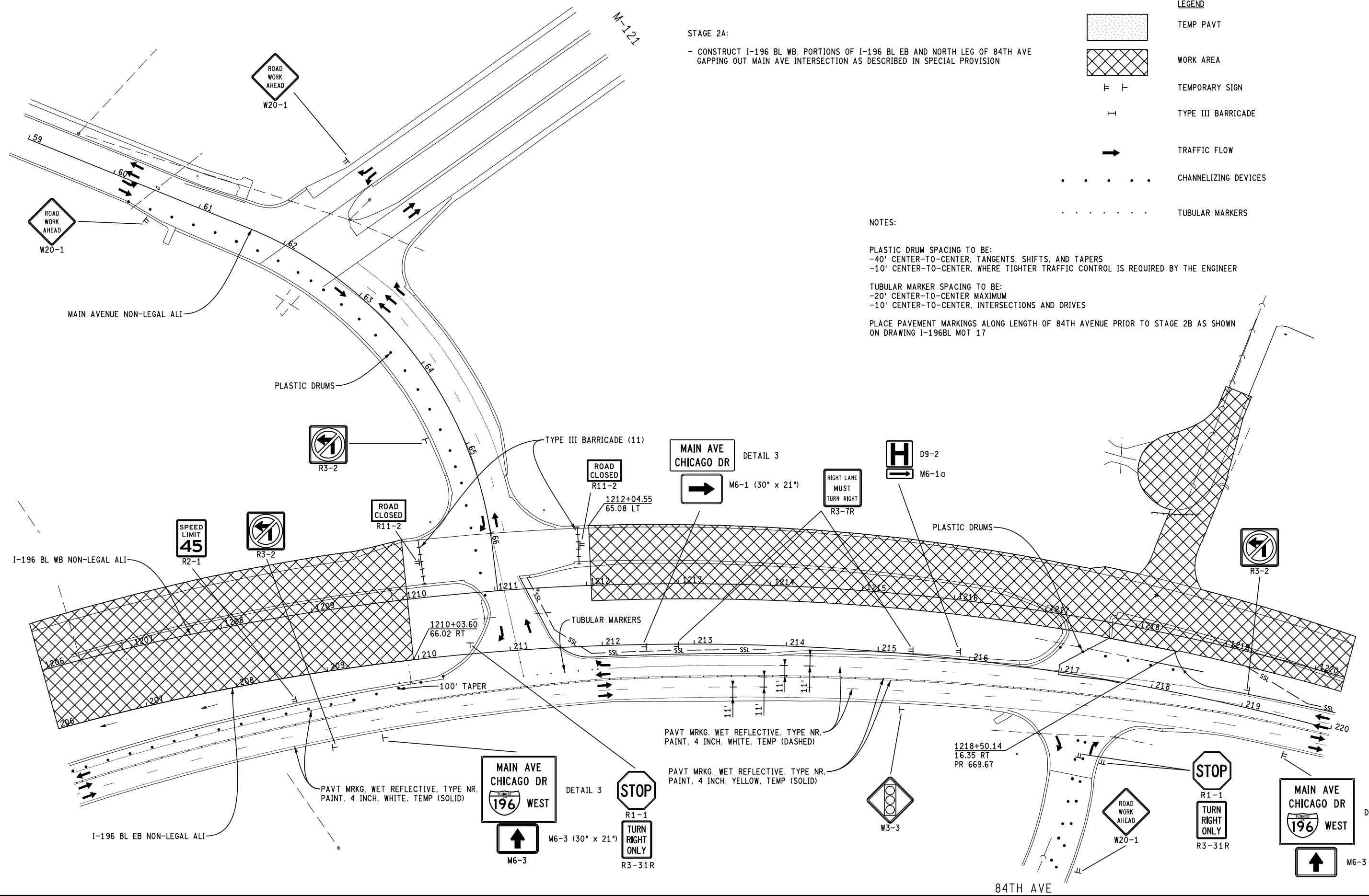
TUBULAR MARKER SPACING TO BE:
 -20' CENTER-TO-CENTER MAXIMUM
 -10' CENTER-TO-CENTER, INTERSECTIONS AND DRIVES

PLACE PAVEMENT MARKINGS ALONG LENGTH OF 84TH AVENUE PRIOR TO STAGE 2B AS SHOWN ON DRAWING I-196BL MOT 17

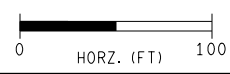
MAIN AVE

I-196 BL

I-196 BL



FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



FILE: MT_Stage_2A_Sta.206.dgn








DATE: 1/31/18
 DESIGN UNIT: ROZEMA
 TSC: MUSKOGON

CS: 70023
 JN: 201572A, 202084A

MAINTAINING TRAFFIC
 I-196 BL
 STAGE 2A

DRAWING SHEET
 I-196BL MOT 12 SECT 96

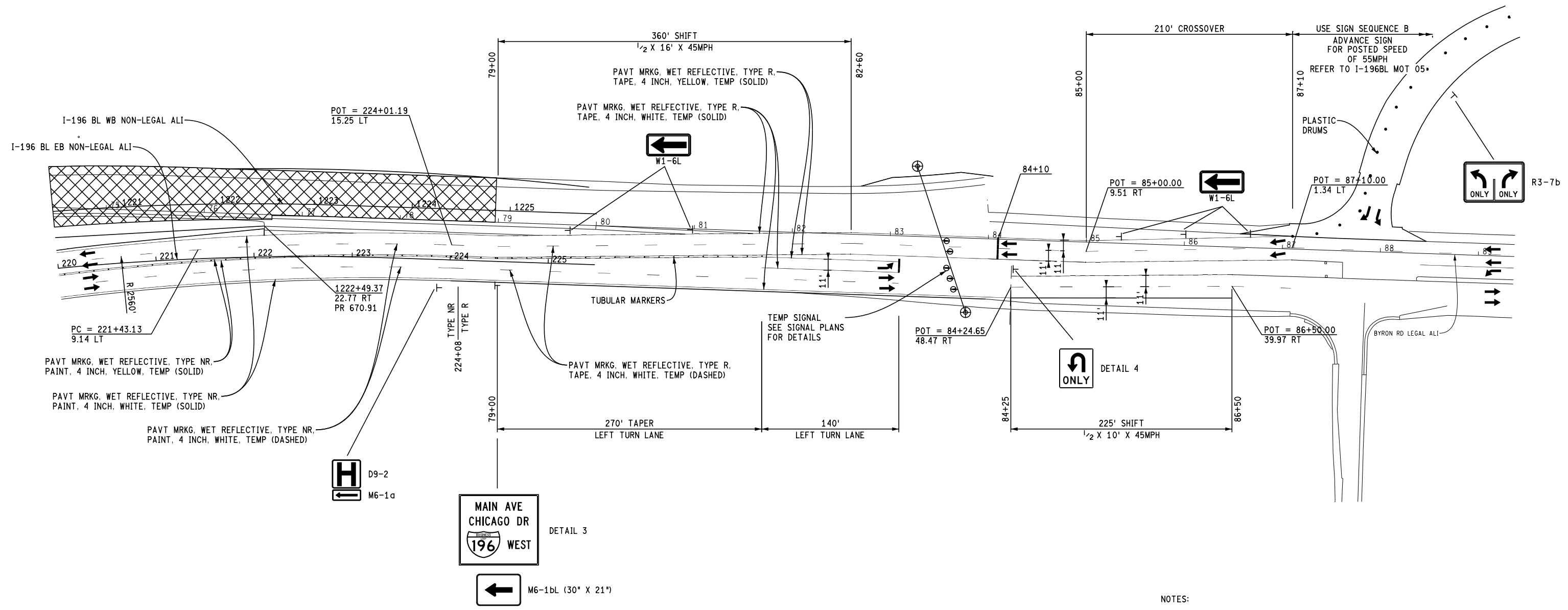
STAGE 2A:
 - CONSTRUCT I-196 BL WB, PORTIONS OF I-196 BL EB AND NORTH LEG OF 84TH AVE
 GAPPING OUT MAIN AVE INTERSECTION AS DESCRIBED IN SPECIAL PROVISION

- LEGEND**
-  TEMP PAVT
 -  WORK AREA
 -  TEMPORARY SIGN
 -  TYPE III BARRICADE
 -  TRAFFIC FLOW
 -  CHANNELIZING DEVICES
 -  TUBULAR MARKERS



I-196 BL

WB I-196 EXIT RAMP



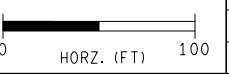
NOTES:

PLASTIC DRUM SPACING TO BE:
 -40' CENTER-TO-CENTER, TANGENTS, SHIFTS, AND TAPERS
 -10' CENTER-TO-CENTER, WHERE TIGHTER TRAFFIC CONTROL IS REQUIRED BY THE ENGINEER

TUBULAR MARKER SPACING TO BE:
 -20' CENTER-TO-CENTER MAXIMUM
 -10' CENTER-TO-CENTER, INTERSECTIONS AND DRIVES

WB I-196 ENTRANCE RAMP

FINAL ROW PLAN REVISIONS		(SUBMITTAL DATE:)	
NO.	DATE	AUTH	DESCRIPTION



FILE: MT_Stage_2A_Sta.220.dgn

DATE: 1/31/18
 DESIGN UNIT: ROZEMA
 TSC: MUSKEGON

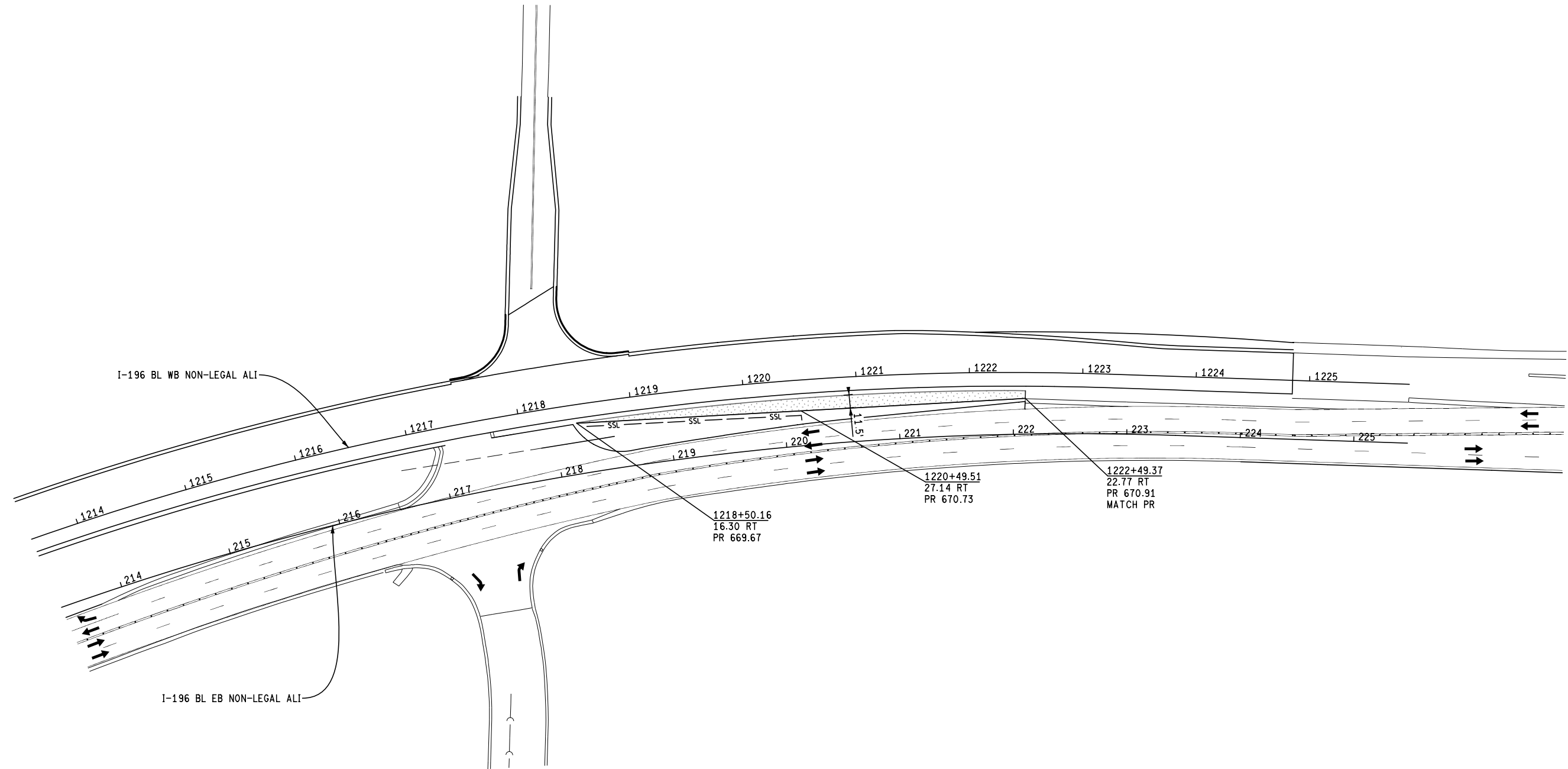
CS: 70023
 JN: 201572A, 202084A

MAINTAINING TRAFFIC
 I-196 BL
 STAGE 2A

DRAWING SHEET
 I-196BL
 MOT 13
 SECT 97

84TH AVE

LEGEND
TEMP PAVT



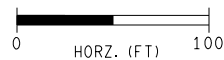
I-196 BL

I-196 BL

84TH AVE

WB I-196 ENTRANCE RAMP

FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



FILE: MT_Stage_2A_TEMP_PAVT.dgn

DATE: 1/31/18

DESIGN UNIT: ROZEMA

TSC: MUSKEGON

CS: 70023

JN: 201572A, 202084A

MAINTAINING TRAFFIC








I-196 BL

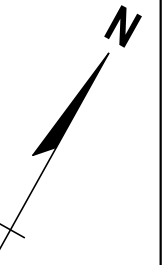
STAGE 2A TEMPORARY PAVEMENT

DRAWING	SHEET
I-196BL MOT 14	98

FAIRVIEW RD

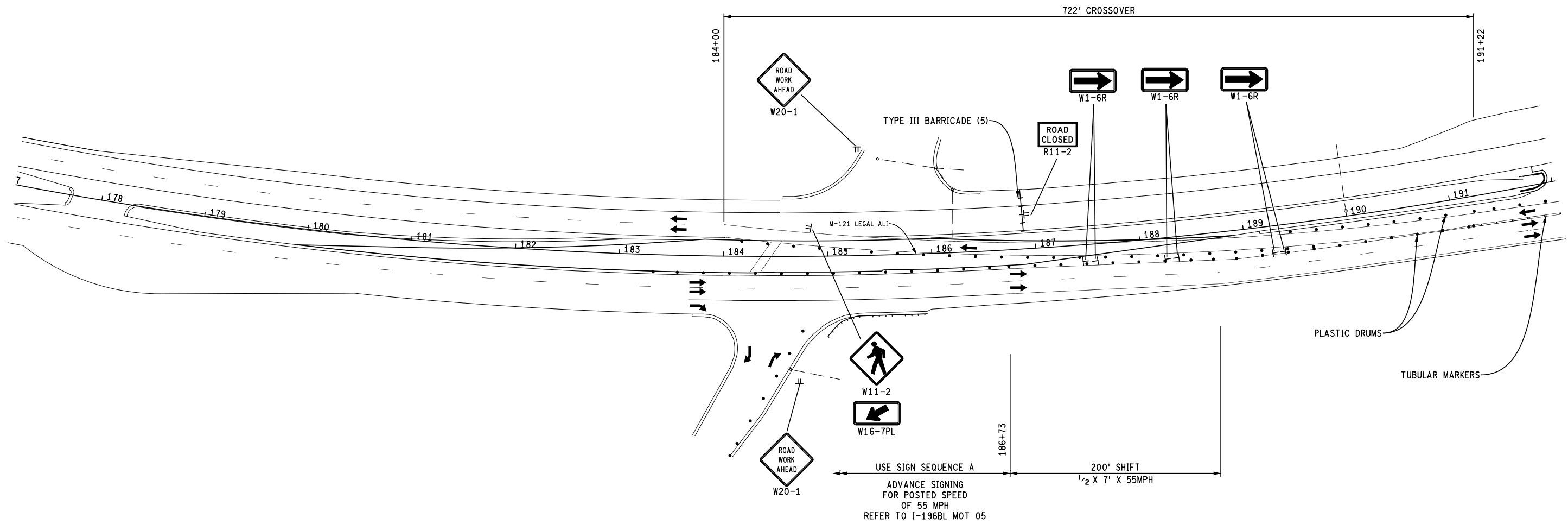
STAGE 2B:
 - CONSTRUCT MAIN AVE AND CHICAGO DRIVE ALONG WITH INTERSECTION OF I-196BL/MAIN AVE AS DESCRIBED IN SPECIAL PROVISION

- LEGEND**
-  TEMP PAVT
 -  WORK AREA
 -  TEMPORARY SIGN
 -  TYPE III BARRICADE
 -  TRAFFIC FLOW
 -  CHANNELIZING DEVICES
 -  TUBULAR MARKERS



I-196 BL

I-196 BL



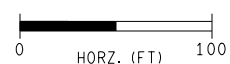
NOTES:

PLASTIC DRUM SPACING TO BE:
 -40' CENTER-TO-CENTER, TANGENTS, SHIFTS, AND TAPERS
 -10' CENTER-TO-CENTER, WHERE TIGHTER TRAFFIC CONTROL IS REQUIRED BY THE ENGINEER

TUBULAR MARKER SPACING TO BE:
 -20' CENTER-TO-CENTER MAXIMUM
 -10' CENTER-TO-CENTER, INTERSECTIONS AND DRIVES

88TH AVE

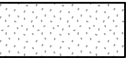






FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION



DATE: 1/31/18	CS: 70023	DRAWING	SHEET
DESIGN UNIT: ROZEMA	JN: 201572A, 202084A	I-196 BL	I-196BL
TSC: MUSKEGON		STAGE 2B	MOT 15
FILE: MT_Stage_2B_Sta_177.dgn			99



LEGEND

-  TEMP PAVT
-  WORK AREA
-  TEMPORARY SIGN
-  TYPE III BARRICADE
-  TRAFFIC FLOW
-  CHANNELIZING DEVICES
-  TUBULAR MARKERS

STAGE 2B:

- CONSTRUCT MAIN AVE AND CHICAGO DRIVE ALONG WITH INTERSECTION OF I-196BL/MAIN AVE AS DESCRIBED IN SPECIAL PROVISION
- DETOUR MAIN AVE AND CHICAGO DR AS SHOWN ON DETOUR MOT 28

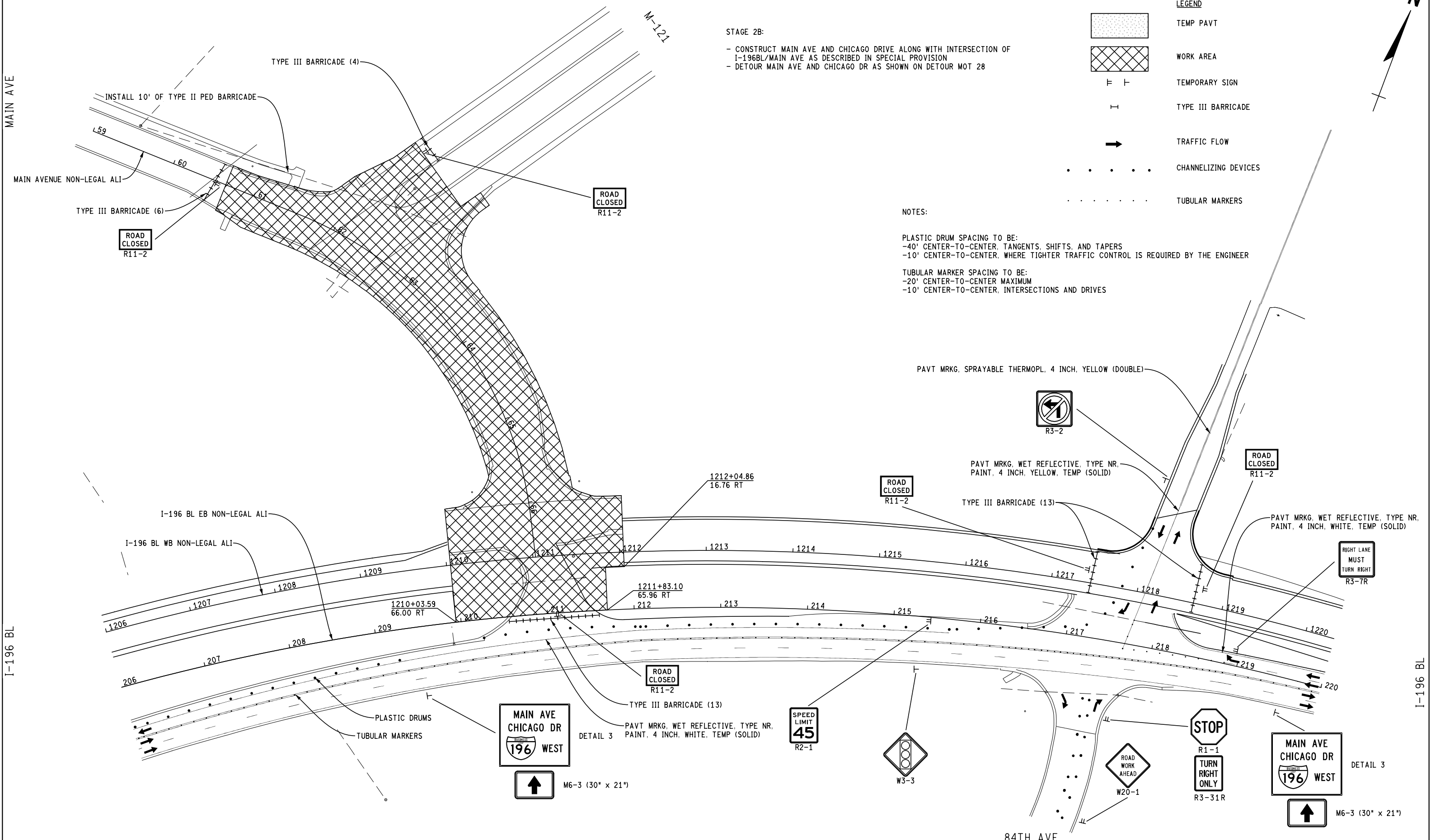
NOTES:

- PLASTIC DRUM SPACING TO BE:
 -40' CENTER-TO-CENTER, TANGENTS, SHIFTS, AND TAPERS
 -10' CENTER-TO-CENTER, WHERE TIGHTER TRAFFIC CONTROL IS REQUIRED BY THE ENGINEER
- TUBULAR MARKER SPACING TO BE:
 -20' CENTER-TO-CENTER MAXIMUM
 -10' CENTER-TO-CENTER, INTERSECTIONS AND DRIVES

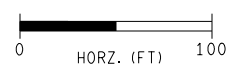
MAIN AVE

I-196 BL

I-196 BL










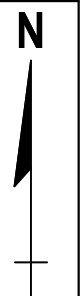
FINAL ROW PLAN REVISIONS			(SUBMITTAL DATE:)				
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



DATE: 1/31/18	CS: 70023	MAINTAINING TRAFFIC	DRAWING	SHEET
DESIGN UNIT: ROZEMA	JN: 201572A, 202084A	I-196 BL	I-196BL	SECT
TSC: MUSKEGON		STAGE 2B	MOT	101
			17	

STAGE 2B:
 - CONSTRUCT MAIN AVE AND CHICAGO DRIVE ALONG WITH INTERSECTION OF I-196BL/MAIN AVE AS DESCRIBED IN SPECIAL PROVISION

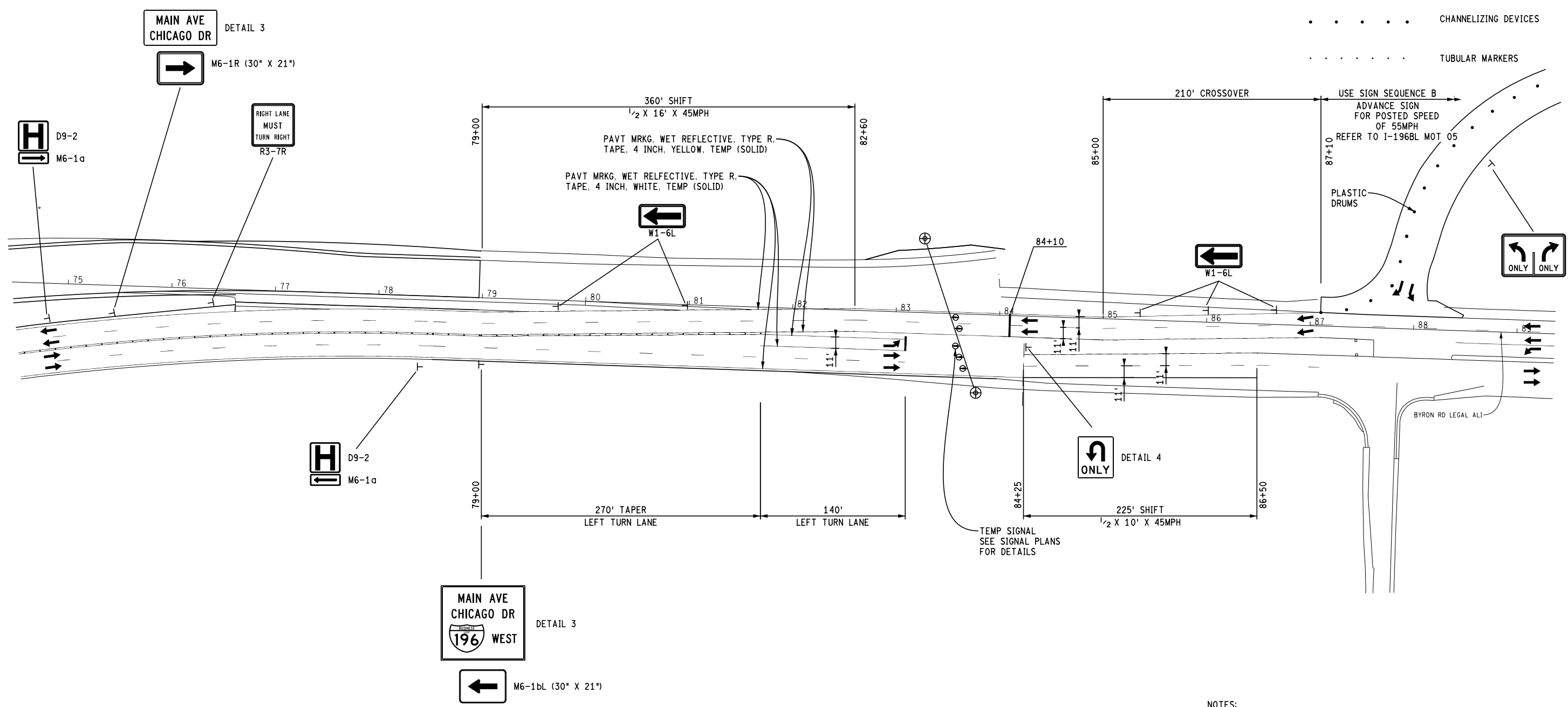
- LEGEND**
-  TEMP PAVT
 -  WORK AREA
 -  TEMPORARY SIGN
 -  TYPE III BARRICADE
 -  TRAFFIC FLOW
 -  CHANNELIZING DEVICES
 -  TUBULAR MARKERS



I-196 BL

WB I-196 EXIT RAMP

I-196 BL



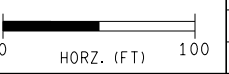
NOTES:

PLASTIC DRUM SPACING TO BE:
 -40' CENTER-TO-CENTER, TANGENTS, SHIFTS, AND TAPERS
 -10' CENTER-TO-CENTER, WHERE TIGHTER TRAFFIC CONTROL IS REQUIRED BY THE ENGINEER

TUBULAR MARKER SPACING TO BE:
 -20' CENTER-TO-CENTER MAXIMUM
 -10' CENTER-TO-CENTER, INTERSECTIONS AND DRIVES

WB I-196 ENTRANCE RAMP

FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION










DATE: 1/31/18	CS: 70023	MAINTAINING TRAFFIC	DRAWING	SHEET
DESIGN UNIT: ROZEMA	JN: 201572A, 202084A	I-196 BL	I-196BL	SECT
TSC: MUSKEGON	FILE: MT_Stage_2B_Sta_220.dgn	STAGE 2B	MOT	102
			18	

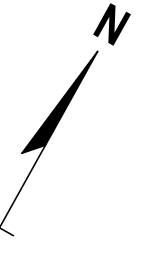
FAIRVIEW RD

STAGE 3A:

- CONSTRUCT EB I-196BL AND SOUTH LEG OF 84TH AVE GAPPING OUT HOMESTEAD DR INTERSECTION AS DESCRIBED IN SPECIAL PROVISION

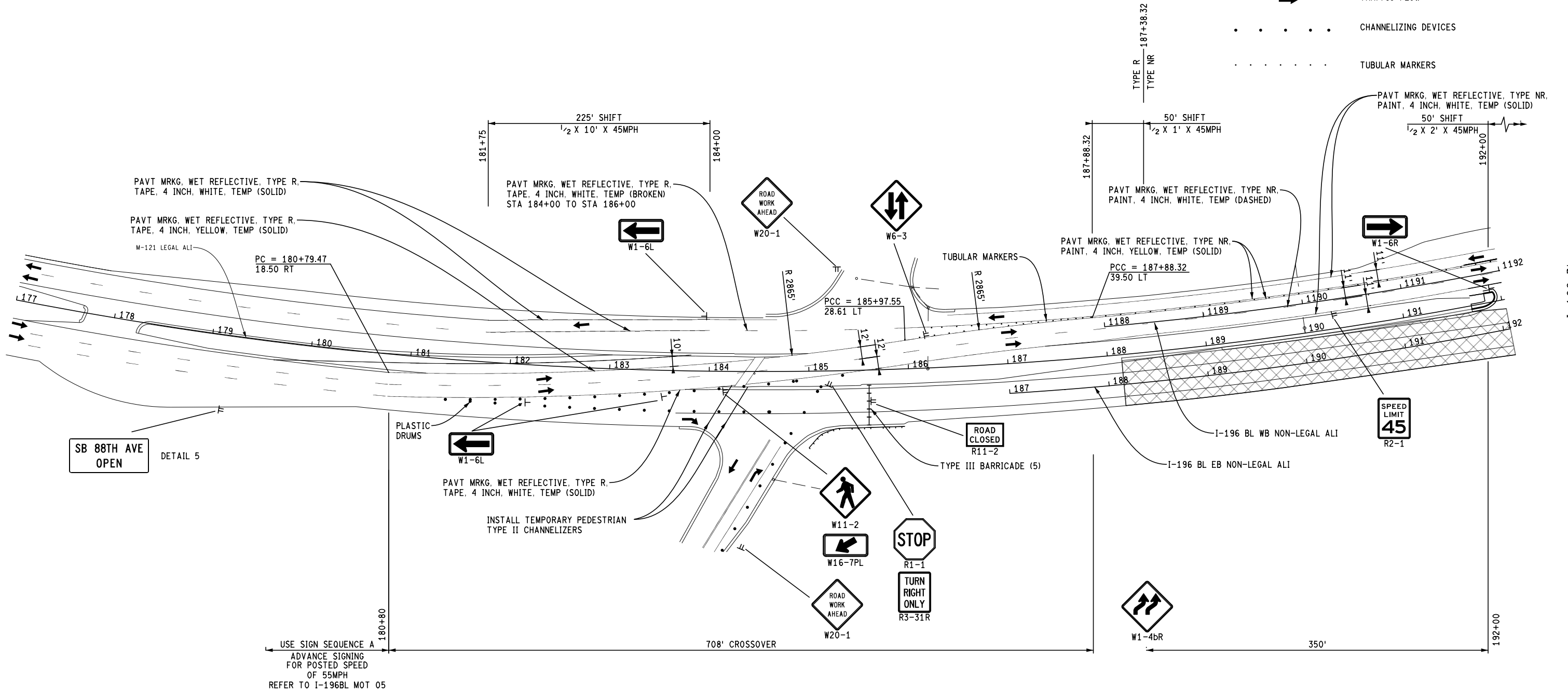
LEGEND

-  TEMP PAVT
-  WORK AREA
-  TEMPORARY SIGN
-  TYPE III BARRICADE
-  TRAFFIC FLOW
-  CHANNELIZING DEVICES
-  TUBULAR MARKERS



I-196 BL

I-196 BL

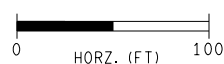


NOTES:

- PLASTIC DRUM SPACING TO BE:
 - 40' CENTER-TO-CENTER, TANGENTS, SHIFTS, AND TAPERS
 - 10' CENTER-TO-CENTER, WHERE TIGHTER TRAFFIC CONTROL IS REQUIRED BY THE ENGINEER
- TUBULAR MARKER SPACING TO BE:
 - 20' CENTER-TO-CENTER MAXIMUM
 - 10' CENTER-TO-CENTER, INTERSECTIONS AND DRIVES








88TH AVE

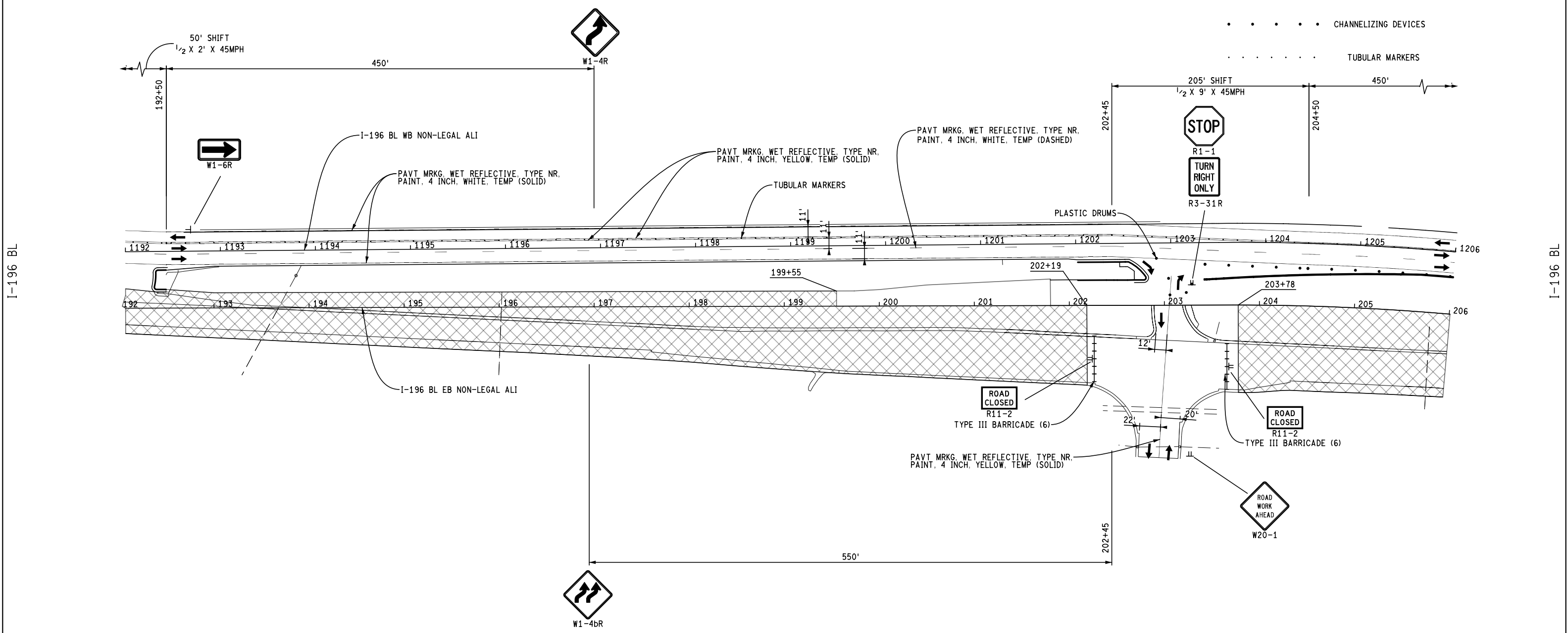
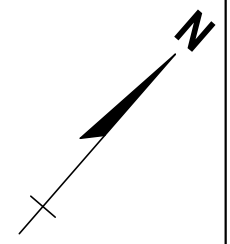
FINAL ROW PLAN REVISIONS		(SUBMITTAL DATE:)	
NO.	DATE	AUTH	DESCRIPTION



DATE: 1/31/18	CS: 70023	MAINTAINING TRAFFIC	DRAWING	SHEET
DESIGN UNIT: ROZEMA	JN: 201572A, 202084A	I-196 BL	I-196BL	19
TSC: MUSKEGON		STAGE 3A	MOT	103
FILE: MT_Stage_3A_Sta.177.dgn			19	

STAGE 3A:
 - CONSTRUCT EB I-196BL AND SOUTH LEG OF 84TH AVE GAPPING OUT
 HOMESTEAD DR INTERSECTION AS DESCRIBED IN SPECIAL PROVISION

- LEGEND**
-  TEMP PAVT
 -  WORK AREA
 -  TEMPORARY SIGN
 -  TYPE III BARRICADE
 -  TRAFFIC FLOW
 -  CHANNELIZING DEVICES
 -  TUBULAR MARKERS



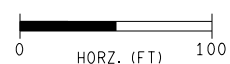
NOTES:

PLASTIC DRUM SPACING TO BE:
 -40' CENTER-TO-CENTER, TANGENTS, SHIFTS, AND TAPERS
 -10' CENTER-TO-CENTER, WHERE TIGHTER TRAFFIC CONTROL IS REQUIRED BY THE ENGINEER

TUBULAR MARKER SPACING TO BE:
 -20' CENTER-TO-CENTER MAXIMUM
 -10' CENTER-TO-CENTER, INTERSECTIONS AND DRIVES

HOMESTEAD DR








FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



FILE: MT_Stage_3A_Sta.192.dgn	DATE: 1/31/18	CS: 70023	Maintaining Traffic	DRAWING	SHEET
TSC: MUSKEGON	DESIGN UNIT: ROZEMA	JN: 201572A, 202084A	I-196 BL	I-196BL	SECT
			STAGE 3A	MOT	104
				20	



LEGEND

-  TEMP PAVT
-  WORK AREA
-  TEMPORARY SIGN
-  TYPE III BARRICADE
-  TRAFFIC FLOW
-  CHANNELIZING DEVICES
-  TUBULAR MARKERS

STAGE 3A:

- CONSTRUCT EB I-196BL AND SOUTH LEG OF 84TH AVE GAPPING OUT HOMESTEAD DR INTERSECTION AS DESCRIBED IN SPECIAL PROVISION

NOTES:

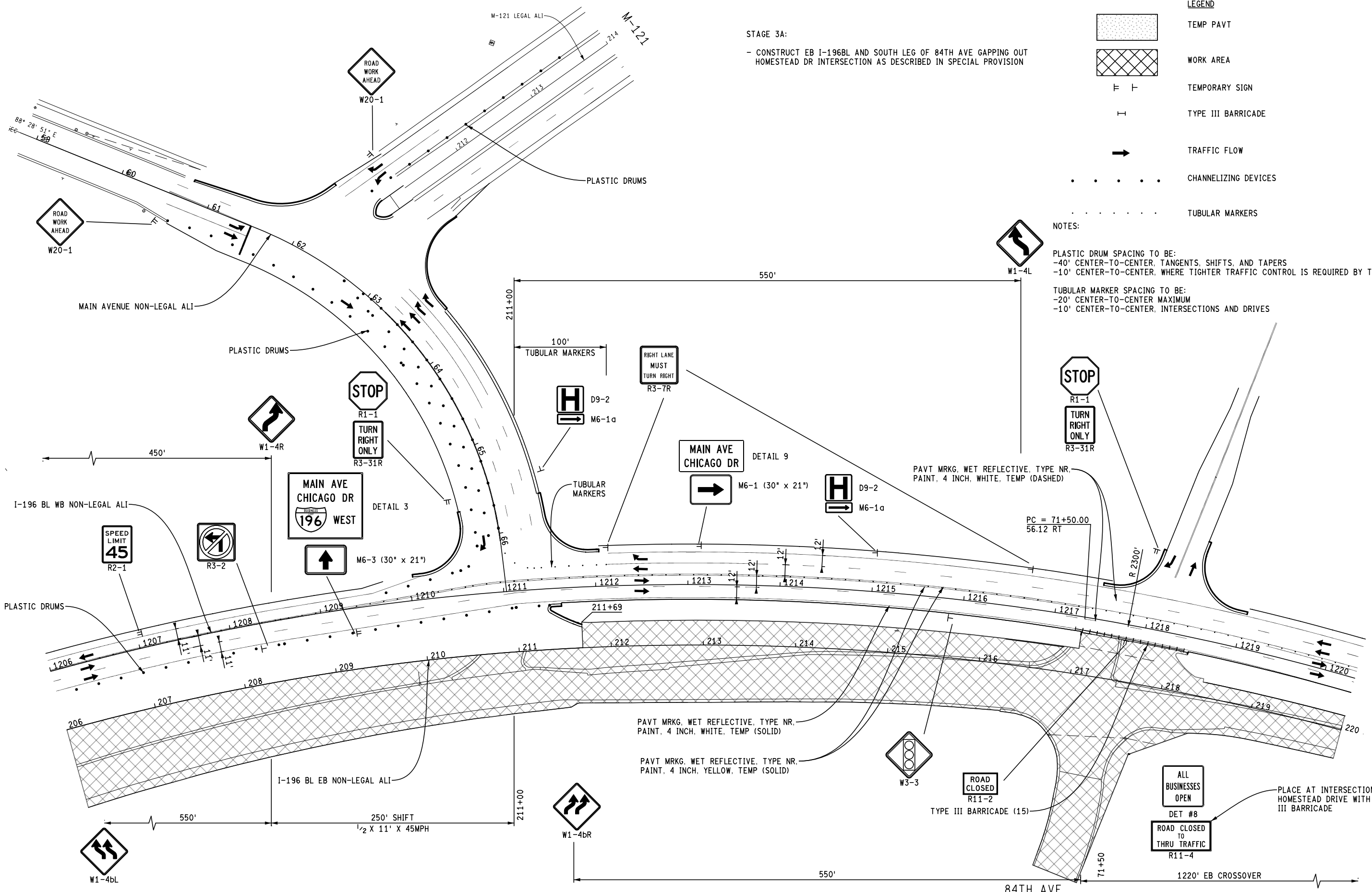
PLASTIC DRUM SPACING TO BE:
 -40' CENTER-TO-CENTER, TANGENTS, SHIFTS, AND TAPERS
 -10' CENTER-TO-CENTER, WHERE TIGHTER TRAFFIC CONTROL IS REQUIRED BY THE ENGINEER

TUBULAR MARKER SPACING TO BE:
 -20' CENTER-TO-CENTER MAXIMUM
 -10' CENTER-TO-CENTER, INTERSECTIONS AND DRIVES

MAIN AVE








I-196 BL

I-196 BL



FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)						CDM Smith	MDOT Michigan Department of Transportation	0 HORIZ. (FT) 100	DATE: 1/31/18	CS: 70023	JN: 201572A, 202084A	MAINTAINING TRAFFIC		DRAWING	SHEET
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE							AUTH	DESCRIPTION		
								FILE: MT_Stage_3A_Sta_206.dgn	TSC: MUSKEGON			I-196 BL	21		105
												STAGE 3A			

STAGE 3A:
 - CONSTRUCT EB I-196BL AND SOUTH LEG OF 84TH AVE GAPPING OUT
 HOMESTEAD DR INTERSECTION AS DESCRIBED IN SPECIAL PROVISION

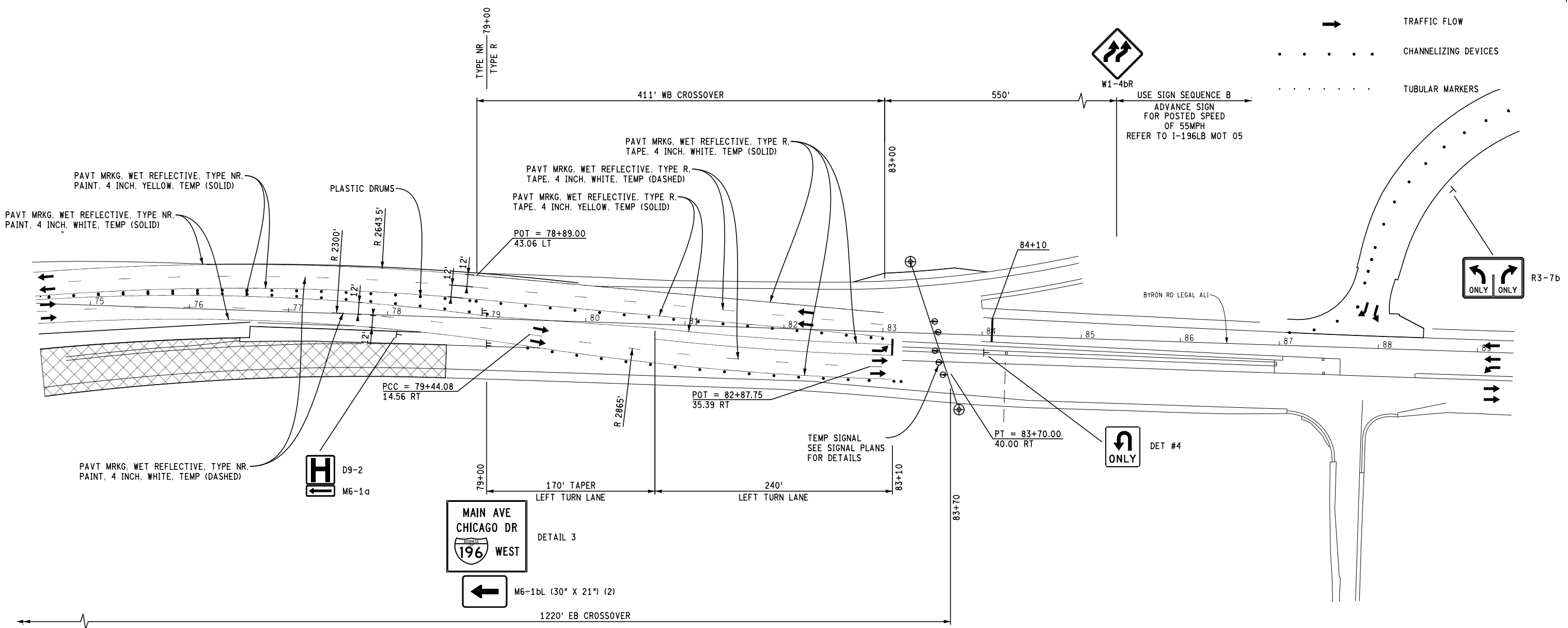
- LEGEND**
-  TEMP PAVT
 -  WORK AREA
 -  TEMPORARY SIGN
 -  TYPE III BARRICADE
 -  TRAFFIC FLOW
 -  CHANNELIZING DEVICES
 -  TUBULAR MARKERS



I-196 BL

WB I-196 EXIT RAMP

I-196 BL



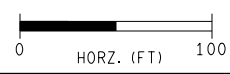
NOTES:

PLASTIC DRUM SPACING TO BE:
 -40' CENTER-TO-CENTER, TANGENTS, SHIFTS, AND TAPERS
 -10' CENTER-TO-CENTER, WHERE TIGHTER TRAFFIC CONTROL IS REQUIRED BY THE ENGINEER

TUBULAR MARKER SPACING TO BE:
 -20' CENTER-TO-CENTER MAXIMUM
 -10' CENTER-TO-CENTER, INTERSECTIONS AND DRIVES

WB I-196 ENTRANCE RAMP

FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION










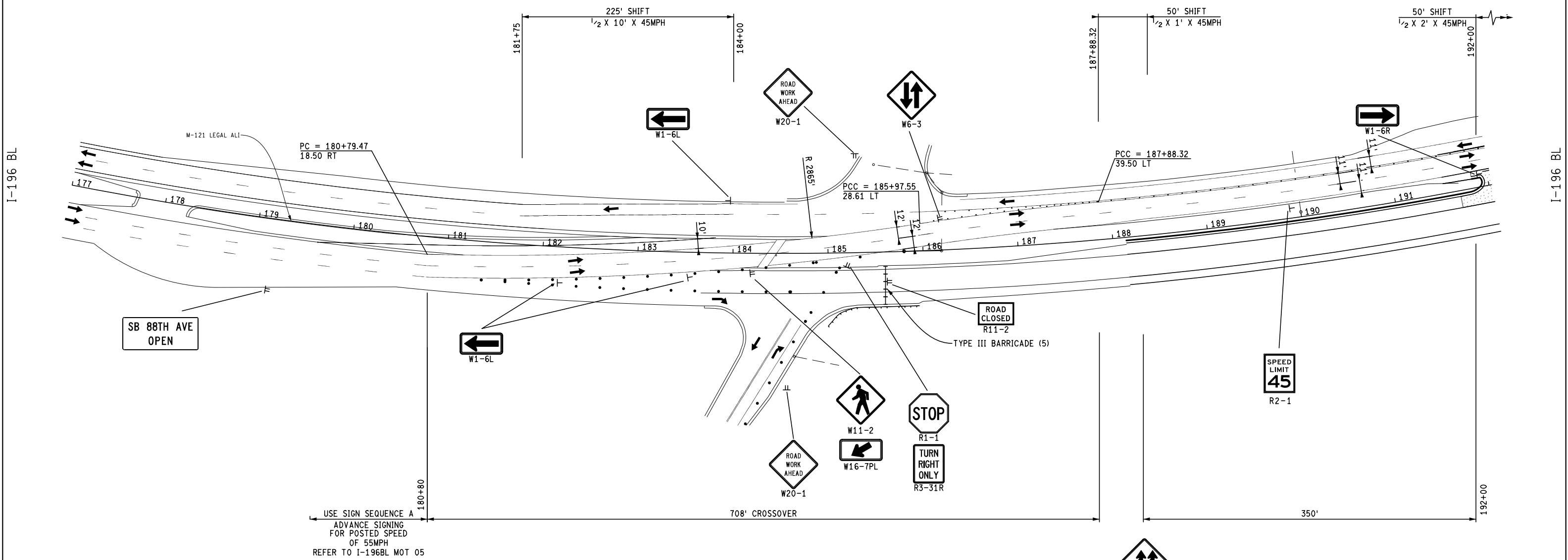
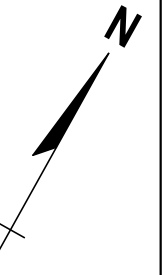
DATE: 1/31/18	CS: 70023
DESIGN UNIT: ROZEMA	JN: 201572A, 202084A
TSC: MUSKEGON	FILE: MT_Stage_3A_Sta.220.dgn

MAINTAINING TRAFFIC		DRAWING	SHEET
I-196 BL		I-196BL	SECT
STAGE 3A		MOT	106
		22	

FAIRVIEW RD

STAGE 3B:
 - CONSTRUCT HOMESTEAD DR INTERSECTION AS DESCRIBED IN SPECIAL PROVISION

LEGEND	
	TEMP PAVT
	WORK AREA
	TEMPORARY SIGN
	TYPE III BARRICADE
	TRAFFIC FLOW
	CHANNELIZING DEVICES
	TUBULAR MARKERS

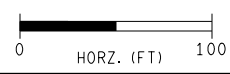


USE SIGN SEQUENCE A
 ADVANCE SIGNING
 FOR POSTED SPEED
 OF 55MPH
 REFER TO I-196BL MOT 05

NOTES:
 W1-4bR PLASTIC DRUM SPACING TO BE:
 -40' CENTER-TO-CENTER, TANGENTS, SHIFTS, AND TAPERS
 -10' CENTER-TO-CENTER, WHERE TIGHTER TRAFFIC CONTROL IS REQUIRED BY THE ENGINEER
 TUBULAR MARKER SPACING TO BE:
 -20' CENTER-TO-CENTER MAXIMUM
 -10' CENTER-TO-CENTER, INTERSECTIONS AND DRIVES


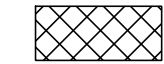
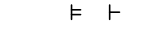



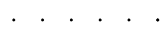
88TH AVE

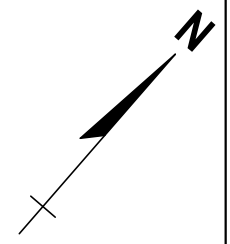
FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



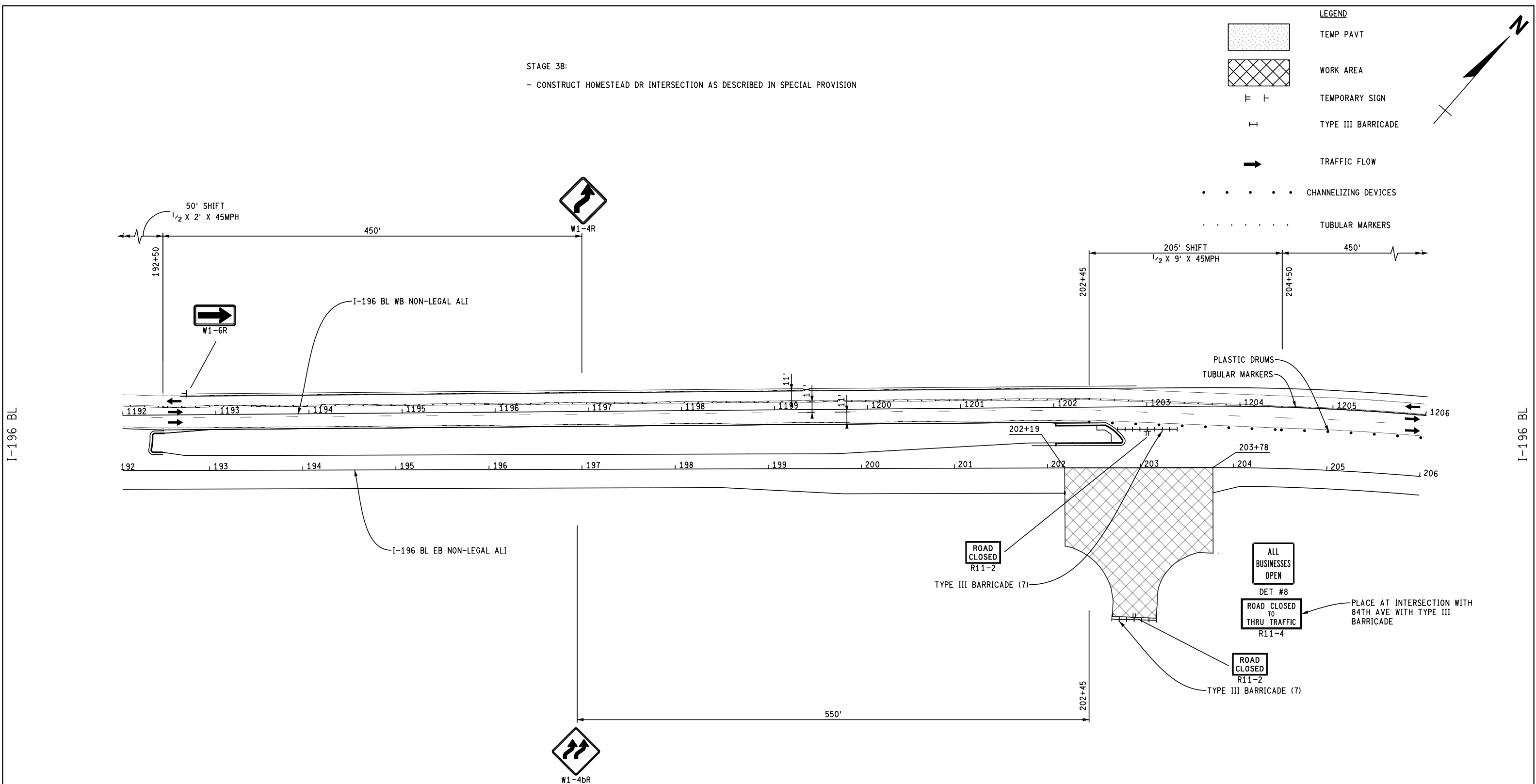
DATE: 1/31/18	CS: 70023	MAINTAINING TRAFFIC	DRAWING	SHEET
DESIGN UNIT: ROZEMA	JN: 201572A, 202084A	I-196 BL	I-196BL	SECT
TSC: MUSKEGON		STAGE 3B	MOT	107
FILE: MT_Stage_3B_Sta.177.dgn			23	

LEGEND

-  TEMP PAVT
-  WORK AREA
-  TEMPORARY SIGN
-  TYPE III BARRICADE
-  TRAFFIC FLOW
-  CHANNELIZING DEVICES
-  TUBULAR MARKERS



STAGE 3B:
 - CONSTRUCT HOMESTEAD DR INTERSECTION AS DESCRIBED IN SPECIAL PROVISION



NOTES:

- PLASTIC DRUM SPACING TO BE:
 - 40' CENTER-TO-CENTER, TANGENTS, SHIFTS, AND TAPERS
 - 10' CENTER-TO-CENTER, WHERE TIGHTER TRAFFIC CONTROL IS REQUIRED BY THE ENGINEER
- TUBULAR MARKER SPACING TO BE:
 - 20' CENTER-TO-CENTER MAXIMUM
 - 10' CENTER-TO-CENTER, INTERSECTIONS AND DRIVES

HOMESTEAD DR

FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)				CDM Smith	MDOT Michigan Department of Transportation	0 100 HORZ. (FT)	DATE: 1/31/18	CS: 70023	MAINTAINING TRAFFIC	DRAWING	SHEET
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION								
												I-196 BL	I-196BL		
												STAGE 3B	MOT 24	108	








FILE: MT_Stage_3B_Sta.192.dgn

DESIGN UNIT: ROZEMA

JN: 201572A, 202084A

TSC: MUSKEGON

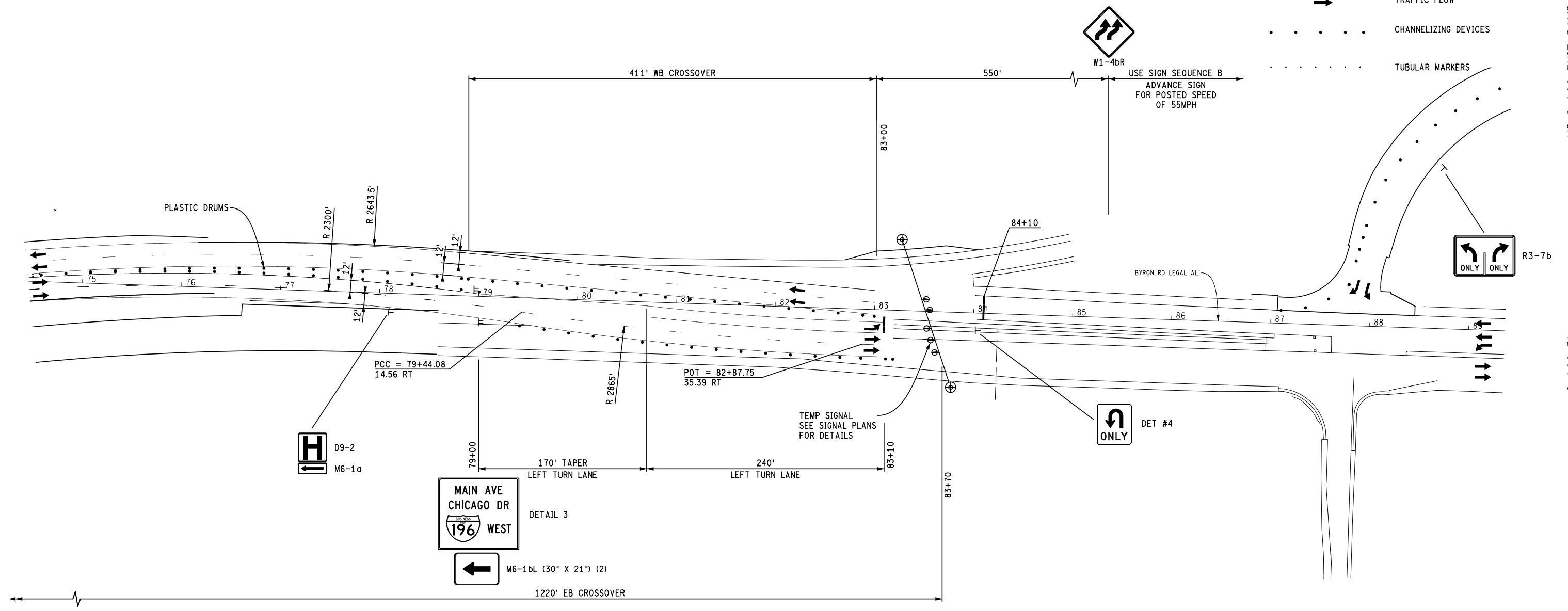
STAGE 3B:
 - CONSTRUCT HOMESTEAD DR INTERSECTION AS DESCRIBED IN SPECIAL PROVISION

- LEGEND**
-  TEMP PAVT
 -  WORK AREA
 -  TEMPORARY SIGN
 -  TYPE III BARRICADE
 -  TRAFFIC FLOW
 -  CHANNELIZING DEVICES
 -  TUBULAR MARKERS

N
WB I-196 EXIT RAMP

I-196 BL

I-196 BL



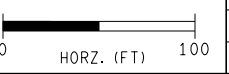
NOTES:

PLASTIC DRUM SPACING TO BE:
 -40' CENTER-TO-CENTER, TANGENTS, SHIFTS, AND TAPERS
 -10' CENTER-TO-CENTER, WHERE TIGHTER TRAFFIC CONTROL IS REQUIRED BY THE ENGINEER

TUBULAR MARKER SPACING TO BE:
 -20' CENTER-TO-CENTER MAXIMUM
 -10' CENTER-TO-CENTER, INTERSECTIONS AND DRIVES

WB I-196 ENTRANCE RAMP

FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

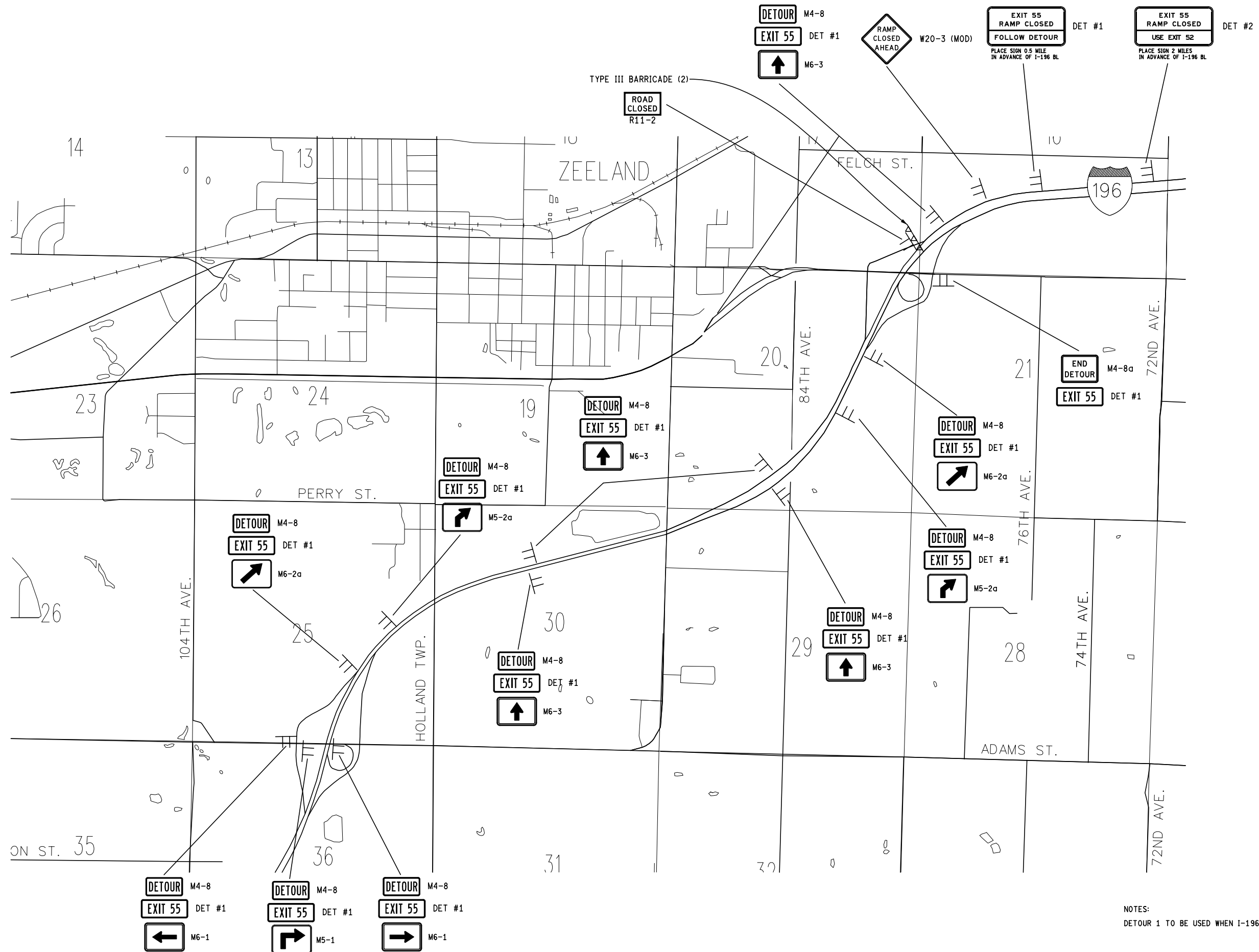


DATE: 1/31/18
 DESIGN UNIT: ROZEMA
 TSC: MUSKEGON
 FILE: MT_Stage_3B_Sta_220.dgn

CS: 70023
 JN: 201572A, 202084A

MAINTAINING TRAFFIC
 I-196 BL
 STAGE 3B

DRAWING SHEET
 I-196BL SECT
 MOT 26 110



NOTES:
 DETOUR 1 TO BE USED WHEN I-196 RAMP B IS CLOSED (STAGE 1)

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION



NO SCALE

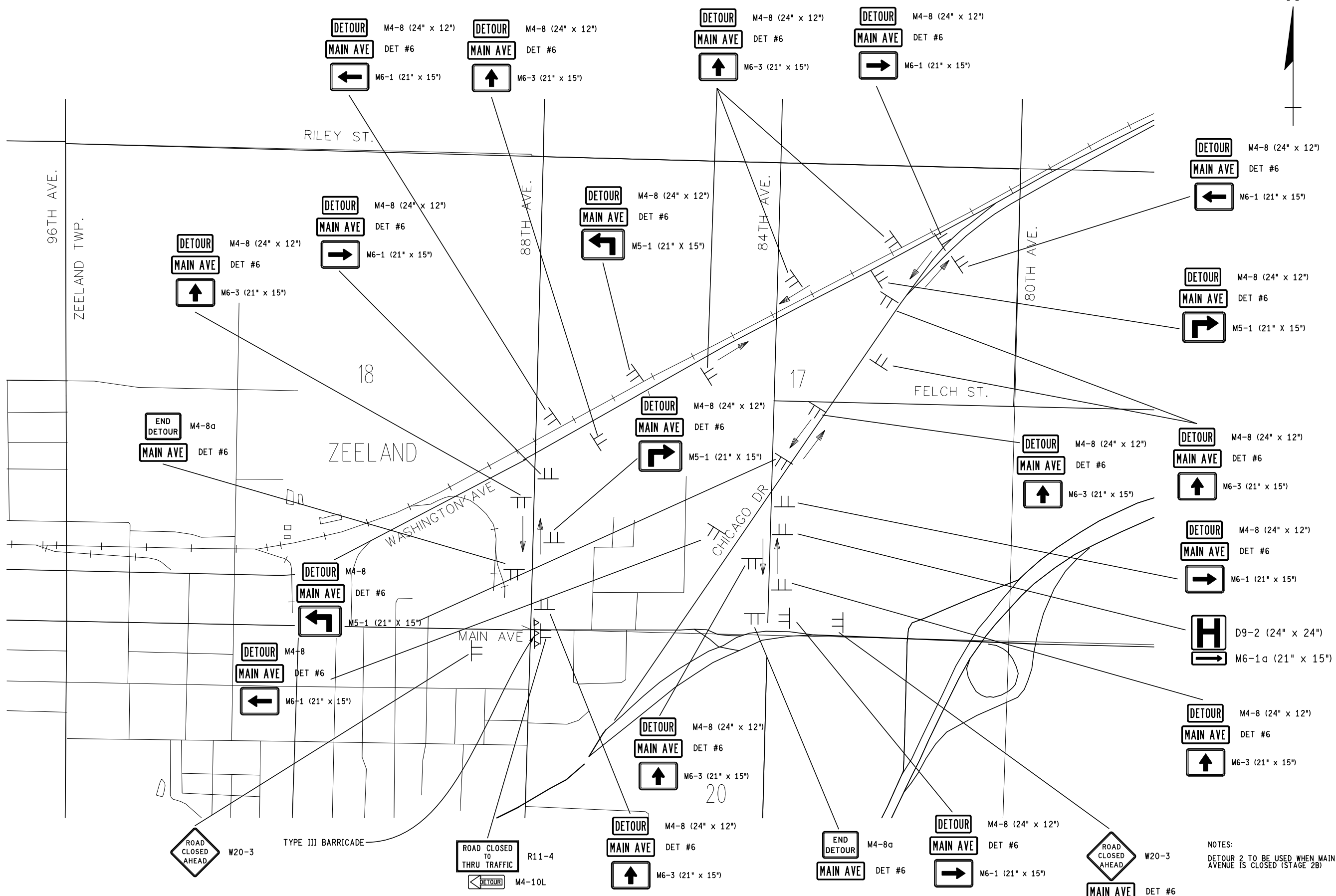
FILE: DETOUR_STAGE_1.dgn

DATE: 1/31/18
 DESIGN UNIT: ROZEMA
 TSC: MUSKEGON

CS: 70023
 JN: 201572A, 202084A

MAINTENANCE OF TRAFFIC
 DETOUR STAGE 1

DRAWING SHEET
 DETOUR MOT 27 SECT 111



NOTES:
DETOUR 2 TO BE USED WHEN MAIN AVENUE IS CLOSED (STAGE 2B)

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION



NO SCALE

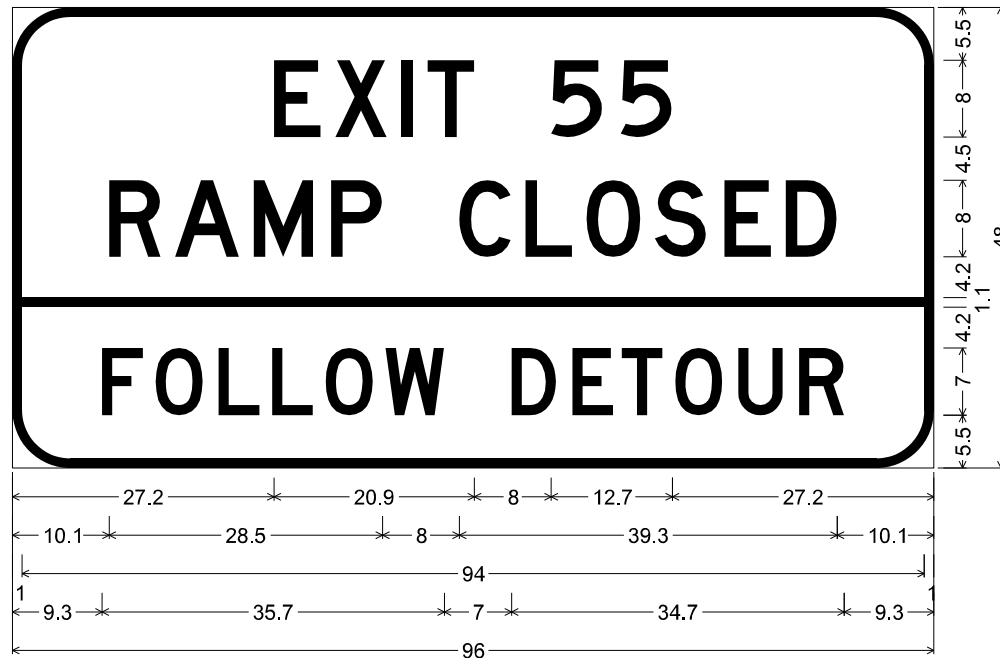
FILE: DETOUR_STAGE_2.dgn

DATE: 1/31/18
DESIGN UNIT: ROZEMA
TSC: MUSKEGON

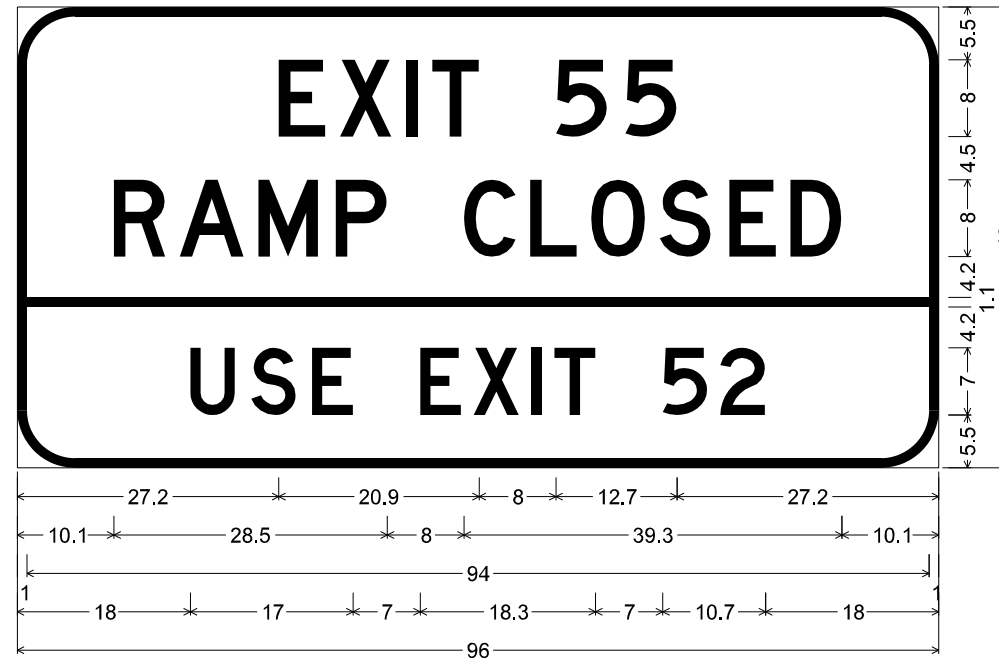
CS: 70023
JN: 201572A, 202084A

MAINTENANCE OF TRAFFIC
DETOUR STAGE 2B

DRAWING SHEET
DETOUR MOT 28 112



DETAIL 1

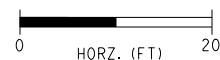


DETAIL 2

6.0" Radius, 1.0" Border, Black on Orange;
 [EXIT 55] D; [RAMP CLOSED] D; [FOLLOW DETOUR] D;

6.0" Radius, 1.0" Border, Black on Orange;
 [EXIT 55] D; [RAMP CLOSED] D; [USE EXIT 52] D;

FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



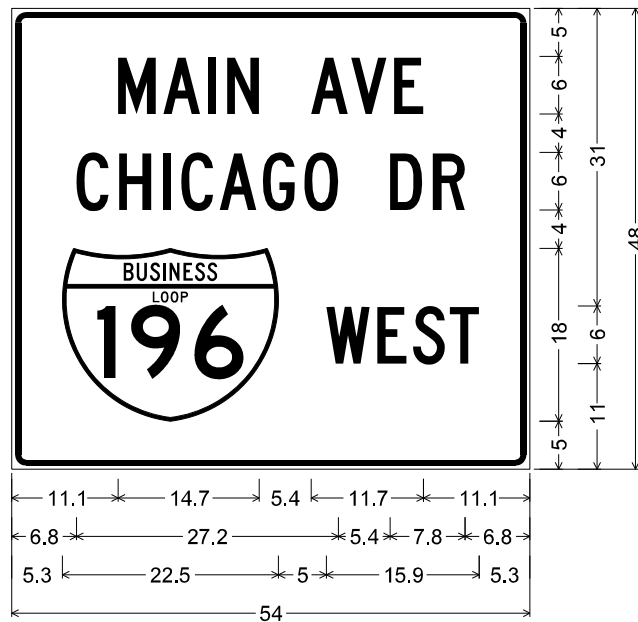
FILE: MT_Sign_Detail.dgn

DATE: 1/31/18
 DESIGN UNIT: ROZEMA
 TSC: MUSKEGON

CS: 70023
 JN: 201572A, 202084A

MISCELLANEOUS DETAILS
 I-196 BL

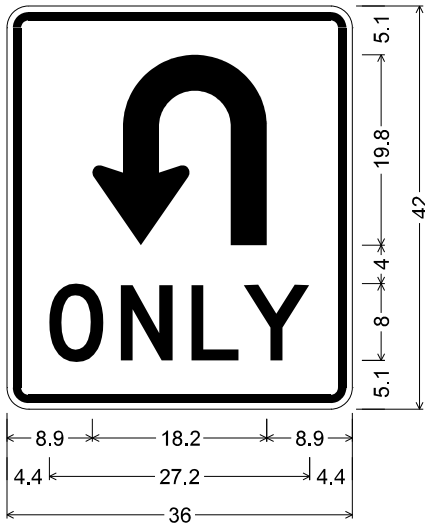
DRAWING	SHEET
FAB	SECT
MOT	113
29	



DETAIL 3

1.5" Radius, 0.6" Border, 0.4" Indent, Black on Orange;
 [MAIN AVE] C 2K 90% spacing;
 [CHICAGO DR] C 2K 90% spacing;
 [WEST] C 2K 90% spacing;
 Table of letter and object lefts.

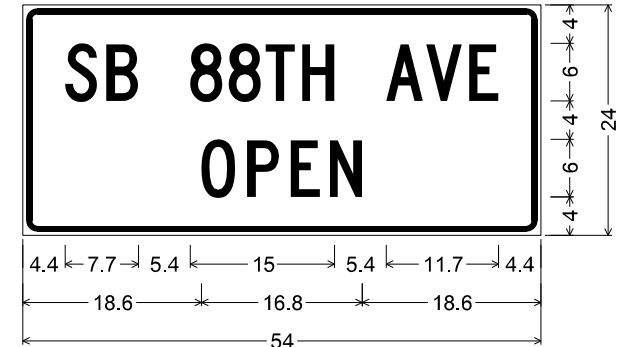
M	A	I	N	A	V	E		
11.1	15.8	20.4	22.4	31.2	35.4	39.8		
C	H	I	C	A	G	O	D	R
6.8	11.2	15.8	17.7	21.7	26.2	30.5	39.4	43.9
W	E	S	T					
5.3	32.8	38.1	41.8	45.7				



DETAIL 4

2.3" Radius, 0.9" Border, 0.6" Indent, Black on White;
 [ONLY] D 2K;
 Table of letter and object lefts.

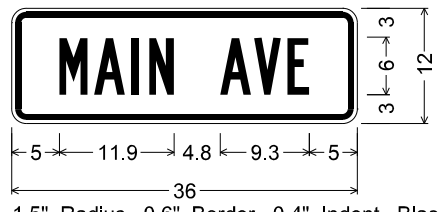
U			
8.9			
O	N	L	Y
4.4	11.9	19.2	24.7



DETAIL 5

1.5" Radius, 0.6" Border, 0.4" Indent, Black on Orange;
 [SB 88TH AVE] C 2K 90% spacing;
 [OPEN] C 2K;
 Table of letter and object lefts.

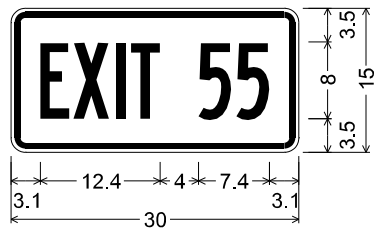
S	B	8	8	T	H	A	V	E
4.4	8.7	17.5	21.5	25.3	29.1	37.9	42.0	46.5
O	P	E	N					
18.6	23.4	27.9	32.0					



DETAIL 6

1.5" Radius, 0.6" Border, 0.4" Indent, Black on Orange;
 [MAIN AVE] B 2K 80% spacing;
 Table of letter and object lefts.

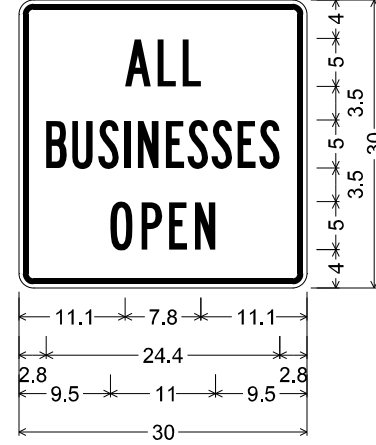
M	A	I	N
5.0	8.6	12.5	14.3
A	V	E	
21.7	25.2	28.7	



DETAIL 7

1.5" Radius, 0.6" Border, 0.4" Indent, Black on Orange;
 [EXIT 55] B 2K 50% spacing;
 Table of letter and object lefts.

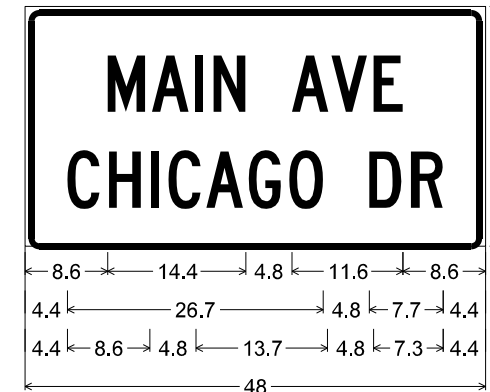
E	X	I	T
3.1	6.5	10.9	12.5
5	5		
19.5	23.5		



DETAIL 8

1.5" Radius, 0.6" Border, 0.4" Indent, Black on White;
 [ALL] B 2K;
 [BUSINESSES] B 2K 70% spacing;
 [OPEN] B 2K;
 Table of letter and object lefts.

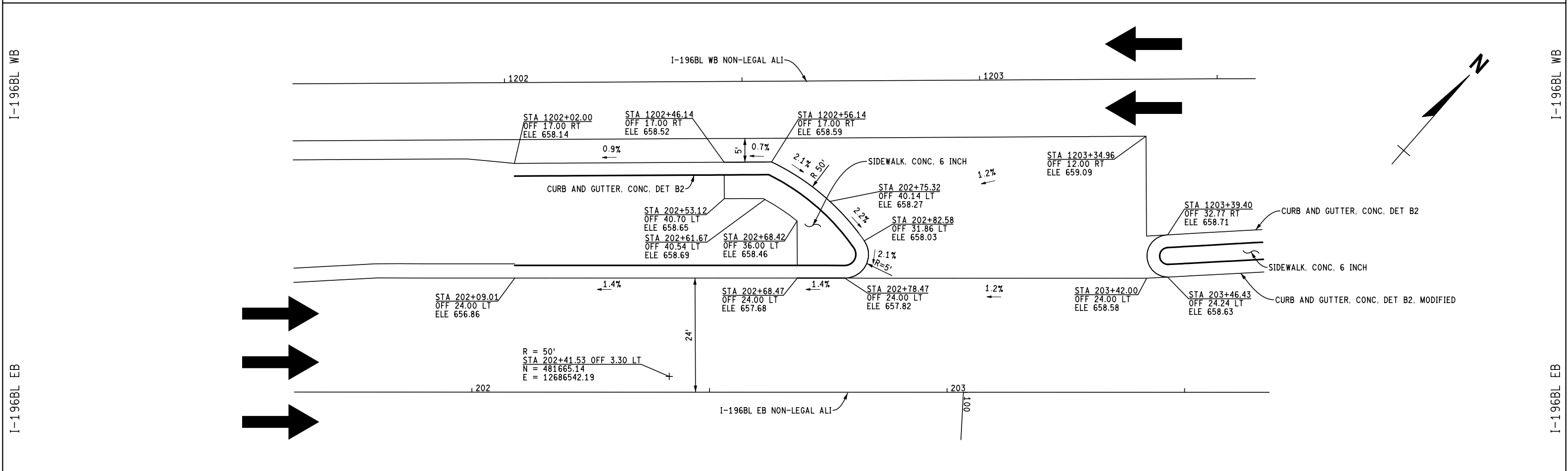
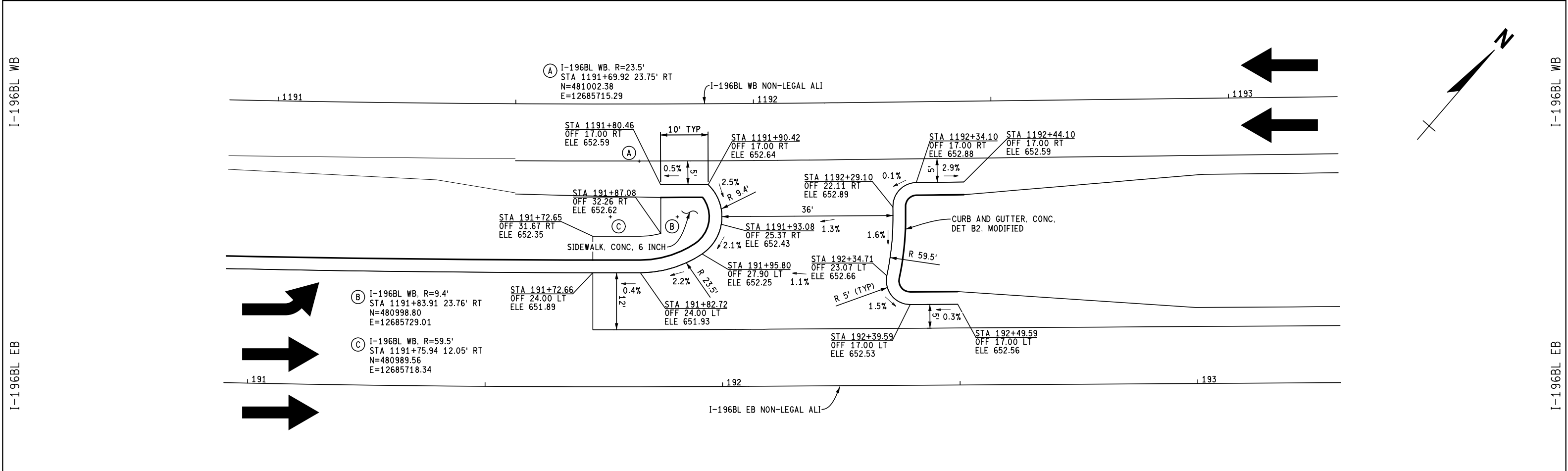
A	L	L							
11.1	14.5	17.0							
B	U	S	I	N	E	S	S	E	S
2.8	5.5	8.3	11.0	12.4	15.3	17.6	20.1	22.8	25.0
O	P	E	N						
9.5	12.8	15.6	18.3						



DETAIL 9

1.5" Radius, 0.6" Border, 0.4" Indent, Black on Orange;
 [MAIN AVE] C 2K 80% spacing;
 [CHICAGO DR] C 2K 80% spacing;
 [WB I-196 BL] C 2K 80% spacing;
 Table of letter and object lefts.

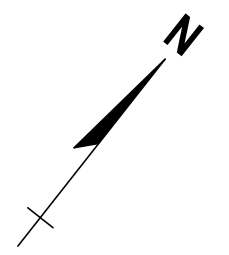
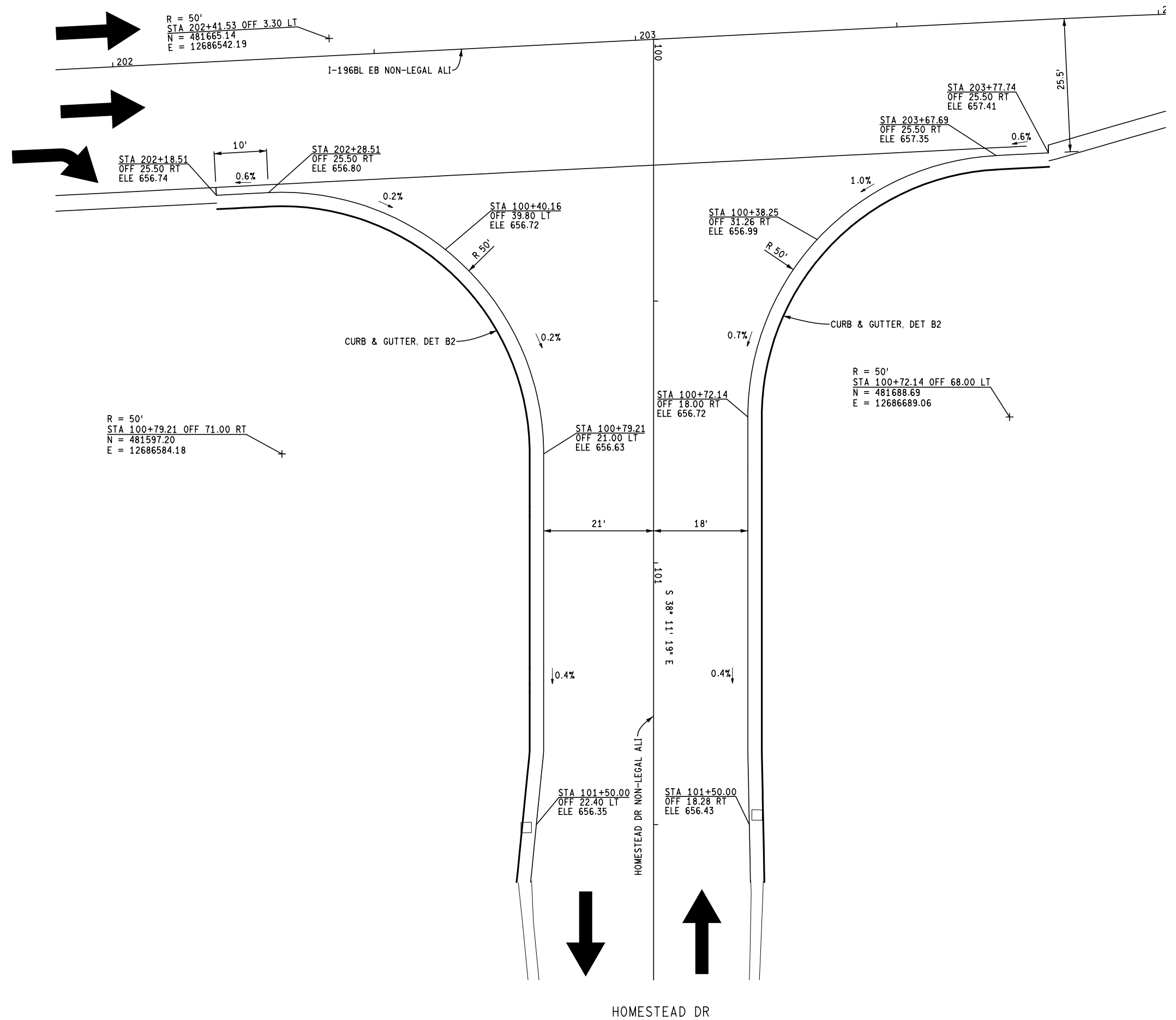
M	A	I	N	A	V	E
8.6	13.2	17.8	19.6	27.8	31.9	36.3
C	H	I	C	A	G	O
4.4	8.8	13.2	15.0	18.9	23.3	27.5
D	R					
35.9	40.2					
W	B	I	-	I	9	6
4.4	9.7	17.8	19.3	22.0	24.1	28.2
B	L					
36.3	40.5					



FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)								DATE: 04/10/18 DESIGN UNIT: JASINSKI TSC: MUSKEGON	CS: 70023 JN: 201572A, 202084A	DETAIL GRADES		DRAWING SHEET
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE					AUTH	DESCRIPTION	
										HOMESTEAD MEDIAN CROSSOVER		

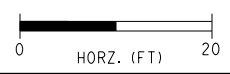
I-196BL EB

I-196BL EB



HOMESTEAD DR

FINAL ROW PLAN REVISIONS		(SUBMITTAL DATE:)	
NO.	DATE	AUTH	DESCRIPTION

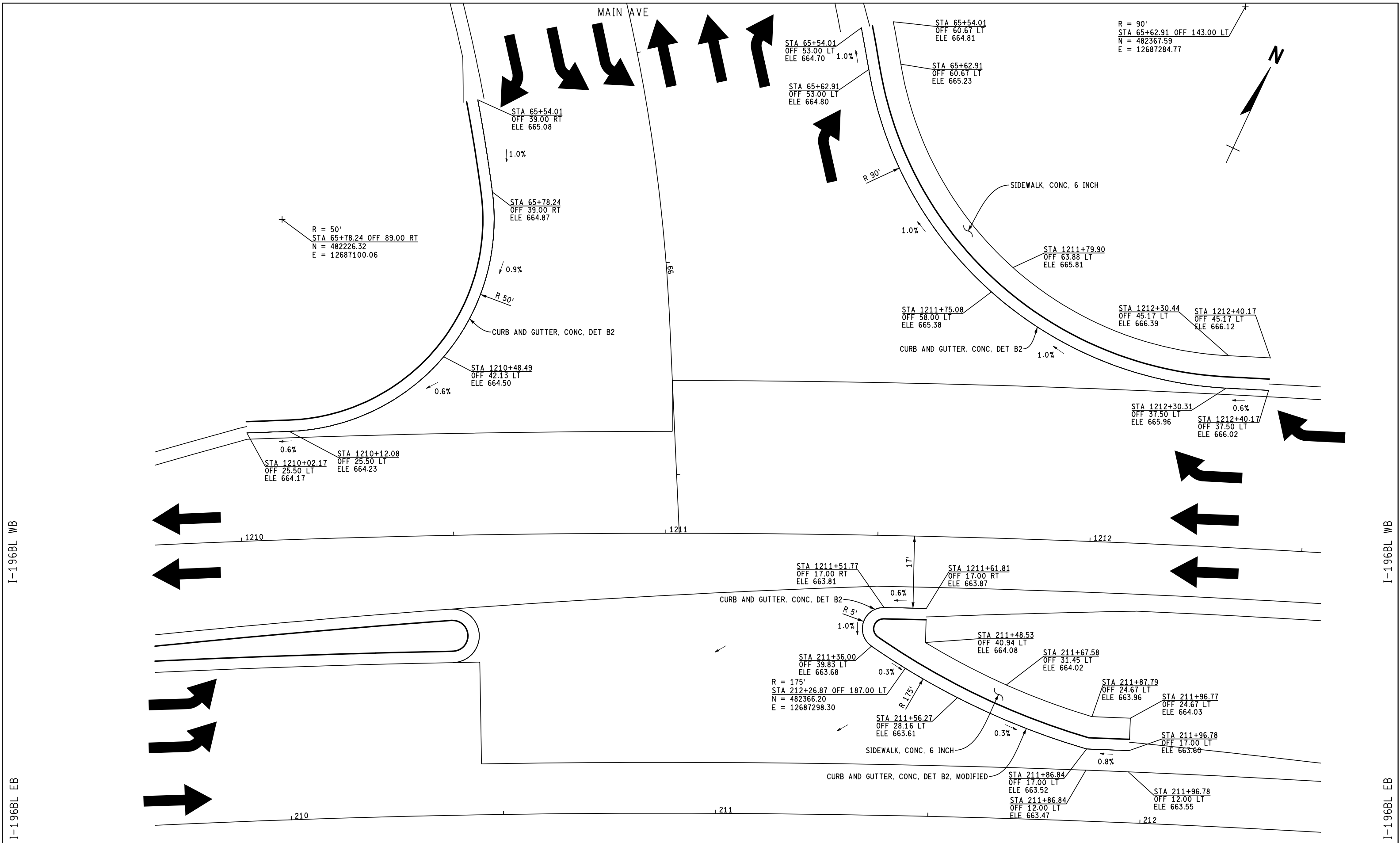


DATE: 04/10/18
 DESIGN UNIT: JASINSKI
 TSC: MUSKEGON
 FILE: 201572_De+Grd002.dgn

CS: 70023
 JN: 201572A, 202084A

DETAIL GRADES
 HOMESTEAD DRIVE APPROACH

DRAWING SHEET
 I-196BL SECT 1
 DETGRD 116
 002



FINAL ROW PLAN REVISIONS		(SUBMITTAL DATE:)	
NO.	DATE	AUTH	DESCRIPTION

NO.	DATE	AUTH	DESCRIPTION

MDOT
Michigan Department of Transportation

0 20
HORZ. (FT)

FILE: 201572_De+Grd003.dgn

DATE: 04/10/18
DESIGN UNIT: JASINSKI
TSC: MUSKEGON

CS: 70023
JN: 201572A, 202084A

DETAIL GRADES
MAIN AVE APPROACH & CROSSOVER

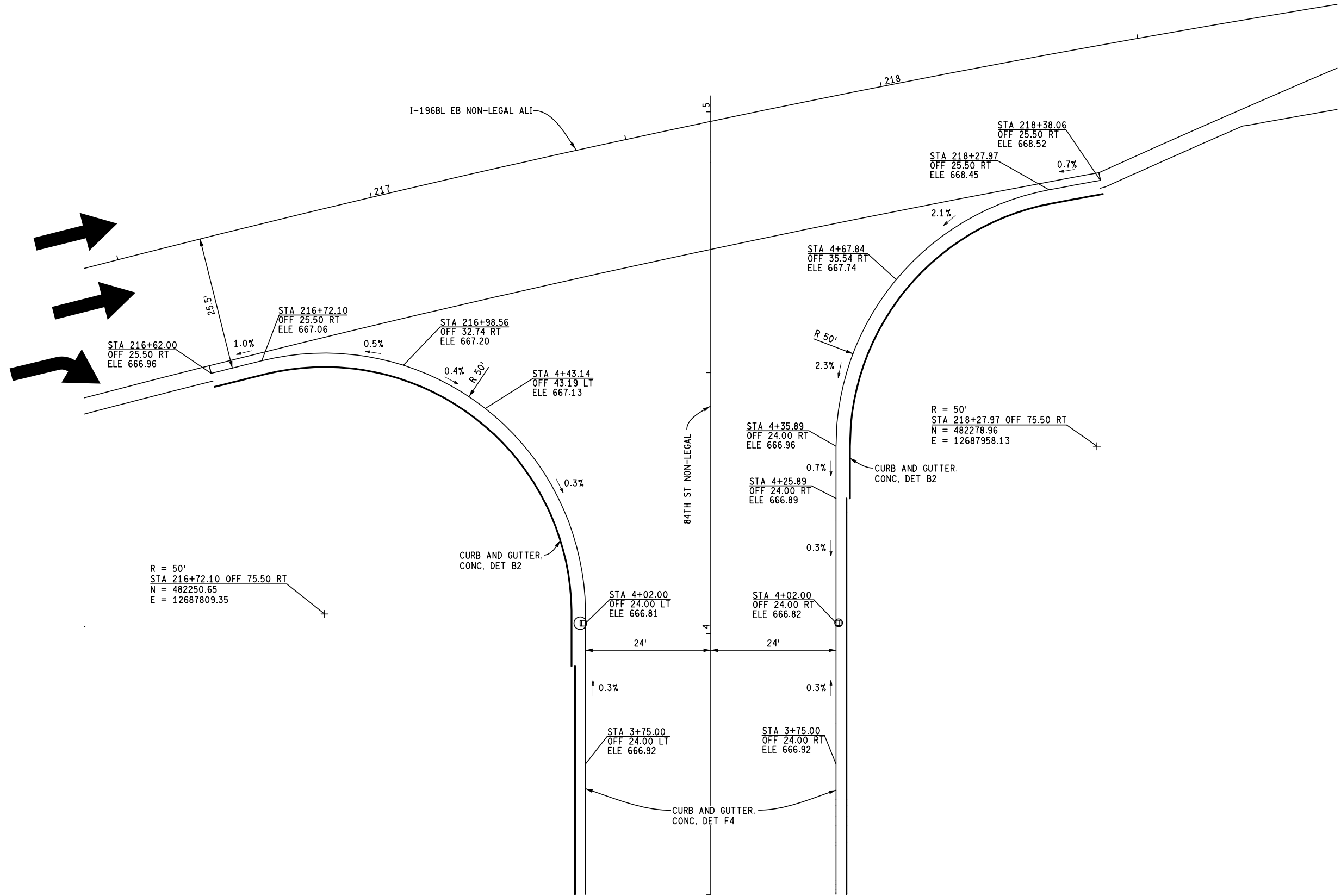
DRAWING SHEET
I-196BL DETGRD 003 SECT 1 117

I-196BL WB

I-196BL EB

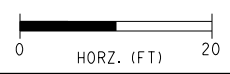
I-196BL WB

I-196BL EB



84TH AVE

FINAL ROW PLAN REVISIONS		(SUBMITTAL DATE:)	
NO.	DATE	AUTH	DESCRIPTION



FILE: 201572_De+Grd004.dgn

DATE: 04/10/18

DESIGN UNIT: JASINSKI

TSC: MUSKEGON

CS: 70023

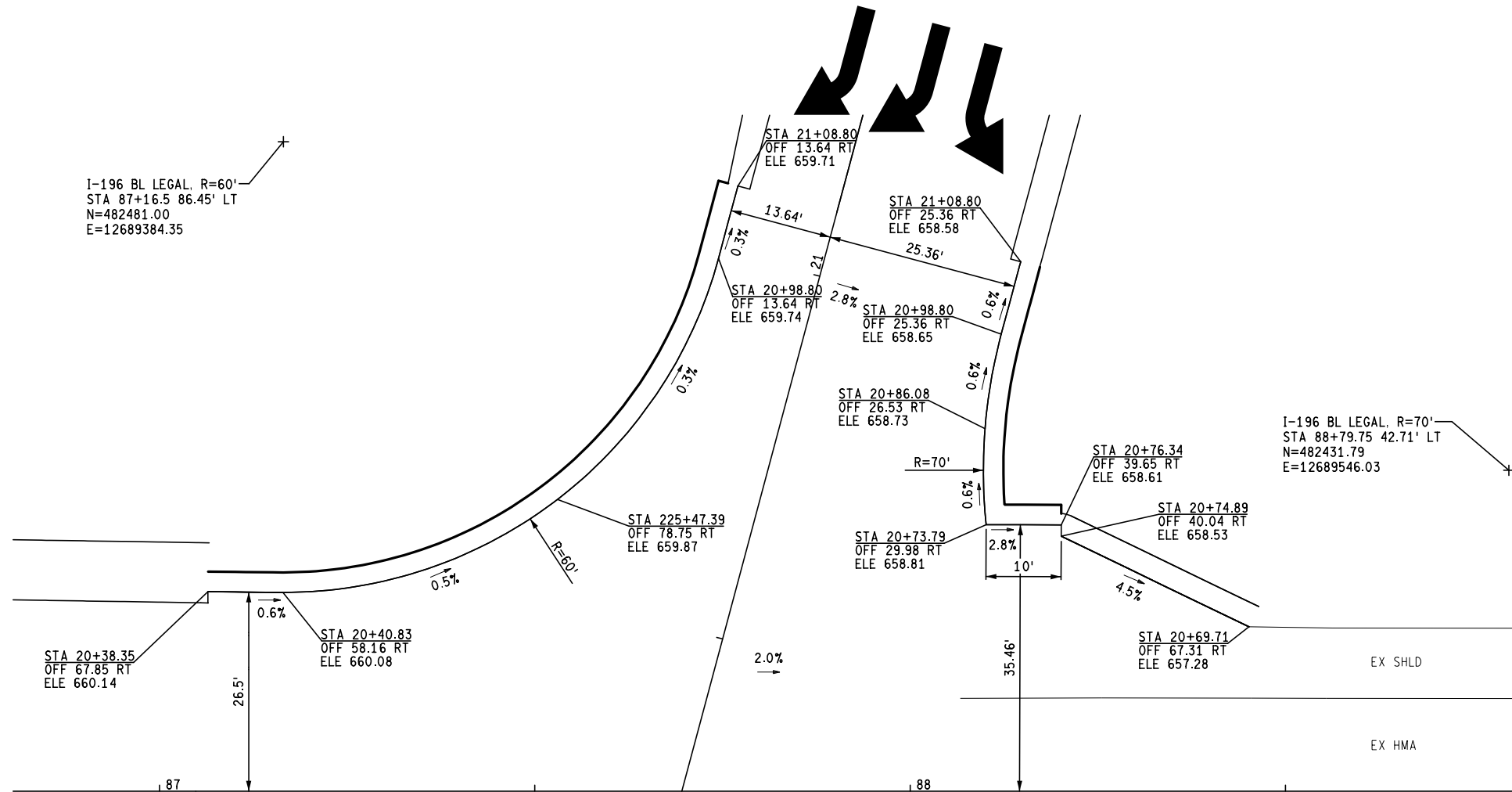
JN: 201572A, 202084A

DETAIL GRADES

84TH AVENUE SOUTH

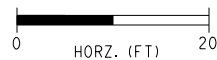
DRAWING	SHEET
I-196BL DETGRD 004	SECT 1 118

RAMP B



I-196 BL

FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



FILE: 201572_De+Grd006.dgn

DATE: 04/10/18

DESIGN UNIT: JASINSKI

TSC: MUSKEGON

CS: 70023, (70024)

JN: 201572A, 202084A

DETAIL GRADES

RAMP B APPROACH

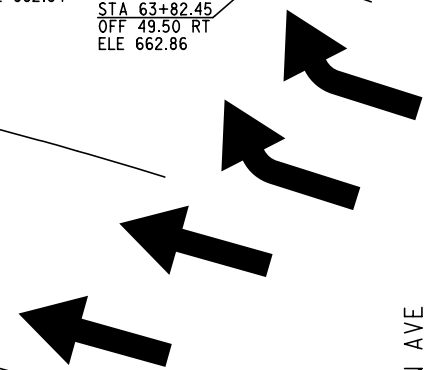
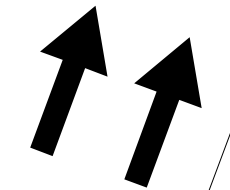
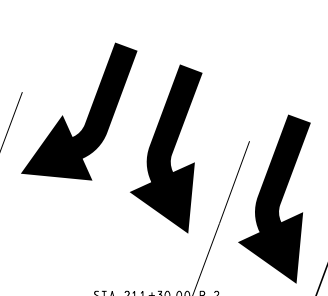
DRAWING SHEET

I-196BL
DETGRD
006

SECT 1
120

M-121 WB

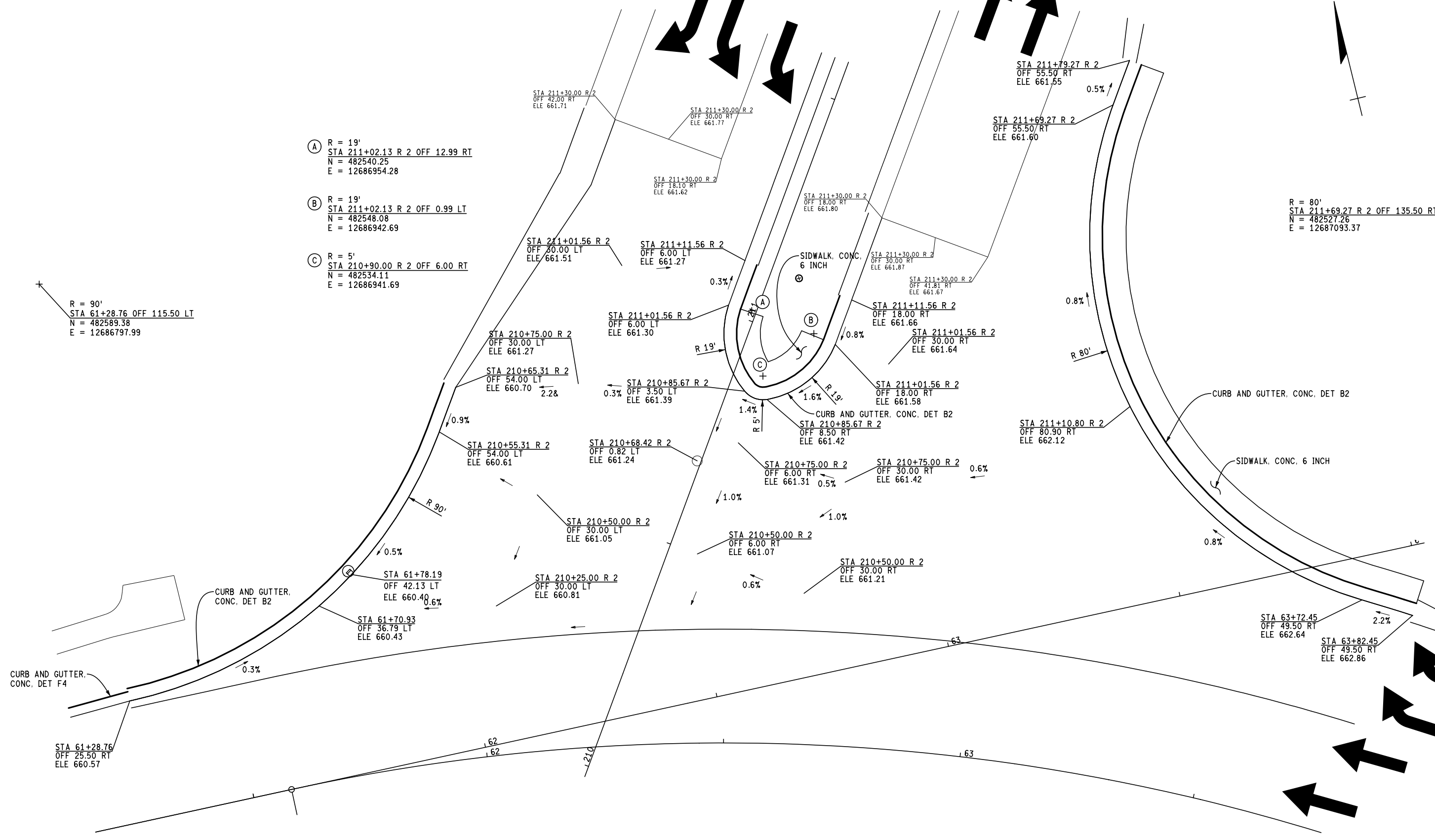
M-121 WB



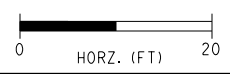
- (A) R = 19'
STA 211+02.13 R 2 OFF 12.99 RT
N = 482540.25
E = 12686954.28
- (B) R = 19'
STA 211+02.13 R 2 OFF 0.99 LT
N = 482548.08
E = 12686942.69
- (C) R = 5'
STA 210+90.00 R 2 OFF 6.00 RT
N = 482534.11
E = 12686941.69

R = 80'
STA 211+69.27 R 2 OFF 135.50 RT
N = 482527.26
E = 12687093.37

R = 90'
STA 61+28.76 OFF 115.50 LT
N = 482589.38
E = 12686797.99

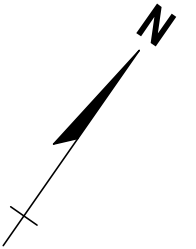


FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



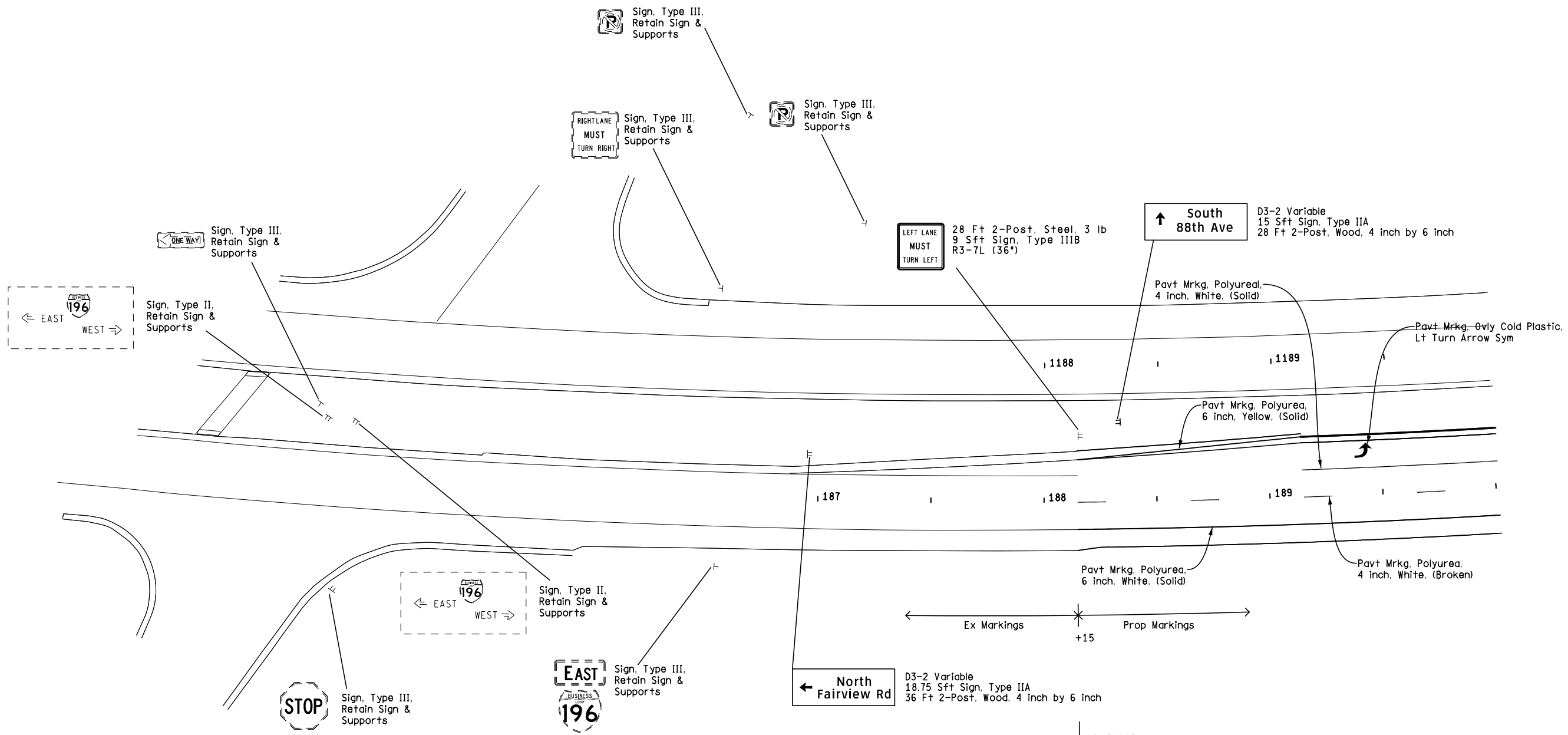
DATE: 04/10/18	CS: 70823	DETAIL GRADES	DRAWING	SHEET
DESIGN UNIT: JASINSKI	JN: 201572A, 202084A	M-121 & MAIN AVE APPROACH	M-121	SECT 1
TSC: MUSKOGON	FILE: 201572_De+Grd007.dgn		DETGRD	121

N FAIRVIEW RD



I-196BL EB I-196BL WB

I-196BL EB I-196BL WB



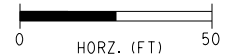
CS: 70023
 JN: 201572A
 POB STA: 188+15
 CSMP: 4.410
 PR: 740803
 PRMP: 6.352

PAVEMENT MARKING AND SIGNING QUANTITIES - THIS SHEET

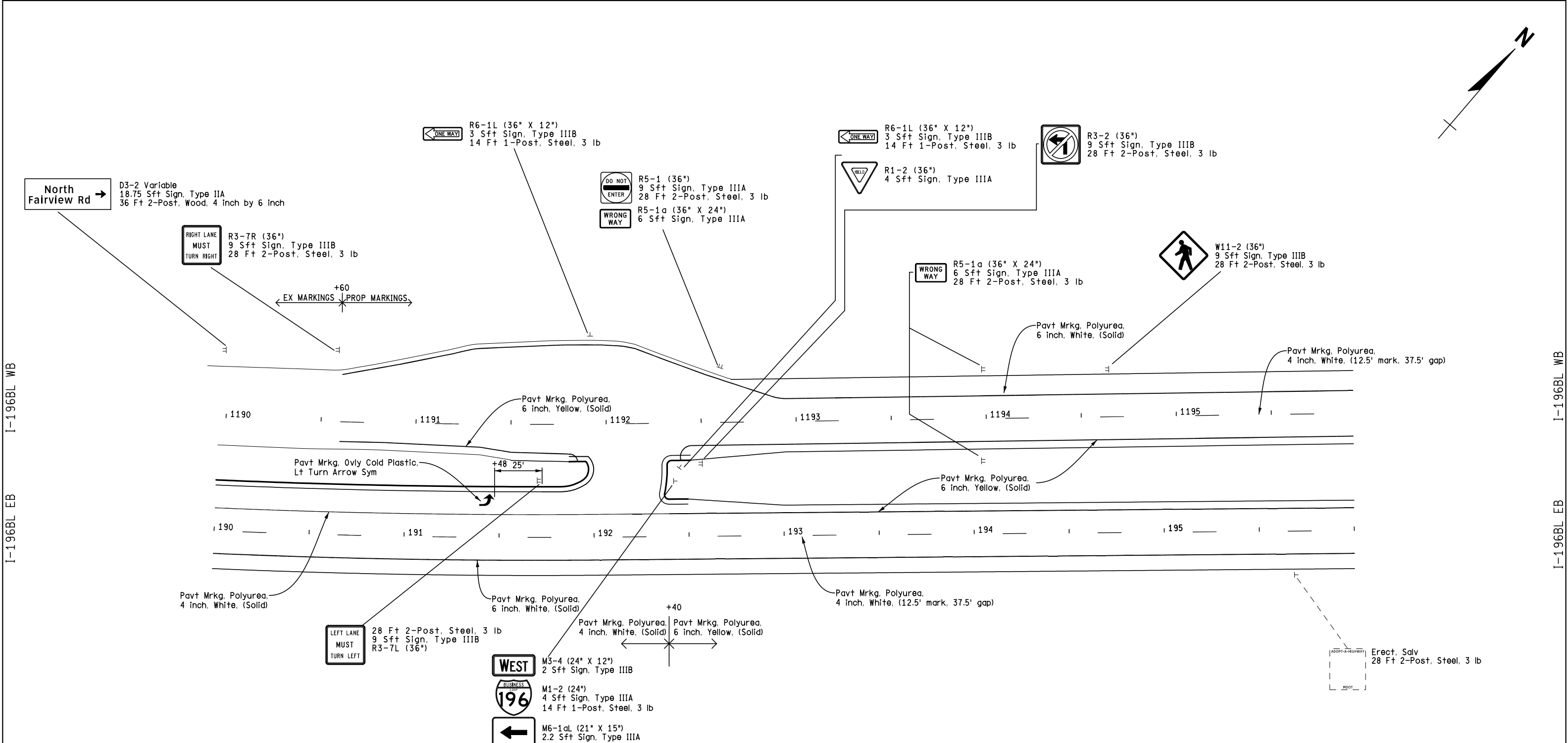
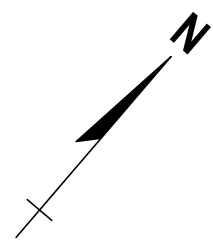
JN 201572A CAT 0001	
28 Ft	Post, Steel, 3 lb
64 Ft	Post, Wood, 4 inch by 6 inch
15 Sft	Sign, Type IIA
9 Sft	Sign, Type IIIB
1 Ea	Pavt Mrkg, Ovly Cold Plastic, Lt Turn Arrow Sym
135 Ft	Pavt Mrkg, Polyurea, 4 inch, White
190 Ft	Pavt Mrkg, Polyurea, 6 inch, White

88TH AVE

FINAL ROW PLAN REVISIONS		(SUBMITTAL DATE:)	
NO.	DATE	AUTH	DESCRIPTION



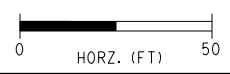
DATE: 04/10/18	CS: 70023	PAVEMENT MARKINGS AND SIGNING I-196BL EB STA 188+15 (POB) TO STA 190+00	DRAWING SHEET 1196BL PVMK 001 122
DESIGN UNIT: JASINSKI	JN: 201572A		
FILE: 201572_I-196BL_Mrk001.dgn	TSC: MUSKEGON		



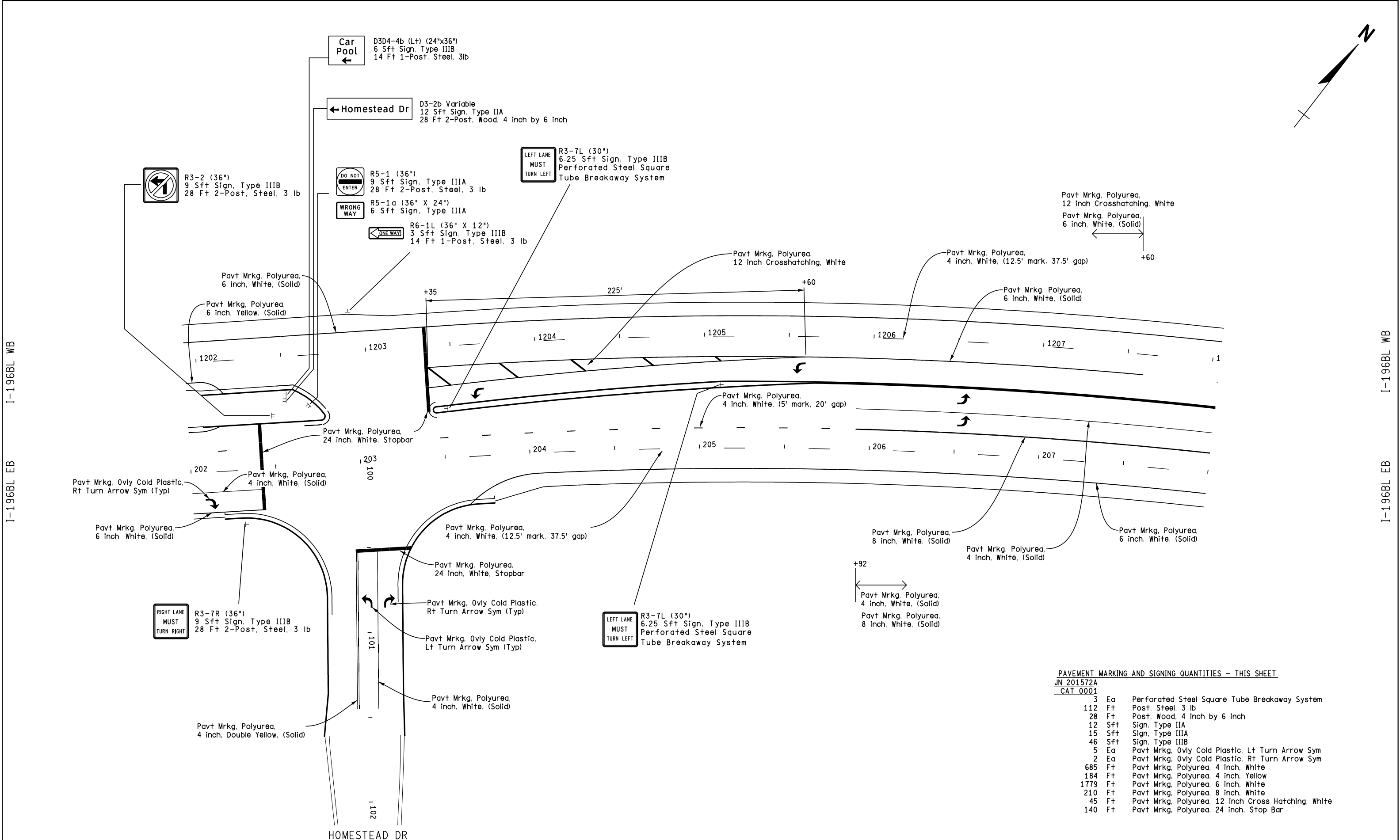
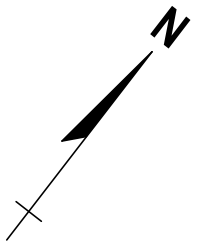
PAVEMENT MARKING AND SIGNING QUANTITIES - THIS SHEET
 JN 201572A
 CAT 0001

266	Ft	Post, Steel, 3 lb
36	Ft	Post, Wood, 4 inch by 6 inch
2	Ea	Sign, Type II, Erect, Salv
19	Sft	Sign, Type IIA
38	Sft	Sign, Type IIIA
44	Sft	Sign, Type IIIB
1	Ea	Pavt Mrkg, Ovly Cold Plastic, Lt Turn Arrow Sym
525	Ft	Pavt Mrkg, Polyurea, 4 inch, White
1140	Ft	Pavt Mrkg, Polyurea, 6 inch, White
846	Ft	Pavt Mrkg, Polyurea, 6 inch, Yellow

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



DATE: 04/10/18	CS: 70023	PAVEMENT MARKINGS AND SIGNING	DRAWING	SHEET
DESIGN UNIT: JASINSKI	JN: 201572A		I-196BL EB STA 190+00 TO STA 196+00	I196BL PVMK 002
TSC: MUSKEGON	FILE: 201572_I-196BL_Mrk002.dgn	I-196BL WB STA 1191+50 TO STA 1195+93		



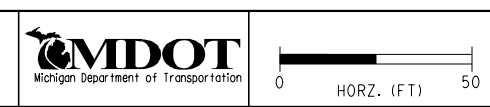
PAVEMENT MARKING AND SIGNING QUANTITIES - THIS SHEET

JN 201572A
CAT 0001

3	Ea	Perforated Steel Square Tube Breakaway System
112	Ft	Post, Steel, 3 lb
28	Ft	Post, Wood, 4 inch by 6 inch
12	Sft	Sign, Type IIA
15	Sft	Sign, Type IIIA
46	Sft	Sign, Type IIIB
5	Ea	Pavt Mrkg, Ovly Cold Plastic, Lt Turn Arrow Sym
2	Ea	Pavt Mrkg, Ovly Cold Plastic, Rt Turn Arrow Sym
685	Ft	Pavt Mrkg, Polyurea, 4 inch, White
184	Ft	Pavt Mrkg, Polyurea, 4 inch, Yellow
1779	Ft	Pavt Mrkg, Polyurea, 6 inch, White
210	Ft	Pavt Mrkg, Polyurea, 8 inch, White
45	Ft	Pavt Mrkg, Polyurea, 12 inch Cross Hatching, White
140	Ft	Pavt Mrkg, Polyurea, 24 inch, Stop Bar

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

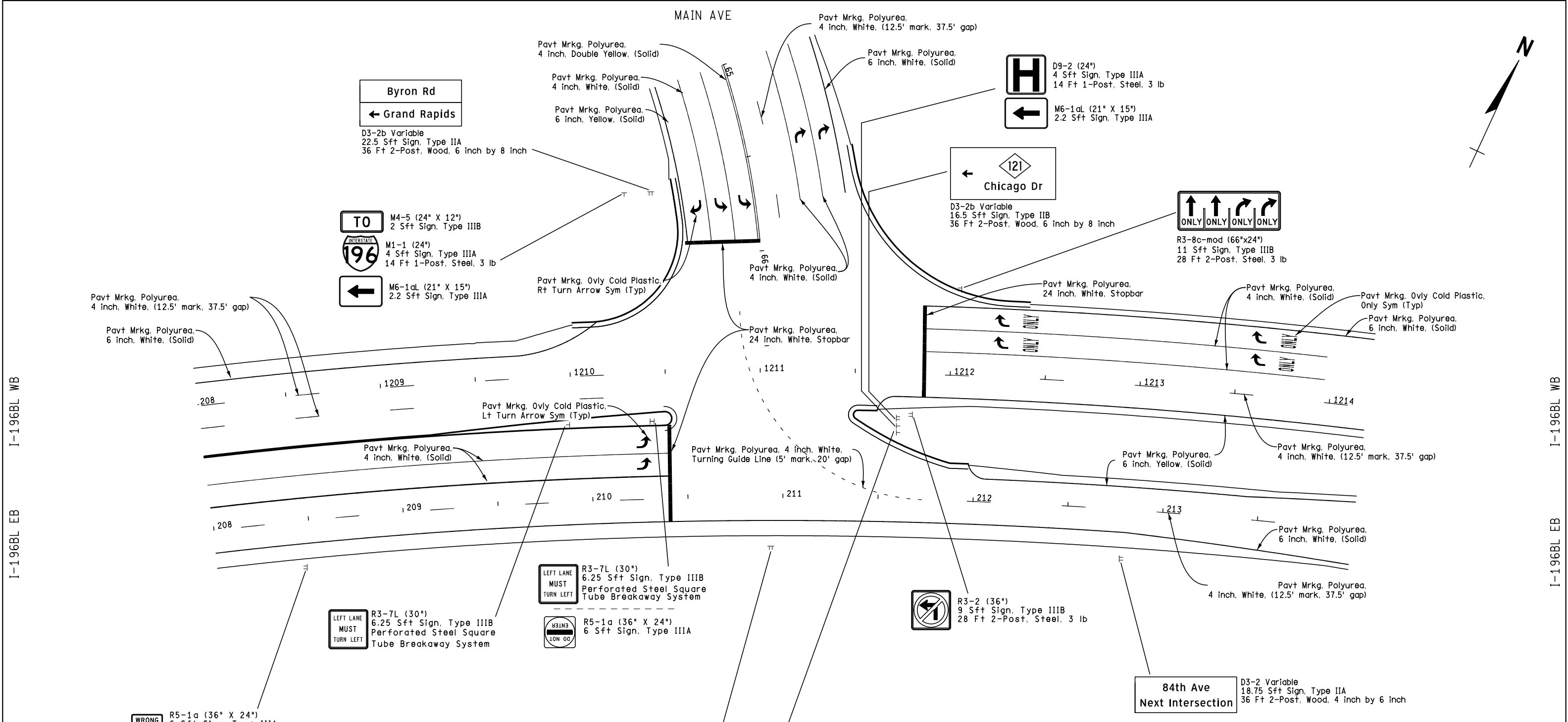
HOMESTEAD DR



DATE: 04/10/18
 DESIGN UNIT: JASINSKI
 TSC: MUSKEGON

CS: 70023
 JN: 201572A

PAVEMENT MARKINGS AND SIGNING		DRAWING	SHEET
I-196BL EB STA 202+00 TO STA 208+00		I196BL	SECT 1
I-196BL WB STA 1201+93 TO STA 1208+04		PVMK	125
		004	



PAVEMENT MARKING AND SIGNING QUANTITIES - THIS SHEET
 JN_201572A
 CAT 0001

2	Ea	Perforated Steel Square Tube Breakaway System
140	Ft	Post, Steel, 3 lb
36	Ft	Post, Wood, 4 inch by 6 inch
72	Ft	Post, Wood, 6 inch by 8 inch
42	Sft	Sign, Type IIA
17	Sft	Sign, Type IIB
31	Sft	Sign, Type IIIA
40	Sft	Sign, Type IIIB
4	Ea	Pavt Mrkg, Ovly Cold Plastic, Lt Turn Arrow Sym
4	Ea	Pavt Mrkg, Ovly Cold Plastic, Only
6	Ea	Pavt Mrkg, Ovly Cold Plastic, Rt Turn Arrow Sym
1375	Ft	Pavt Mrkg, Polyurea, 4 inch, White
200	Ft	Pavt Mrkg, Polyurea, 4 inch, Yellow
1255	Ft	Pavt Mrkg, Polyurea, 6 inch, White
485	Ft	Pavt Mrkg, Polyurea, 6 inch, Yellow
250	Ft	Pavt Mrkg, Polyurea, 8 inch, White
140	Ft	Pavt Mrkg, Polyurea, 24 inch, Stop Bar
35	Ft	Pavt Mrkg, Polyurea, 4 inch, Turning Guide Line, White

FINAL ROW PLAN REVISIONS		(SUBMITTAL DATE:)	
NO.	DATE	AUTH	DESCRIPTION

NO.	DATE	AUTH	DESCRIPTION

0 50
HORIZ. (FT)

DATE: 04/17/18 CS: 70023
 DESIGN UNIT: JASINSKI JN: 201572A
 TSC: MUSKEGON

FILE: 201572_1-196BL_Mrk005.dgn

PAVEMENT MARKINGS AND SIGNING		DRAWING	SHEET
I-196BL EB STA 208+00 TO STA 214+00		I196BL	SECT 1
I-196BL WB STA 1208+04 TO STA 1214+19		PVMK	126
		005	

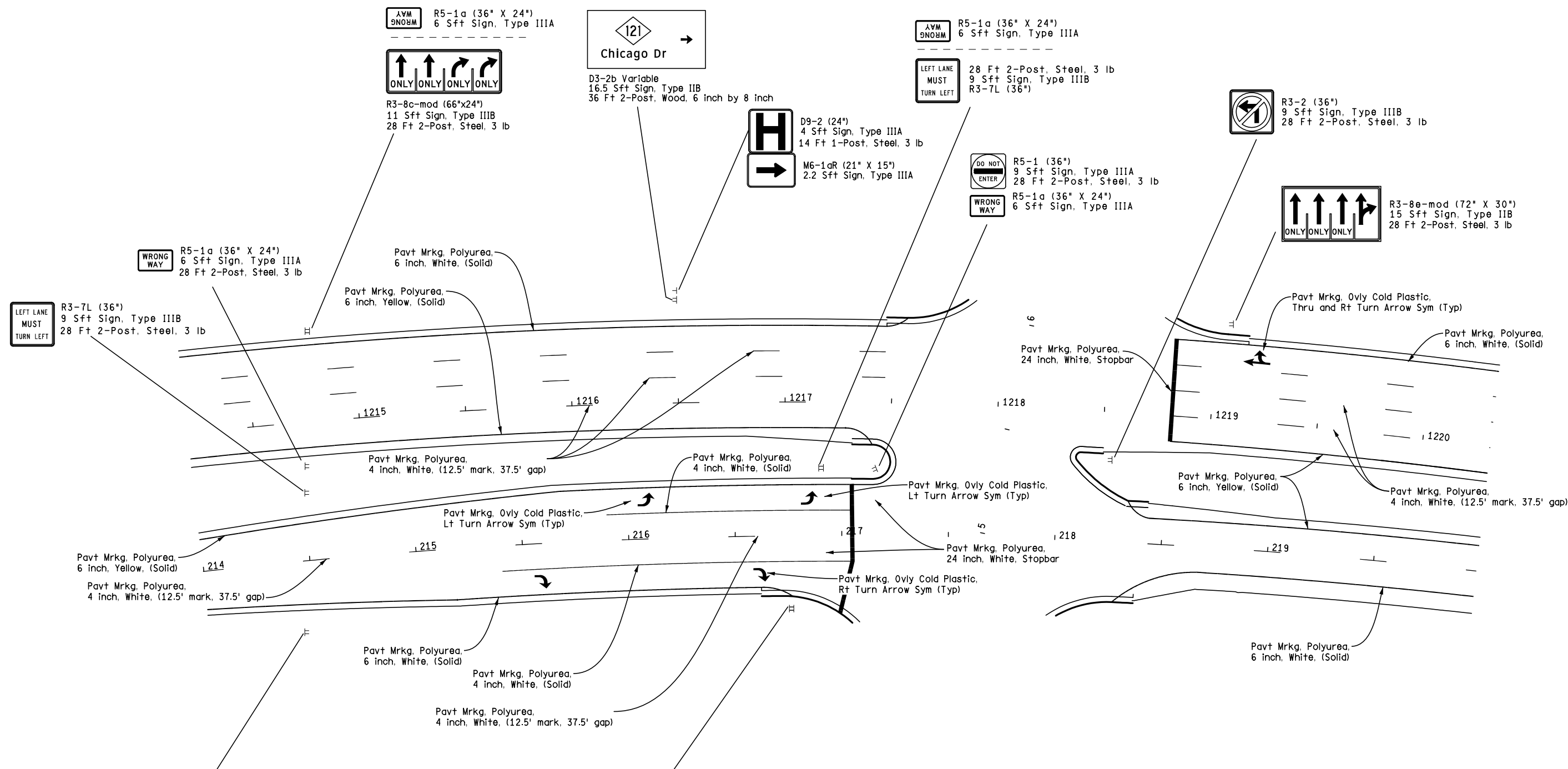


I-196BL WB

I-196BL EB

I-196BL WB

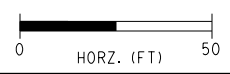
I-196BL EB



PAVEMENT MARKING AND SIGNING QUANTITIES - THIS SHEET
 JN 201572A
 CAT 0001

266	Ft	Post, Steel, 3 lb
36	Ft	Post, Wood, 6 inch by 8 inch
32	Sft	Sign, Type IIB
46	Sft	Sign, Type IIIA
56	Sft	Sign, Type IIIB
2	Ea	Pavt Mrkg, Ovly Cold Plastic, Lt Turn Arrow Sym
2	Ea	Pavt Mrkg, Ovly Cold Plastic, Rt Turn Arrow Sym
1	Ea	Pavt Mrkg, Ovly Cold Plastic, Thru and Rt Turn Arrow Sym
775	Ft	Pavt Mrkg, Polyurea, 4 inch, White
967	Ft	Pavt Mrkg, Polyurea, 6 inch, White
976	Ft	Pavt Mrkg, Polyurea, 6 inch, Yellow
115	Ft	Pavt Mrkg, Polyurea, 24 inch, Stop Bar

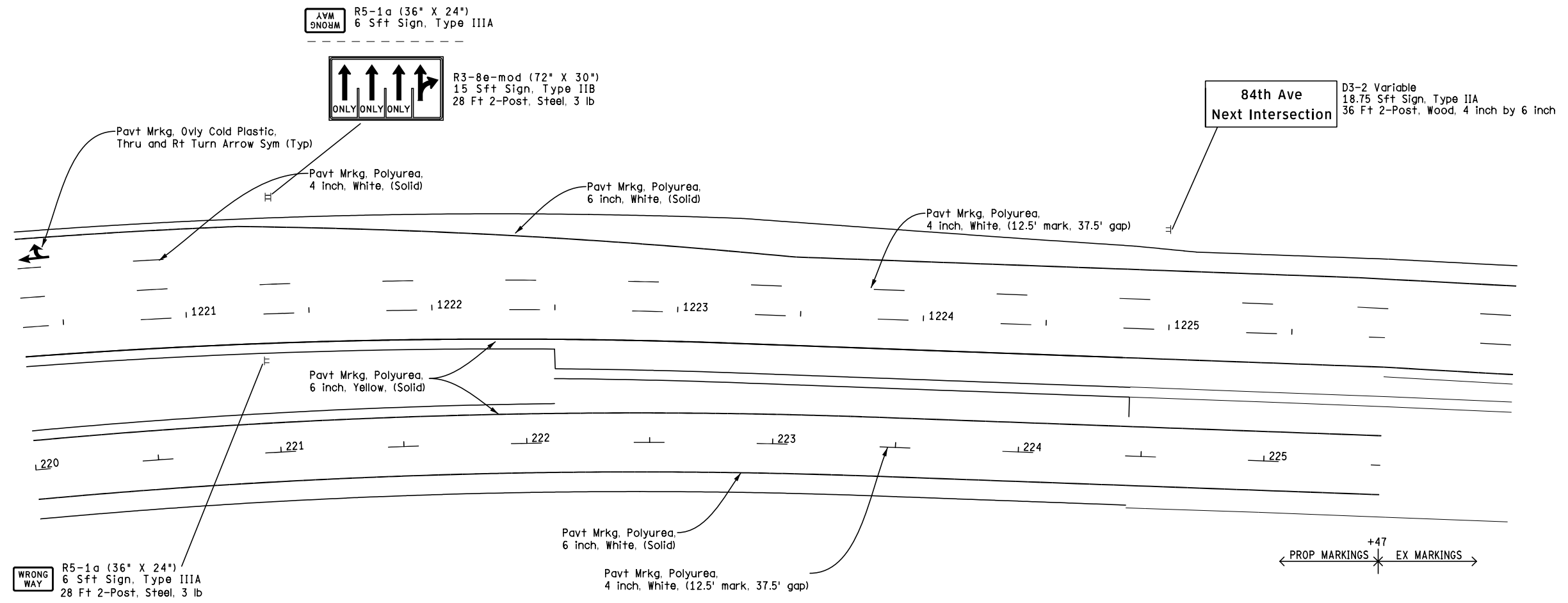
FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



84TH ST

DATE: 04/10/18	CS: 70023	PAVEMENT MARKING AND SIGNING	DRAWING	SHEET
DESIGN UNIT: JASINSKI	JN: 201572A	I-196BL EB STA 214+00 TO STA 220+00	I196BL	SECT 1
TSC: MUSKEGON		I-196BL WB STA 1214+19 TO STA 1220+33	PVMK	127
			006	

FILE: 201572_I-196BL_Mrk006.dgn



I-196BL WB

I-196BL WB

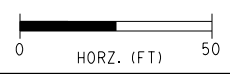
I-196BL EB

I-196BL EB

PAVEMENT MARKING AND SIGNING QUANTITIES - THIS SHEET
 JN 201572A
 CAT 0001

56	Ft	Post, Steel, 3 lb
36	Ft	Post, Wood, 4 inch by 6 inch
19	Sft	Sign, Type IIA
15	Sft	Sign, Type IIB
12	Sft	Sign, Type IIIA
1	Ea	Pavt Mrkg, 0vly Cold Plastic, Thru and Rt Turn Arrow Sym
460	Ft	Pavt Mrkg, Polyurea, 4 inch, White
1165	Ft	Pavt Mrkg, Polyurea, 6 inch, White
1160	Ft	Pavt Mrkg, Polyurea, 6 inch, Yellow

FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

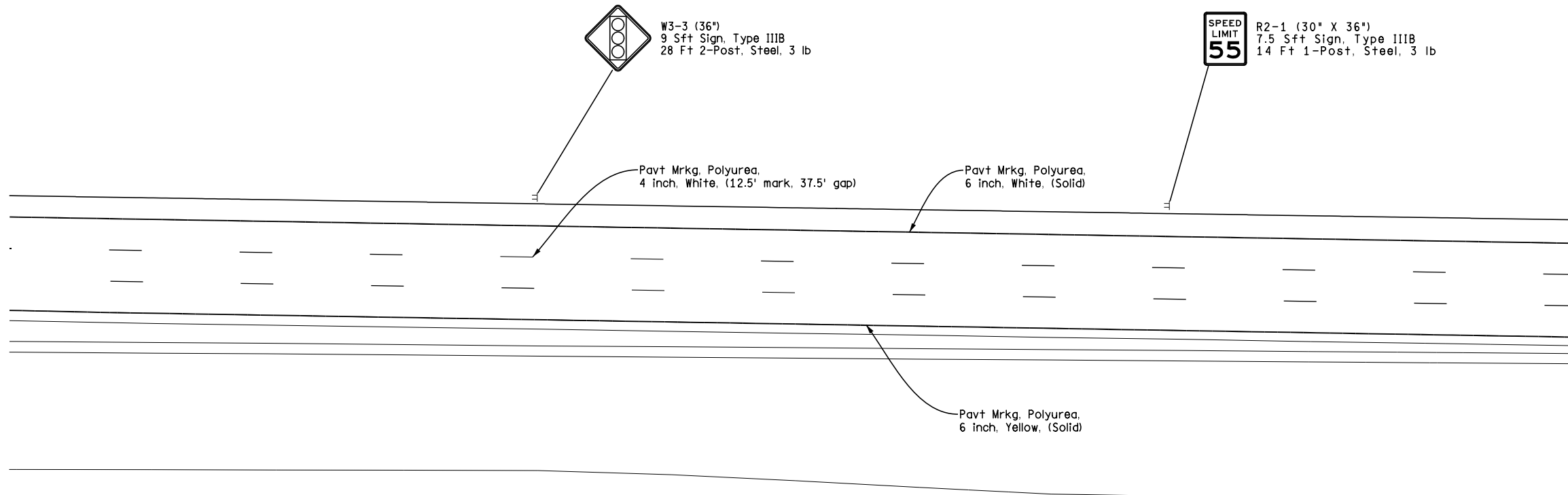


DATE: 04/10/18	CS: 70023	PAVEMENT MARKINGS AND SIGNING	DRAWING	SHEET
DESIGN UNIT: JASINSKI	JN: 201572A		I-196BL EB STA 220+00 TO STA 225+47	I196BL PVMK 007
FILE: 201572_I-196BL_Mrk007.dgn	TSC: MUSKEGON	I-196BL WB STA 1220+33 TO STA 1225+88		



I-196BL WB
I-196BL EB

RAMP B
I-196BL WB
I-196BL EB



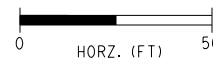
↑ Grand Rapids
Benton Harbor →
Sign, Type II,
Retain Sign &
Supports

PAVEMENT MARKING AND SIGNING QUANTITIES - THIS SHEET

JN 201572A
CAT 0001

42	Ft	Post, Steel, 3 lb
17	Sft	Sign, Type IIIB
305	Ft	Pavt Mrkg, Polyurea, 4 inch, White
605	Ft	Pavt Mrkg, Polyurea, 6 inch, White
605	Ft	Pavt Mrkg, Polyurea, 6 inch, Yellow

FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



FILE: 201572_I-196BL_Mrk008.dgn

DATE: 04/10/18

DESIGN UNIT: JASINSKI

TSC: MUSKEGON

CS: 70023

JN: 201572A

PAVEMENT MARKINGS AND SIGNING




I-196BL STA 80+00 TO STA 86+00


DRAWING SHEET



1196BL PVMK 008 SECT 1 129

RAMP B




-  M6-1aR (21" X 15")
2.2 Sft Sign, Type IIIA
-  M3-4 (24" X 12")
2 Sft Sign, Type IIIB
-  M1-2 (24")
4 Sft Sign, Type IIIA
14 Ft 1-Post, Steel, 3 lb

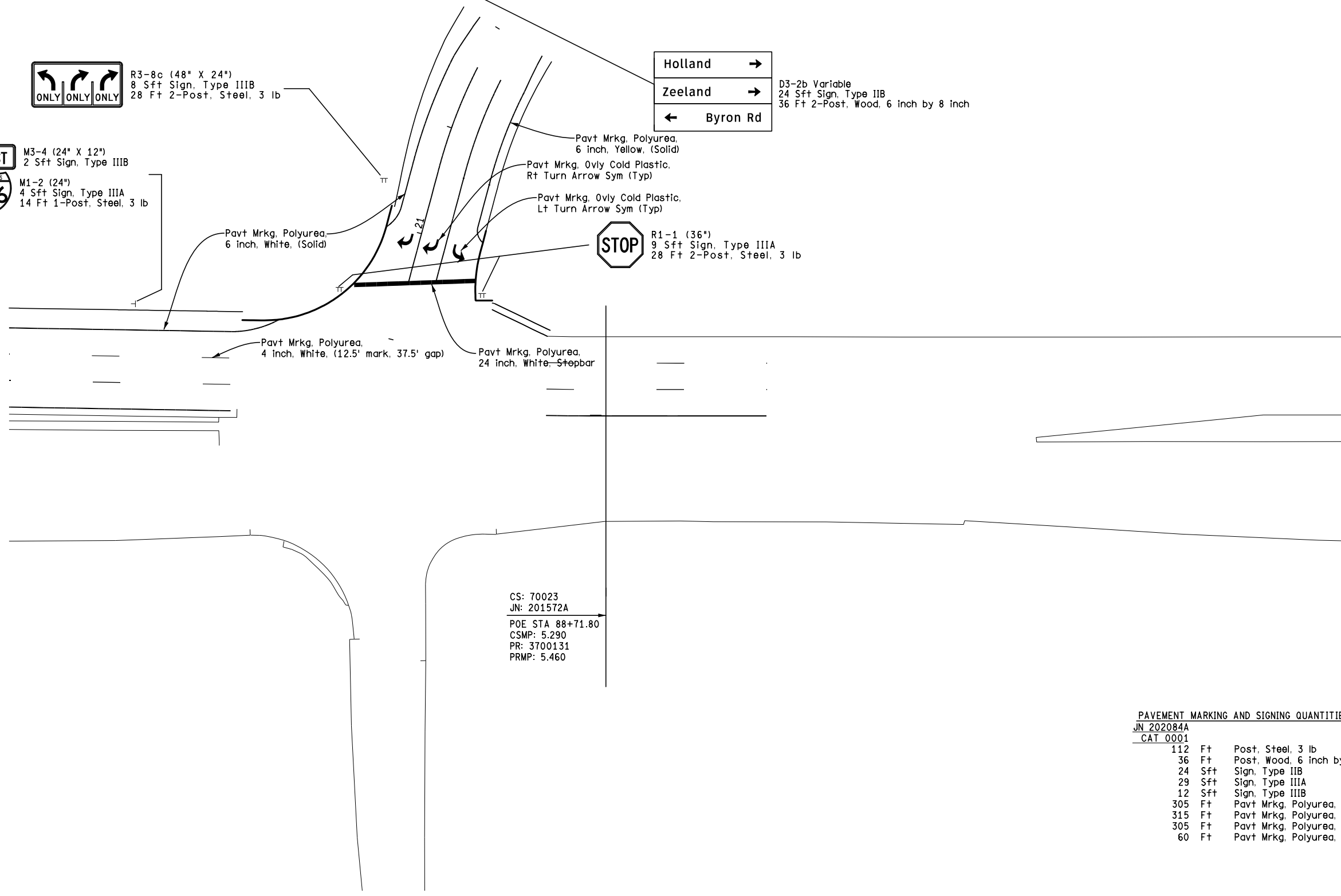
-  R3-8c (48" X 24")
8 Sft Sign, Type IIIB
28 Ft 2-Post, Steel, 3 lb

-  M3-4 (24" X 12")
2 Sft Sign, Type IIIB
-  M1-2 (24")
4 Sft Sign, Type IIIA
14 Ft 1-Post, Steel, 3 lb

- Holland →
- Zeeland →
- ← Byron Rd

- D3-2b Variable
24 Sft Sign, Type IIB
36 Ft 2-Post, Wood, 6 inch by 8 inch

-  R1-1 (36")
9 Sft Sign, Type IIIA
28 Ft 2-Post, Steel, 3 lb



CS: 70023
JN: 201572A
POE STA 88+71.80
CSMP: 5.290
PR: 3700131
PRMP: 5.460

PAVEMENT MARKING AND SIGNING QUANTITIES - THIS SHEET

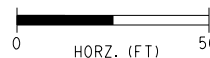
NO.	DESCRIPTION	QUANTITY
112	Post, Steel, 3 lb	112
36	Post, Wood, 6 inch by 8 inch	36
24	Sign, Type IIB	24
29	Sign, Type IIIA	29
12	Sign, Type IIIB	12
305	Pavt Mrkg, Polyurea, 4 inch, White	305
315	Pavt Mrkg, Polyurea, 6 inch, White	315
305	Pavt Mrkg, Polyurea, 6 inch, Yellow	305
60	Pavt Mrkg, Polyurea, 24 inch, Stop Bar	60

RAMP A

I-196BL EB I-196BL WB

I-196BL EB I-196BL WB

FINAL ROW PLAN REVISIONS		(SUBMITTAL DATE:)	
NO.	DATE	AUTH	DESCRIPTION



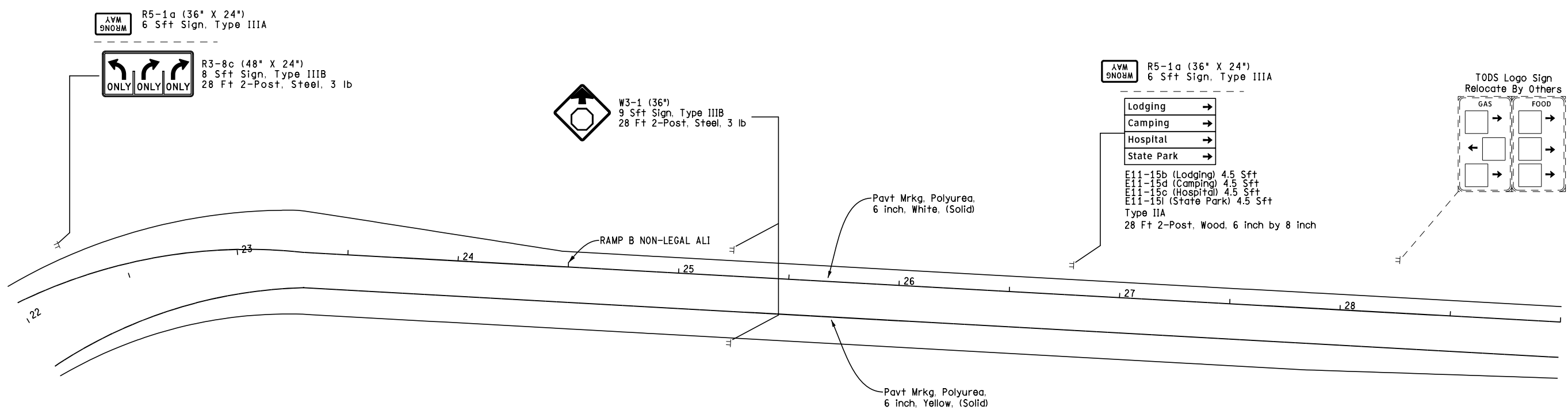
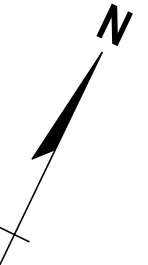
FILE: 201572_I-196BL_Mrk009.dgn

DATE: 04/10/18
DESIGN UNIT: JASINSKI
TSC: MUSKEGON

CS: 70023
JN: 202084A

PAVEMENT MARKINGS AND SIGNING
I-196BL STA 86+00 TO STA 92+00

DRAWING	SHEET
I196BL PVMK 009	130

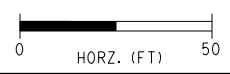


PAVEMENT MARKING AND SIGNING QUANTITIES - THIS SHEET

JN 202084A
CAT 0001

84	Ft	Post, Steel, 3 lb
28	Ft	Post, Wood, 6 inch by 8 inch
18	Sft	Sign, Type IIB
12	Sft	Sign, Type IIIA
26	Sft	Sign, Type IIB
702	Ft	Pavt Mrkg, Polyurea, 6 inch, White
701	Ft	Pavt Mrkg, Polyurea, 6 inch, Yellow

FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



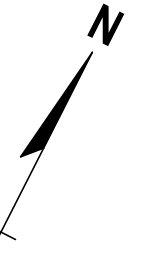
DATE: 04/10/18
 DESIGN UNIT: JASINSKI
 TSC: MUSKEGON

CS: 70024
 JN: 202084A

PAVEMENT MARKINGS AND SIGNING
 RAMP B STA 22+00 TO STA 29+00

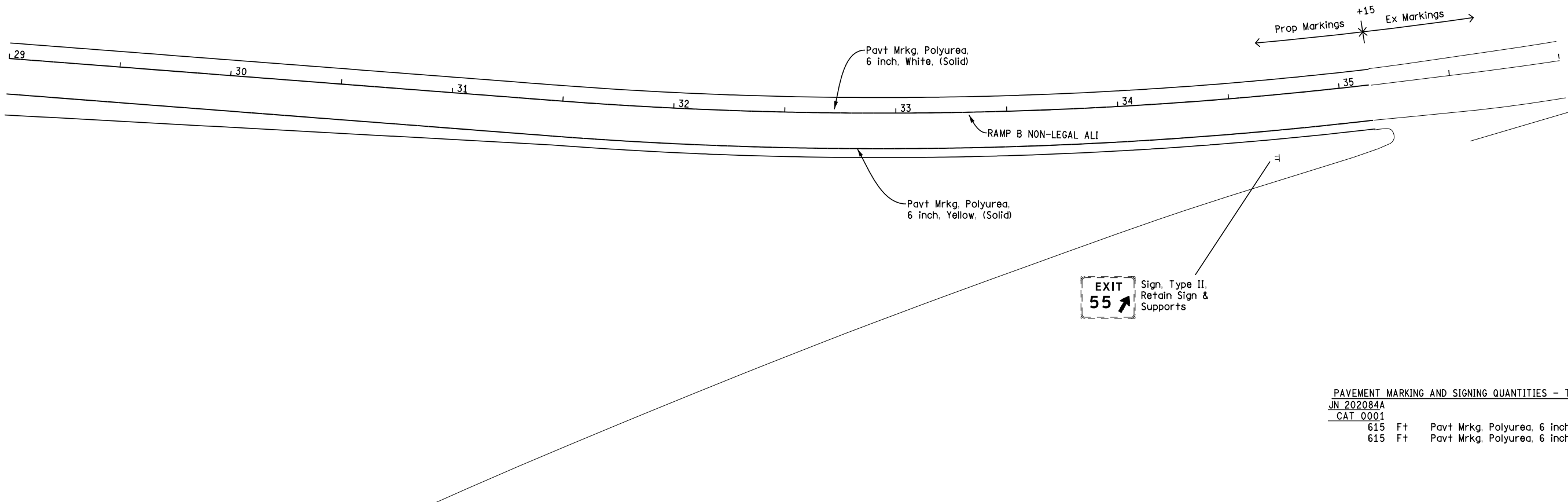
DRAWING SHEET
 RAMPB PVMK 001 131

FILE: 201572_Ramp_Mrk001.dgn



RAMP B

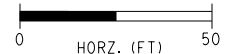
RAMP B



PAVEMENT MARKING AND SIGNING QUANTITIES - THIS SHEET

JN 202084A			
CAT 0001			
615	Ft	Pavt Mrkg, Polyurea, 6 inch, White	
615	Ft	Pavt Mrkg, Polyurea, 6 inch, Yellow	

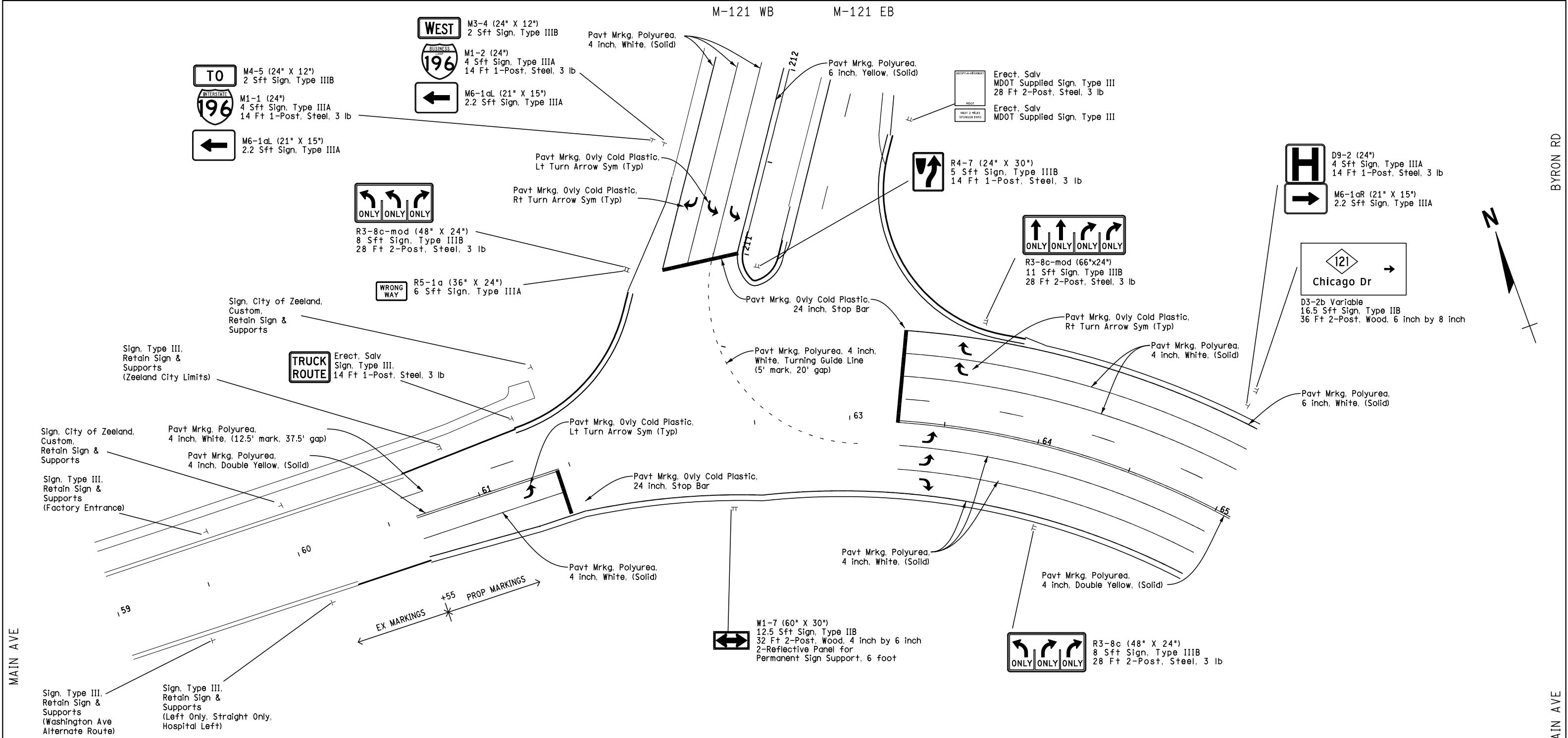
FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



DATE: 04/10/18	CS: 70024
DESIGN UNIT: JASINSKI	JN: 202084A
TSC: MUSKEGON	

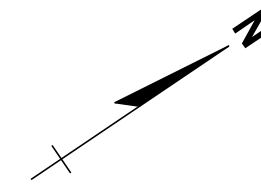
PAVEMENT MARKINGS AND SIGNING		DRAWING	SHEET
RAMP B STA 29+00 TO STA 35+14		RAMPB	SECT 1
		PVMK	132
		002	

FILE: 201572_Ramp_Mrk002.dgn



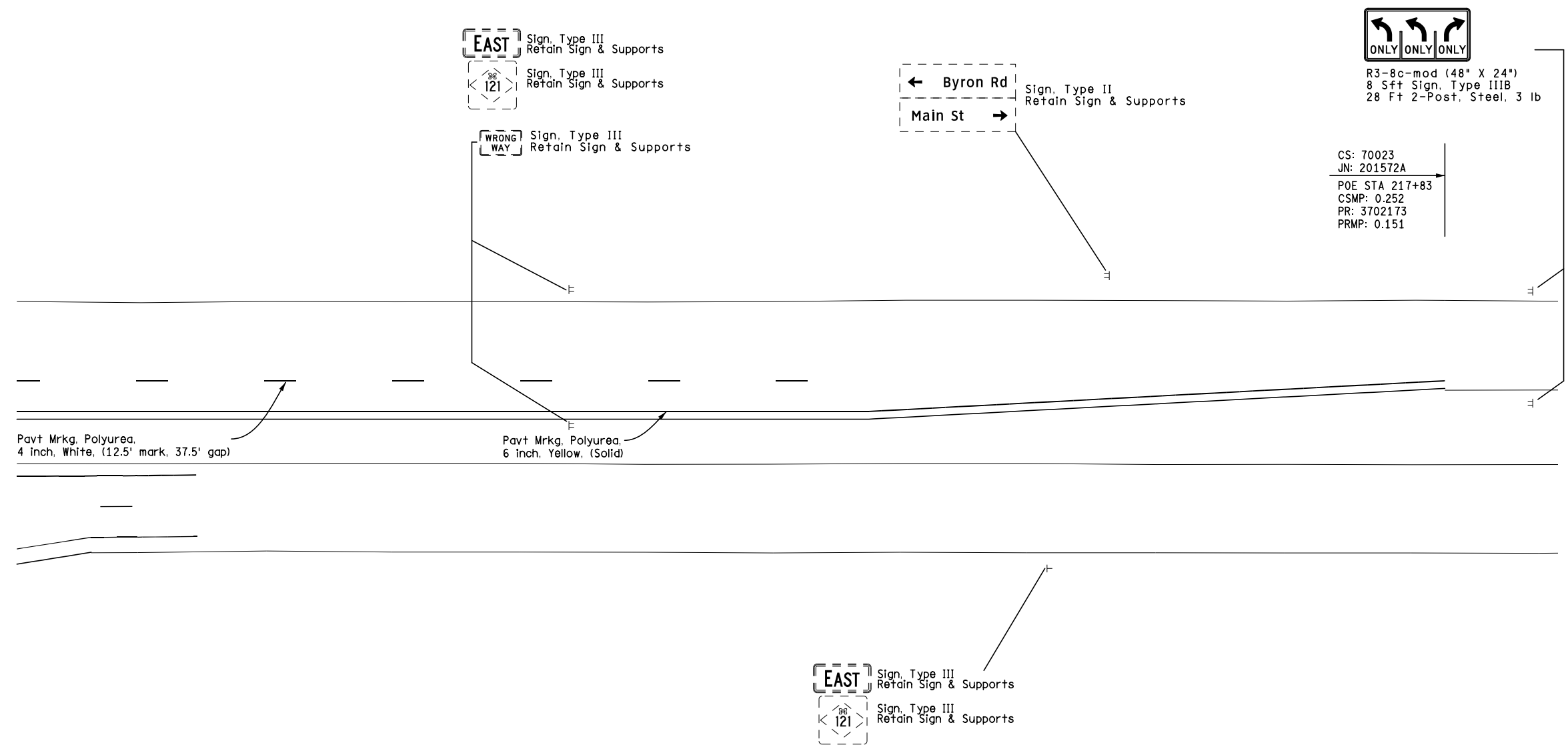
PAVEMENT MARKING AND SIGNING QUANTITIES - THIS SHEET


NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION
182			Post, Steel, 3 lb				
32			Post, Wood, 4 inch by 6 inch				
36			Post, Wood, 6 inch by 8 inch				
3			Sign, Type II, Erect, Salv				
29			Sign, Type IIB				
25			Sign, Type IIIA				
36			Sign, Type IIIB				
5			Pavt Mrkg, Ovly Cold Plastic, Lt Turn Arrow Sym				
4			Pavt Mrkg, Ovly Cold Plastic, Rt Turn Arrow Sym				
1140			Pavt Mrkg, Polyurea, 4 inch, White				
560			Pavt Mrkg, Polyurea, 4 inch, Yellow				
745			Pavt Mrkg, Polyurea, 6 inch, White				
200			Pavt Mrkg, Polyurea, 6 inch, Yellow				
135			Pavt Mrkg, Polyurea, 24 inch, Stop Bar				
30			Pavt Mrkg, Polyurea, 4 inch, Turning Guide Line, White				



M-121 WB
M-121 EB

M-121 WB
M-121 EB



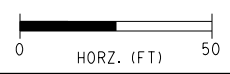

 R3-8c-mod (48" X 24")
 8 Sft Sign, Type IIIB
 28 Ft 2-Post, Steel, 3 lb

CS: 70023
 JN: 201572A
 POE STA 217+83
 CSMP: 0.252
 PR: 3702173
 PRMP: 0.151

PAVEMENT MARKING AND SIGNING QUANTITIES - THIS SHEET
 JN 202084A
 CAT 0001

84	Ft	Post, Steel, 3 lb
0	Ft	Post, Wood, 4 inch by 6 inch
0	Sft	Sign, Type IIA
6	Sft	Sign, Type IIIA
16	Sft	Sign, Type IIIB
680	Ft	Pavt Mrkg, Polyurea, 4 inch, White
620	Ft	Pavt Mrkg, Polyurea, 6 inch, White
560	Ft	Pavt Mrkg, Polyurea, 6 inch, Yellow

FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

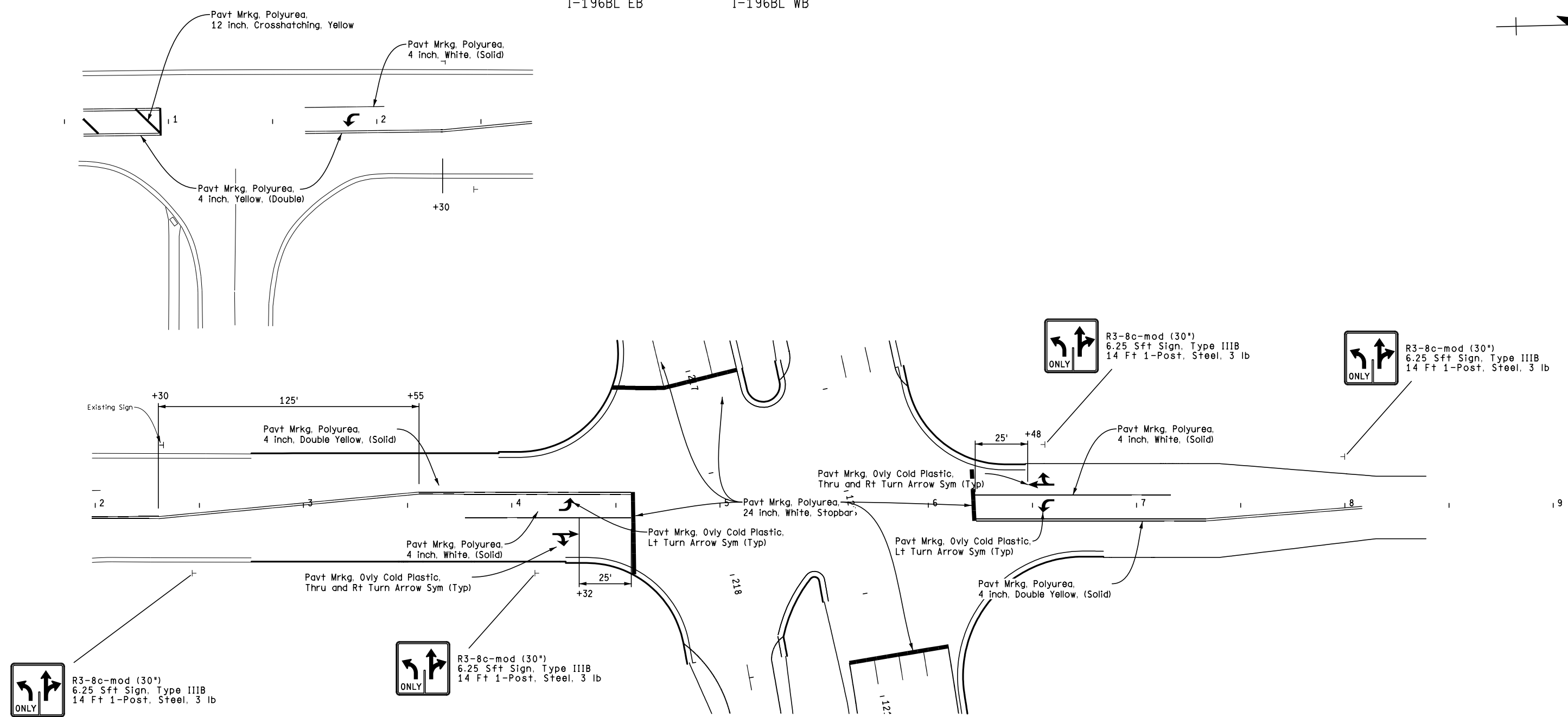


DATE: 04/10/18	CS: 70823	PAVEMENT MARKINGS AND SIGNING M-121 STA 212+00 TO STA 218+00	DRAWING	SHEET
DESIGN UNIT: JASINSKI	JN: 202084A		M-121 PVMK 002	SECT 1 134
FILE: 201572_M-121_Mrk002.dgn		TSC: MUSKEGON		



84TH ST

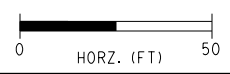
84TH ST



PAVEMENT MARKING AND SIGNING QUANTITIES - THIS SHEET

NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION
56			Post, Steel, 3 lb				
25			Sft Sign, Type IIIB				
3			Ea Pavt Mrkg, Ovly Cold Plastic, Lt Turn Arrow Sym				
2			Ea Pavt Mrkg, Ovly Cold Plastic, Thru and Rt Turn Arrow Sym				
370			Ft Pavt Mrkg, Polyurea, 4 inch, White				
1380			Ft Pavt Mrkg, Polyurea, 4 inch, Yellow				
417			Ft Pavt Mrkg, Polyurea, 6 inch, White				
40			Ft Pavt Mrkg, Polyurea, 12 inch Cross Hatching, Yellow				
175			Ft Pavt Mrkg, Polyurea, 24 inch, Stop Bar				

FINAL ROW PLAN REVISIONS		(SUBMITTAL DATE:)	
NO.	DATE	AUTH	DESCRIPTION



DATE: 04/10/18	CS: 70023
DESIGN UNIT: JASINSKI	JN: 201572A
TSC: MUSKEGON	

PAVEMENT MARKINGS AND SIGNING		DRAWING	SHEET
84TH AVE STA 2+00 TO STA 9+00		84TH PVMK 001	135

FILE: 201572_84th_Mrk001.dgn



I-196 WB RAMP
TO ADAMS ST

I-196 WB I-196 EB

W3-3 (36")
9 Sft Sign, Type III B
28 Ft 2-Post, Steel, 3 lb

1-Sign, Type II, Rem

Existing Sign
Left Arrow
(to remain)

Existing Sign
Holland right
(to remain)

Existing Sign
Hospital, Colleges right
(to remain)

STOP 1-Sign, Type III, Rem

No Motor Vehicles
(to remain)

Do Not Enter
Wrong Way
(to remain)

ADAMS ST

ADAMS ST

W3-3 (36")
9 Sft Sign, Type III B
28 Ft 2-Post, Steel, 3 lb
With "New" Sign,
replace after 90 days

Right Lane Must
Turn Right
(to remain)

I-196 West Right
I-196 East Ahead
(to remain)

Pavt Mrkg, Polyurea,
24 inch, Stop Bar

East I-196 right
(to remain)

W3-3 (36")
9 Sft Sign, Type III B
28 Ft 2-Post, Steel, 3 lb
With "New" Sign,
replace after 90 days

PAVEMENT MARKING AND SIGNING QUANTITIES - THIS SHEET

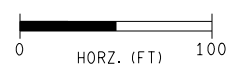
JN 202084A
CAT 0005

112	Ft	Post, Steel, 3 lb
36	Sft	Sign, Type III B
72	Ft	Pavt Mrkg, Polyurea, 24 inch, Stop Bar

I-196 WB I-196 EB

ADAMS ST RAMP
TO I-196 WB

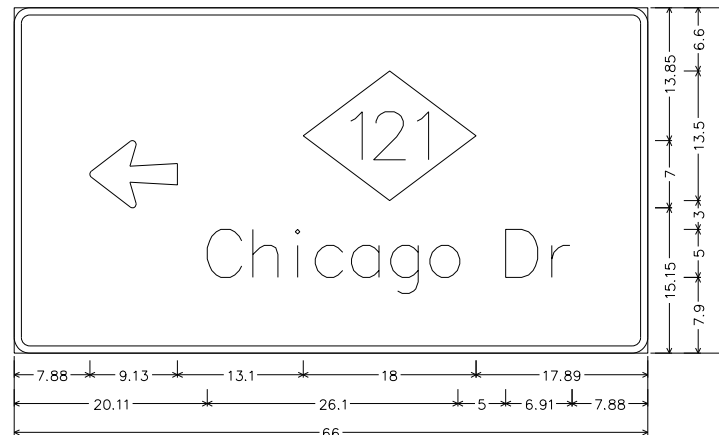
FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



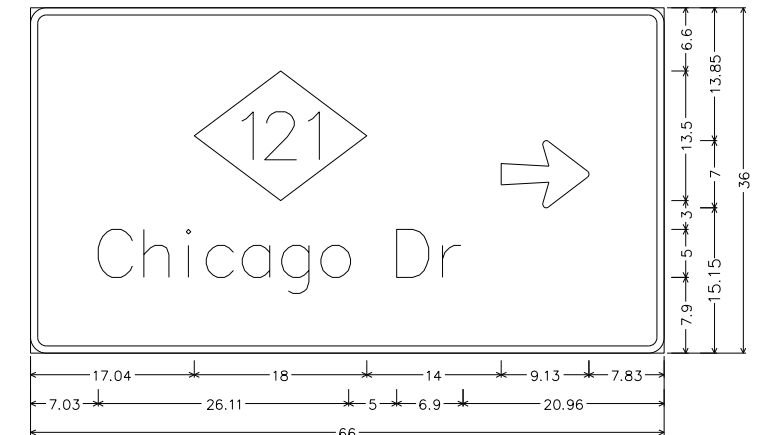
DATE: 04/10/18	CS: 70024	PAVEMENT MARKING AND SIGNING	DRAWING	SHEET
DESIGN UNIT: JASINSKI	JN: 202084A	I-196 AT ADAMS ST	ADAMS PVMK 001	SECT 1 136
TSC: MUSKEGON	FILE: 201572_Adams_Mrk001.dgn			



D1-2 (1.2) 40 mph or more; 1.63" Radius, 0.75" Border, White on Green; Arrow A-7 - 9.13" 90°; [South] D; [88th Ave] D;



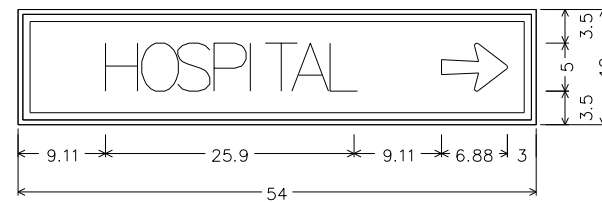
D1-1d (1.3); 1.63" Radius, 0.75" Border, White on Green; Arrow A-7 - 9.13" 180°; State Highway 121 M1-6a; [Chicago Dr] D;



D1-1d (1.3); 1.63" Radius, 0.75" Border, White on Green; State Highway 121 M1-6a; [Chicago Dr] D; Arrow A-7 - 9.13" 0°;



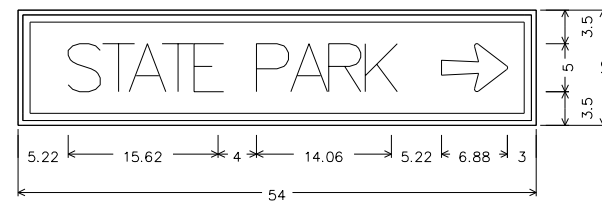
E11-15d; 0.75" Inner border White, 1.50" Radius, 0.50" Outer border, Blue on Blue; [CAMPING] White C; Arrow A-5 - 6.88" 0° White;



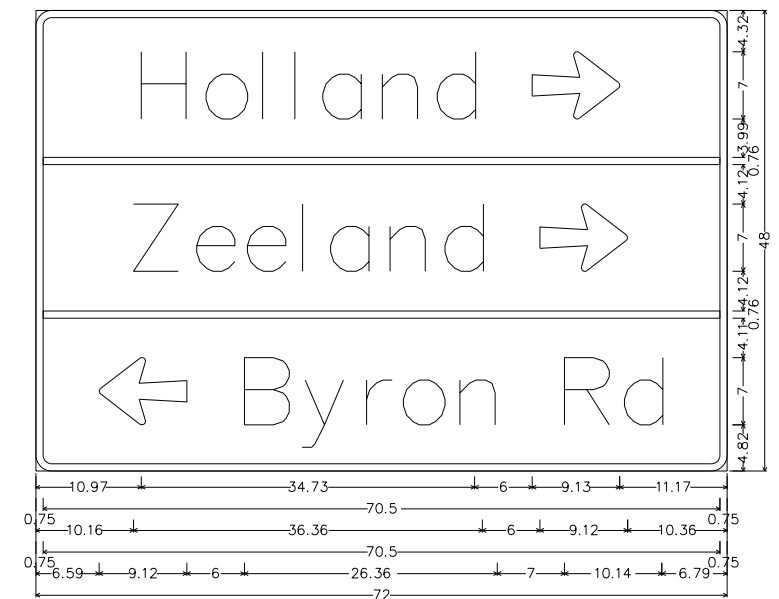
E11-15c; 0.75" Inner border White, 1.50" Radius, 0.50" Outer border, Blue on Blue; [HOSPITAL] White C; Arrow A-5 - 6.88" 0° White;



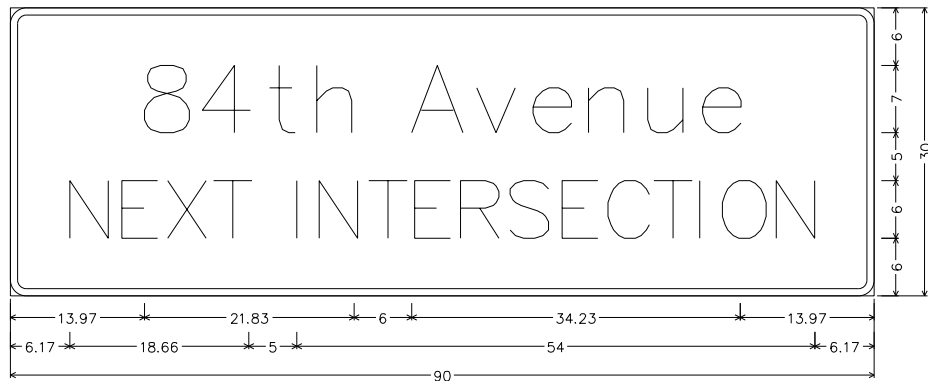
E11-15b; 0.75" Inner border White, 1.50" Radius, 0.50" Outer border, Blue on Blue; [LODGING] White C; Arrow A-5 - 6.88" 0° White;



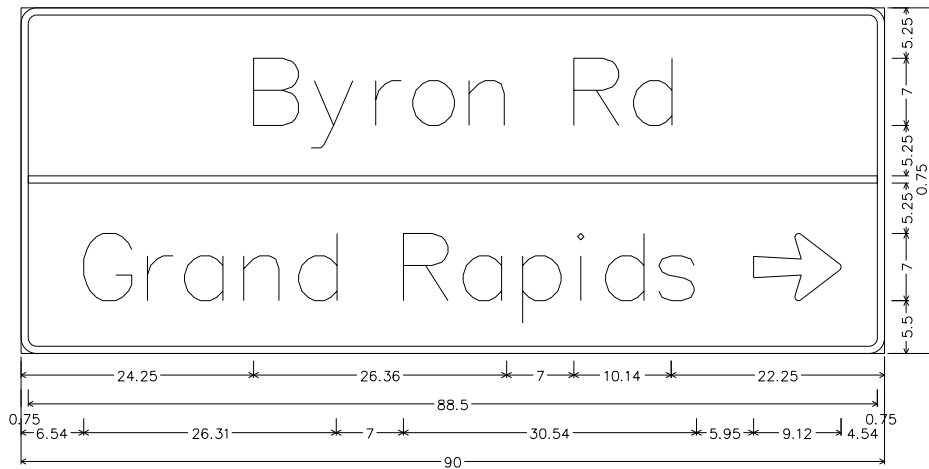
E11-15i; 0.75" Inner border White, 1.50" Radius, 0.50" Outer border, Brown on Brown; [STATE] White C; [PARK] White C; Arrow A-5 - 6.88" 0° White;



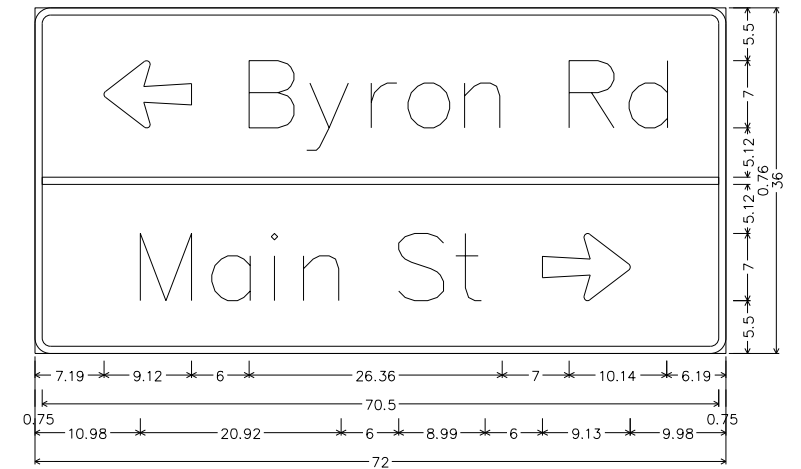
D1-3 (1.1) 40 mph or more; 1.63" Radius, 0.75" Border, White on Green; [Holland] D; Arrow A-7 - 9.13" 0°; [Zeeland] D; Arrow A-7 - 9.13" 0°; Arrow A-7 - 9.13" 180°; [Byron Rd] D;



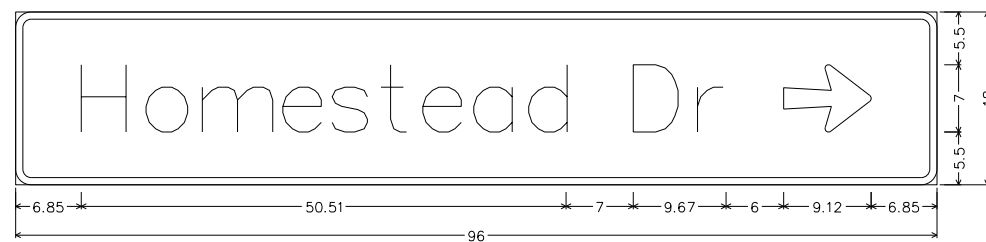
D3-2 (1.1) 40 mph or more; 1.63" Radius, 0.75" Border, White on Green; [84th] D; [Avenue] D; [NEXT] D; [INTERSECTION] D;



D1-2 (1.1) 40 mph or more; 1.63" Radius, 0.75" Border, White on Green; [Byron Rd] D; [Grand] D; [Rapids] D; Arrow A-7 - 9.13" 0;



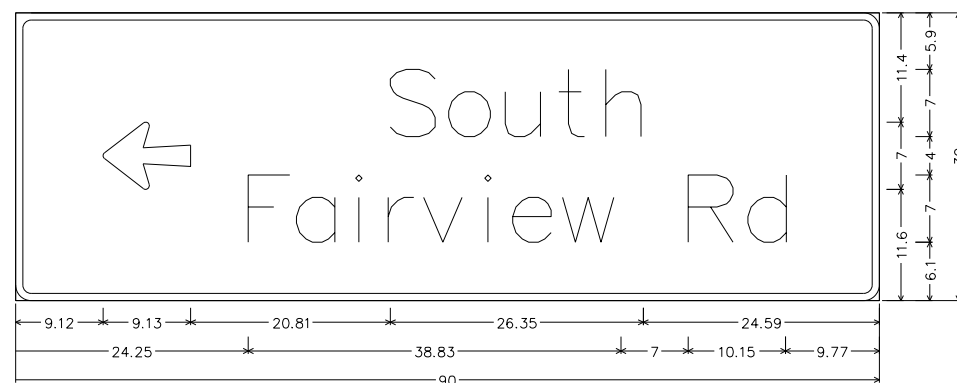
D1-2 (1.1) 40 mph or more; 1.63" Radius, 0.75" Border, White on Green; Arrow A-7 - 9.13" 180; [Byron Rd] D; [Main] D; [St] D; Arrow A-7 - 9.13" 0;



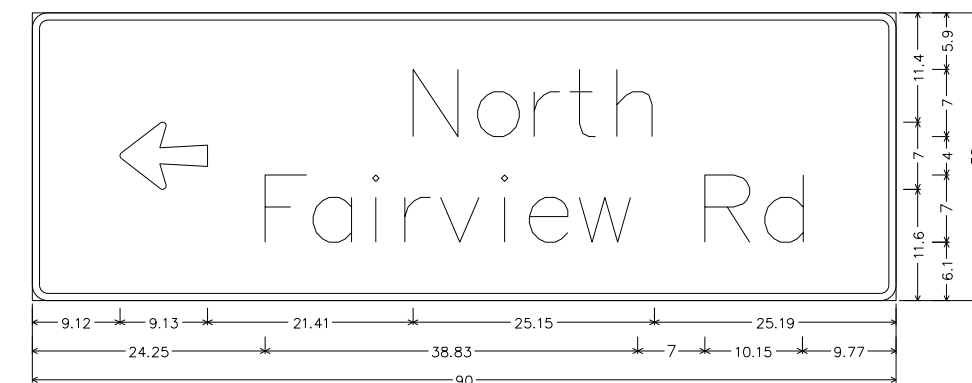
D1-2 (1.2) 40 mph or more; 1.63" Radius, 0.75" Border, White on Green; [Homestead Dr] D; Arrow A-7 - 9.13" 0;



D1-2 (1.2) 40 mph or more; 1.63" Radius, 0.75" Border, White on Green; Arrow A-7 - 9.13" 180; [Homestead Dr] D;



D1-2 (1.2) 40 mph or more; 1.63" Radius, 0.75" Border, White on Green; Arrow A-7 - 9.13" 180; [South] D; [Fairview Rd] D;



D1-2 (1.2) 40 mph or more; 1.63" Radius, 0.75" Border, White on Green; Arrow A-7 - 9.13" 180; [North] D; [Fairview Rd] D;

FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)					NO SCALE	DATE: 04/10/18	CS: 70023	PAVEMENT MARKINGS AND SIGNING	DRAWING	SHEET
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION			DESIGN UNIT: JASINSKI	JN: 201572A, 202084A		DETAIL	SECT 1
SIGN FABRICATION DETAILS											PVMK		138	
									FILE: 201572_SGN_CAD.dgn	TSC: MUSKEGON		002		

**CABLES TO BE USED
UNLESS SPECIFIED OTHERWISE**

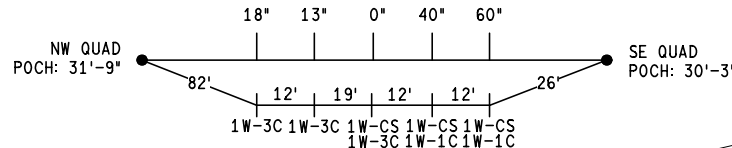
- 1W-3C SIGNAL CABLES ARE 5/C#16 PJ.
- 1W-1C W/CS TRAFFIC SIGNAL CABLES ARE 7/C#16 PJ.
- 1W-3C W/CS TRAFFIC SIGNAL CABLES ARE 7/C#16 PJ.
- CABLE TO VIDEO CAMERAS TO BE COMBINATION COAXIAL/POWER CABLE RG 59-3 CONDUCTOR 16AWG.

NOTE: R.O.W. ON THE NORTH SIDE OF I-196BL IS BEYOND THE LIMITS OF THE PLAN SHEET.

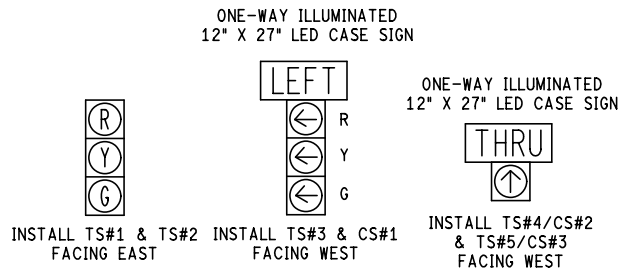
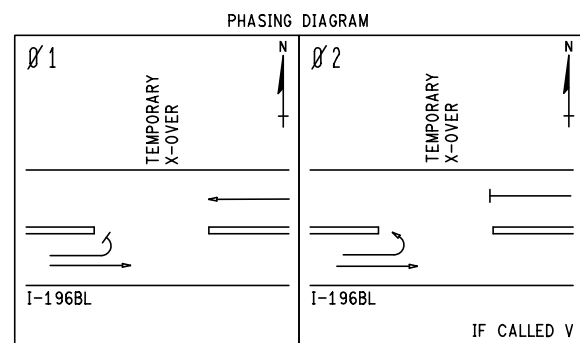
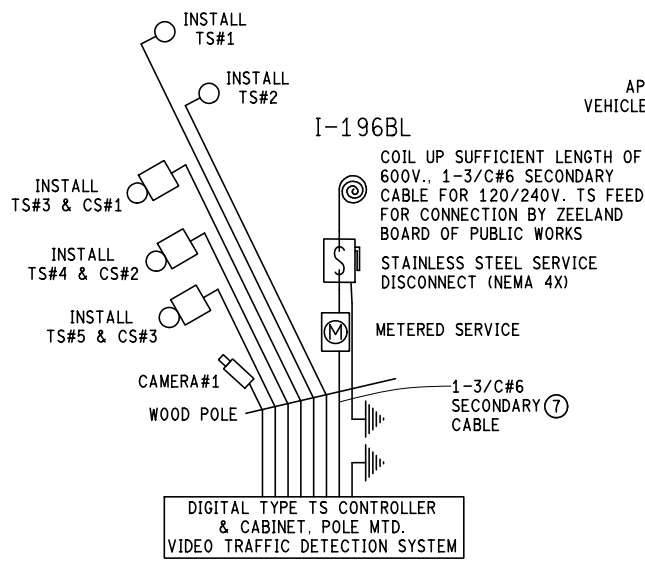
**DIAGONAL SPAN CALCULATIONS
(TEMPORARY SIGNAL INSTALLATION)**

NOT TO SCALE

SPAN LENGTH = 163'
TENSION = 1200



HAZARDOUS OR
FLAMMABLE MATERIAL



LIST OF MATERIAL - JN 202084A CAT 0001		
NO.	ITEM	QUANTITIES
1	Case Sign (LED), One Way, 12 inch by 27 inch	3 Ea
2	TS Head, Temp	5 Ea
3	Controller and Cabinet, Digital Type	1 Ea
4	Serv Disconnect	1 Ea
5	Span Wire	1 Ea
6	Wood Pole	2 Ea
7	Cable, Sec. 600V, 1, 3/C#6	250 Ft
8	Metered, Serv	1 Ea
9	Video Traf Detection System	1 Ea
10	Video Traf Detection Camera	1 Ea
11	Bracket, Truss, With 9 Foot Arm	1 Ea
12	Wood Pole, Fit Up, TS and Sec Cable Pole	1 Ea
13	Power Co. (Est. Cost to Contractor)	75 Dir

CONTACT: TRACEY DEKRAKER OF ZEELAND BOARD OF PUBLIC WORKS AT (616) 772-6212, FOR ELECTRICAL SERVICE CONNECTION.
ESTIMATED COST TO CONTRACTOR: \$75.
CONTRACTOR SHALL PICK UP THE PROVIDED METER SOCKET FOR NO CHARGE FROM ZEELAND BOARD OF PUBLIC WORKS.
350 E. WASHINGTON AVE
ZEELAND, MI 49464

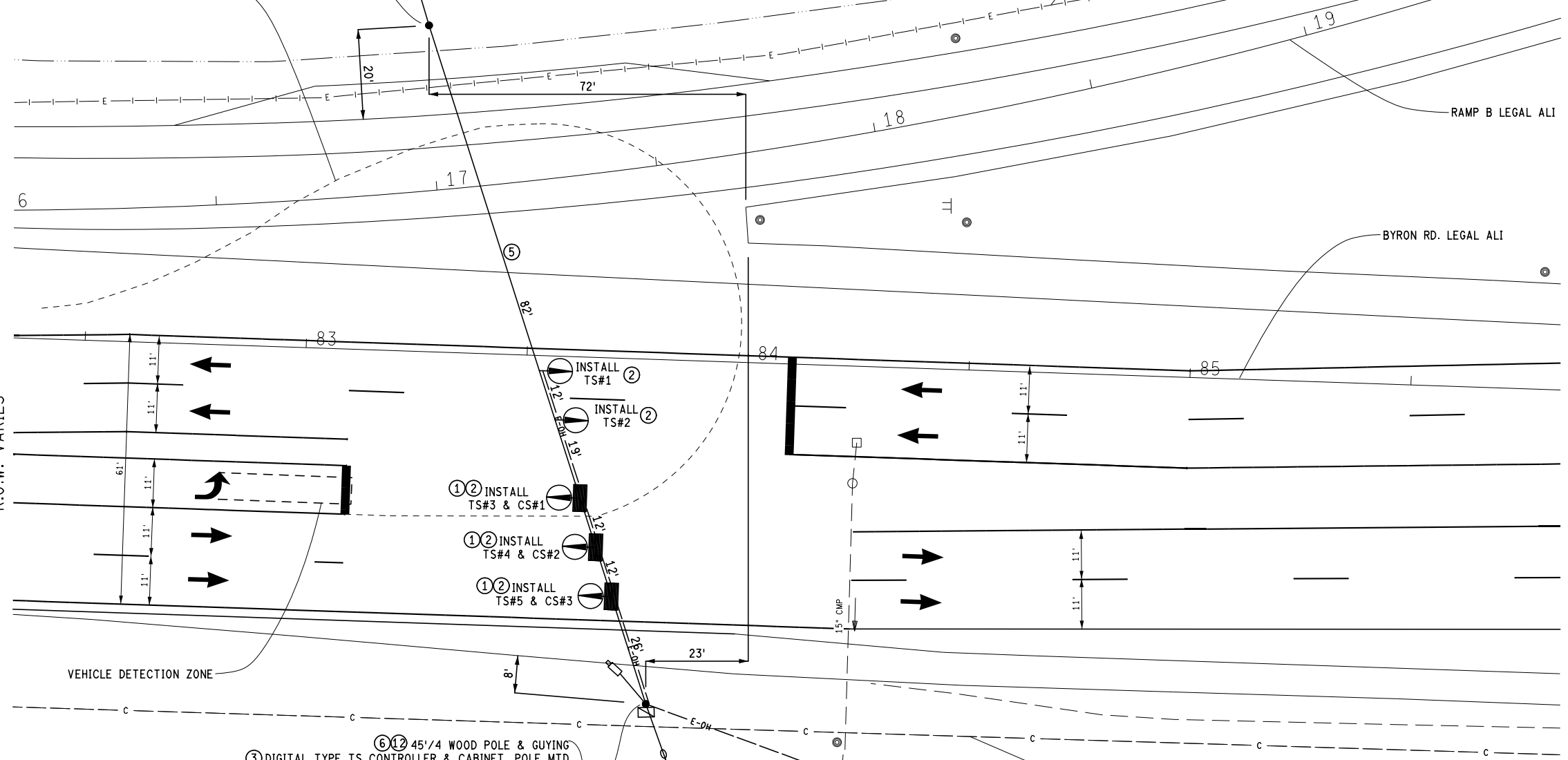
FOR ELECTRICAL SERVICE INSPECTION CONTACT THE MICHIGAN DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS AT (269) 312-3300
COST TO CONTRACTOR WILL BE INCIDENTAL.

NOTE: THE VIDEO DETECTION ZONE LOCATIONS TO BE DETERMINED BY THE STATEWIDE SIGNAL INSPECTOR, JIM KWAPISZEWSKI AT (517) 242-1486. PLEASE PROVIDE FIVE WORKING DAYS NOTICE.

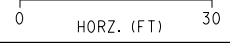
NOTE: SEE MAINTENANCE OF TRAFFIC PLANS FOR PLACEMENT AND QUANTITIES OF TEMPORARY PAVEMENT MARKINGS AND SIGNAGE.

NOTE: TEMPORARY TRAFFIC SIGNAL SHALL BE INSTALLED PRIOR TO STAGE 2A AND SHALL BE PUT INTO OPERATION AS DIRECTED BY THE ENGINEER.

APPROXIMATE TURNING PATH LIMITS OF VEHICLES THROUGH TEMPORARY CROSS-OVER



FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



INT CS: 70023 INT SPOT: 902
DESIGNED BY: WADETRIM
FILE: 202084_7002301902_CON001.dgn

DATE: 04/09/18
DESIGN UNIT: SIGNALS
TSC: MUSKEGON

CS: 70023
JN: 202084A

TRAFFIC SIGNAL CONSTRUCTION SHEET - STAGE 2
TEMP SIGNAL - I-196BL @ X-OVER E. OF 84TH AVE
ZEELAND TWP, OTTAWA COUNTY

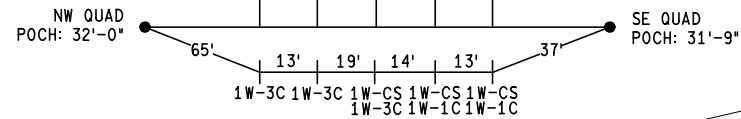
SIGNALS	
OPENINGS:	14
CYCLIC WATTS:	122
STEADY WATTS:	45
PLAN:	70023-01-902

SIG LOC	SECT
001	139

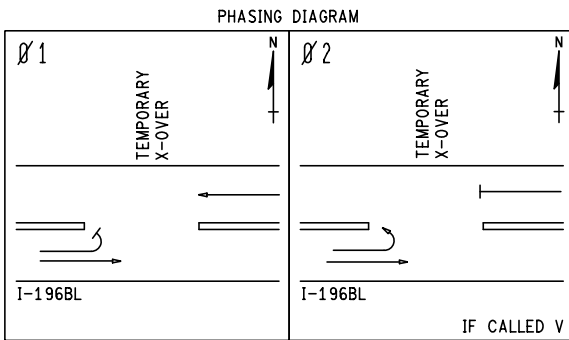
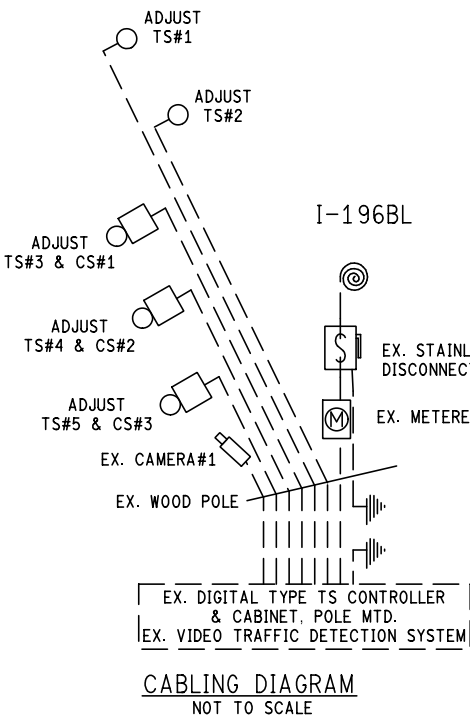
DIAGONAL SPAN CALCULATIONS
(TEMPORARY SIGNAL INSTALLATION)

NOT TO SCALE

SPAN LENGTH = 163'
TENSION = 1200

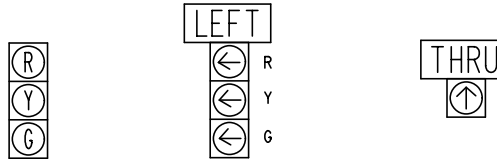


NOTE: R.O.W. ON THE NORTH SIDE OF I-196BL IS BEYOND THE LIMITS OF THE PLAN SHEET.



ONE-WAY ILLUMINATED 12" X 27" LED CASE SIGN

ONE-WAY ILLUMINATED 12" X 27" LED CASE SIGN



ADJUST TS#1 & TS#2 FACING EAST

ADJUST TS#3 & CS#1 FACING WEST

ADJUST TS#4/CS#2 & TS#5/CS#3 FACING WEST

NOTE: TRAFFIC SIGNAL HEADS SHALL BE ADJUSTED FROM THE LAYOUT OF CONSTRUCTION STAGE 2. THE ADJUSTMENTS TO THE TRAFFIC SIGNAL HEADS AND THE SPAN WIRE CONTACT HEIGHTS SHALL BE INCLUDED IN THE PAY ITEM "TS HEAD, ADJ" AND WILL NOT BE PAID FOR SEPARATELY. TIME OF ADJUSTMENTS SHALL BE AS DIRECTED BY THE ENGINEER.

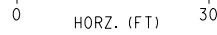
NOTE: SEE MAINTENANCE OF TRAFFIC PLANS FOR PLACEMENT AND QUANTITIES OF TEMPORARY PAVEMENT MARKINGS AND SIGNAGE.

EX. 45/4 WOOD POLE & GUYING
EX. DIGITAL TYPE TS CONTROLLER & CABINET, POLE MTD
EX. VIDEO TRAFFIC DETECTION SYSTEM
EX. STAINLESS STEEL SERVICE DISCONNECT (NEMA 4X)
EX. METERED SERVICE
EX. VIDEO DETECTION CAMERA (CAMERA#1)
EX. BRACKET, TRUSS, WITH 9 FOOT ARM
POCH= 31'9"

LIST OF MATERIAL - JN 202084A CAT 0001

NO.	ITEM	QUANTITIES
①	TS Head, Adj	5 Ea

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



INT CS: 70023 INT SPOT: 902
DESIGNED BY: WADETRIM
FILE: 202084_7002301902_CON001.dgn

DATE: 04/09/18
DESIGN UNIT: SIGNALS
TSC: MUSKOGON

CS: 70023
JN: 202084A

TRAFFIC SIGNAL CONSTRUCTION SHEET - STAGE 3
TEMP SIGNAL - I-196BL @ X-OVER E. OF 84TH AVE
ZEELAND TWP, OTTAWA COUNTY

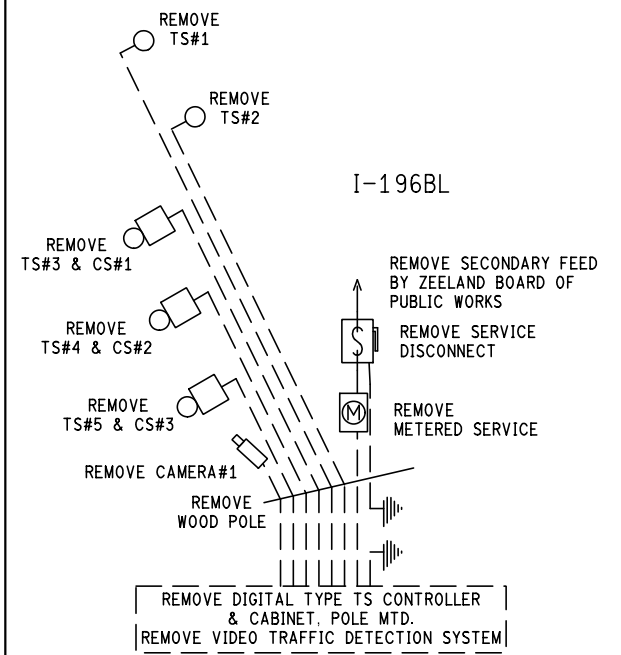
SIGNALS	
OPENINGS:	14
CYCLIC WATTS:	122
STEADY WATTS:	45
PLAN:	70023-01-902

DRAWING	SHEET
SIG LOC 001	SECT 1 140

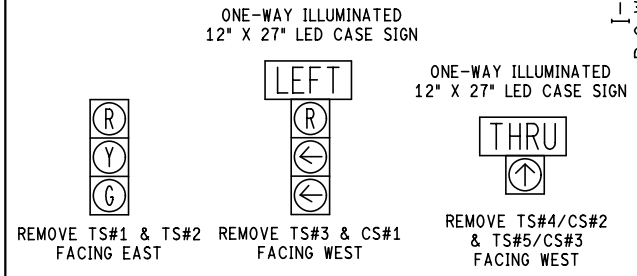




NOTE: R.O.W. ON THE NORTH SIDE OF I-196BL IS BEYOND THE LIMITS OF THE PLAN SHEET.



CABLING REMOVAL DIAGRAM
NOT TO SCALE



NOTE: REMOVAL OF TEMP TS HEADS IS INCLUDED IN THE PAY ITEM "TS HEAD, TEMP" AND WILL NOT BE PAID FOR SEPERATELY.

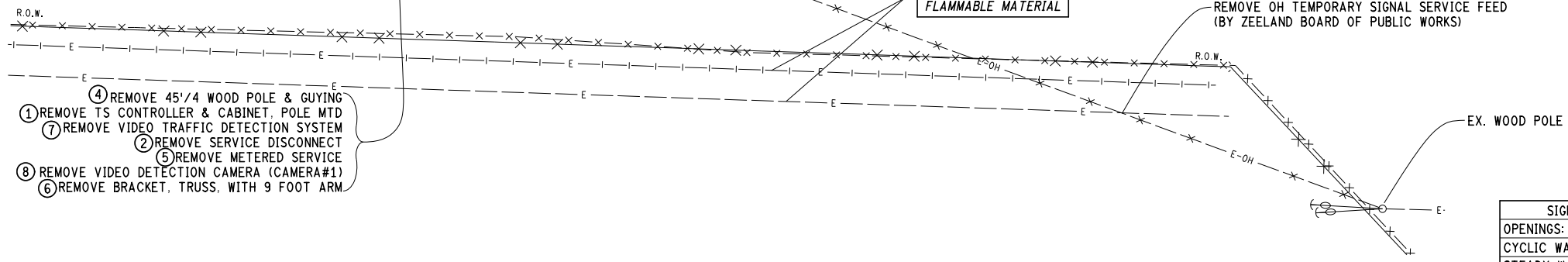
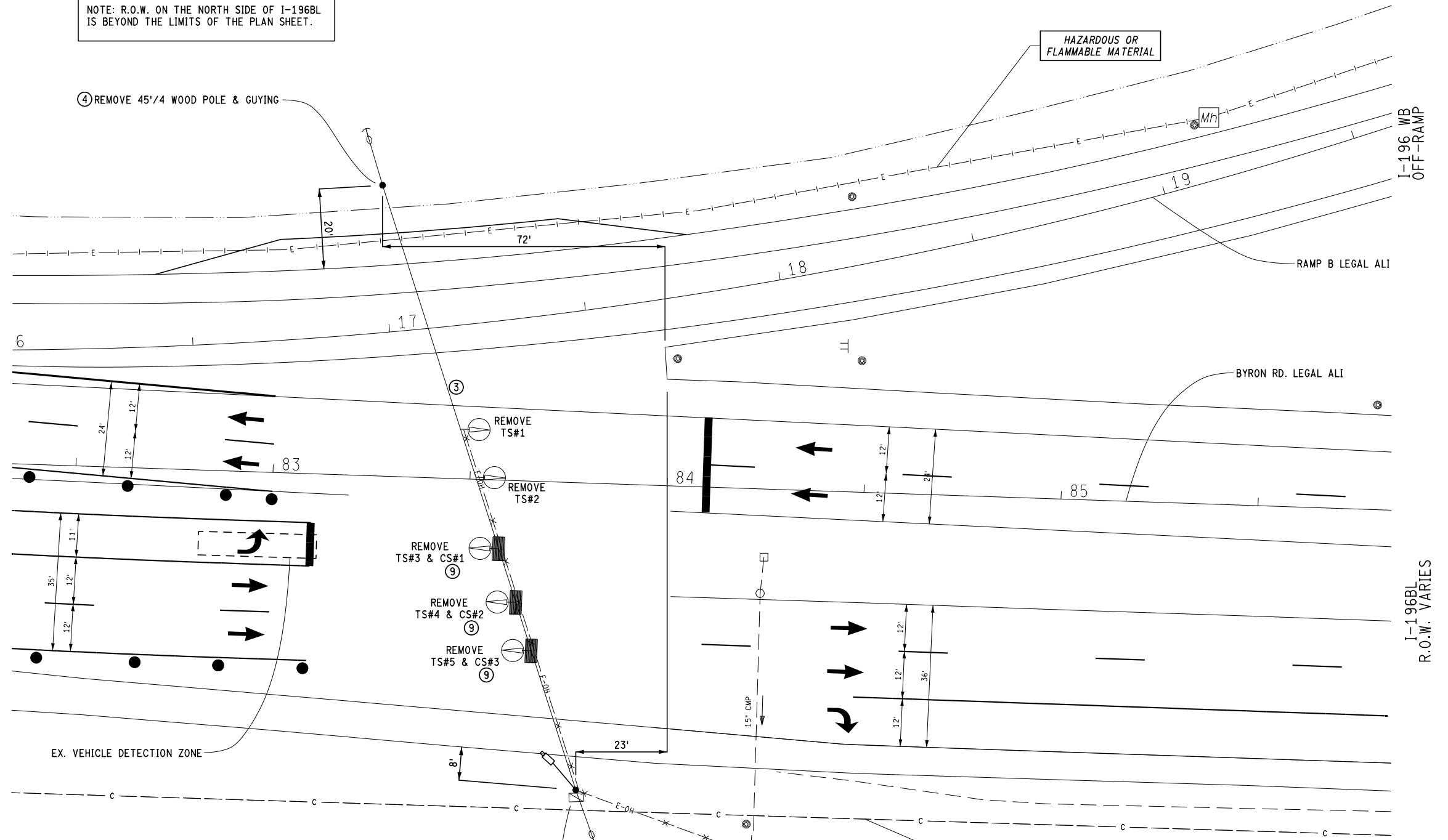
CONTACT: TRACEY DEKRAKER OF ZEELAND BOARD OF PUBLIC WORKS AT (616) 772-6212. FOR ELECTRICAL SERVICE DISCONNECTION. SEE CONSTRUCTION PLAN FOR ESTIMATED COST TO CONTRACTOR.

NOTE: SIGNAL EQUIPMENT SHALL BE SALVAGED FOR MDOT. CONTRACTOR SHALL CONTACT THE MDOT STATEWIDE SIGNAL SHOP AT (517) 322-360. GIVE FIVE WORKING DAYS NOTICE.

NOTE: REMOVAL OF TEMPORARY TRAFFIC SIGNAL SHALL BE COORDINATED WITH ROADWAY CONSTRUCTION. TIME OF REMOVAL SHALL BE AS DIRECTED BY THE ENGINEER.

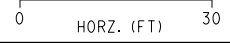
NOTE: SEE MAINTAINANCE OF TRAFFIC PLANS FOR REMOVAL AND QUANTITIES OF TEMPORARY PAVEMENT MARKINGS AND SIGNAGE.

LIST OF MATERIAL - JN 202084A CAT 0001		
NO.	ITEM	QUANTITIES
1	Controller and Cabinet, Rem	1 Ea
2	Serv Disconnect, Rem	1 Ea
3	Span Wire, Rem	1 Ea
4	Wood Pole, Rem	2 Ea
5	Metered Serv, Rem	1 Ea
6	Bracket, Truss, Rem	1 Ea
7	Video Traf Detection System, Rem	1 Ea
8	Video Traff Detection Camera, Rem	1 Ea
9	Case Sign, Rem	3 Ea



- ④ REMOVE 45'/4 WOOD POLE & GUYING
- ① REMOVE TS CONTROLLER & CABINET, POLE MTD
- ⑦ REMOVE VIDEO TRAFFIC DETECTION SYSTEM
- ② REMOVE SERVICE DISCONNECT
- ⑤ REMOVE METERED SERVICE
- ⑧ REMOVE VIDEO DETECTION CAMERA (CAMERA#1)
- ⑥ REMOVE BRACKET, TRUSS, WITH 9 FOOT ARM

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

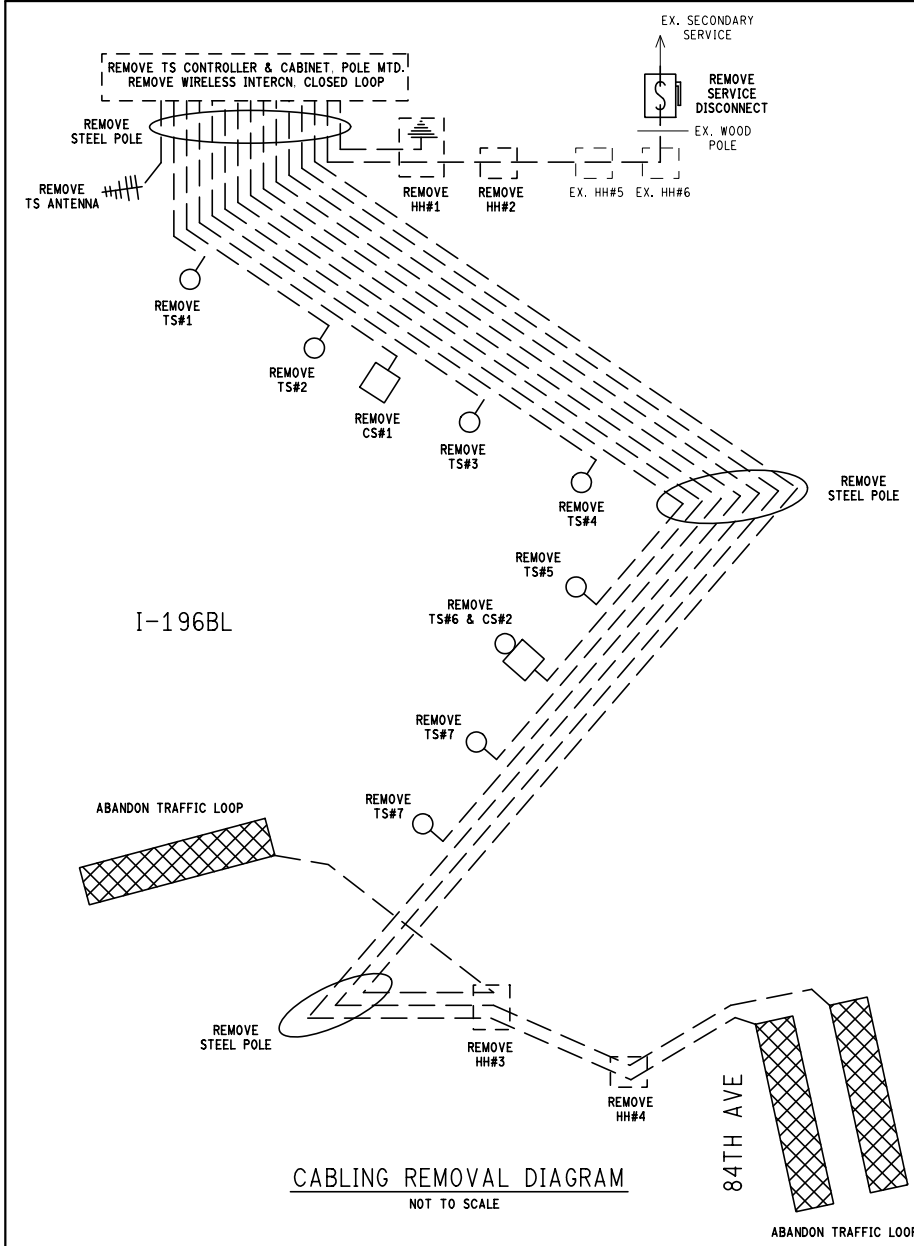
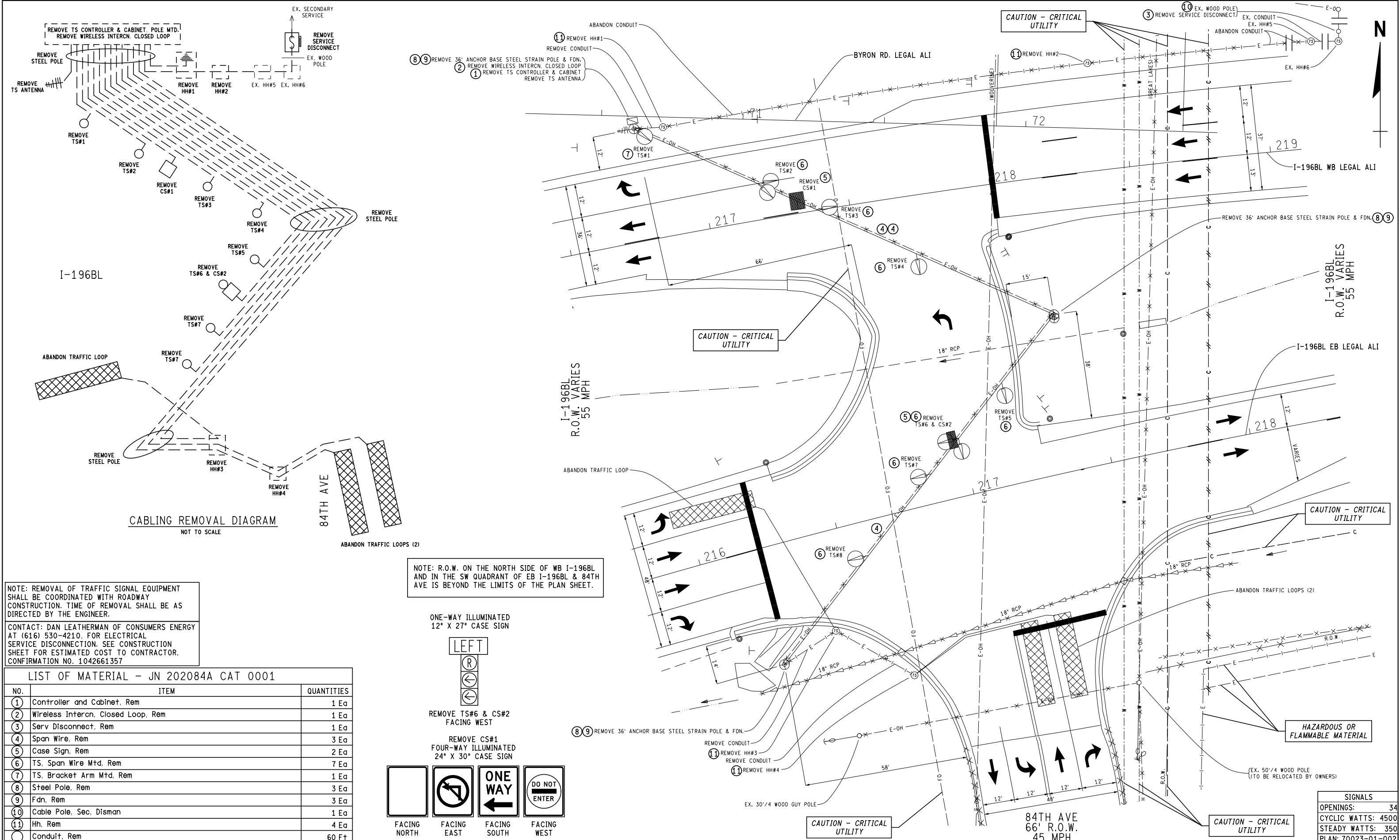


INT CS: 70023 INT SPOT: 902 DATE: 04/09/18 CS: 70023
 DESIGNED BY: WADETRIM DESIGN UNIT: SIGNALS JN: 202084A
 FILE: 202084_7002301902_REM001.dgn TSC: MUSKEGON

TRAFFIC SIGNAL REMOVAL SHEET
 TEMP SIGNAL - I-196BL @ X-OVER E. OF 84TH AVE
 ZEELAND TWP, OTTAWA COUNTY

SIGNALS	
OPENINGS:	14
CYCLIC WATTS:	122
STEADY WATTS:	45
PLAN:	70023-01-902

DRAWING	SHEET
SIG LOC 001	SECT 1 141

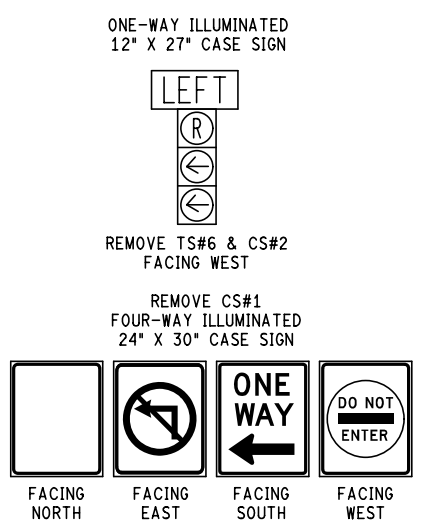


NOTE: REMOVAL OF TRAFFIC SIGNAL EQUIPMENT SHALL BE COORDINATED WITH ROADWAY CONSTRUCTION. TIME OF REMOVAL SHALL BE AS DIRECTED BY THE ENGINEER.

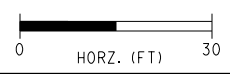
CONTACT: DAN LEATHERMAN OF CONSUMERS ENERGY AT (616) 530-4210. FOR ELECTRICAL SERVICE DISCONNECTION. SEE CONSTRUCTION SHEET FOR ESTIMATED COST TO CONTRACTOR. CONFIRMATION NO. 1042661357

LIST OF MATERIAL - JN 202084A CAT 0001		
NO.	ITEM	QUANTITIES
1	Controller and Cabinet, Rem	1 Ea
2	Wireless Intercon, Closed Loop, Rem	1 Ea
3	Serv Disconnect, Rem	1 Ea
4	Span Wire, Rem	3 Ea
5	Case Sign, Rem	2 Ea
6	TS, Span Wire Mtd, Rem	7 Ea
7	TS, Bracket Arm Mtd, Rem	1 Ea
8	Steel Pole, Rem	3 Ea
9	Fdn, Rem	3 Ea
10	Cable Pole, Sec. Disman	1 Ea
11	Hh, Rem	4 Ea
12	Conduit, Rem	60 Ft

NOTE: R.O.W. ON THE NORTH SIDE OF WB I-196BL AND IN THE SW QUADRANT OF EB I-196BL & 84TH AVE IS BEYOND THE LIMITS OF THE PLAN SHEET.



FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



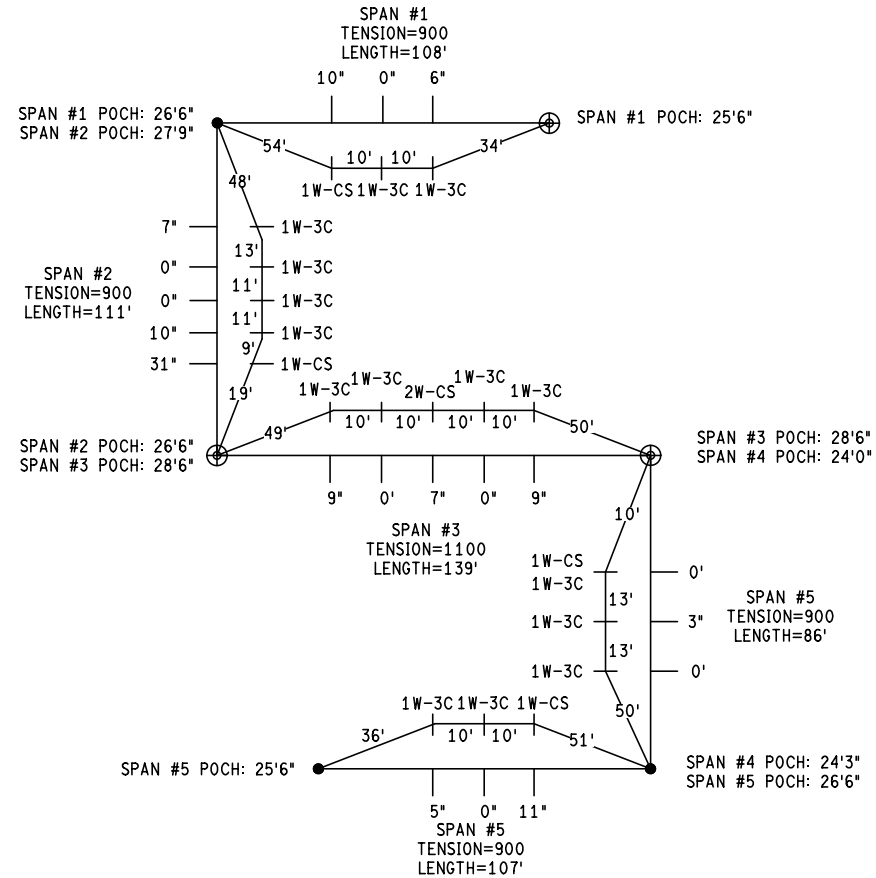
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 DESIGNED BY: WADETRIM DESIGN UNIT: SIGNALS JN: 202084A
 FILE: 202084_7002301002_REM001.dgn TSC: MUSKEGON

TRAFFIC SIGNAL REMOVAL SHEET
 I-196BL @ 84TH AVE
 ZEELAND TWP, OTTAWA COUNTY

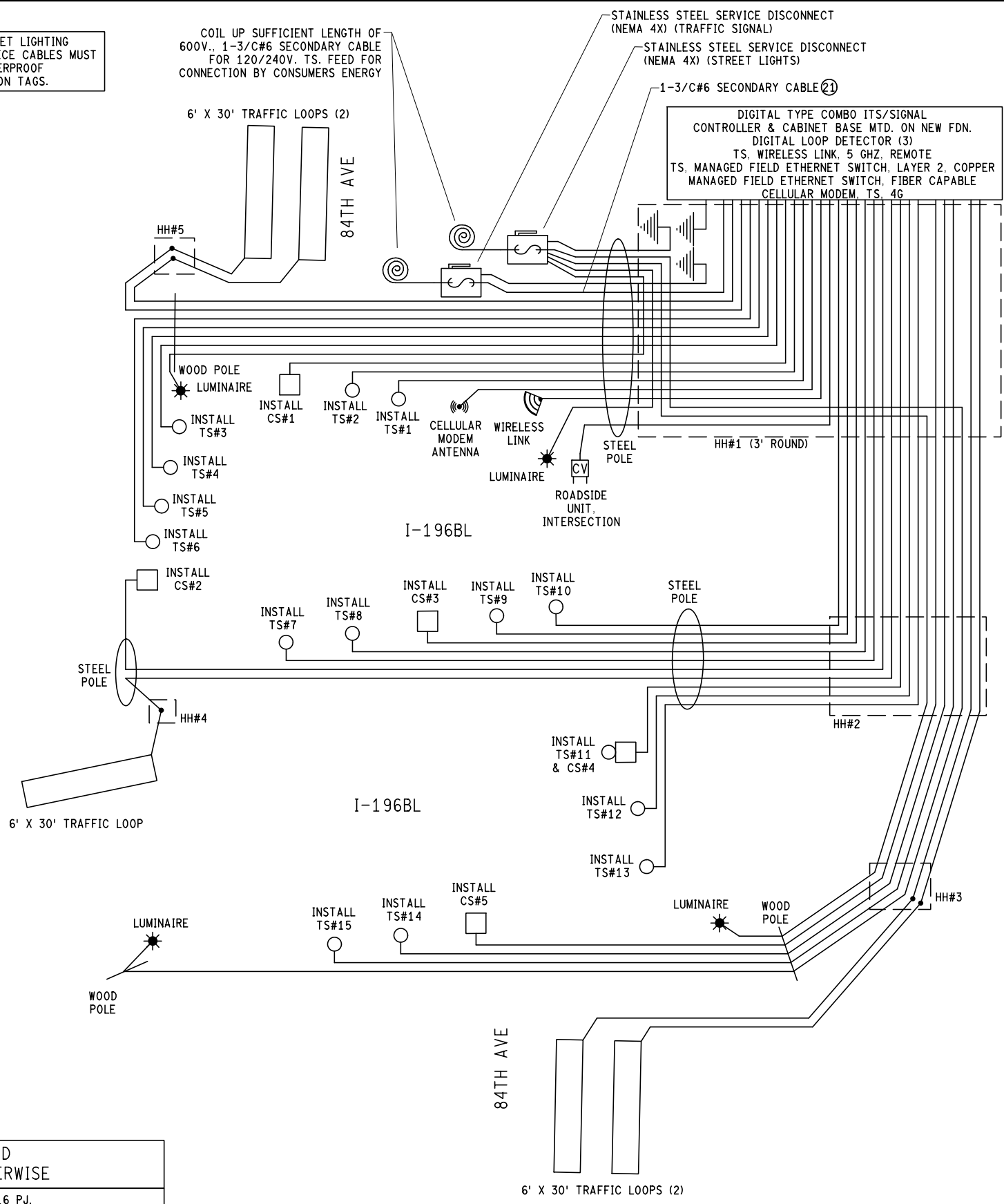
SIGNALS	
OPENINGS:	34
CYCLIC WATTS:	4500
STEADY WATTS:	350
PLAN:	70023-01-002

DRAWING	SHEET
SIG LOC 002	SECT 1 142

SPAN CALCULATIONS
NOT TO SCALE



NOTE: TRAFFIC SIGNAL AND STREET LIGHTING SERVICE DISCONNECTS AND SERVICE CABLES MUST BE CLEARLY LABELED WITH WEATHERPROOF ENGRAVED PLASTIC IDENTIFICATION TAGS.

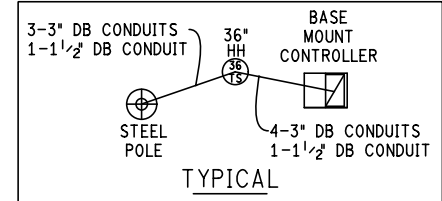


LIST OF MATERIAL - JN 202084A CAT 0001

NO.	ITEM	QUANTITIES
①	Controller Fdn, Base Mount	1 Ea
②	Controller and Cabinet, Digital Type	1 Ea
③	Serv Disconnect	2 Ea
④	TS, Wireless Link, 5 Ghz, Remote	1 Ea
⑤	TS, Managed Field Ethernet Switch, Layer 2, Copper	1 Ea
⑥	Cellular Modem, TS, 4G	1 Ea
⑦	Digital Loop Detector	3 Ea
⑧	Roadside Unit, Intersection	1 Ea
⑨	Managed Field Ethernet Switch, Fiber Capable	1 Ea
⑩	TS, One Way Span Wire Mtd (LED)	15 Ea
⑪	Case Sign (LED), One Way, 12 inch by 27 inch	1 Ea
⑫	Case Sign (LED), One Way, 24 inch by 30 inch	1 Ea
⑬	Case Sign (LED), Two Way, 24 inch by 30 inch	3 Ea
⑭	Wood Pole	3 Ea
⑮	Wood Pole, Fit Up, TS Cable Pole	2 Ea
⑯	Strain Pole, Steel, 6 bolt, 36 foot	3 Ea
⑰	Strain Pole Fdn, 6 bolt	46 Ft
⑱	Casing	35 Ft
⑲	Hh, Round, 3 foot Dia	1 Ea
⑳	Hh, Round	4 Ea
㉑	Cable, Sec, 600V, 1, 3/C#6	150 Ft
㉒	Traf Loop	5 Ea
㉓	Span Wire	5 Ea
○	Conduit, DB, 1, 1 1/2 inch	75 Ft
○	Conduit, DB, 1, 3 inch	35 Ft
○	Conduit, DB, 3, 3 inch	30 Ft
○	Conduit, DB, 4, 3 inch	10 Ft
○	Conduit, Directional Bore, 2, 3 inch	200 Ft

LIST OF MATERIAL - JN 202084A CAT 0003

NO.	ITEM	QUANTITIES
㉔	Light Std Arm, 17 foot	4 Ea
㉕	Luminaire	4 Ea



- CABLES TO BE USED UNLESS SPECIFIED OTHERWISE**
- 1W-3C TRAFFIC SIGNAL CABLES ARE 5/C#16 PJ.
 - 1W-3C W/CS TRAFFIC SIGNAL CABLES ARE 7/C#16 PJ.
 - TRAFFIC LOOPS ARE 1/C#14 THHN 3 TURNS.
 - LOOP LEAD-INS ARE 2/C#16 SHIELDED PJ.
 - TS ANTENNA CABLES ARE 600V., CAT 5e OR APPROVED EQUAL.
 - 24" X 30" L.E.D. CASE SIGNS ARE 4/C#16 PJ.
 - ROADSIDE UNIT CABLES ARE 600V. CAT 5e OR APPROVED EQUAL.
 - CELLULAR MODEM ANTENNA CABLES ARE LMR 400 OR APPROVED EQUAL.

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



NO SCALE

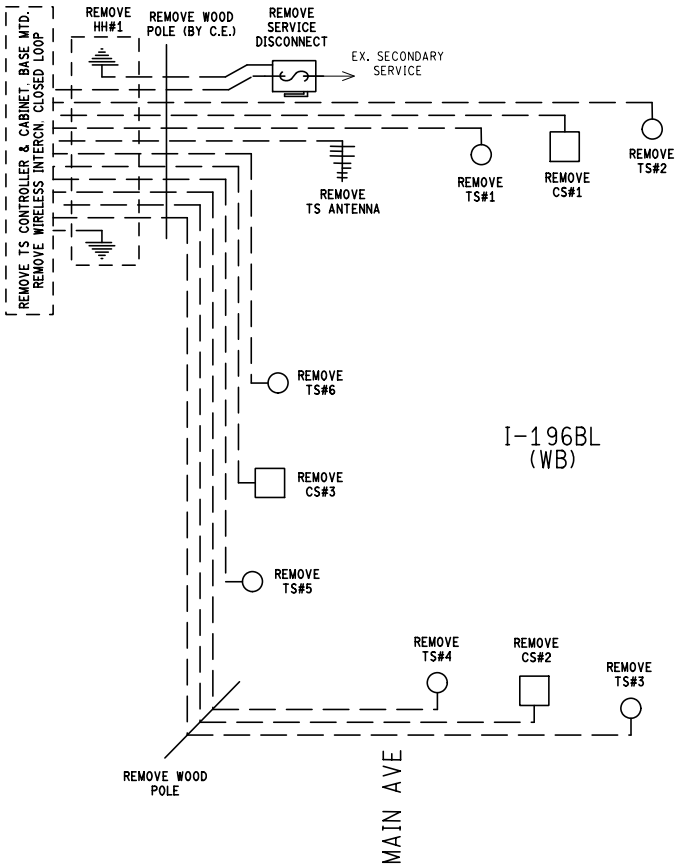
INT CS: 70023 INT SPOT: 002 DATE: 04/09/18
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 FILE: 202084_7002301002_CON001.dgn TSC: MUSKEGON

CS: 70023
 JN: 202084A

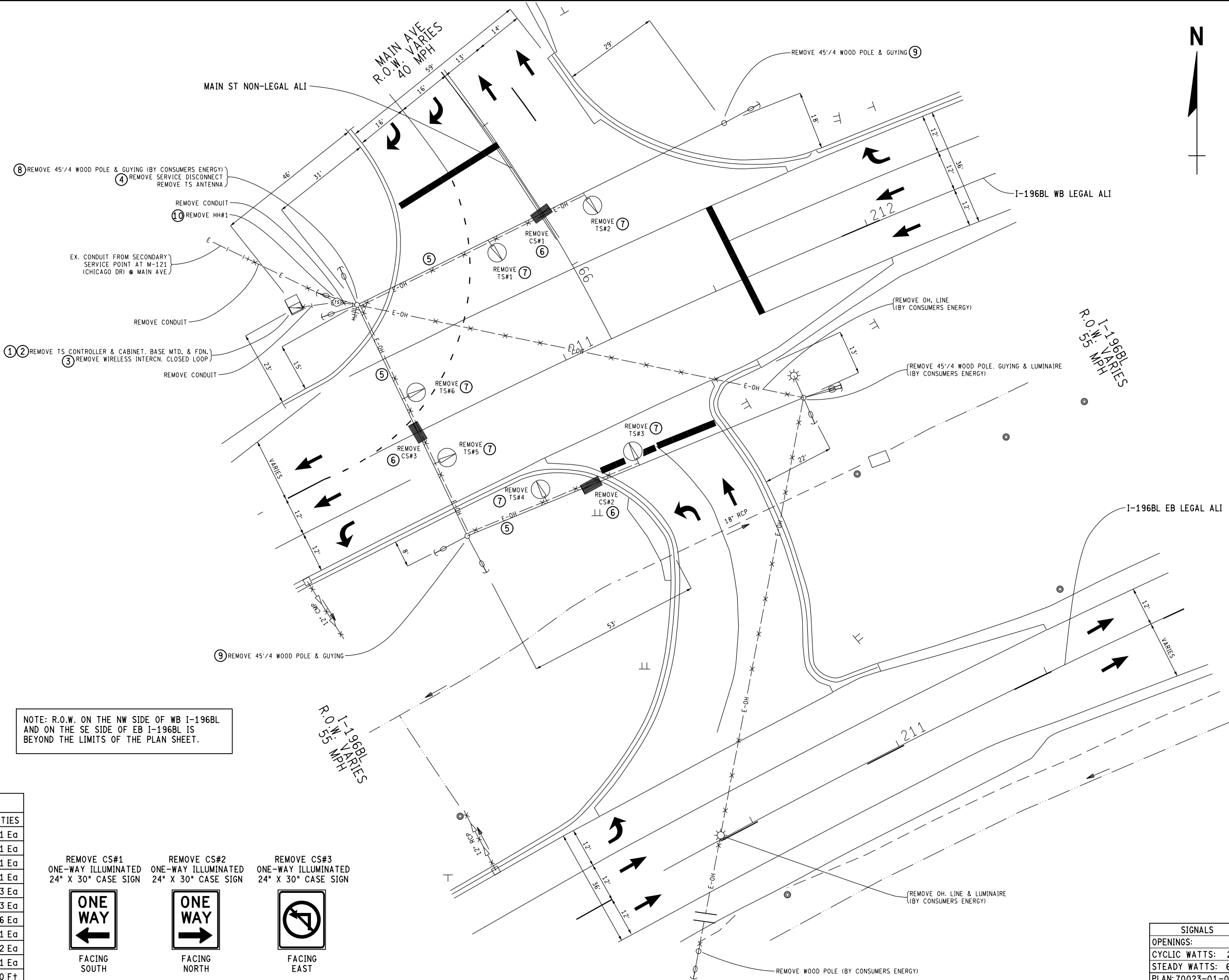
TRAFFIC SIGNAL CONSTRUCTION SHEET
 I-196BL @ 84TH AVE
 ZEELAND TWP, OTTAWA COUNTY

PLAN: 70023-01-002

DRAWING SHEET
 SIG LOC 002 SECT 1
 144



CABLING REMOVAL DIAGRAM
NOT TO SCALE

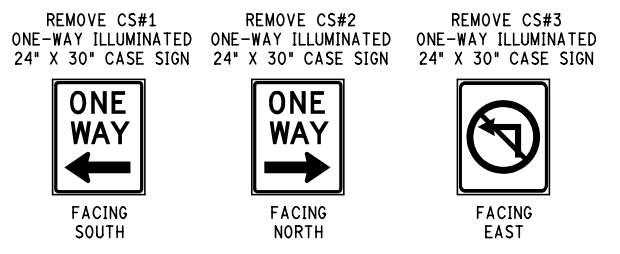


NOTE: REMOVAL OF TRAFFIC SIGNAL EQUIPMENT SHALL BE COORDINATED WITH ROADWAY CONSTRUCTION. TIME OF REMOVAL SHALL BE AS DIRECTED BY THE ENGINEER.

CONTACT: DAN LEATHERMAN OF CONSUMERS ENERGY AT (616) 530-4210, FOR ELECTRICAL SERVICE DISCONNECTION. SEE CONSTRUCTION SHEET FOR ESTIMATED COST TO CONTRACTOR. CONFIRMATION NO. 1042661356

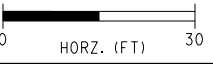
NOTE: R.O.W. ON THE NW SIDE OF WB I-196BL AND ON THE SE SIDE OF EB I-196BL IS BEYOND THE LIMITS OF THE PLAN SHEET.

LIST OF MATERIAL - JN 202084A CAT 0001		
NO.	ITEM	QUANTITIES
①	Controller and Cabinet, Rem	1 Ea
②	Controller Fdn, Rem	1 Ea
③	Wireless Intercon, Closed Loop, Rem	1 Ea
④	Serv Disconnect, Rem	1 Ea
⑤	Span Wire, Rem	3 Ea
⑥	Case Sign, Rem	3 Ea
⑦	TS, Span Wire Mtd, Rem	6 Ea
⑧	Cable Pole, Sec, Disman	1 Ea
⑨	Wood Pole, Rem	2 Ea
⑩	Hh, Rem	1 Ea
○	Conduit, Rem	50 Ft



SIGNALS	
OPENINGS:	21
CYCLIC WATTS:	258
STEADY WATTS:	600
PLAN:	70023-01-010

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

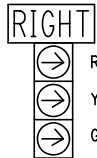


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 DESIGNED BY: WADETRIM DESIGN UNIT: SIGNALS JN: 202084A
 FILE: 202084_7002301010_REM001.dgn TSC: MUSKOGON

TRAFFIC SIGNAL REMOVAL SHEET
 I-196BL WB @ MAIN AVE/X-OVER
 ZEELAND TWP, OTTAWA COUNTY

DRAWING	SHEET
SIG LOC 003	SECT 1 145

ONE-WAY ILLUMINATED
12" X 27" LED CASE SIGN



INSTALL TS#1/CS#2 &
TS#2/CS#3 FACING WEST

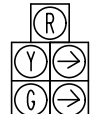
ONE-WAY ILLUMINATED
24" X 30" DISAPPEARING
LEGEND LED CASE SIGN



INSTALL CS#1
FACING EAST

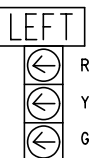
NOTE: R.O.W. ON THE NW SIDE OF WB I-196BL
AND ON THE SE SIDE OF EB I-196BL IS
BEYOND THE LIMITS OF THE PLAN SHEET.

INSTALL TS#3 & TS#4 FACING EAST
INSTALL TS#6 FACING NORTH
INSTALL TS#9 & TS#10 FACING WEST



INSTALL TS#5 FACING NORTH

ONE-WAY ILLUMINATED
12" X 27" LED CASE SIGN



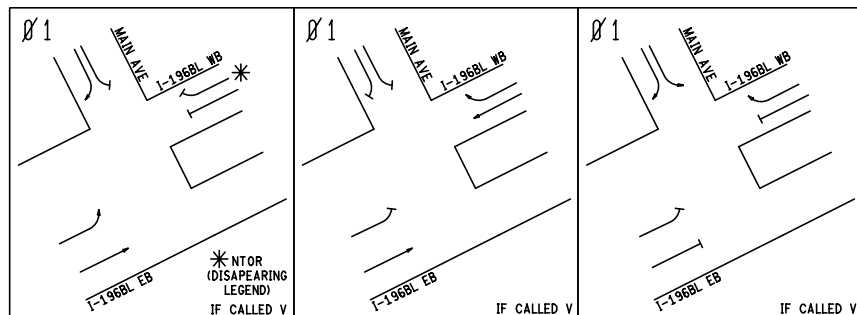
INSTALL TS#7/CS#4 &
TS#8/CS#5 FACING WEST

- ③④ UNDERGROUND UNMETERED SERVICE PEDESTAL ON NEW FDN. STAINLESS STEEL SERVICE DISCONNECT (NEMA 4X)(STREET LIGHT)
- ③④ UNDERGROUND UNMETERED SERVICE PEDESTAL ON NEW FDN. STAINLESS STEEL SERVICE DISCONNECT (NEMA 4X)(TRAFFIC SIGNAL)

- ②③ HH#2 (SPlice INTO EX. CONDUIT)
- CONDUIT, DB 1-3"
- CONDUIT, DB 1-1 1/2"
- ② HH#1 (3' ROUND)
- CONDUIT, DB. 4-3", CONDUIT, DB 1-1 1/2"
- ①② DIGITAL TYPE COMBO ITS/SIGNAL CONTROLLER & CABINET BASE MTD. ON NEW FDN.
- ⑧ HEMISPHERICAL VIDEO DETECTION SYSTEM
- ⑤ TS, WIRELESS LINK, 5 GHZ, REMOTE
- ⑥ TS, MANAGED FIELD ETHERNET SWITCH, LAYER 2, COPPER
- ⑦② MANAGED FIELD ETHERNET SWITCH, FIBER CAPABLE
- ⑦ CELLULAR MODEM, TS, 4G

- CONDUIT, DB. 3-3", CONDUIT, DB 1-1 1/2"
- ①⑨②① 40' ANCHOR BASE STEEL STRAIN POLE ON NEW 42" DIA X 14.5' DEEP FDN., 11.0" CASING SEE B-65 POCH: 30'9" (SPAN #1)
- ②⑧ LIGHT STD ARM, 17 FOOT
- ②⑥ LUMINAIRE
- ⑩ BRACKET TRUSS WITH 18' ARM
- ⑨ HEMISPHERICAL VIDEO DETECTION CAMERA
- CELLULAR MODEM ANTENNA (15' MIN MTD HEIGHT)
- WIRELESS LINK, 5GHZ REMOTE FACING SOUTH-WEST
- ⑪ ROADSIDE UNIT, INTERSECTION

PHASING DIAGRAM



NOTE: INSTALLATION OF NEW TRAFFIC SIGNAL EQUIPMENT SHALL BE COORDINATED WITH ROADWAY CONSTRUCTION. TIME OF INSTALLATION SHALL BE AS DIRECTED BY THE ENGINEER. SIGNALS SHALL BE PUT INTO OPERATION FOR STAGE 4.

NOTE: THE VIDEO DETECTION ZONE LOCATIONS TO BE DETERMINED BY THE STATEWIDE SIGNAL INSPECTOR, JIM KWAPISZEWSKI AT (517) 242-1486. PLEASE PROVIDE FIVE WORKING DAYS NOTICE.

FOR ELECTRICAL SERVICE INSPECTION CONTACT THE MICHIGAN DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS AT (269) 312-3300 COST TO CONTRACTOR WILL BE INCIDENTAL.

NOTE: DIGITAL TYPE CONTROLLER SHALL BE A MODEL 60 WITH SOFTWARE VERSION 3.58B OR NEWER WITH A COMBO ITS/SIGNAL CABINET, AS SPECIFIED BY MDOT.

NOTE: INSTALL ROADSIDE UNIT ABOVE TRAFFIC SIGNALS SO NOT TO INTERFERE WITH SIGNAL DISPLAY VISIBILITY.

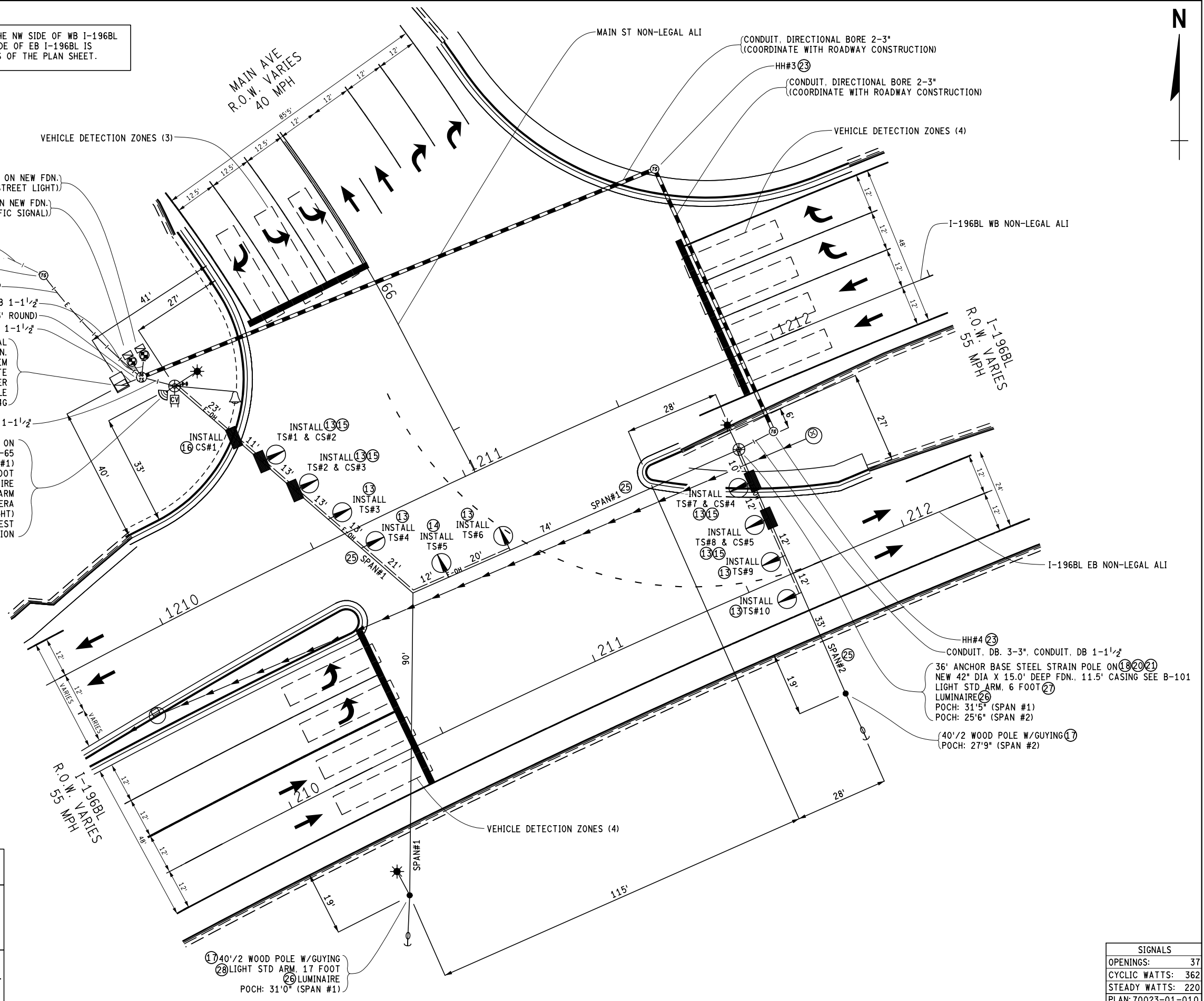
CONTACT: DAN LEATHERMAN OF CONSUMERS ENERGY AT (616) 530-4210. FOR ELECTRICAL SERVICE RECONNECTION. ESTIMATION COST TO CONTRACTOR: \$7054. CONFIRMATION NO. 1042661356

NOTE: LUMINAIRE SHALL BE "XSP1 LED STREET/ AREA LUMINAIRE-SINGLE MODULE-VERSION C" OR EQUIVALENT AS APPROVED BY THE ENGINEER.

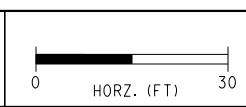
NOTE: THE WIRELESS LINK RADIO SHALL BE MOUNTED ON A 20' EXTENSION (SEE DETAIL ON INTERCONNECT PLAN SHEET) ON THE NW QUADRANT. THIS SHALL BE INCLUDED IN THE PAY ITEM "TS WIRELESS LINK, 5 GHZ, REMOTE" AND WILL NOT BE PAID FOR SEPARATELY.

NOTE: CELLULAR MODEM ANTENNA MOUNTING HEIGHT TO BE VERIFIED BY THE STATEWIDE SIGNAL INSPECTOR (15' MIN) FOR OPTIMAL SIGNAL STRENGTH. CONTACT JIM KWAPISZEWSKI AT (517) 242-1486. PLEASE PROVIDE FIVE WORKING DAYS NOTICE.

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)	
NO.	DATE



NO.	DATE	AUTH	DESCRIPTION



INT CS: 70023 INT SPOT: 010
DESIGNED BY: WADETRIM
FILE: 202084_7002301010_CON001.dgn

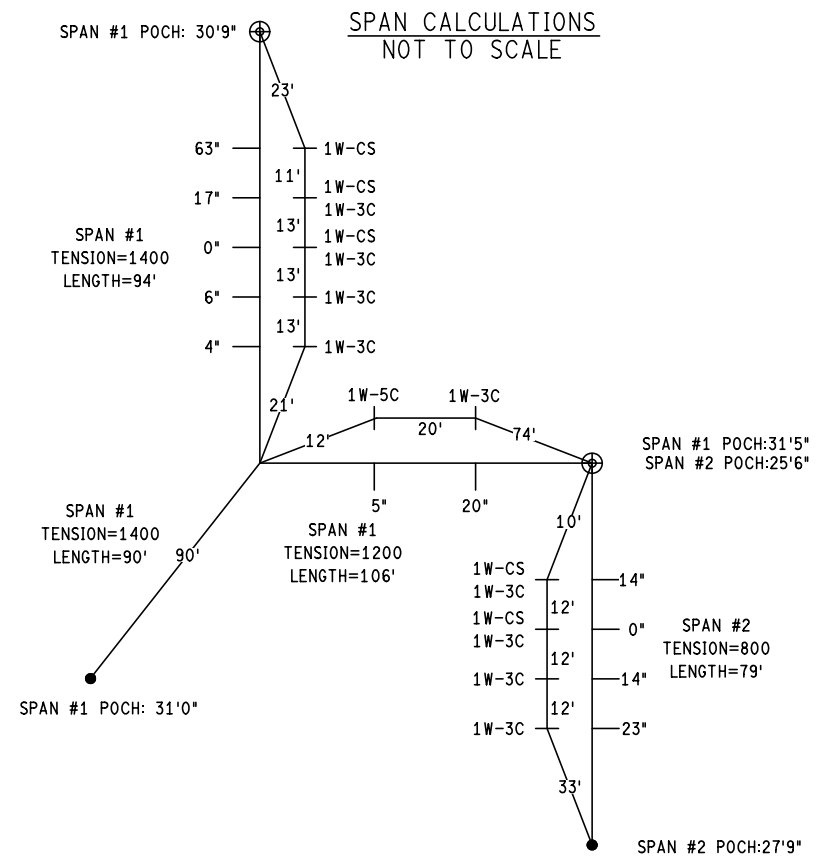
DATE: 04/09/18
DESIGN UNIT: SIGNALS
TSC: MUSKOGON

CS: 70023
JN: 202084A

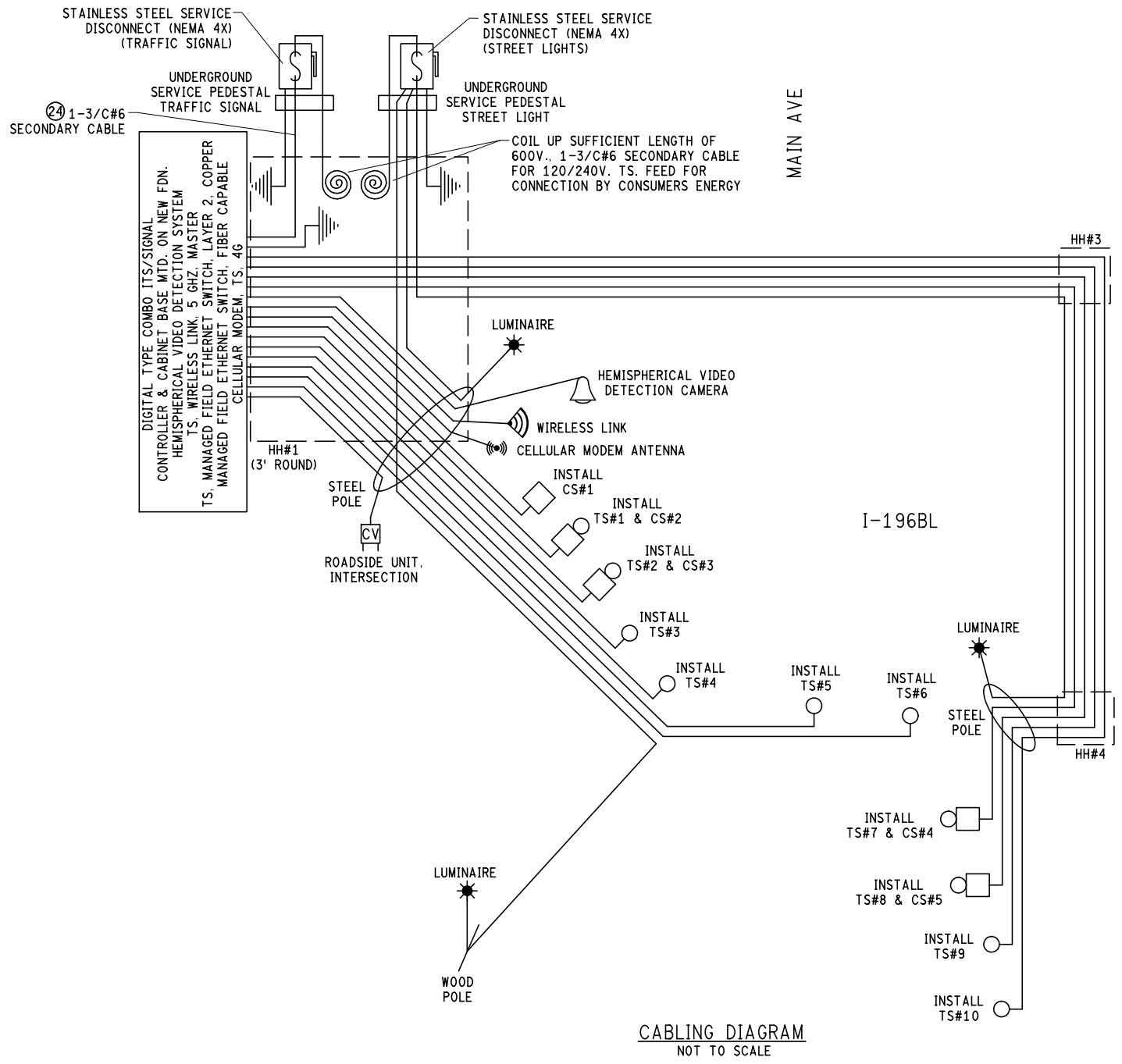
TRAFFIC SIGNAL CONSTRUCTION SHEET
I-196BL WB @ MAIN AVE/X-OVER
ZEELAND TWP, OTTAWA COUNTY

SIGNALS	
OPENINGS:	37
CYCLIC WATTS:	362
STEADY WATTS:	220
PLAN:	70023-01-010

DRAWING	SHEET
SIG LOC 003	146

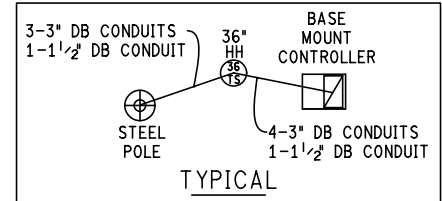


NOTE: TRAFFIC SIGNAL AND STREET LIGHTING SERVICE DISCONNECTS AND SERVICE CABLES MUST BE CLEARLY LABELED WITH WEATHERPROOF ENGRAVED PLASTIC IDENTIFICATION TAGS.



LIST OF MATERIAL - JN 202084A CAT 0001

NO.	ITEM	QUANTITIES
1	Controller Fdn, Base Mount	1 Ea
2	Controller and Cabinet, Digital Type	1 Ea
3	Pedestal, Underground Serv, Unmetered	2 Ea
4	Pedestal, Fdn	2 Ea
5	TS, Wireless Link, 5 GHz, Remote	1 Ea
6	TS, Managed Field Ethernet Switch, Layer 2, Copper	1 Ea
7	Cellular Modem, TS, 4G	1 Ea
8	Hemispherical Video Detection System	1 Ea
9	Hemispherical Video Detection Camera	1 Ea
10	Bracket, Truss, With 18 foot Arm	1 Ea
11	Roadside Unit, Intersection	1 Ea
12	Managed Field Ethernet Switch, Fiber Capable	1 Ea
13	TS, One Way Span Wire Mtd (LED)	9 Ea
14	TS, One Way Span Wire Mtd, Five Sect (LED)	1 Ea
15	Case Sign (LED), One Way, 12 inch by 27 inch	4 Ea
16	Case Sign (LED), Disappearing Legend, One Way, 24 inch by 30 inch	1 Ea
17	Wood Pole	2 Ea
18	Strain Pole, Steel, 6 bolt, 36 foot	1 Ea
19	Strain Pole, Steel, 6 bolt, 40 foot	1 Ea
20	Strain Pole Fdn, 6 bolt	30 Ft
21	Casing	23 Ft
22	Hh, Round, 3 foot Dia	1 Ea
23	Hh, Round	3 Ea
24	Cable, Sec, 600V, 1, 3/C#6	450 Ft
25	Span Wire	3 Ea
26	Luminaire	3 Ea
27	Light Std Arm, 6 foot	1 Ea
28	Light Std Arm, 17 foot	2 Ea
29	Conduit, DB, 1, 1 1/2 inch	55 Ft
30	Conduit, DB, 1, 3 inch	45 Ft
31	Conduit, DB, 3, 3 inch	25 Ft
32	Conduit, DB, 4, 3 inch	10 Ft
33	Conduit, Directional Bore, 2, 3 inch	250 Ft
34	Power Co. (Est. Cost to Contractor)	7054 Dir



- CABLES TO BE USED UNLESS SPECIFIED OTHERWISE**
- 1W-3C TRAFFIC SIGNAL CABLES ARE 5/C#16 PJ.
 - 1W-3C W/CS TRAFFIC SIGNAL CABLES ARE 7/C#16 PJ.
 - TS ANTENNA CABLES ARE 600V, CAT 5e OR APPROVED EQUAL.
 - 24" X 30" L.E.D. CASE SIGNS ARE 4/C#16 PJ.
 - ROADSIDE UNIT CABLES ARE 600V, CAT 5e OR APPROVED EQUAL.
 - HEMISPHERICAL VIDEO DETECTION CAMERA CABLES ARE 600V CAT 5e OR APPROVED EQUAL.
 - CELLULAR MODEM ANTENNA CABLES ARE LMR 400 OR APPROVED EQUAL.

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)

NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



NO SCALE

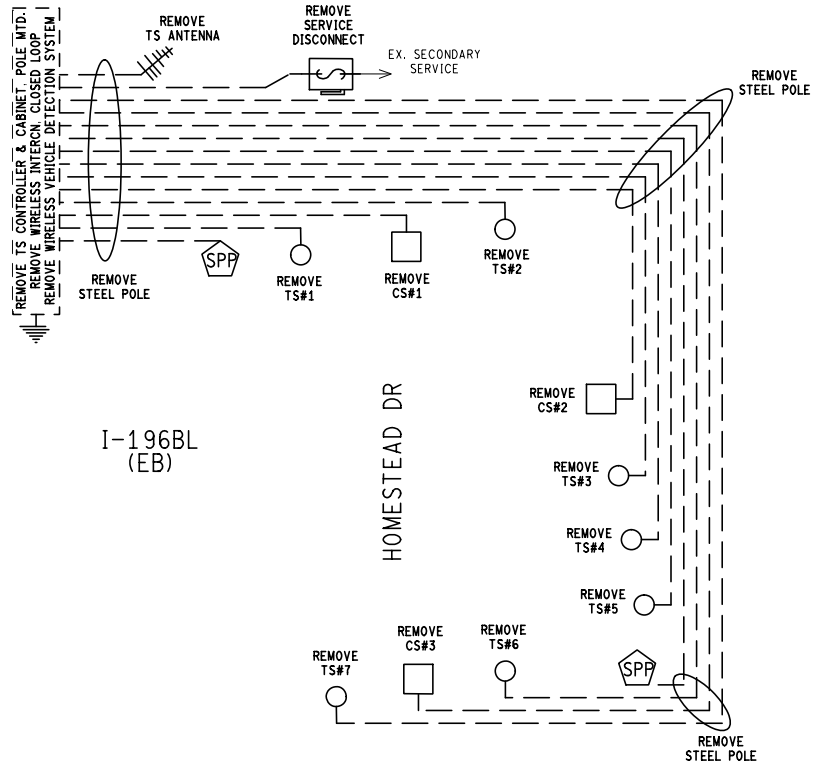
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 FILE: 202084_7002301010_CON001.dgn

DATE: 04/09/18
 DESIGN UNIT: SIGNALS
 TSC: MUSKEGON

CS: 70023
 JN: 202084A

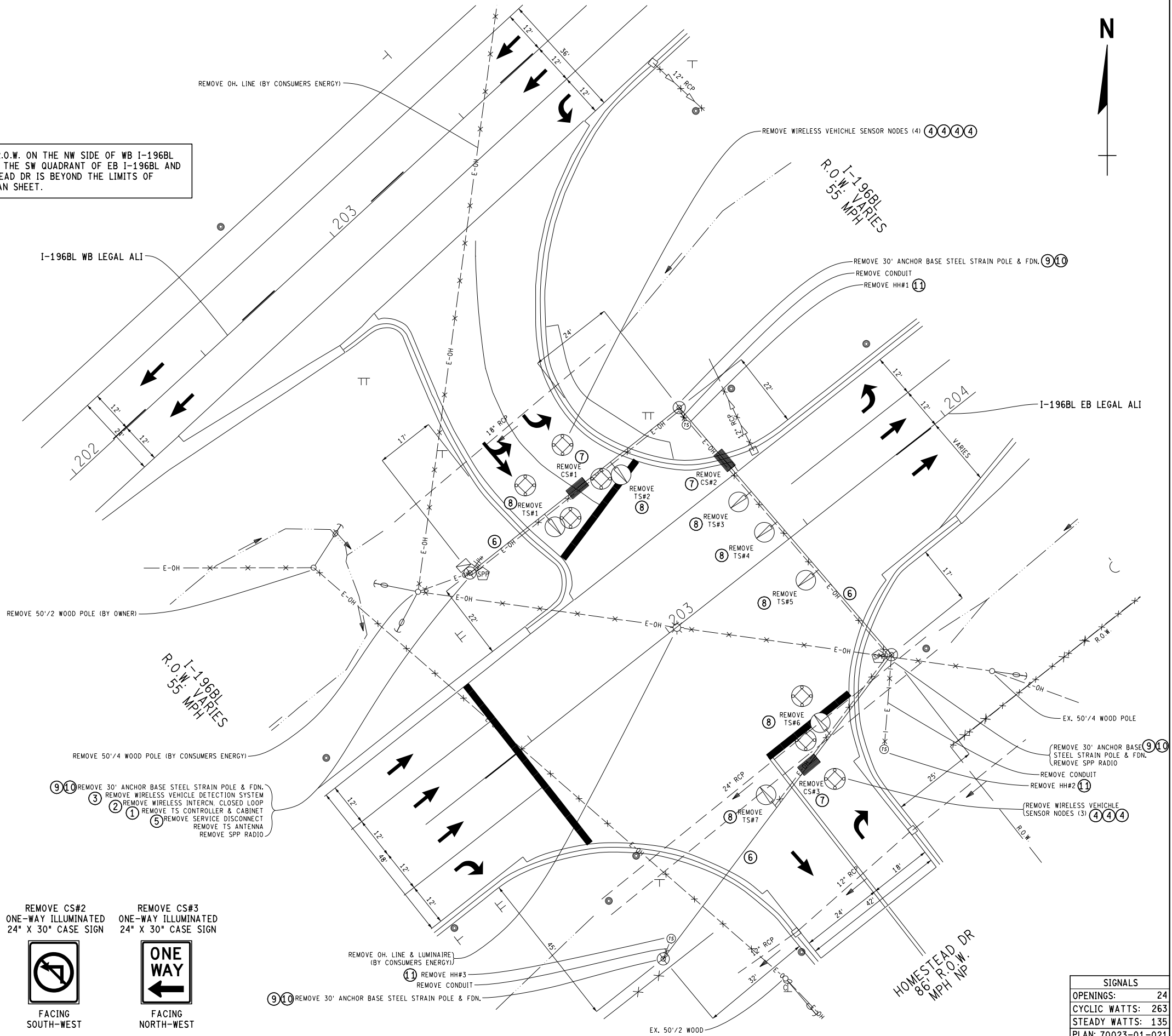
TRAFFIC SIGNAL CONSTRUCTION SHEET
 I-196BL WB @ MAIN AVE/X-OVER
 ZEELAND TWP, OTTAWA COUNTY

PLAN: 70023-01-010
 DRAWING SHEET
 SIG LOC 003
 SECT 1
 147



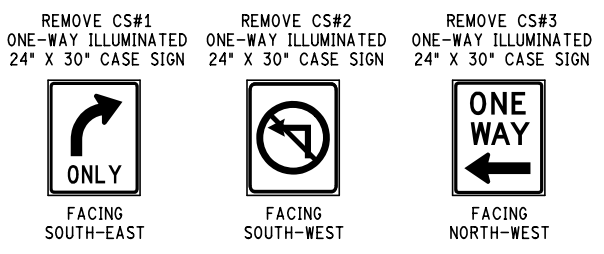
CABLING REMOVAL DIAGRAM
NOT TO SCALE

NOTE: R.O.W. ON THE NW SIDE OF WB I-196BL AND ON THE SW QUADRANT OF EB I-196BL AND HOMESTEAD DR IS BEYOND THE LIMITS OF THE PLAN SHEET.



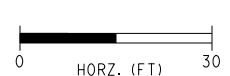
NOTE: REMOVAL OF TRAFFIC SIGNAL EQUIPMENT SHALL BE COORDINATED WITH ROADWAY CONSTRUCTION. TIME OF REMOVAL SHALL BE AS DIRECTED BY THE ENGINEER.
CONTACT: DAN LEATHERMAN OF CONSUMERS ENERGY AT (616) 530-4210. FOR ELECTRICAL SERVICE DISCONNECTION. SEE CONSTRUCTION SHEET FOR ESTIMATED COST TO CONTRACTOR. CONFIRMATION NO. 1042661355

LIST OF MATERIAL - JN 202084A CAT 0001		
NO.	ITEM	QUANTITIES
1	Controller and Cabinet, Rem	1 Ea
2	Wireless Intercom, Closed Loop, Rem	1 Ea
3	Wireless Vehicle Detection System, Rem	1 Ea
4	Wireless Vehicle Sensor Node, Rem	7 Ea
5	Serv Disconnect, Rem	1 Ea
6	Span Wire, Rem	3 Ea
7	Case Sign, Rem	3 Ea
8	TS, Span Wire Mtd, Rem	7 Ea
9	Steel Pole, Rem	4 Ea
10	Fdn, Rem	4 Ea
11	Hh, Rem	3 Ea
○	Conduit, Rem	50 Ft



SIGNALS	
OPENINGS:	24
CYCLIC WATTS:	263
STEADY WATTS:	135
PLAN:	70023-01-021

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



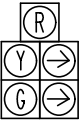
INT CS: 70023 INT SPOT: 021 DATE: 04/09/18 CS: 70023
DESIGNED BY: WADETRIM DESIGN UNIT: SIGNALS JN: 202084A
FILE: 202084_7002301021_REM001.dgn TSC: MUSKOGON

TRAFFIC SIGNAL REMOVAL SHEET
I-196BL EB @ HOMESTEAD DR/X-OVER
ZEELAND TWP, OTTAWA COUNTY

DRAWING	SHEET
SIG LOC 004	SECT 1 148



INSTALL TS#1 FACING SOUTH-EAST
INSTALL TS#3 & TS#4 FACING SOUTH-WEST
INSTALL TS#7 & TS#8 FACING NORTH-EAST



INSTALL TS#2 FACING SOUTH-EAST
INSTALL TS#5 FACING SOUTH-WEST



INSTALL TS#6 FACING NORTH-EAST

ONE-WAY ILLUMINATED 24" X 30" LED CASE SIGN
ONE-WAY ILLUMINATED 24" X 30" LED CASE SIGN

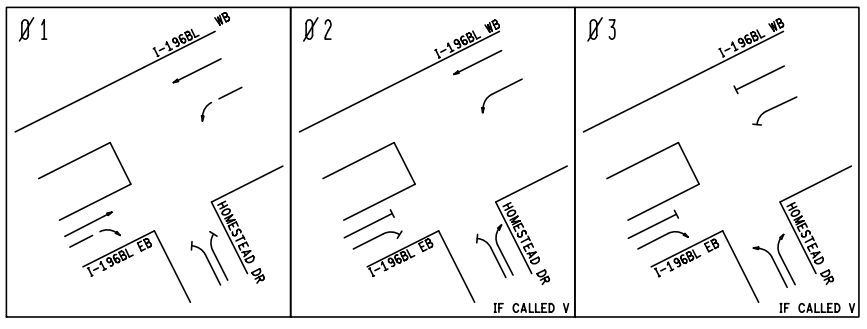


INSTALL CS#1 FACING SOUTH-EAST



INSTALL CS#2 FACING SOUTH-WEST

PHASING DIAGRAM



NOTE: THE TRAFFIC LOOP LOCATIONS TO BE DETERMINED BY THE STATEWIDE SIGNAL INSPECTOR, JIM KWAPISZEWSKI AT (517) 242-1486. PLEASE PROVIDE FIVE WORKING DAYS NOTICE.

FOR ELECTRICAL SERVICE INSPECTION CONTACT THE MICHIGAN DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS AT (269) 312-3300 COST TO CONTRACTOR WILL BE INCIDENTAL.

NOTE: DIGITAL TYPE CONTROLLER SHALL BE A MODEL 60 WITH SOFTWARE VERSION 3.58B OR NEWER WITH A COMBO ITS/SIGNAL CABINET, AS SPECIFIED BY MDOT.

NOTE: INSTALL ROADSIDE UNIT ABOVE TRAFFIC SIGNALS SO NOT TO INTERFERE WITH SIGNAL DISPLAY VISIBILITY.

CONTACT: DAN LEATHERMAN OF CONSUMERS ENERGY AT (616) 530-4210. FOR ELECTRICAL SERVICE RECONNECTION. ESTIMATED COST TO CONTRACTOR: \$7928. CONFIRMATION NO. 1042661355

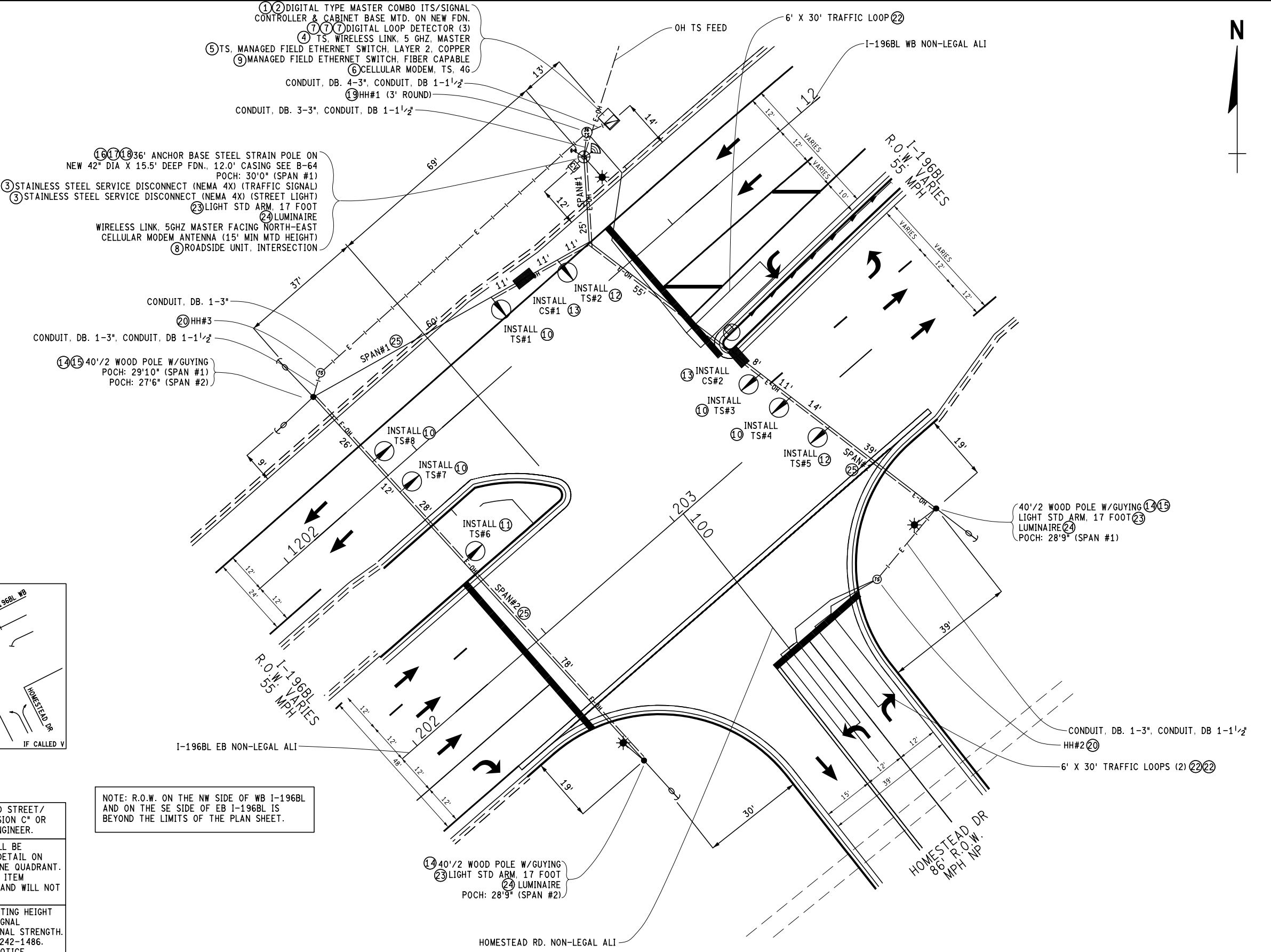
NOTE: LUMINAIRE SHALL BE "XSP1 LED STREET/AREA LUMINAIRE-SINGLE MODULE-VERSION C" OR EQUIVALENT AS APPROVED BY THE ENGINEER.

NOTE: THE WIRELESS LINK RADIO SHALL BE MOUNTED ON A 20' EXTENSION (SEE DETAIL ON INTERCONNECT PLAN SHEET) ON THE NE QUADRANT. THIS SHALL BE INCLUDED IN THE PAY ITEM "TS, WIRELESS LINK, 5 GHZ, MASTER" AND WILL NOT BE PAID FOR SEPARATELY.

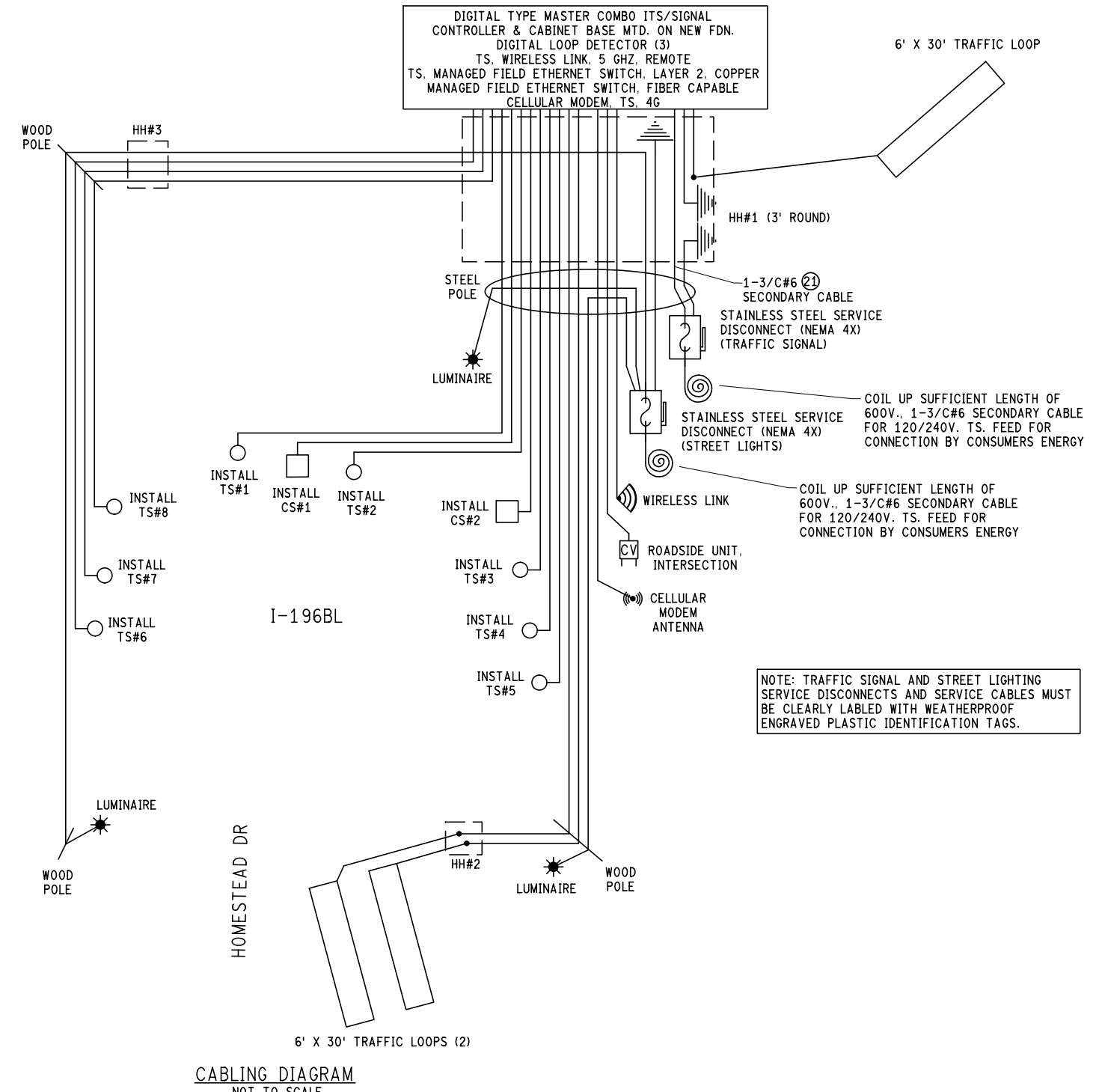
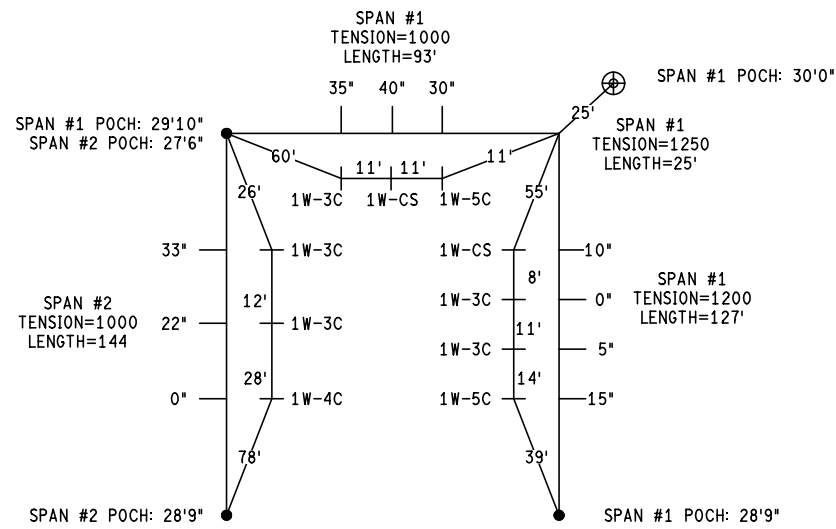
NOTE: CELLULAR MODEM ANTENNA MOUNTING HEIGHT TO BE VERIFIED BY THE STATEWIDE SIGNAL INSPECTOR (15' MIN) FOR OPTIMAL SIGNAL STRENGTH. CONTACT JIM KWAPISZEWSKI AT (517) 242-1486. PLEASE PROVIDE FIVE WORKING DAYS NOTICE.

NOTE: INSTALLATION OF NEW TRAFFIC SIGNAL EQUIPMENT SHALL BE COORDINATED WITH ROADWAY CONSTRUCTION. TIME OF INSTALLATION SHALL BE AS DIRECTED BY THE ENGINEER. SIGNALS SHALL BE PUT INTO OPERATION FOR STAGE 4.

NOTE: R.O.W. ON THE NW SIDE OF WB I-196BL AND ON THE SE SIDE OF EB I-196BL IS BEYOND THE LIMITS OF THE PLAN SHEET.

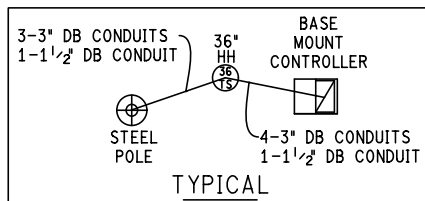


BOX SPAN CALCULATIONS
NOT TO SCALE



NOTE: TRAFFIC SIGNAL AND STREET LIGHTING SERVICE DISCONNECTS AND SERVICE CABLES MUST BE CLEARLY LABELED WITH WEATHERPROOF ENGRAVED PLASTIC IDENTIFICATION TAGS.

LIST OF MATERIAL - JN 202084A CAT 0001		
NO.	ITEM	QUANTITIES
1	Controller Fdn, Base Mount	1 Ea
2	Controller and Cabinet, Digital Type, Master	1 Ea
3	Serv Disconnect	2 Ea
4	TS, Wireless Link, 5 Ghz, Master	1 Ea
5	TS, Managed Field Ethernet Switch, Layer 2, Copper	1 Ea
6	Cellular Modem, TS, 4G	1 Ea
7	Digital Loop Detector	3 Ea
8	Roadside Unit, Intersection	1 Ea
9	Managed Field Ethernet Switch, Fiber Capable	1 Ea
10	TS, One Way Span Wire Mtd (LED)	5 Ea
11	TS, One Way Span Wire Mtd, FYA (LED)	1 Ea
12	TS, One Way Span Wire Mtd, Five Sect (LED)	2 Ea
13	Case Sign (LED), One Way, 24 inch by 30 inch	2 Ea
14	Wood Pole	3 Ea
15	Wood Pole, Fit Up, TS Cable Pole	2 Ea
16	Strain Pole, Steel, 6 bolt, 36 foot	1 Ea
17	Strain Pole Fdn, 6 bolt	16 Ft
18	Casing	12 Ft
19	Hh, Round, 3 foot Dia	1 Ea
20	Hh, Round	2 Ea
21	Cable, Sec, 600V, 1, 3/C#6	150 Ft
22	Traf Loop	3 Ea
23	Light Std Arm, 17 foot	3 Ea
24	Luminaire	3 Ea
25	Span Wire	3 Ea
○	Conduit, DB, 1, 1 1/2 inch	60 Ft
○	Conduit, DB, 1, 3 inch	150 Ft
○	Conduit, DB, 3, 3 inch	10 Ft
○	Conduit, DB, 4, 3 inch	10 Ft
○	Power Co. (Est. Cost to Contractor)	7928 Dir



- CABLES TO BE USED UNLESS SPECIFIED OTHERWISE**
- 1W-3C TRAFFIC SIGNAL CABLES ARE 5/C#16 PJ.
 - 1W-4C TRAFFIC SIGNAL CABLES ARE 7/C#16 PJ.
 - 1W-5C (DOGHOUSE) TRAFFIC SIGNAL CABLES ARE 7/C#16 PJ.
 - TRAFFIC LOOPS ARE 1/C#14 THHN 3 TURNS.
 - LOOP LEAD-INS ARE 2/C#16 SHIELDED PJ.
 - TS ANTENNA CABLES ARE 600V., CAT 5e OR APPROVED EQUAL.
 - 24" X 30" L.E.D. CASE SIGNS ARE 4/C#16 PJ.
 - ROADSIDE UNIT CABLES ARE 600V. CAT 5e OR APPROVED EQUAL.
 - CELLULAR MODEM ANTENNA CABLES ARE LMR 400 OR APPROVED EQUAL.

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



NO SCALE

INT CS: 70023 INT SPOT: 021 DATE: 04/09/18
 DESIGNED BY: WADETRIM DESIGN UNIT: SIGNALS
 FILE: 202084_7002301021_CON001.dgn TSC: MUSKOGON

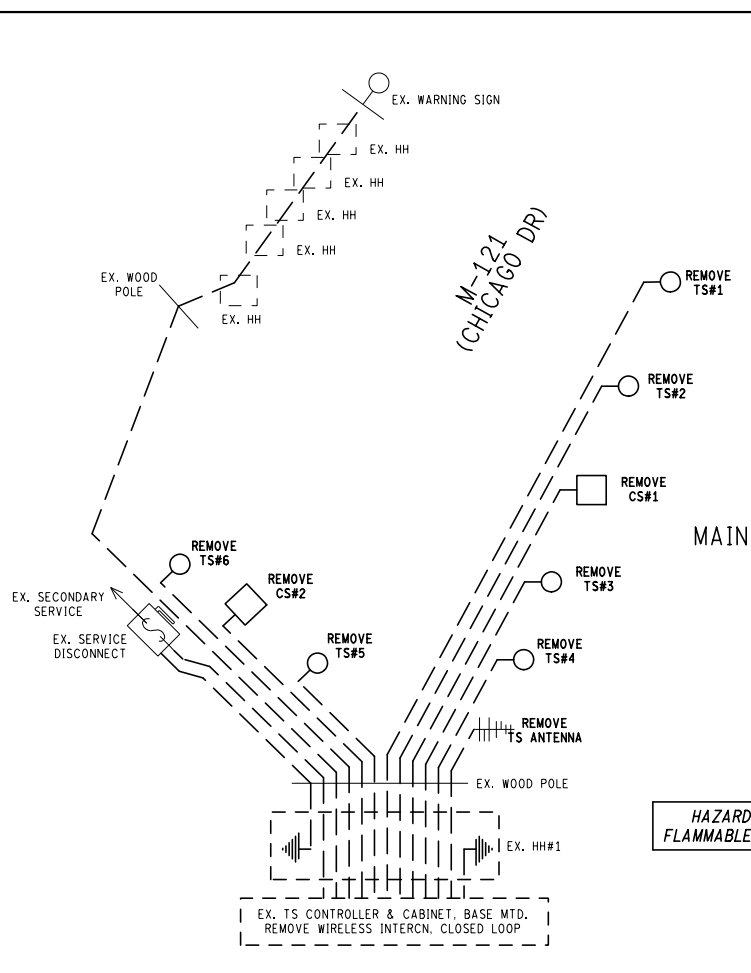
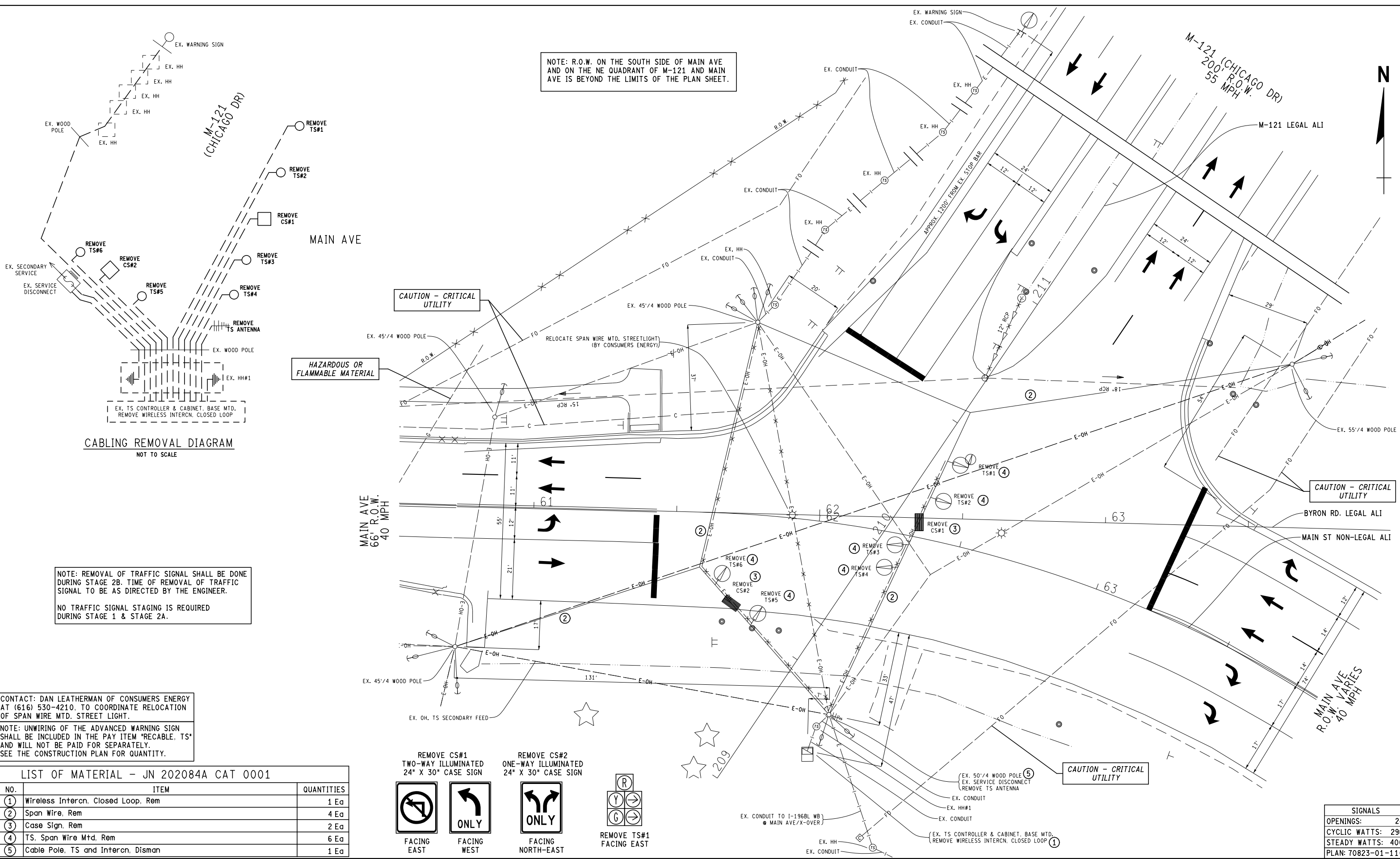
CS: 70023
 JN: 202084A

TRAFFIC SIGNAL CONSTRUCTION SHEET
 I-196BL EB @ HOMESTEAD DR/X-OVER
 ZEELAND TWP, OTTAWA COUNTY

DRAWING SHEET
 SIG LOC 004 SECT 1
 150

PLAN: 70023-01-021

NOTE: R.O.W. ON THE SOUTH SIDE OF MAIN AVE AND ON THE NE QUADRANT OF M-121 AND MAIN AVE IS BEYOND THE LIMITS OF THE PLAN SHEET.

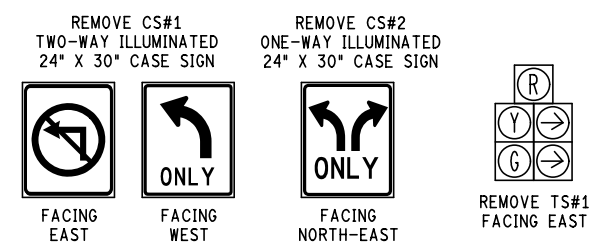


CABLING REMOVAL DIAGRAM
NOT TO SCALE

NOTE: REMOVAL OF TRAFFIC SIGNAL SHALL BE DONE DURING STAGE 2B. TIME OF REMOVAL OF TRAFFIC SIGNAL TO BE AS DIRECTED BY THE ENGINEER.
NO TRAFFIC SIGNAL STAGING IS REQUIRED DURING STAGE 1 & STAGE 2A.

CONTACT: DAN LEATHERMAN OF CONSUMERS ENERGY AT (616) 530-4210, TO COORDINATE RELOCATION OF SPAN WIRE MTD. STREET LIGHT.
NOTE: UNWIRING OF THE ADVANCED WARNING SIGN SHALL BE INCLUDED IN THE PAY ITEM "RECALLABLE, TS" AND WILL NOT BE PAID FOR SEPARATELY. SEE THE CONSTRUCTION PLAN FOR QUANTITY.

LIST OF MATERIAL - JN 202084A CAT 0001		
NO.	ITEM	QUANTITIES
①	Wireless Intercon, Closed Loop, Rem	1 Ea
②	Span Wire, Rem	4 Ea
③	Case Sign, Rem	2 Ea
④	TS, Span Wire Mtd, Rem	6 Ea
⑤	Cable Pole, TS and Intercon, Disman	1 Ea



FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



INT CS: 70823 INT SPOT: 110
DESIGNED BY: WADETRIM
FILE: 202084_7082301110_REM001.dgn

DATE: 04/09/18
DESIGN UNIT: SIGNALS
TSC: MUSKOGON

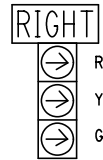
CS: 70023
JN: 202084A

TRAFFIC SIGNAL REMOVAL SHEET
M-121 (CHICAGO DR) @ MAIN AVE
ZEELAND TWP, OTTAWA COUNTY

SIGNALS	
OPENINGS:	24
CYCLIC WATTS:	296
STEADY WATTS:	400
PLAN:	70823-01-110

DRAWING	SHEET
SIG LOC 005	SECT 1 151

ONE-WAY ILLUMINATED
12" X 27" LED CASE SIGN



INSTALL TS#1/CS#1 &
TS#2/CS#2 FACING EAST



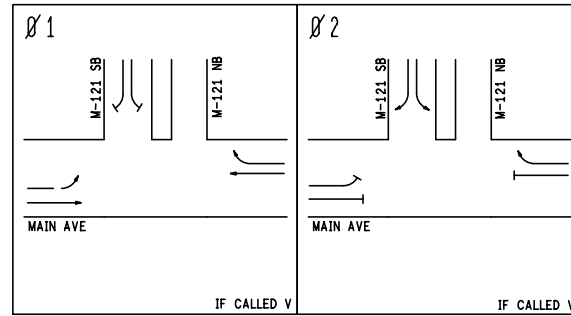
INSTALL TS#3 & TS#4 FACING EAST
INSTALL TS#5 FACING NORTH-EAST & WEST
INSTALL TS#6 FACING WEST
INSTALL TS#7 & TS#8 FACING NORTH-EAST

ONE-WAY ILLUMINATED
24" X 30" LED CASE SIGN



INSTALL CS#3 FACING WEST

PHASING DIAGRAM

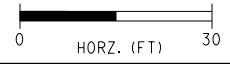


NOTE: R.O.W. ON THE SOUTH SIDE OF MAIN AVE
AND ON THE NE QUADRANT OF M-121 AND MAIN
AVE IS BEYOND THE LIMITS OF THE PLAN SHEET.

NOTE: CONSTRUCTION OF TRAFFIC SIGNAL SHALL BE
DONE DURING STAGE 2B. TIME OF CONSTRUCTION OF
TRAFFIC SIGNAL TO BE AS DIRECTED BY THE
ENGINEER.
NEW TRAFFIC SIGNAL SHALL BE OPERATIONAL
PRIOR TO STAGE 3A.

NOTE: CELLULAR MODEM ANTENNA MOUNTING HEIGHT
TO BE VERIFIED BY THE STATEWIDE SIGNAL
INSPECTOR (15' MIN) FOR OPTIMAL SIGNAL STRENGTH.
CONTACT JIM KWAPISZEWSKI AT (517) 242-1486.
PLEASE PROVIDE FIVE WORKING DAYS NOTICE.
NOTE: THE TRAFFIC LOOP LOCATIONS TO BE
DETERMINED BY THE STATEWIDE SIGNAL INSPECTOR,
JIM KWAPISZEWSKI AT (517) 242-1486. PLEASE
PROVIDE FIVE WORKING DAYS NOTICE.

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

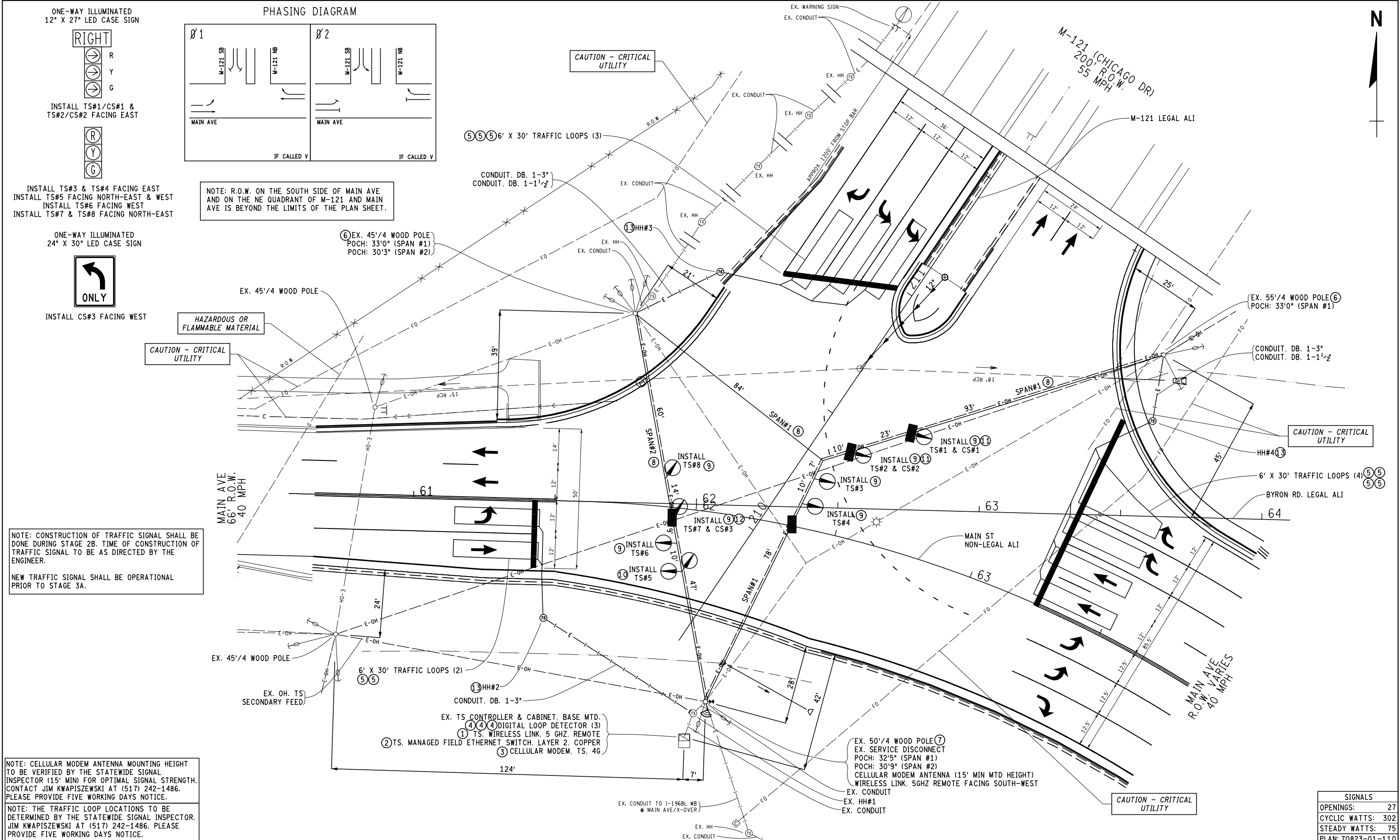


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DESIGNED BY: WADETRIM
DATE: 04/09/18
TSC: MUSKEGON

CS: 70023
JN: 202084A

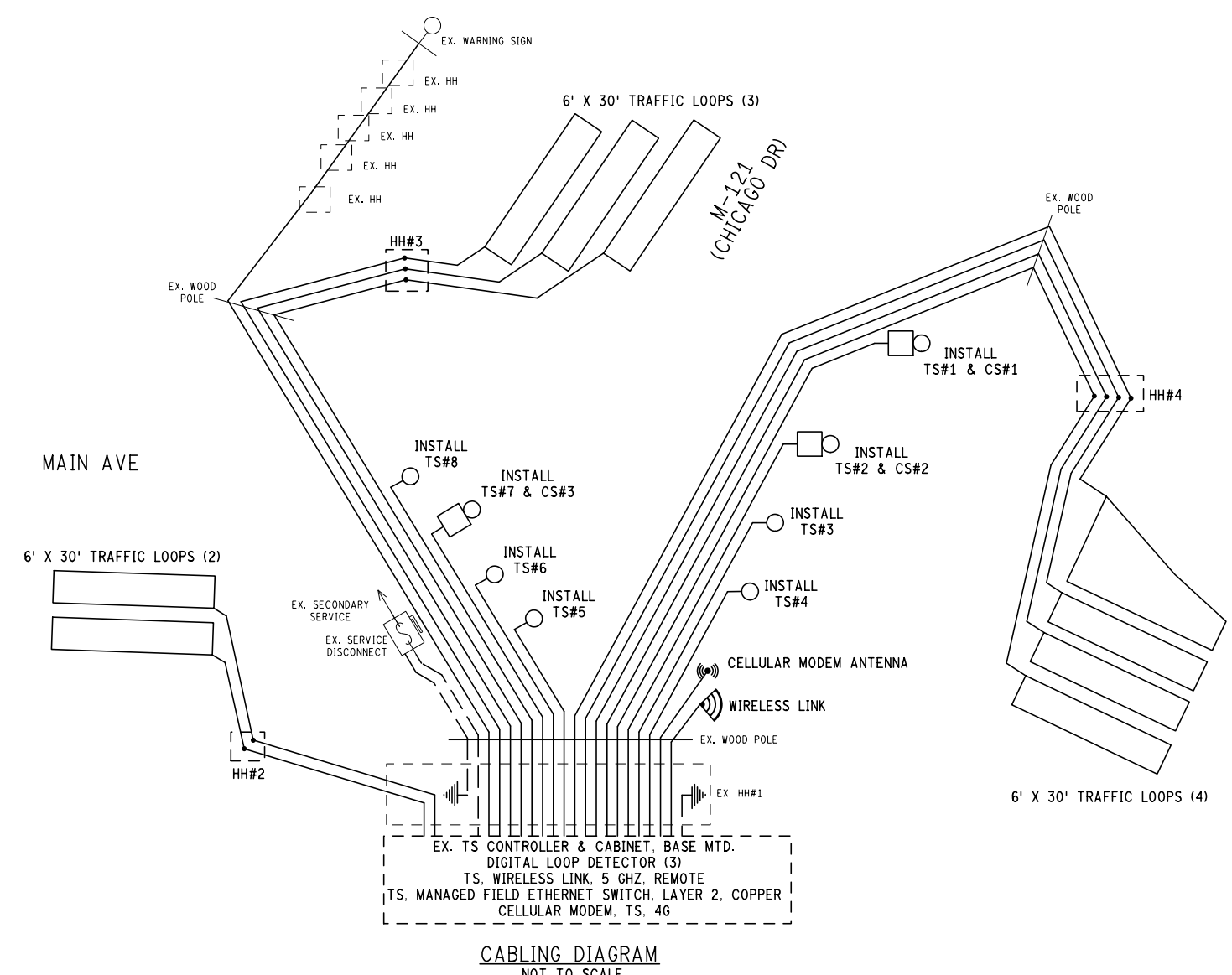
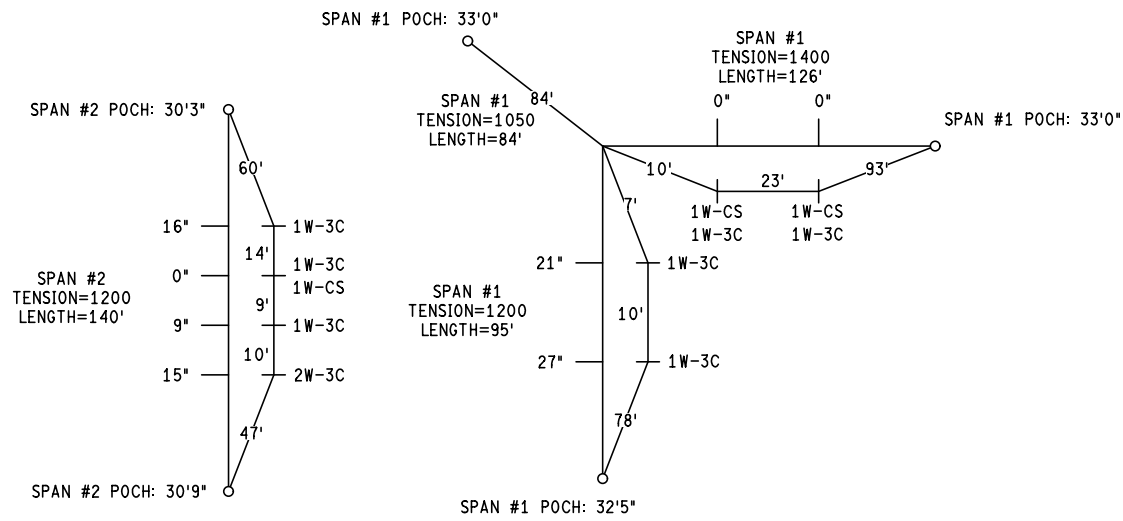
TRAFFIC SIGNAL CONSTRUCTION SHEET
M-121 (CHICAGO DR) @ MAIN AVE
ZEELAND TWP, OTTAWA COUNTY

SIG LOC 005	SHEET 152
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SIGNALS	
OPENINGS:	27
CYCLIC WATTS:	302
STEADY WATTS:	75
PLAN:	70823-01-110

SPAN CALCULATIONS
NOT TO SCALE



CABLING DIAGRAM
NOT TO SCALE

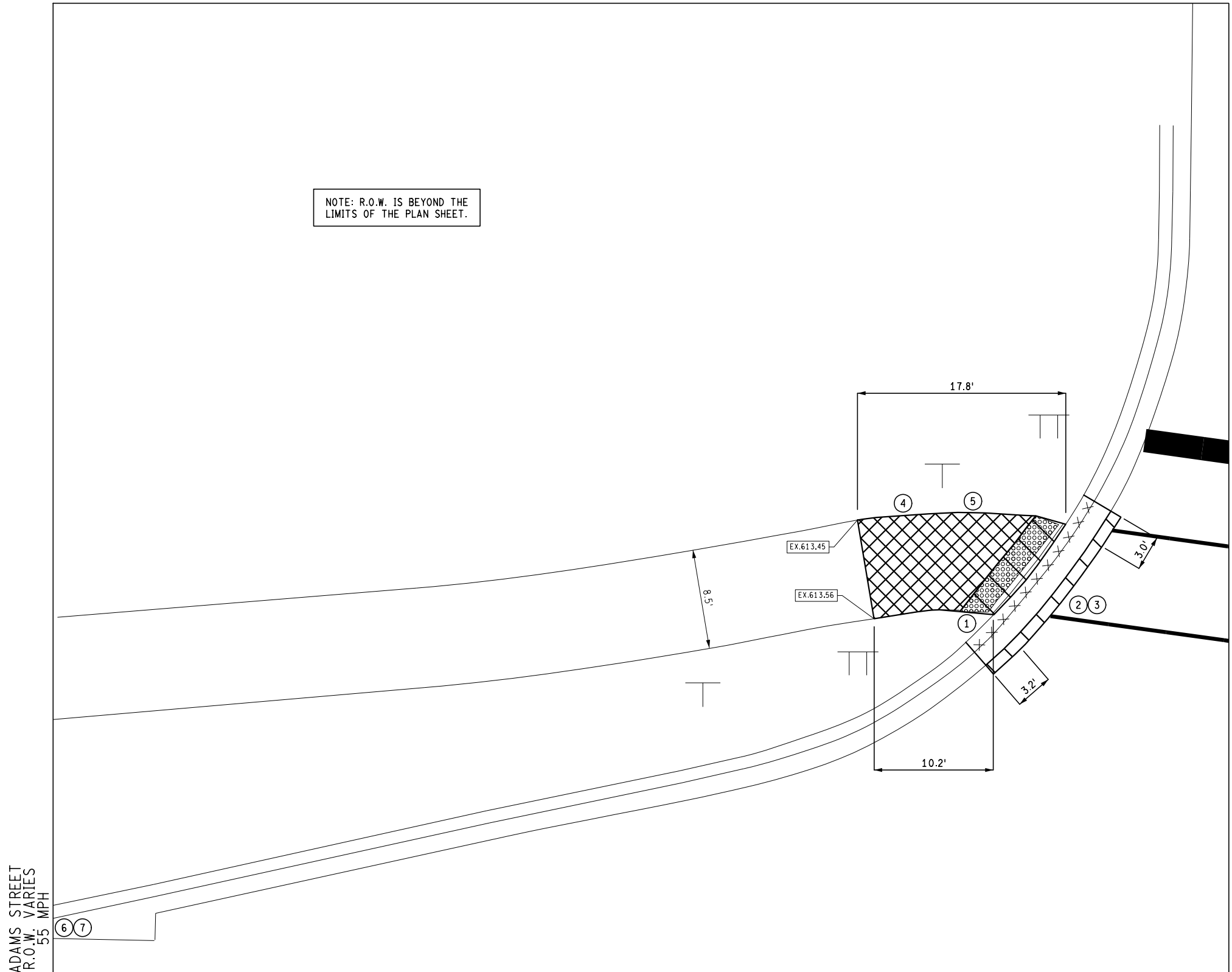
LIST OF MATERIAL - JN 202084A CAT 0001		
NO.	ITEM	QUANTITIES
①	TS, Wireless Link, 5 Ghz, Remote	1 Ea
②	TS, Managed Field Ethernet Switch, Layer 2, Copper	1 Ea
③	Cellular Modem, TS, 4G	1 Ea
④	Digital Loop Detector	3 Ea
⑤	Traf Loop	9 Ea
⑥	Wood Pole, Fit Up, TS Cable Pole	2 Ea
⑦	Wood Pole, Fit Up, TS and Intercon Cable Pole	1 Ea
⑧	Span Wire	3 Ea
⑨	TS, One Way Span Wire Mtd (LED)	7 Ea
⑩	TS, Two Way Span Wire Mtd (LED)	1 Ea
⑪	Case Sign (LED), One Way, 12 inch by 27 inch	2 Ea
⑫	Case Sign (LED), One Way, 24 inch by 30 inch	1 Ea
⑬	Hh, Round	3 Ea
○	Recable, TS	1500 Ft
○	Conduit, DB, 1, 1 1/2 inch	60 Ft
○	Conduit, DB, 1, 3 inch	125 Ft

CABLES TO BE USED UNLESS SPECIFIED OTHERWISE	
1.	1W-3C TRAFFIC SIGNAL CABLES ARE 5/C#16 PJ.
2.	1W-3C W/CS TRAFFIC SIGNAL CABLES ARE 7/C#16 PJ.
3.	24" X 30" L.E.D. CASE SIGNS ARE 4/C#16 PJ.
4.	TS ANTENNA CABLES ARE 600V., CAT 5e OR APPROVED EQUAL.
5.	TRAFFIC LOOPS ARE 1/C#14 THHN 3 TURNS.
6.	LOOP LEAD-INS ARE 2/C#16 SHIELDED PJ.
7.	CELLULAR MODEM ANTENNA CABLES ARE LMR 400 OR APPROVED EQUAL.

PLAN: 70823-01-110



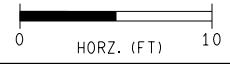
NOTE: R.O.W. IS BEYOND THE
LIMITS OF THE PLAN SHEET.



LIST OF MATERIAL - JN 202084A CAT 0005

NO.	ITEM	QUANTITIES
①	Sidewalk, Rem	3 Syd
②	Curb and Gutter, Rem	16 Ft
③	Pavt. Rem	2 Syd
④	HMA Surface, Rem	11 Syd
⑤	Excavation, Earth	2 Cyd
⑥	Erosion Control, Inlet Protection, Fabric Drop	1 Ea
⑦	Erosion Control, Maintenance, Sediment Removal	1 Cyd

FINAL ROW PLAN REVISIONS		(SUBMITTAL DATE:)	
NO.	DATE	AUTH	DESCRIPTION



INT CS: 70024 INT SPOT: 005
 DESIGNED BY: WADETRIM
 DATE: 04/09/18
 DESIGN UNIT: SIGNALS
 FILE: 202084_7002401005_REM001.dgn
 TSC: MUSKEGON

CS: 70023
 JN: 202084A

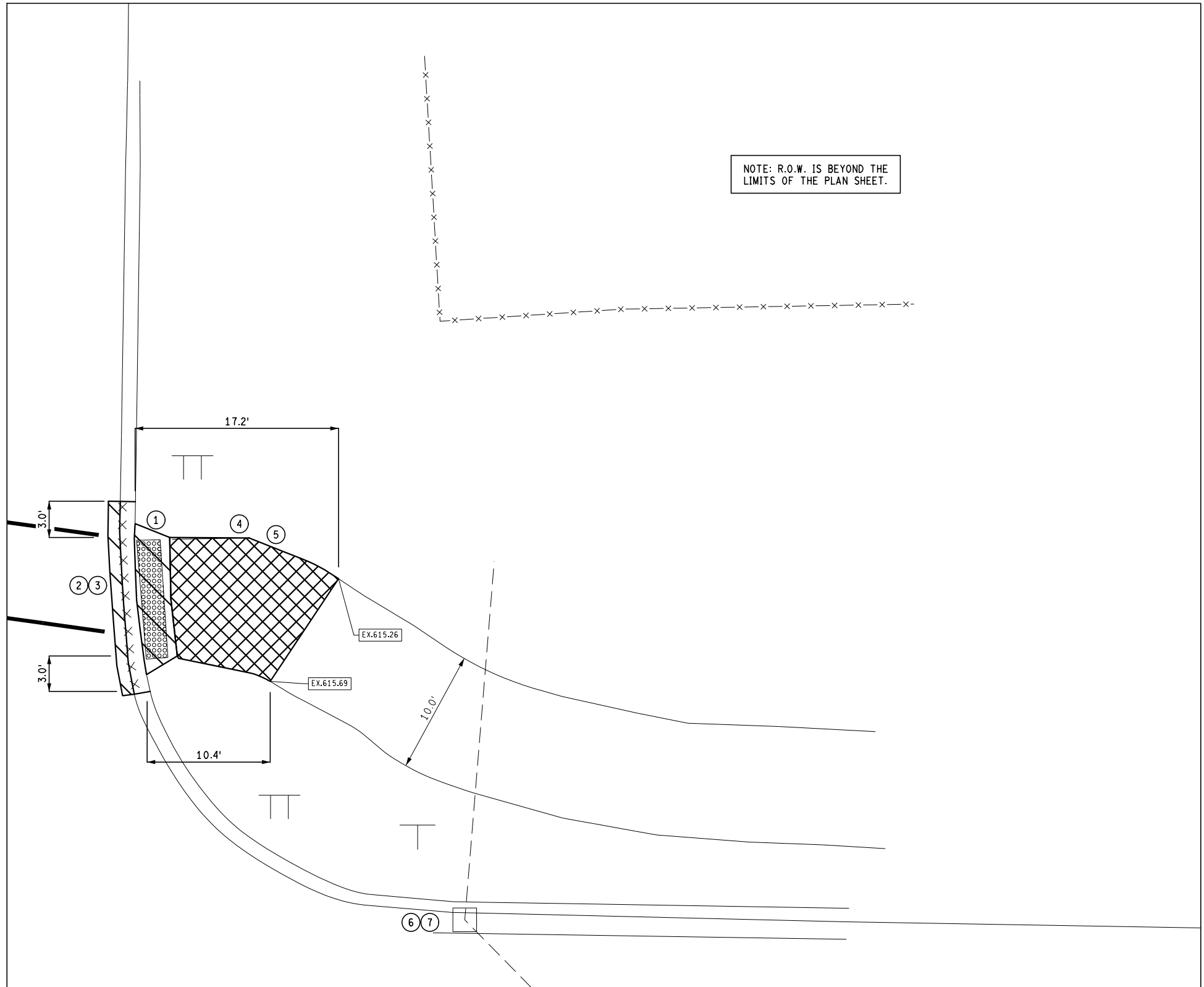
SIDWALK REMOVAL SHEET NW QUAD
 I-196 WB OFF RAMP @ ADAMS STREET
 ZEELAND TWP, OTTAWA COUNTY

PLAN: 70024-01-005
 DRAWING SHEET
 SIG LOC 006
 SECT 1
 154

I-196 WB
OFF-RAMP



NOTE: R.O.W. IS BEYOND THE
LIMITS OF THE PLAN SHEET.



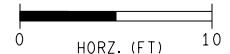
ADAMS STREET
R.O.W. VARIES
55 MPH

LIST OF MATERIAL - JN 202084A CAT 0005

NO.	ITEM	QUANTITIES
①	Sidewalk, Rem	4 Syd
②	Curb and Gutter, Rem	16 Ft
③	Pavt. Rem	2 Syd
④	HMA Surface, Rem	14 Syd
⑤	Excavation, Earth	2 Cyd
⑥	Erosion Control, Inlet Protection, Fabric Drop	1 Ea
⑦	Erosion Control, Maintenance, Sediment Removal	1 Cyd

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)

NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



INT CS: 70024 INT SPOT: 005
DESIGNED BY: WADETRIM
FILE: 202084_7002401005_REM002.dgn

DATE: 04/09/18
DESIGN UNIT: SIGNALS
TSC: MUSKEGON

CS: 70023
JN: 202084A

SIDEWALK REMOVAL SHEET NE QUAD
I-196 WB OFF RAMP @ ADAMS STREET
ZEELAND TWP, OTTAWA COUNTY

DRAWING SHEET
SIG LOC 006 SECT 1 155

PLAN: 70024-01-005



NOTE: INSTALLATION OF NEW TRAFFIC SIGNAL EQUIPMENT SHALL BE COORDINATED WITH ROADWAY CONSTRUCTION. TIME OF INSTALLATION SHALL BE AS DIRECTED BY THE ENGINEER. SIGNALS SHALL BE PUT INTO OPERATION FOR STAGE 1.

NOTE: SEE SIGNING AND PAVEMENT MARKING SHEETS FOR ALL SIGNING AND PAVEMENT MARKING REMOVAL AND INSTALLATION QUANTITIES.

NOTE: CELLULAR MODEM ANTENNA MOUNTING HEIGHT TO BE VERIFIED BY THE STATEWIDE SIGNAL INSPECTOR (15' MIN) FOR OPTIMAL SIGNAL STRENGTH. CONTACT JIM KWAPISZEWSKI AT (517) 242-1486. PLEASE PROVIDE FIVE WORKING DAYS NOTICE.

NOTE: INSTALLATION OF PEDESTALS WITH PUSHBUTTONS SHALL BE COORDINATED WITH THE CONSTRUCTION OF THE NEW SIDEWALK RAMPS AND CROSSWALK PAVEMENT MARKINGS. LOCATIONS SHALL MEET CURRENT ADA REQUIREMENTS.

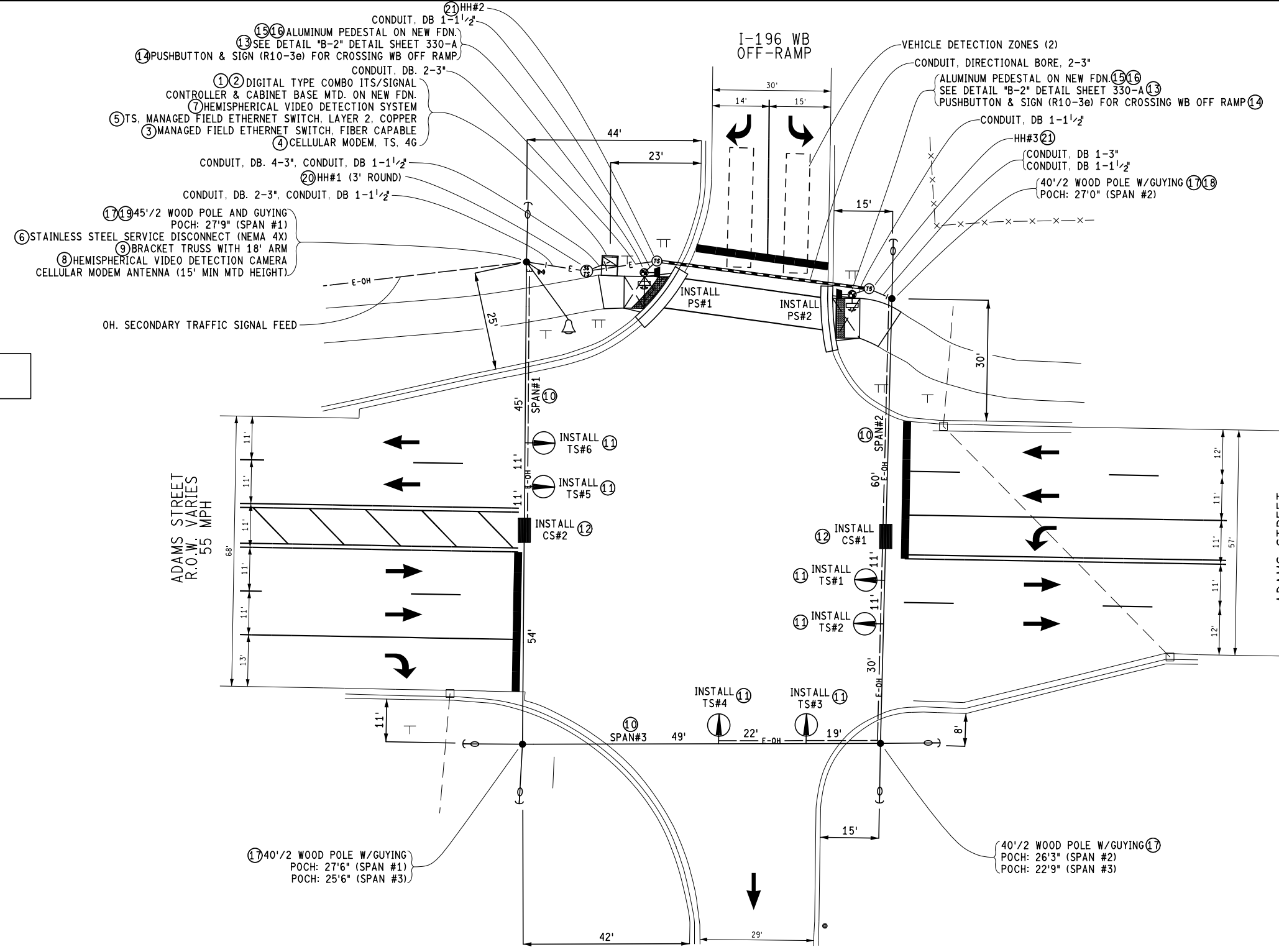
NOTE: DIGITAL TYPE CONTROLLER SHALL BE A MODEL 60 WITH SOFTWARE VERSION 3.58B OR NEWER WITH A COMBO ITS/SIGNAL CABINET, AS SPECIFIED BY MDOT.

NOTE: THE VIDEO DETECTION ZONE LOCATIONS TO BE DETERMINED BY THE STATEWIDE SIGNAL INSPECTOR, JIM KWAPISZEWSKI AT (517) 242-1486. PLEASE PROVIDE FIVE WORKING DAYS NOTICE.

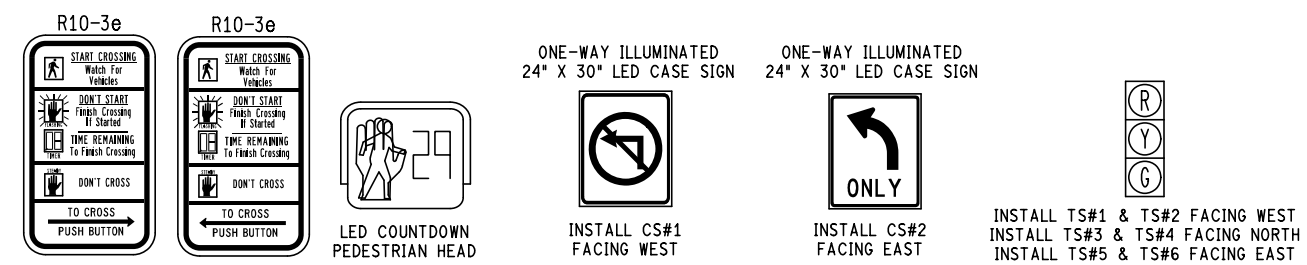
FOR ELECTRICAL SERVICE INSPECTION CONTACT THE MICHIGAN DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS AT (269) 312-3300. COST TO CONTRACTOR WILL BE INCIDENTAL.

CONTACT: MARTY CHRISTOPHEL OF CONSUMERS ENERGY AT (269) 620-5104, FOR ELECTRICAL SERVICE CONNECTION. ESTIMATED COST TO CONTRACTOR: \$2284.

NOTE: R.O.W. ON ALL FOUR QUADRANTS IS BEYOND THE LIMITS OF THE PLAN SHEET.



LIST OF MATERIAL - JN 202084A CAT 0005		
NO.	ITEM	QUANTITIES
1	Controller Fdn, Base Mount	1 Ea
2	Controller and Cabinet, Digital Type	1 Ea
3	Managed Field Ethernet Switch, Fiber Capable	1 Ea
4	Cellular Modem, TS, 4G	1 Ea
5	TS, Managed Field Ethernet Switch, Layer 2, Copper	1 Ea
6	Serv Disconnect	1 Ea
7	Hemispherical Video Detection System	1 Ea
8	Hemispherical Video Detection Camera	1 Ea
9	Bracket, Truss, With 18 foot Arm	1 Ea
10	Span Wire	3 Ea
11	TS, One Way Span Wire Mtd (LED)	6 Ea
12	Case Sign (LED), One Way, 24 inch by 30 inch	2 Ea
13	TS, Pedestrian, One Way Pedestal Mtd (LED) Countdown	2 Ea
14	Pushbutton and Sign	2 Ea
15	Pedestal, Alum	2 Ea
16	Pedestal, Fdn	2 Ea
17	Wood Pole	4 Ea
18	Wood Pole, Fit Up, TS Cable Pole	1 Ea
19	Wood Pole, Fit Up, TS and Sec Cable Pole	1 Ea
20	Hh, Round, 3 foot Dia	1 Ea
21	Hh, Round	2 Ea
22	Cable, Sec, 600V, 1, 3/C#6	300 Ft
○	Conduit, DB, 1, 1 1/2 inch	50 Ft
○	Conduit, DB, 1, 3 inch	10 Ft
○	Conduit, DB, 2, 3 inch	35 Ft
○	Conduit, DB, 4, 3 inch	10 Ft
○	Conduit, Directional Bore 2, 3 inch	55 Ft
○	Power Co. (Est. Cost to Contractor)	2284 Dir



SIGNALS	
OPENINGS:	22
CYCLIC WATTS:	280
STEADY WATTS:	90
PLAN:	70024-01-005

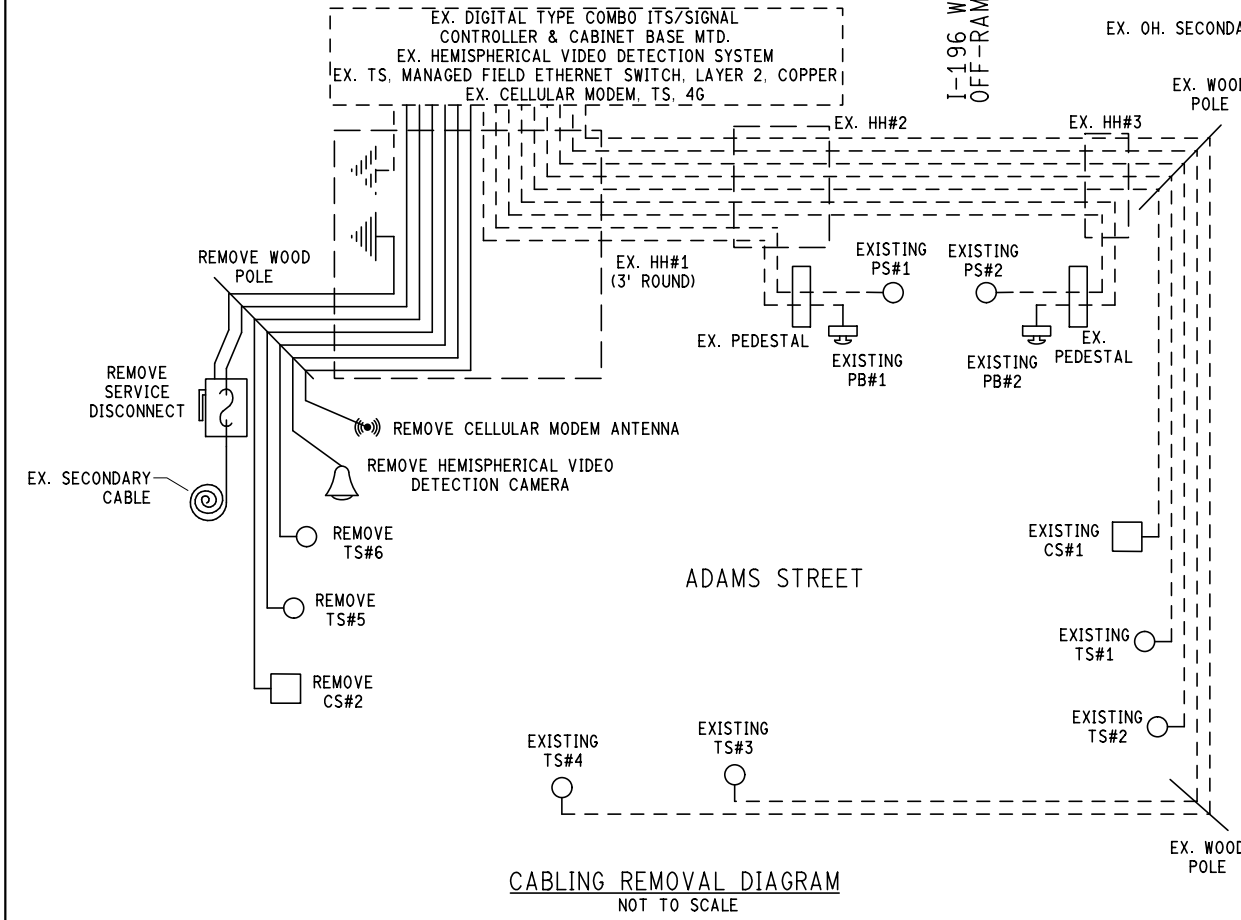
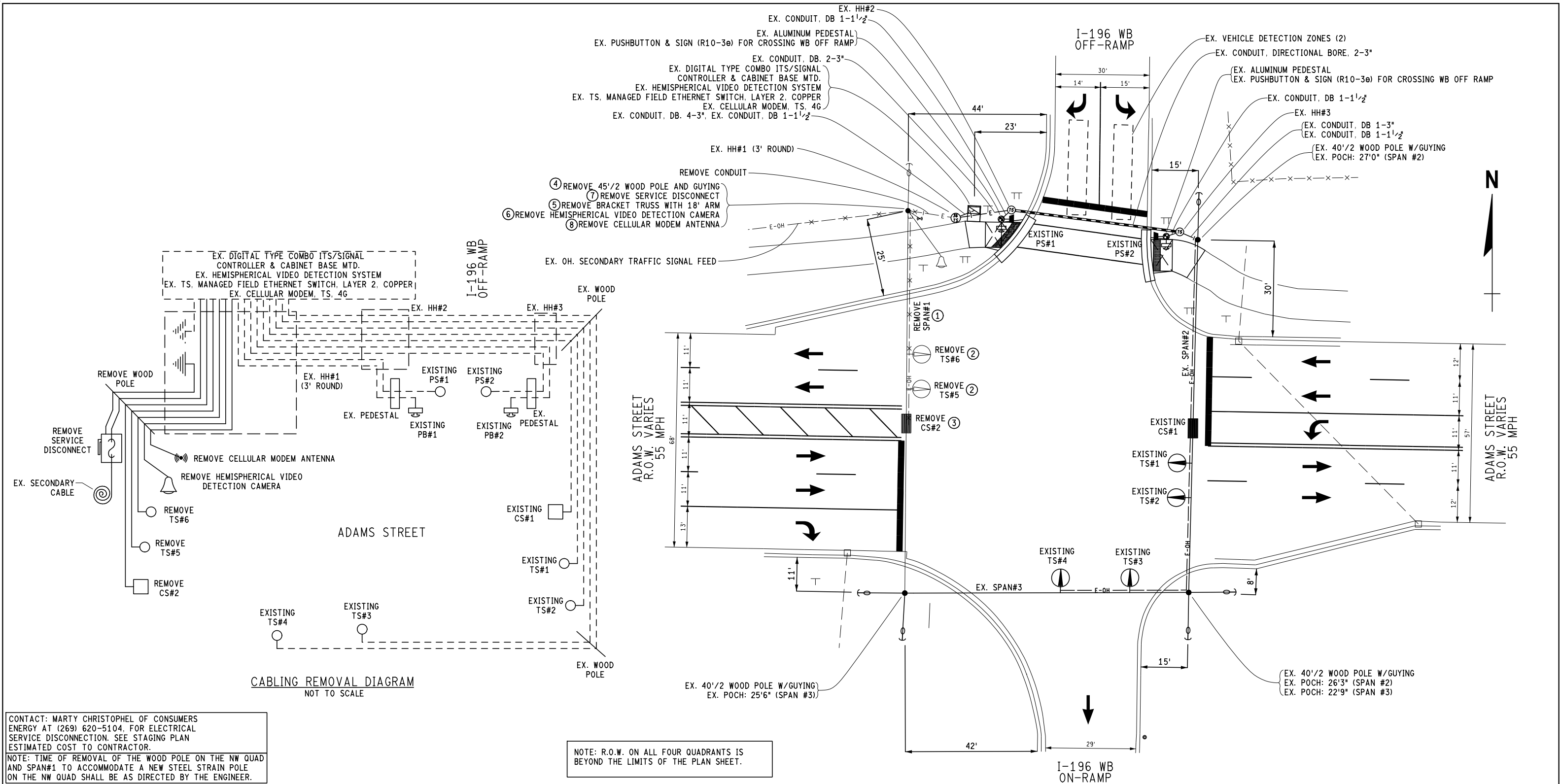
FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



INT CS: 70024	INT SPOT: 005	DATE: 04/09/18	CS: 70023
DESIGNED BY: WADETRIM	DESIGN UNIT: SIGNALS	JN: 202084A	TRAFFIC SIGNAL CONSTRUCTION SHEET - FOR STAGING
FILE: 202084_7002401005_CON001.dgn	TSC: MUSKEGON		I-196 WB OFF RAMP @ ADAMS STREET

INSTALL TS#1 & TS#2 FACING WEST	INSTALL TS#3 & TS#4 FACING NORTH	INSTALL TS#5 & TS#6 FACING EAST
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ZEELAND TWP, OTTAWA COUNTY		SIG LOC 006	SECT 1 156
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CONTACT: MARTY CHRISTOPHEL OF CONSUMERS ENERGY AT (269) 620-5104. FOR ELECTRICAL SERVICE DISCONNECTION. SEE STAGING PLAN ESTIMATED COST TO CONTRACTOR.

NOTE: TIME OF REMOVAL OF THE WOOD POLE ON THE NW QUAD AND SPAN#1 TO ACCOMMODATE A NEW STEEL STRAIN POLE ON THE NW QUAD SHALL BE AS DIRECTED BY THE ENGINEER.

NOTE: R.O.W. ON ALL FOUR QUADRANTS IS BEYOND THE LIMITS OF THE PLAN SHEET.

LIST OF MATERIAL - JN 202084A CAT 0005		
NO.	ITEM	QUANTITIES
1	Span Wire, Rem	1 Ea
2	TS, Span Wire Mtd, Rem	2 Ea
3	Case Sign, Rem	1 Ea
4	Wood Pole, Rem	1 Ea
5	Bracket, Truss, Rem	1 Ea
6	Hemispherical Video Detection Camera, Rem	1 Ea
7	Serv Disconnect, Rem	1 Ea
8	TS, Antenna, Rem	1 Ea
9	Conduit, Rem	15 Ft



EXISTING TS#1 & TS#2 FACING WEST
 EXISTING TS#3 & TS#4 FACING NORTH
 REMOVE TS#5 & TS#6 FACING EAST

SIGNALS	
OPENINGS:	22
CYCLIC WATTS:	280
STEADY WATTS:	90
PLAN:	70024-01-005

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



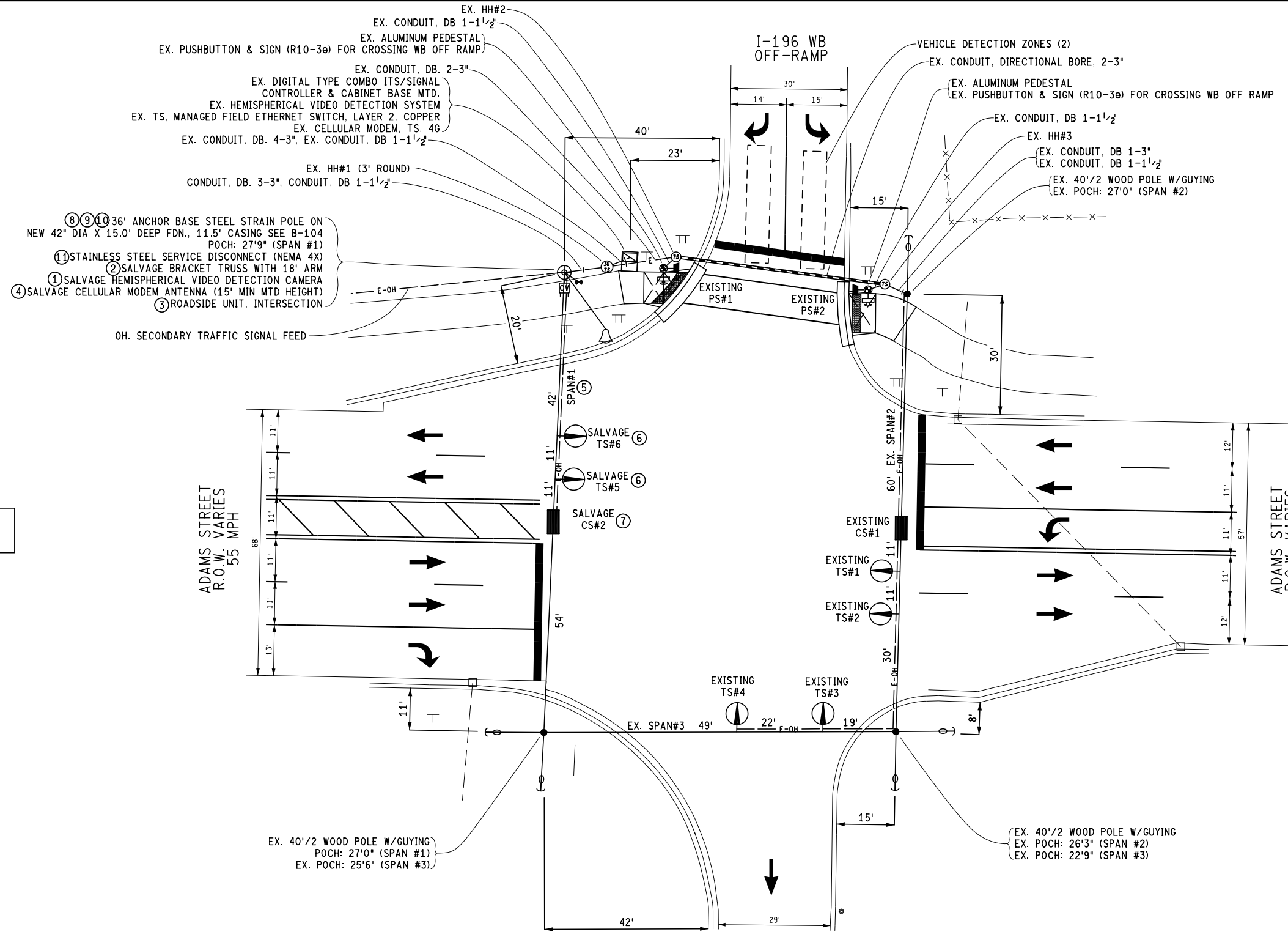
INT CS: 70024 INT SPOT: 005
 DESIGNED BY: WADETRIM
 FILE: 202084_7002401005_REM003.dgn

DATE: 04/09/18
 DESIGN UNIT: SIGNALS
 TSC: MUSKEGON

CS: 70023
 JN: 202084A

TRAFFIC SIGNAL REMOVAL SHEET
 I-196 WB OFF RAMP @ ADAMS STREET
 ZEELAND TWP, OTTAWA COUNTY

SIG	LOC	SHEET
006	006	158



NOTE: R.O.W. ON ALL FOUR QUADRANTS IS BEYOND THE LIMITS OF THE PLAN SHEET.

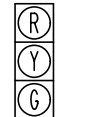
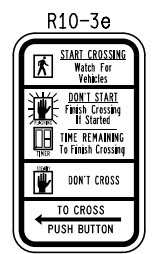
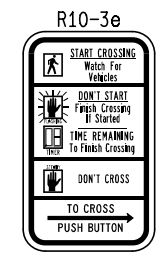
CONTACT: MARTY CHRISTOPHEL OF CONSUMERS ENERGY AT (269) 620-5104, FOR ELECTRICAL SERVICE RECONNECTION. SEE STAGING PLAN FOR ESTIMATED COST TO CONTRACTOR.

NOTE: CELLULAR MODEM ANTENNA MOUNTING HEIGHT TO BE VERIFIED BY THE STATEWIDE SIGNAL INSPECTOR (15' MIN) FOR OPTIMAL SIGNAL STRENGTH. CONTACT JIM KWAPISZEWSKI AT (517) 242-1486. PLEASE PROVIDE FIVE WORKING DAYS NOTICE.

NOTE: INSTALL ROADSIDE UNIT ABOVE TRAFFIC SIGNALS SO NOT TO INTERFERE WITH SIGNAL DISPLAY VISIBILITY.

NOTE: THE VIDEO DETECTION ZONE LOCATIONS TO BE DETERMINED BY THE STATEWIDE SIGNAL INSPECTOR, JIM KWAPISZEWSKI AT (517) 242-1486. PLEASE PROVIDE FIVE WORKING DAYS NOTICE.

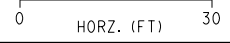
LIST OF MATERIAL - JN 202084A CAT 0005		
NO.	ITEM	QUANTITIES
1	Hemispherical Video Detection Camera, Salv	1 Ea
2	Bracket, Truss, Salv	1 Ea
3	Roadside Unit, Intersection	1 Ea
4	TS, Antenna, Salv	1 Ea
5	Span Wire	1 Ea
6	TS, One Way Span Wire Mtd, Salv	2 Ea
7	Case Sign, Salv	1 Ea
8	Strain Pole, Steel, 6 bolt, 36 foot	1 Ea
9	Strain Pole Fdn, 6 bolt	15 Ft
10	Casing	12 Ft
11	Serv Disconnect	1 Ea
○	Conduit, DB, 1, 1 1/2 inch	15 Ft
○	Conduit, DB, 3, 3 inch	15 Ft



EXISTING TS#1 & TS#2 FACING WEST
 EXISTING TS#3 & TS#4 FACING NORTH
 SALVAGE TS#5 & TS#6 FACING EAST

SIGNALS	
OPENINGS:	22
CYCLIC WATTS:	280
STEADY WATTS:	90
PLAN:	70024-01-005

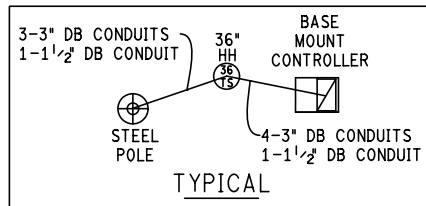
FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



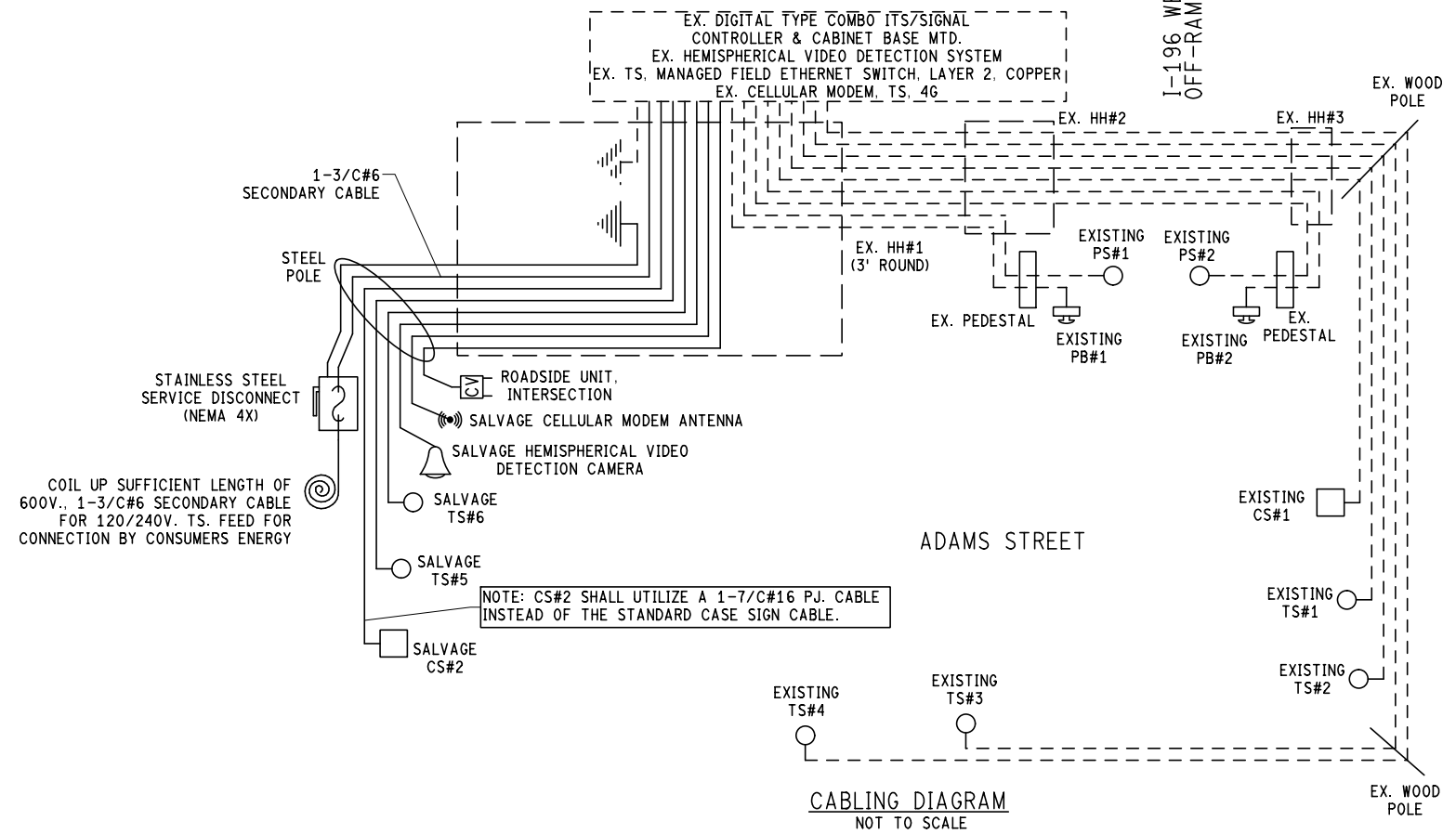
INT CS: 70024 INT SPOT: 005 DATE: 04/09/18 CS: 70023
 DESIGNED BY: WADETRIM DESIGN UNIT: SIGNALS JN: 202084A
 FILE: 202136_7002401005_CON001.dgn TSC: MUSKEGON

TRAFFIC SIGNAL CONSTRUCTION SHEET - FINAL
 I-196 WB OFF RAMP @ ADAMS STREET
 ZEELAND TWP, OTTAWA COUNTY

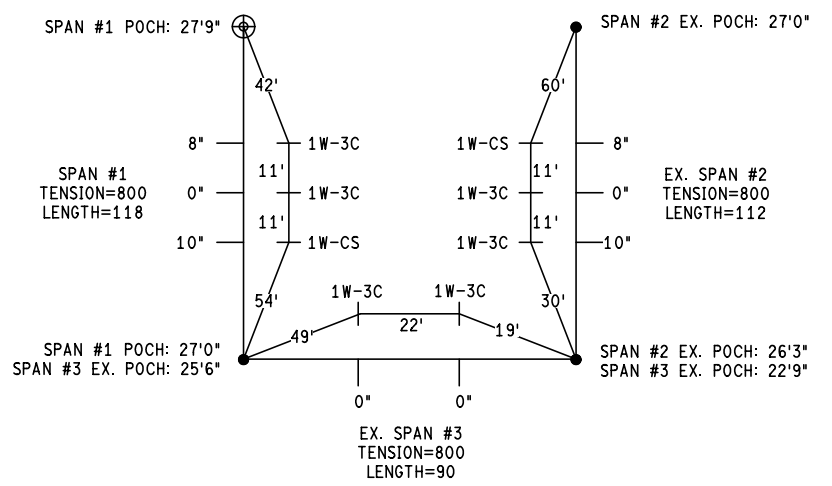
SIG LOC	SECT
006	159



- CABLES TO BE USED
UNLESS SPECIFIED OTHERWISE
- 1W-3C TRAFFIC SIGNAL CABLES ARE 5/C#16 PJ.
 - ROADSIDE UNIT CABLES ARE 600V. CAT 5e OR APPROVED EQUAL.
 - HEMISPHERICAL VIDEO DETECTION CAMERA CABLES ARE 600V CAT 5e OR APPROVED EQUAL.
 - CELLULAR MODEM ANTENNA CABLES ARE LMR 400 OR APPROVED EQUAL.

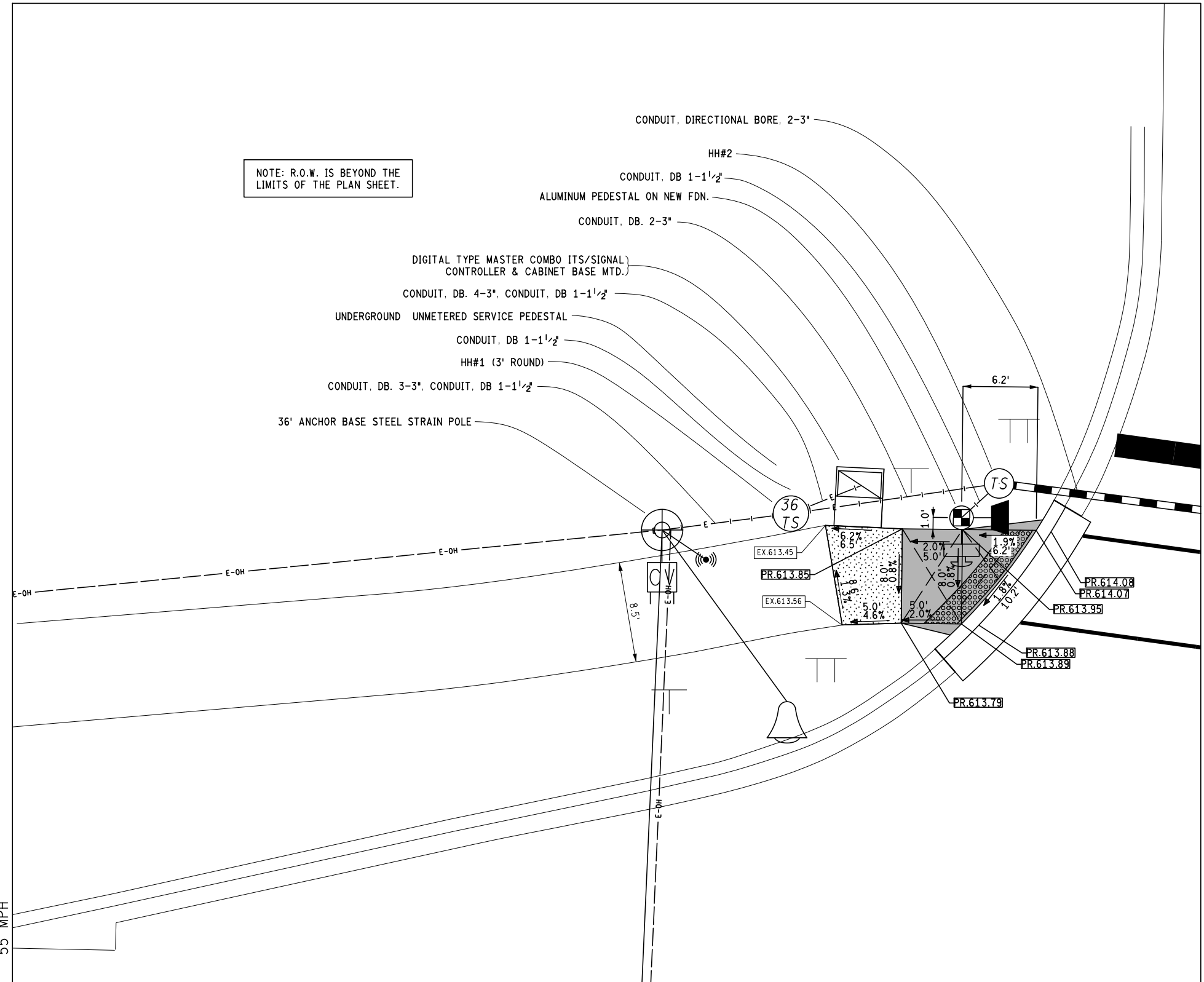


BOX SPAN CALCULATIONS
NOT TO SCALE



FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)										NO SCALE		INT CS: 70024 INT SPOT: 005	DATE: 04/09/18	CS: 70023	TRAFFIC SIGNAL CONSTRUCTION SHEET - FINAL	DRAWING	SHEET
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION					DESIGNED BY: WADETRIM	DESIGN UNIT: SIGNALS	JN: 202084A	1-196 WB OFF RAMP @ ADAMS STREET	SIG	SECT 1
												FILE: 202136_7002401005_CON001.dgn	TSC: MUSKEGON		ZEELAND TWP, OTTAWA COUNTY	LOC	160
																006	

PLAN: 70024-01-005



NOTE: R.O.W. IS BEYOND THE LIMITS OF THE PLAN SHEET.

ADAMS STREET
R.O.W. VARIES
55 MPH

LIST OF MATERIAL - JN 202084A CAT 0005

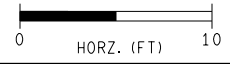
NO.	ITEM	QUANTITIES
○	Sidewalk Ramp, Conc, 6 inch	75 Sft
○	Detectable Warning Surface	12 Ft
○	Curb Ramp Opening, Conc	16 Ft
○	Slope Restoration, Type A	12 Syd
○	Shared use Path, HMA	1 Ton
○	Aggregate Base, 4 inch	19 Syd
○	Embankment, CIP, Special	1 Cyd

HMA APPLICATION ESTIMATE

IDENT NO.	ITEM	RATE LBS PER SYD	PERFORMANCE GRADE	REMARKS
SUP	SHARED USE PATH, HMA	165	58-28	SIDEWALK TOP & LEVELING COURSE: HMA, LVSP (LOWER TARGET AIR VOIDS BY 1.0%)

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)

NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



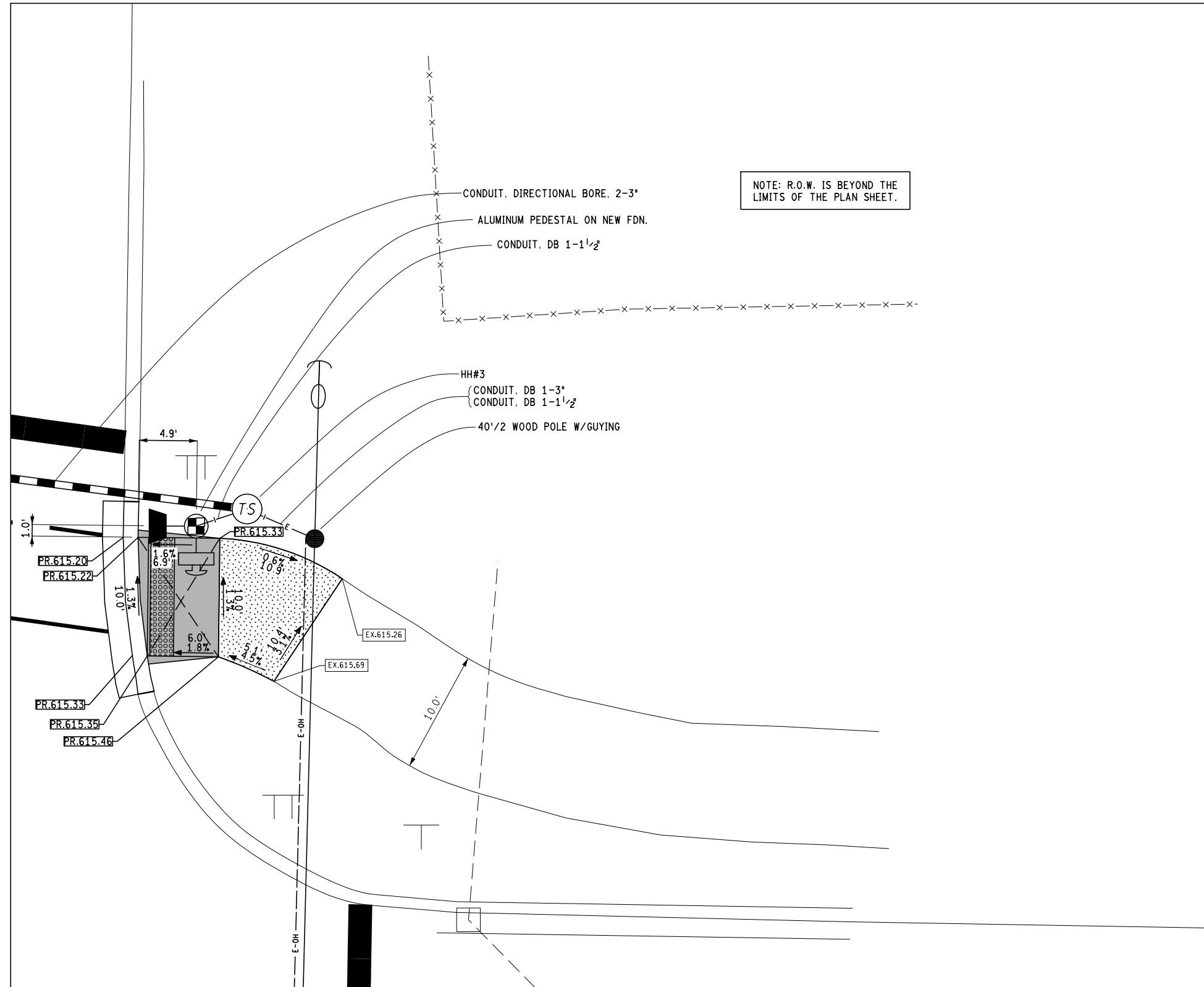
INT CS: 70024 INT SPOT: 005 DATE: 04/09/18
 DESIGNED BY: WADETRIM DESIGN UNIT: SIGNALS
 FILE: 202084_7002401005_CON002.dgn TSC: MUSKEGON

CS: 70023
 JN: 202084A

SIDEWALK CONSTRUCTION SHEET NW QUAD
 I-196 WB OFF RAMP @ ADAMS STREET
 ZEELAND TWP, OTTAWA COUNTY

DRAWING SHEET
 SIG LOC 006 SECT 1
 161

I-196 WB
OFF-RAMP

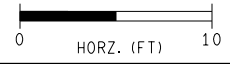


ADAMS STREET
R.O.W. VARIES
55 MPH

LIST OF MATERIAL - JN 202084A CAT 0005		
NO.	ITEM	QUANTITIES
○	Sidewalk Ramp, Conc, 6 inch	75 Sft
○	Detectable Warning Surface	10 Ft
○	Curb Ramp Opening, Conc	16 Ft
○	Slope Restoration, Type A	10 Syd
○	Shared use Path, HMA	1 Ton
○	Aggregate Base, 4 inch	23 Syd
○	Embankment, CIP, Special	1 Cyd

HMA APPLICATION ESTIMATE				
IDENT NO.	ITEM	RATE LBS PER SYD	PERFORMANCE GRADE	REMARKS
SUP	SHARED USE PATH, HMA	165	58-28	SIDEWALK TOP & LEVELING COURSE: HMA, LVSP (LOWER TARGET AIR VOIDS BY 1.0%)

FINAL ROW PLAN REVISIONS (SUBMITTAL DATE:)							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



INT CS: 70024 INT SPOT: 005 DATE: 04/09/18 CS: 70023
 DESIGNED BY: WADETRIM DESIGN UNIT: SIGNALS JN: 202084A
 FILE: 202084_7002401005_CON003.dgn TSC: MUSKEGON

SIDEWALK CONSTRUCTION SHEET NE QUAD
 I-196 WB OFF RAMP @ ADAMS STREET
 ZEELAND TWP, OTTAWA COUNTY

DRAWING	SHEET
SIG LOC 006	SECT 1 162

PLAN: 70024-01-005



M-121 (CHICAGO DR)

84TH AVE

40 MPH
MAIN AVE

M-121 (CHICAGO DR) ● MAIN AVE 70823-01-110	
RADIO CONFIGURATION:	REMOTE RADIO LINK: 1
MOUNTING CONFIGURATION:	STEEL STRAIN POLE

I-196BL ● 84TH AVE 70023-01-002	
RADIO CONFIGURATION:	REMOTE RADIO LINK: 1
MOUNTING CONFIGURATION:	STEEL STRAIN POLE

I-196BL ● MAIN AVE 70023-01-010	
RADIO CONFIGURATION:	REMOTE RADIO LINK: 1
MOUNTING CONFIGURATION:	STEEL STRAIN POLE

I-196BL ● HOMESTEAD DR 70023-01-021	
RADIO CONFIGURATION:	MASTER RADIO LINK: 1
MOUNTING CONFIGURATION:	STEEL STRAIN POLE

I-196BL WB

I-196BL EB

55 MPH

310' (APPROX.)

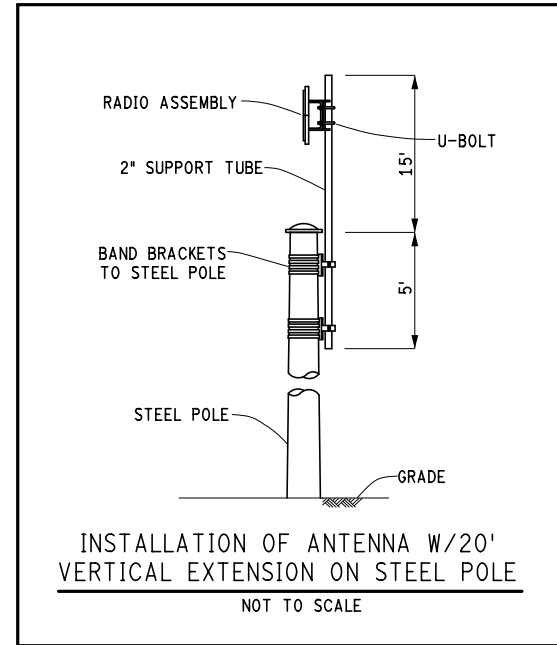
855' (APPROX.)

700' (APPROX.)

84TH AVE

HOMESTEAD DR

55 MPH
I-196BL WB
I-196BL EB



INSTALLATION OF ANTENNA W/20' VERTICAL EXTENSION ON STEEL POLE
NOT TO SCALE

FINAL ROW PLAN REVISIONS				(SUBMITTAL DATE:)			
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

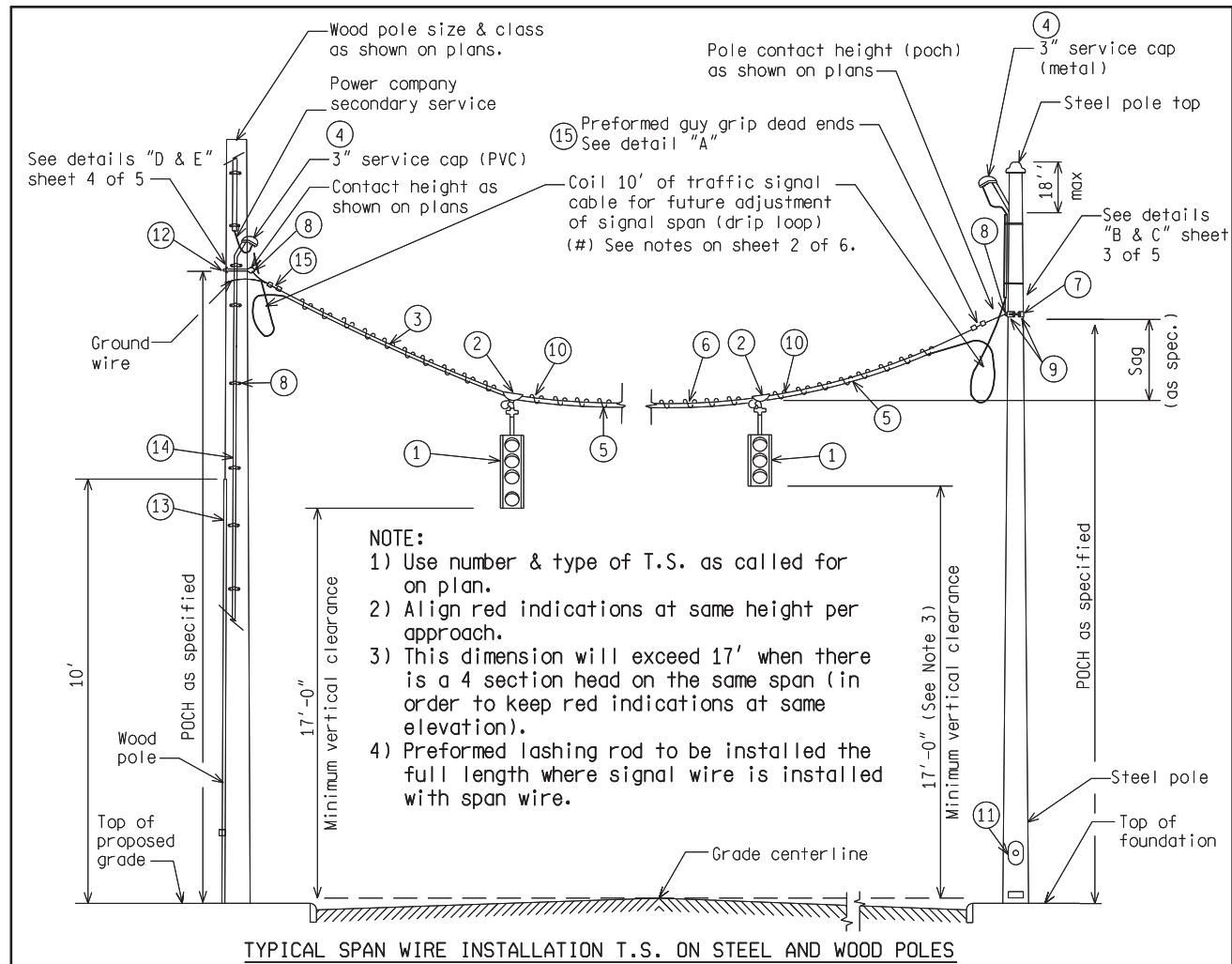


NO SCALE

INT CS: 70023	INT SPOT:	DATE: 04/09/18	CS: 70023
DESIGNED BY: WADETRIM	DESIGN UNIT: SIGNALS	JN: 202084A	
FILE: 202084_INTERCN_CON001.dgn	TSC: MUSKEGON		

TRAFFIC SIGNAL INTERCONNECT SHEET
I-196BL
ZEELAND TWP, OTTAWA COUNTY

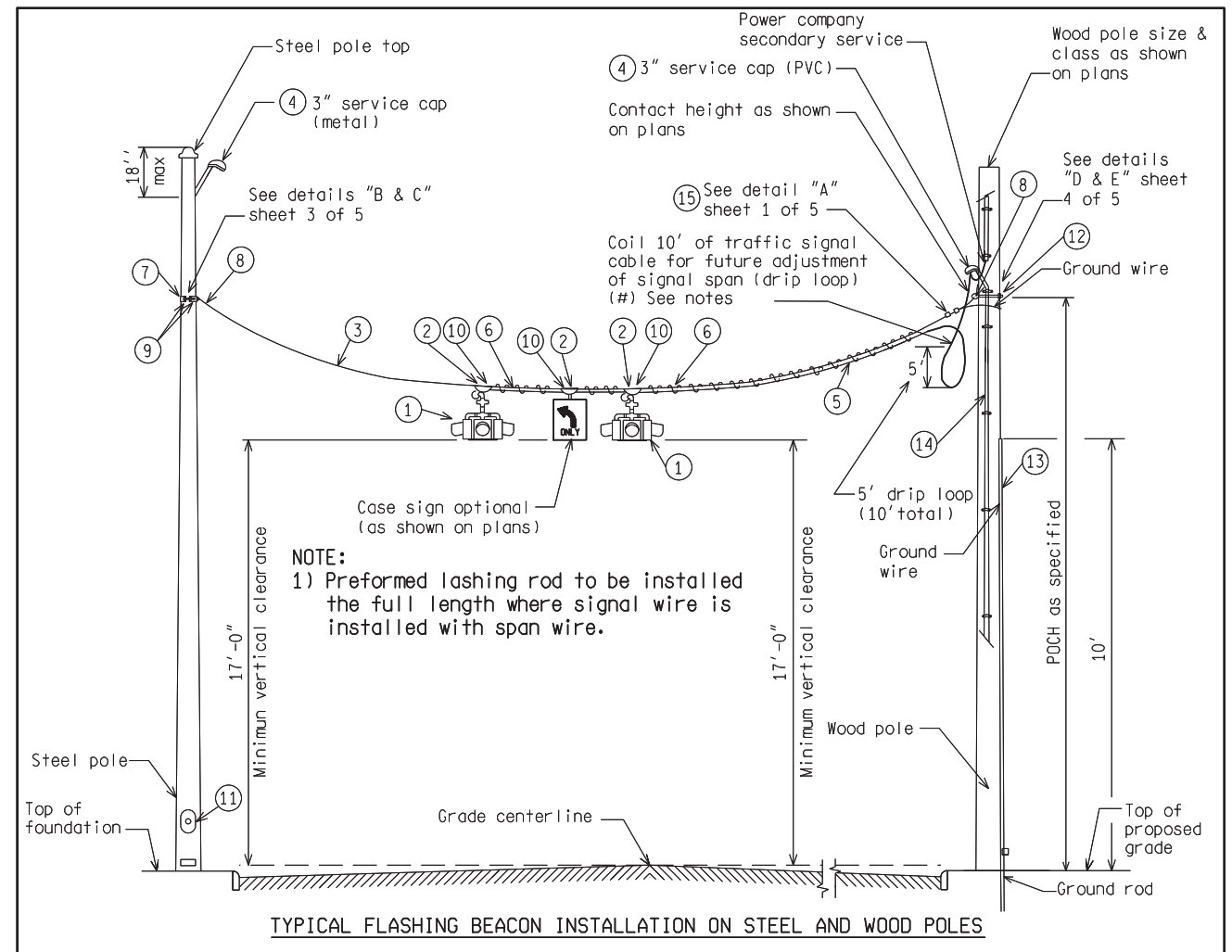
DRAWING	SHEET
INTERCN	SECT 1
001	163



TYPICAL SPAN WIRE INSTALLATION T.S. ON STEEL AND WOOD POLES

NOTE:

- 1) Use number & type of T.S. as called for on plan.
- 2) Align red indications at same height per approach.
- 3) This dimension will exceed 17' when there is a 4 section head on the same span (in order to keep red indications at same elevation).
- 4) Preformed lashing rod to be installed the full length where signal wire is installed with span wire.

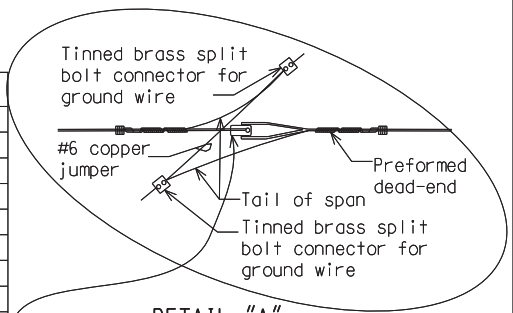


TYPICAL FLASHING BEACON INSTALLATION ON STEEL AND WOOD POLES

NOTE:

- 1) Preformed lashing rod to be installed the full length where signal wire is installed with span wire.

NO.	ITEM
1	Traffic signal (no. heads as indicated)
2	Span wire hanger
3	5/16" extra high strength span wire
4	3" Service cap (weatherhead), (metal for steel and PVC for wood poles)
5	P.J. traffic signal cable (as specified)
6	Preformed lashing rods
7	Pole band clamp (steel pole)
8	Guy thimble (2" dia.)
9	(2) 5/8" x 4" long bolt, nut, washers per pole band clamp (steel pole)
10	Install span wire preformed (armor rod) under each span hanger
11	Access hand hole all new & existing steel poles
12	5/8" eyebolt, oval eye and nut
13	Wood moulding or plastic duct (10' from ground level)
14	3" schedule 80 PVC or rigid metal (*) See note on sheet 2 of 5
15	Preformed guy grip dead ends



DETAIL "A"

COPPER JUMPER

NOTE: Porcelain strain insulator (if required shall meet the codes and placement requirements of the local utility co.)

NO.	ITEM
1	Traffic signal (no. heads as indicated)
2	Span wire hanger
3	5/16" extra high strength span wire
4	3" service cap (weatherhead), (metal for steel and PVC for wood poles)
5	P.J. traffic signal cable (as specified)
6	Preformed lashing rods
7	Pole band clamp (steel pole)
8	Guy thimble (2" dia.)
9	(2) 5/8" x 4" long bolt, nut, washers per pole band clamp (steel pole)
10	Install span wire preformed (armor rod) under each span hanger
11	Access hand hole all new & existing steel poles
12	5/8" eyebolt, oval eye and nut
13	Wood moulding or plastic duct (10' from ground level)
14	1 1/2" to 2" schedule 80 PVC or rigid metal (*) See note
15	Preformed guy grip dead ends

NOTES:

(*) For projects maintained by the Wayne Co. Department of Public Services (WCDPS), use rigid metal for conduit(s) from grade level to 10' (min.) above grade or as directed by the Engineer.

(#) For projects maintained by the Road Commission for Oakland County (RCOC), use drip loop (without coil) for future adjustment of signal span.

NOT TO SCALE

File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG010A.dgn Rev. 02/16/17



PREPARED BY
TRAFFIC AND SAFETY

DRAWN BY: DJF

CHECKED BY:

ENGINEER OF DELIVERY

ENGINEER OF DEVELOPMENT

(SPECIAL DETAIL)
FHWA APPROVAL DATE

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN FOR

ALL SPAN WIRE T.S. ON
STEEL AND WOOD POLES

PLAN DATE

SIG-010-A

SHEET
1 of 7

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN

(SPECIAL DETAIL)
FHWA APPROVAL DATE

File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG010A.dgn Rev. 02/16/17

PLAN DATE

SIG-010-A

SHEET
2 of 7

AS-LET PLAN REVISIONS

NO.	DATE	AUTH	DESCRIPTION



FILE: 202084_SignalDetails.pdf

DATE: 04/09/18

DESIGN UNIT: SIGNALS

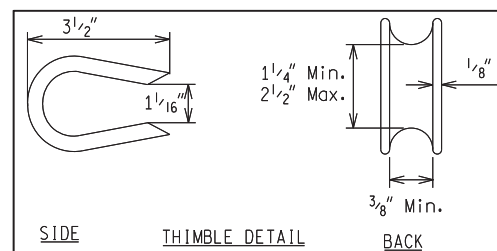
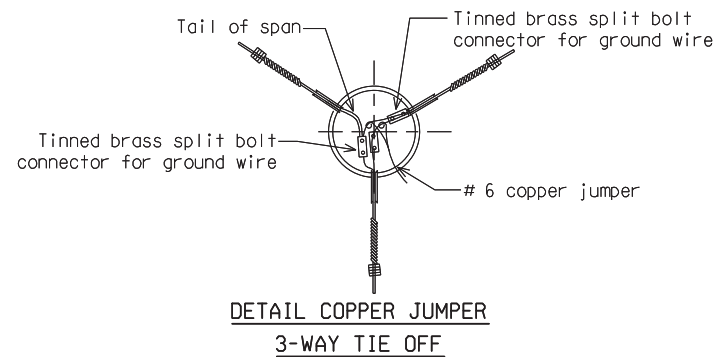
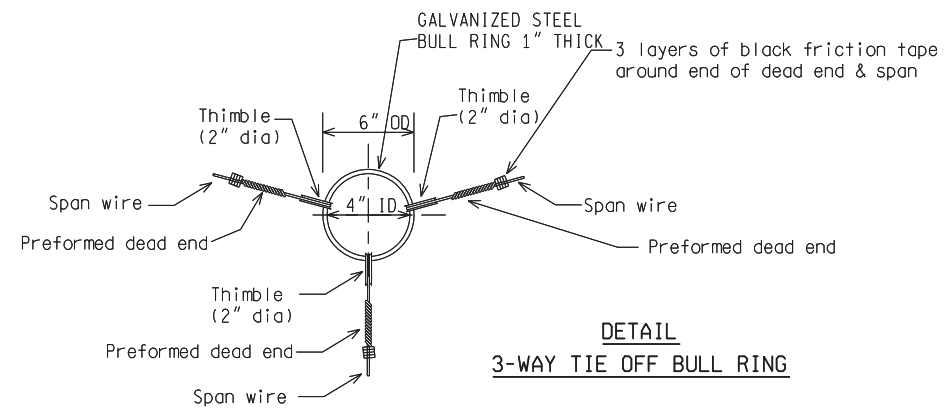
TSC: MUSKEGON

CS: 70023

JN: 202084A

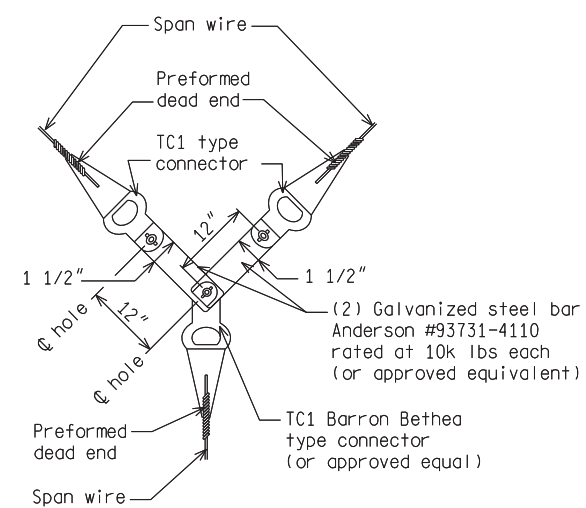
DRAWING SHEET

164

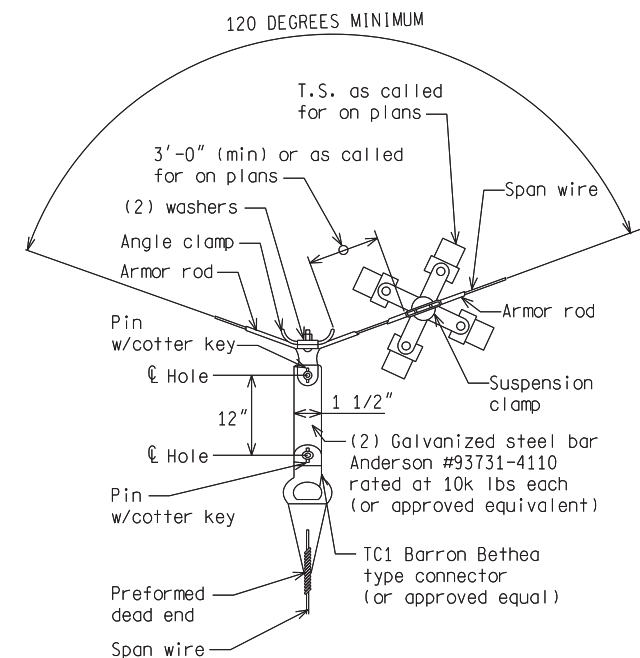


NOT TO SCALE

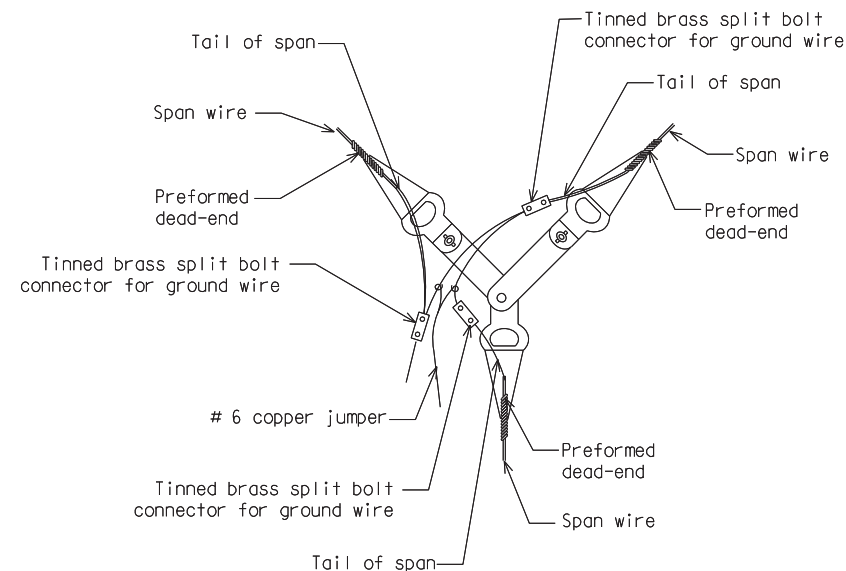
MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN	(SPECIAL DETAIL) FHWA APPROVAL DATE	PLAN DATE	SIG-010-A	SHEET 5 of 7
File: RefDoc/TR/Signals/Web/Sp Det/F in/SIG010A.dgn Rev. 02/16/17				



PULL-OFF CONNECTION DETAIL (ALTERNATE)
FOR 3-WAY SUSPENSION



PULL-OFF CONNECTION DETAIL (ALTERNATE)
FOR 3-WAY SUSPENSION



DETAIL COPPER JUMPER (ALTERNATE)
SPAN WIRE GROUNDING

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN	(SPECIAL DETAIL) FHWA APPROVAL DATE	PLAN DATE	SIG-010-A	SHEET 6 of 7
File: RefDoc/TR/Signals/Web/Sp Det/F in/SIG010A.dgn Rev. 02/16/17				

AS-LET PLAN REVISIONS							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

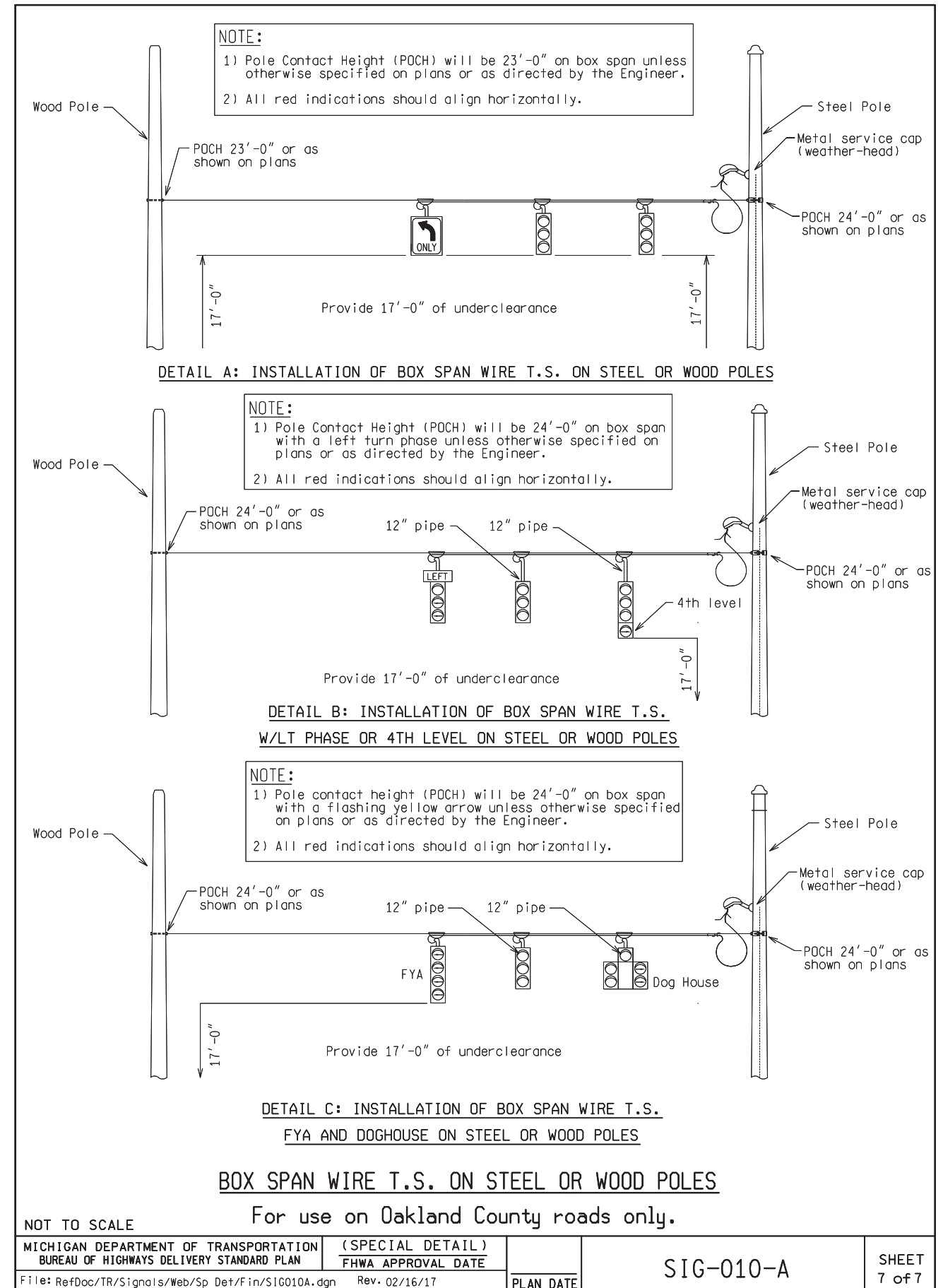


FILE: 202084_SignalDetails.pdf

DATE: 04/09/18
DESIGN UNIT: SIGNALS
TSC: MUSKEGON

CS: 70023
JN: 202084A

DRAWING SHEET
166



AS-LET PLAN REVISIONS							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

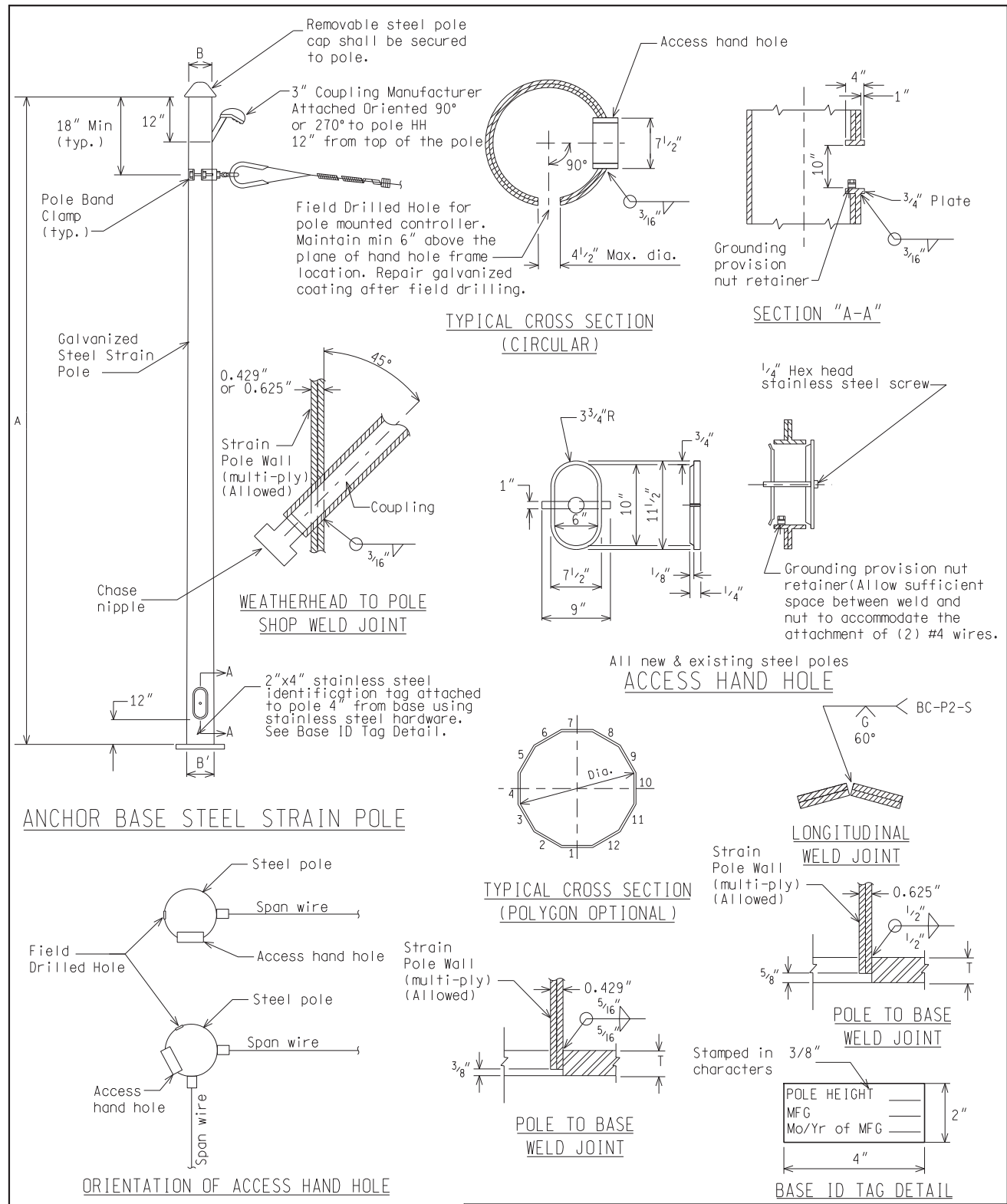


FILE: 202084_SignalDetails.pdf

DATE: 04/09/18
 DESIGN UNIT: SIGNALS
 TSC: MUSKEGON

CS: 70023
 JN: 202084A

DRAWING SHEET
 167



NOT TO SCALE

File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG020A.dgn Rev. 02/16/17

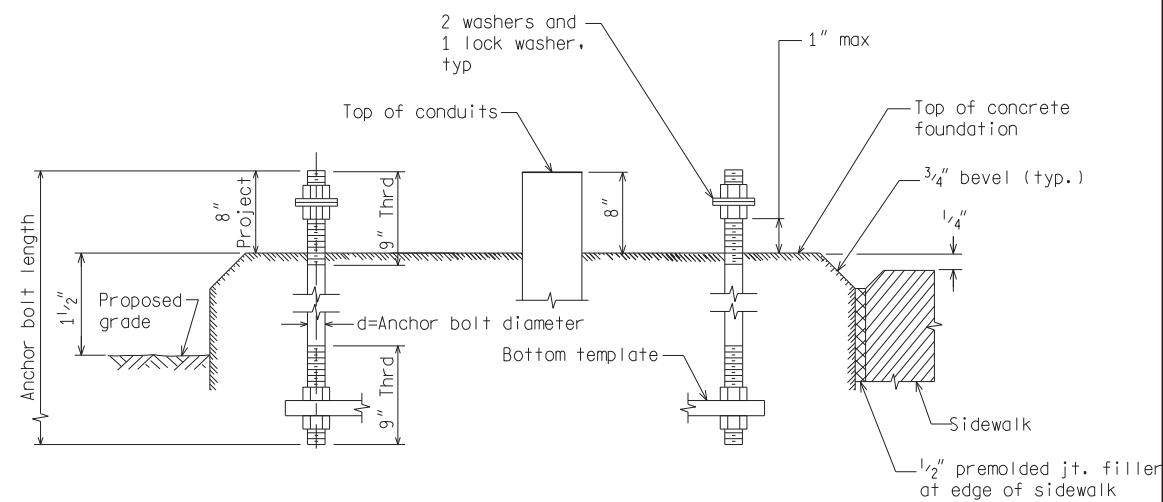
<p>PREPARED BY TRAFFIC AND SAFETY</p> <p>DRAWN BY: DJF</p> <p>CHECKED BY:</p>	<p>ENGINEER OF DELIVERY</p>	<p>MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN FOR</p> <p>6 ANCHOR BOLT STRAIN POLE AND FOUNDATION</p>	<p>PLAN DATE</p>	<p>SIG-020-A</p>	<p>SHEET 1 of 7</p>
	<p>ENGINEER OF DEVELOPMENT (SPECIAL DETAIL) FHWA APPROVAL DATE</p>				

POLE REQUIREMENTS				
Pole Length	A	30 feet	36 feet	40 feet
Thickness (min.)		0.429 inches	0.625 inches	0.625 inches
Pole dia.	At top At bottom	B B'	8" min ± 1/2" 13" ± 1/2"	8 1/2" min ± 1/2" 14" ± 1/2"
Full length taper		+0.002in/ft 0.14in/ft -0.000in/ft	+0.002in/ft 0.14in/ft -0.000in/ft	+0.002in/ft 0.14in/ft -0.000in/ft
Anchor bolt cord	C	9"	10 1/2"	10 1/2"
Base plate edge	D	12 1/4"	14 1/4"	14 1/4"
Base plate thickness	T	2"	2 1/4"	2 1/4"
Anchor bolt circle	BC	18"	21"	21"
Anchor base bolt hole dia.		1 3/16"	2 1/16"	2 1/16"
Anchor bolt dia.	d	1 1/2"	1 3/4"	1 3/4"
Foundation dia.		36"	42"	42"
Anchor bolt length		72"	72"	72"
Pole band (span clamp)	8.5"	POCH 25'-6" to 28' 6"	POCH 32'-6" to 34'-6"	POCH 36'-0" to 38'-6"
	9.5"	POCH 20'-0" to 25'-0"	POCH 25'-0" to 32'-0"	POCH 29'-0" to 35'-6"

- NOTES:
- Acceptable mill tolerances to apply to all nominal dimensions.
 - Materials and galvanizing:
 - Steel for poles shall conform to ASTM A572, Grade 50, fy=50 ksi, or ASTM A595, Grade A, fy=55 ksi.
 - Base plate and steel bottom template ASTM A36, fy=36 ksi.
 - Galvanize all exposed nuts, bolts, and washers according to ASTM F2329. Galvanize all other steel items according to ASTM A123. Embedded nuts, bolts, washers, and steel ring need not be galvanized.
 - Anchor bolts shall conform to ASTM F1554, Grade 105, fy=105 ksi. Coarse pitch thread will be allowed provided threads conform to designation: 06 UNC 2A (1.5 inch dia) 05 UNC 2A (1.75 inch dia).
 - Nuts for anchor bolts shall conform to ASTM A194 Grade 2H or ASTM A563 Grade DH
 - Washers for anchor bolts shall conform to ASTM F436 Type I.
 - Welding
 - Welding shall conform to ANSI/AWS D1.1
 - 100% of welds shall be inspected. Full-penetration groove weld inspection shall be performed by nondestructive ultrasonic methods. Other welds shall have visual and/or magnetic particle inspection.
 - Tolerances
 - overall height + 1%.
 - Sweep and camber 1/8 in/ft.
 - Twist 10° max. overall.
 - Design conforms to AASHTO Standard Specifications for Structural Supports for Highway Sign, Luminaries, and Traffic Signals, 5th Edition, 2009.

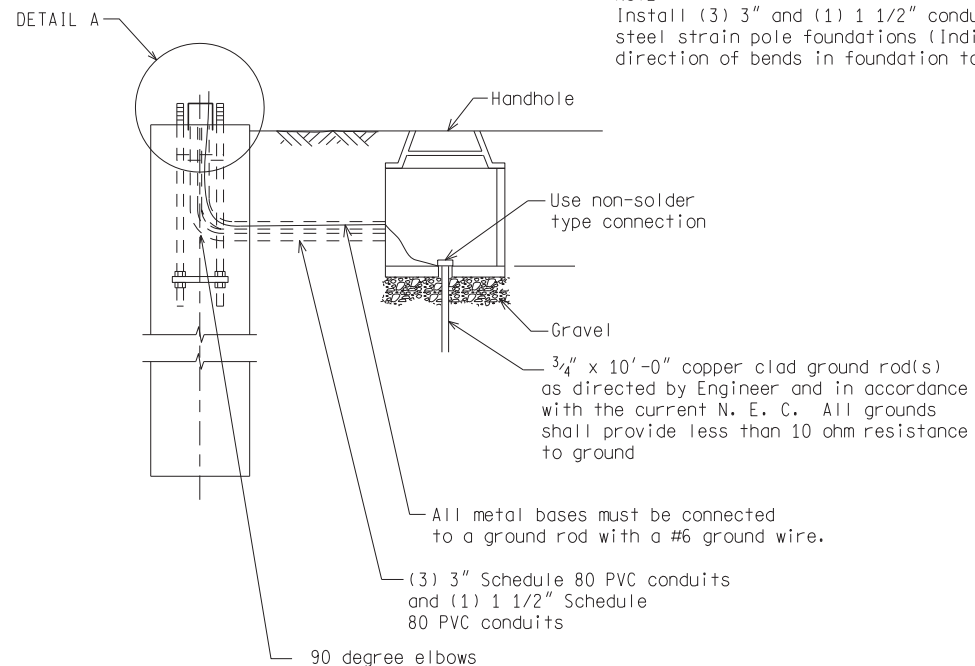
NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN	(SPECIAL DETAIL) FHWA APPROVAL DATE	PLAN DATE	SIG-020-A	SHEET 2 of 7
File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG020A.dgn Rev. 02/16/17				



DETAIL A

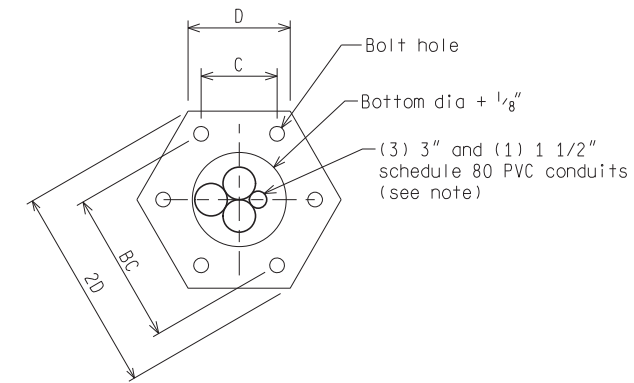
NOTE:
Install (3) 3" and (1) 1 1/2" conduits in all steel strain pole foundations (Indicate direction of bends in foundation top.)



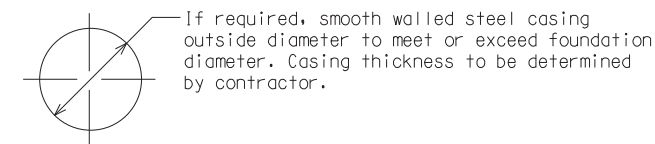
ANCHOR BASE STEEL STRAIN POLE FOUNDATION

NOT TO SCALE

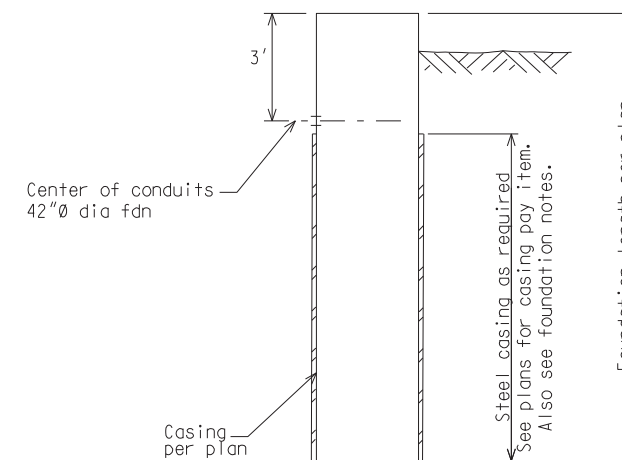
MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN				(SPECIAL DETAIL) FHWA APPROVAL DATE				PLAN DATE	SIG-020-A	SHEET 3 of 7
File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG020A.dgn				Rev. 02/16/17						



BASE PLATE



PLAN



ELEVATION

DRILLED SHAFT FOUNDATION FOR STRAIN POLE (SHOWN WITH CASING PAY ITEM)

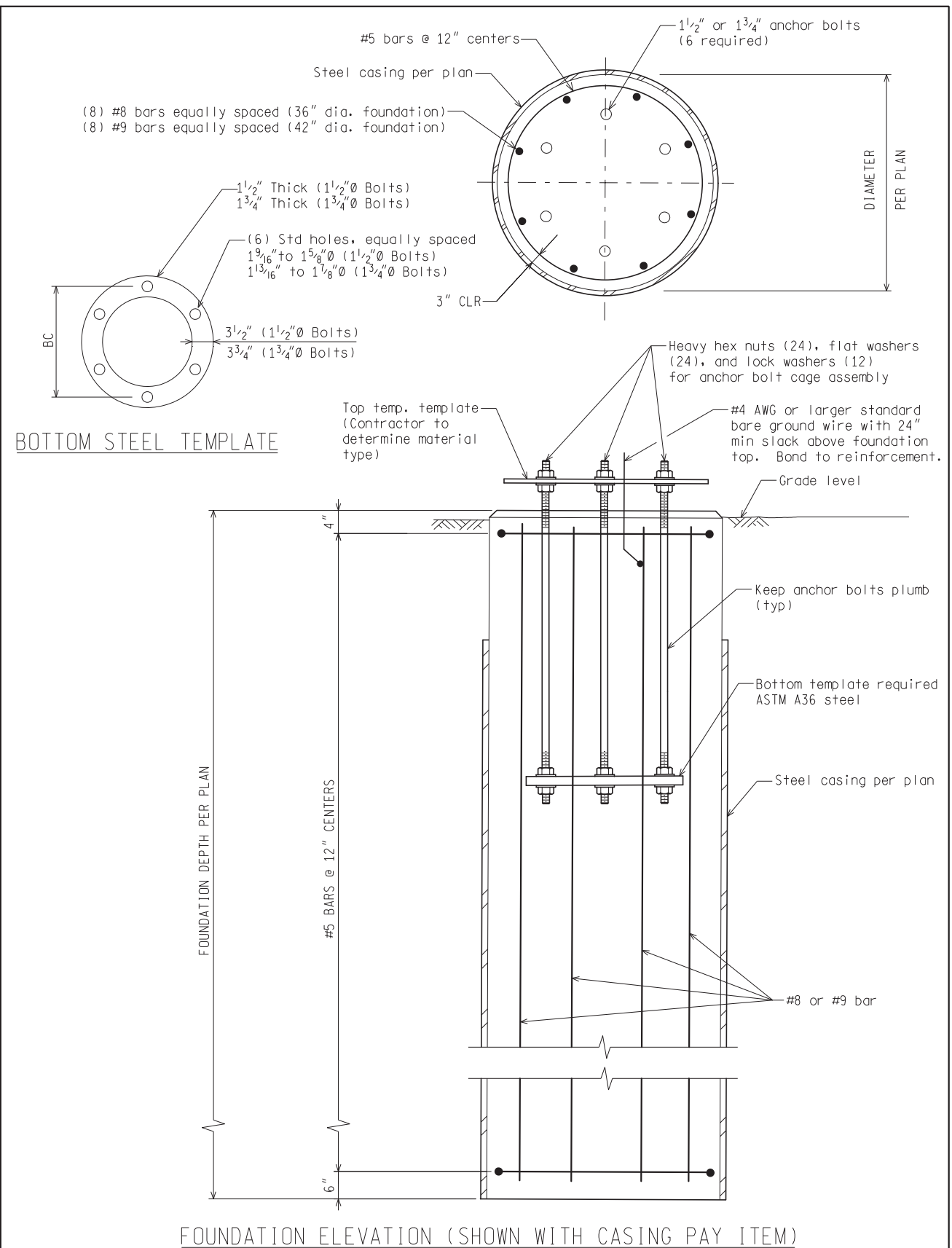
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MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN				(SPECIAL DETAIL) FHWA APPROVAL DATE				PLAN DATE	SIG-020-A	SHEET 4 of 7
File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG020A.dgn				Rev. 02/16/17						

AS-LET PLAN REVISIONS							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



DATE: 04/09/18	CS: 70023	DRAWING	SHEET
DESIGN UNIT: SIGNALS	JN: 202084A		
TSC: MUSKEGON			169
FILE: 202084_SignalDetails.pdf			



NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN	(SPECIAL DETAIL) FHWA APPROVAL DATE	PLAN DATE	SIG-020-A	SHEET 5 of 7
File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG020A.dgn Rev. 02/16/17				

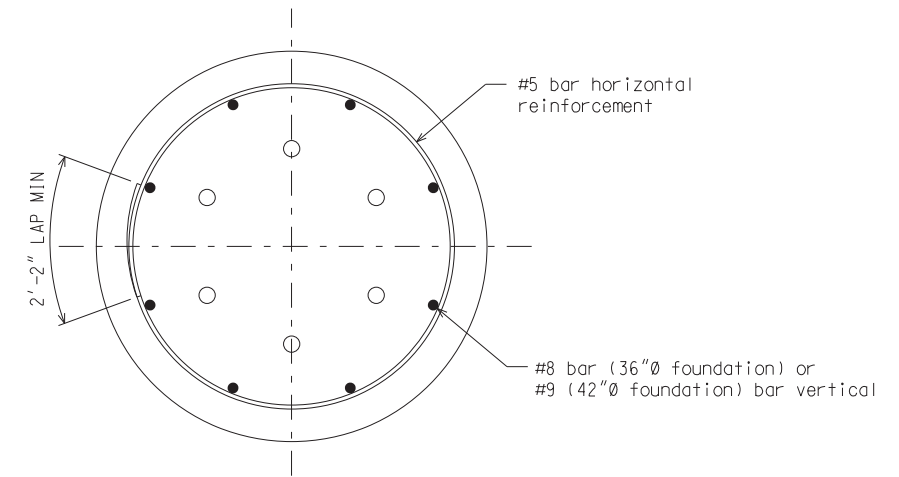
FOUNDATION NOTES:

- Construct strain pole foundations according to 718.03 of the Standard Specifications for Construction. All work and materials shall be in accordance with the MDT Standard Specifications.
- If soil conditions indicate there is no need for a casing pay item as shown on the plans, the contractor should request permission of the engineer to install the foundation without casing.
- When the casing pay item is included on the plans for a foundation (due to granular soils or a wet hole), steel casing (smooth walled) is to be installed to enable the foundation to be poured. The thickness of the steel casing is to be determined by the contractor. The steel casing shall be left in place. A suitable method of compaction must be employed to ensure the soil immediately outside the casing is compacted properly.
- When the casing pay item is called for on the plans, the steel casing may stop at the conduit entrance to foundation. Top of foundation must then be formed separately. The casing pay item quantity will be paid for based on actual linear feet installed.
- Dewatering of wet shafts is not allowed. A wet shaft is defined as having more than 3 inches of standing water or as having water infiltrating at a rate equal to or exceeding 12 inches per hour. For wet shafts, Concrete is to be placed in accordance with section 718.03. (wet construction method) with a tremie tube or concrete pump beginning at the shaft bottom. Grade T concrete must be used for underwater placement. Grade S2 may be used in dry excavations only. See MDT standard specifications Tables 701-1A and 701-1B (Concrete Structure Mixtures)
- Per MDT standard specifications 718-02, the Grade S2 acceptable slump range is 6-8 inches. The Grade T acceptable slump range is 7-9 inches.
- Steel reinforcement shall be ASTM A615 grade 60 without epoxy coating.
- Exposed concrete surfaces shall be cast in forms. Exposed concrete edges shall be beveled 3/4 inches.
- Steel reinforcement shall have a clear cover of 3 inches unless noted otherwise. Steel Reinforcement may be adjusted to ensure proper clear cover.
- Conduits and anchor bolts shall be rigidly installed before concrete is placed. Anchor bolts shall be spaced by means of a template. The center of the template shall coincide with the center of the foundation.
- Grounding of pole includes adding #4 bare copper ground wire bonded by mechanical connection to foundation reinforcing steel and having 24" of slack above the top of foundation.
- Refer to the following special provisions related to 6 anchor bolt strain poles:
Steel Strain Pole
Strain Pole Foundation and Anchor Bolts
Casing Used With Strain Poles and Mast Arm Poles

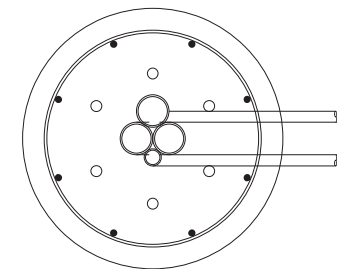
NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN	(SPECIAL DETAIL) FHWA APPROVAL DATE	PLAN DATE	SIG-020-A	SHEET 6 of 7
File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG020A.dgn Rev. 02/16/17				

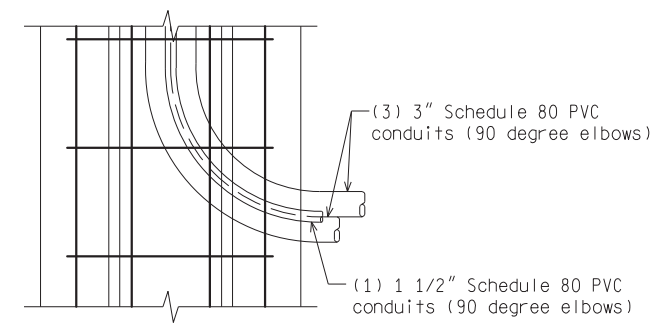
AS-LET PLAN REVISIONS								MDOT Michigan Department of Transportation	DATE: 04/09/18		CS: 70023		DRAWING	SHEET
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION		DESIGN UNIT: SIGNALS	TSC: MUSKEGON	JN: 202084A			
								FILE: 202084_SignalDetails.pdf						170



HORIZONTAL REINFORCEMENT DETAIL



PLAN



ELEVATION VIEW

CONDUIT LAYOUT

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN	(SPECIAL DETAIL) FHWA APPROVAL DATE		SIG-020-A	SHEET 7 of 7
File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG020A.dgn	Rev. 02/16/17	PLAN DATE		

AS-LET PLAN REVISIONS							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

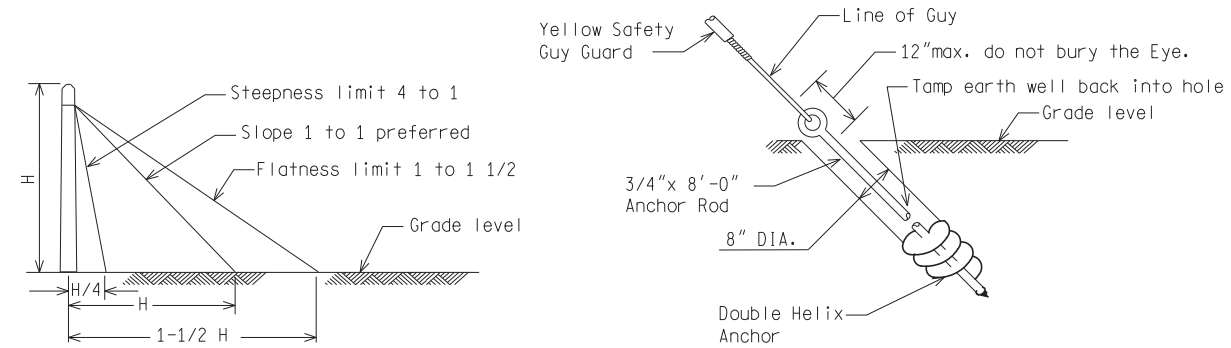


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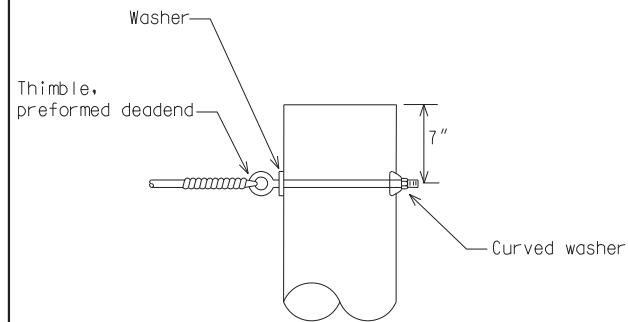
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DESIGN UNIT: SIGNALS
TSC: MUSKEGON

CS: 70023
JN: 202084A

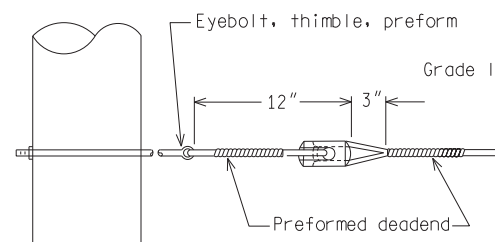
DRAWING SHEET
171



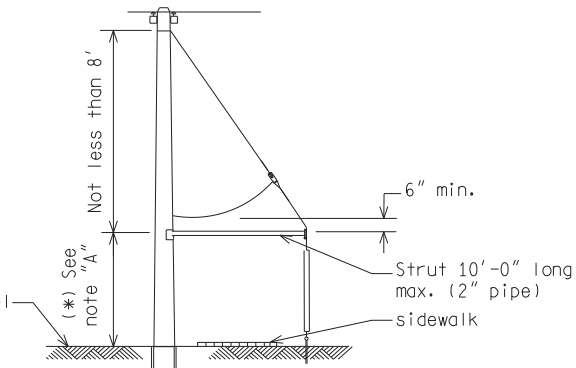
SLOPE LIMITS FOR ANCHOR GUYS



POLE GUY

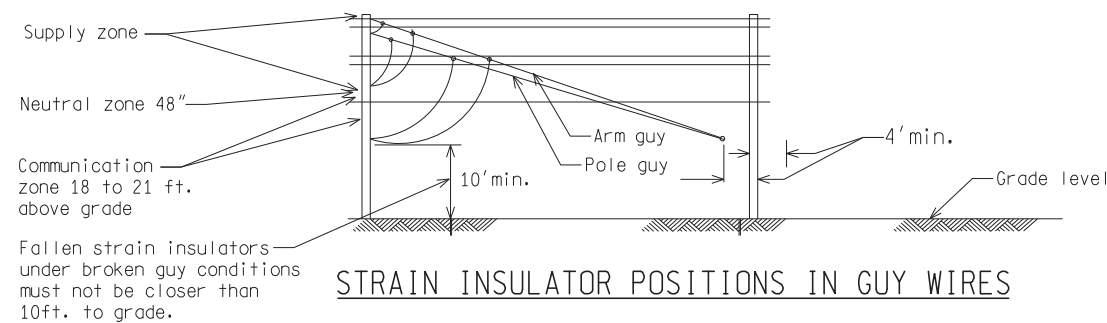


ARM GUY



GUY STRUT

(* NOTE: "A"
This dimension to be 10' unless otherwise specified.



STRAIN INSULATOR POSITIONS IN GUY WIRES

NOT TO SCALE

File: RefDoc/TR/Signals/Web/Sp Det/F in/SIG050A.dgn Rev. 02/16/17



PREPARED BY
TRAFFIC AND SAFETY

DRAWN BY: DJF

CHECKED BY:

ENGINEER OF DELIVERY

ENGINEER OF DEVELOPMENT

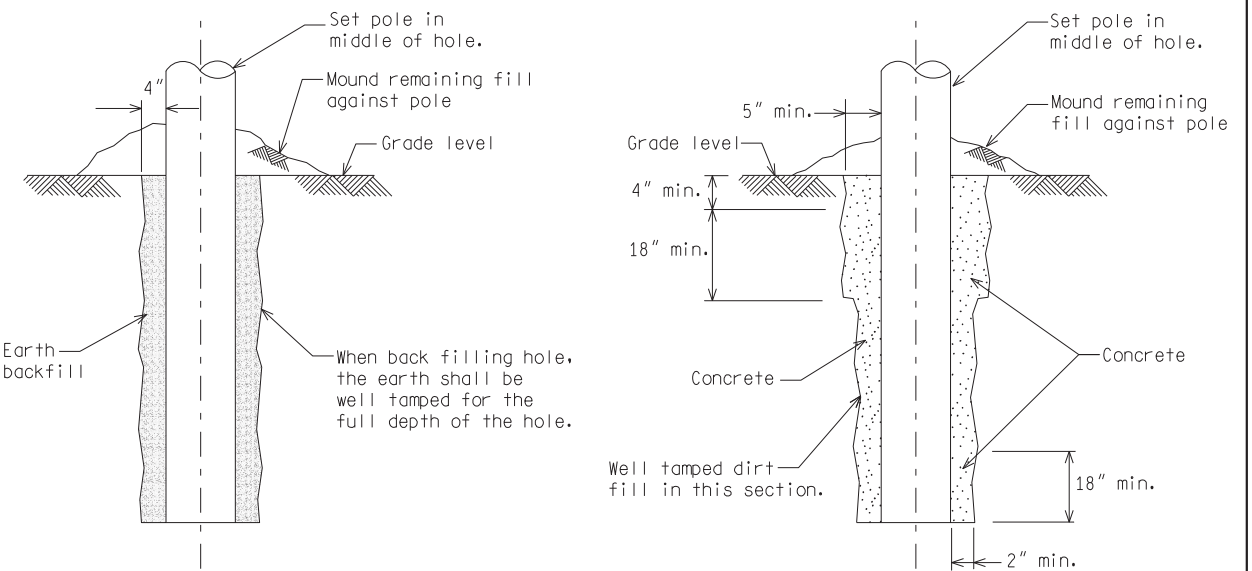
(SPECIAL DETAIL)
FHWA APPROVAL DATE

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN FOR

**WOOD POLE GUYS
AND SETTING DEPTH**

SIG-050-A

SHEET
1 of 2



WOOD POLE INSTALLATION

**SELF SUPPORTING WOOD POLE
IN CONCRETE**

POLE HEIGHT	SETTING DEPTH
30'	6.0'
35'	6.0'
40'	6.0'
45'	6.5'
50'	7.0'
55'	7.5'
60'	8.0'

WOOD POLE SETTING DEPTHS

Reference Standard Specification for Construction Section 819.03

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN

(SPECIAL DETAIL)
FHWA APPROVAL DATE

File: RefDoc/TR/Signals/Web/Sp Det/F in/SIG050A.dgn Rev. 02/16/17

PLAN DATE

SIG-050-A

SHEET
2 of 2

AS-LET PLAN REVISIONS

NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



FILE: 202084_SignalDetails.pdf

DATE: 04/09/18

DESIGN UNIT: SIGNALS

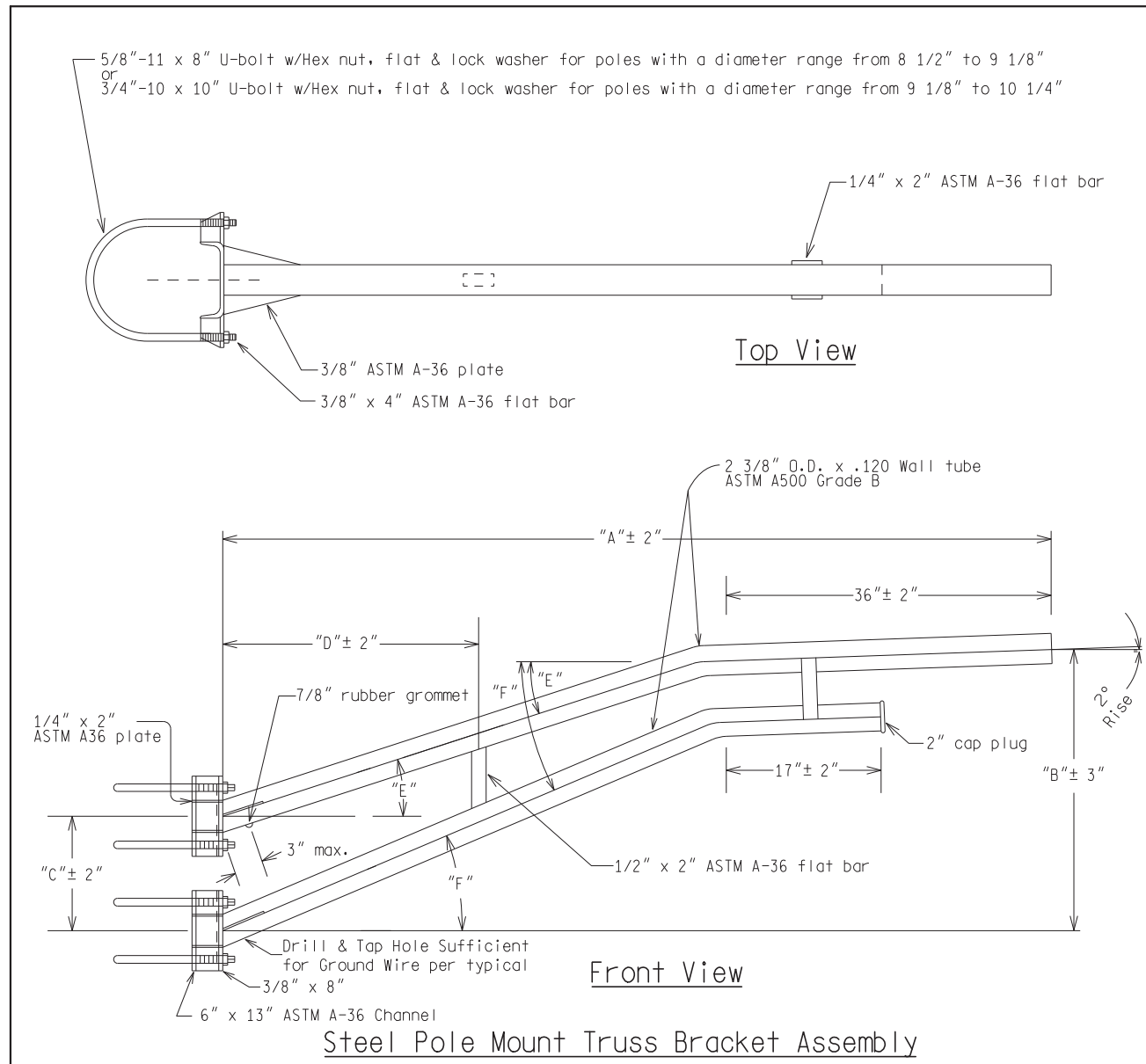
TSC: MUSKEGON

CS: 70023

JN: 202084A

DRAWING SHEET

172



Steel Pole Mount Truss Bracket Assembly

"Dimensions" Size Table

A	B	C	D	E	F
18'-0"	81 3/4"	21 3/4"	84"	18°	23°
15'-0"	66"	18"	66"	18°	23°
12'-0"	50 3/8"	14 1/4"	54"	18°	23°
9'-0"	36 3/4"	12"	36"	18°	23°
6'-0"	23"	10"	18"	18°	27°

NOT TO SCALE

File: RefDoc/TR/Signals/Web/Sp Det/F in/SIG060A.dgn Rev. 02/16/17



PREPARED BY
TRAFFIC AND SAFETY

DRAWN BY: JAM
CHECKED BY:

ENGINEER OF DELIVERY

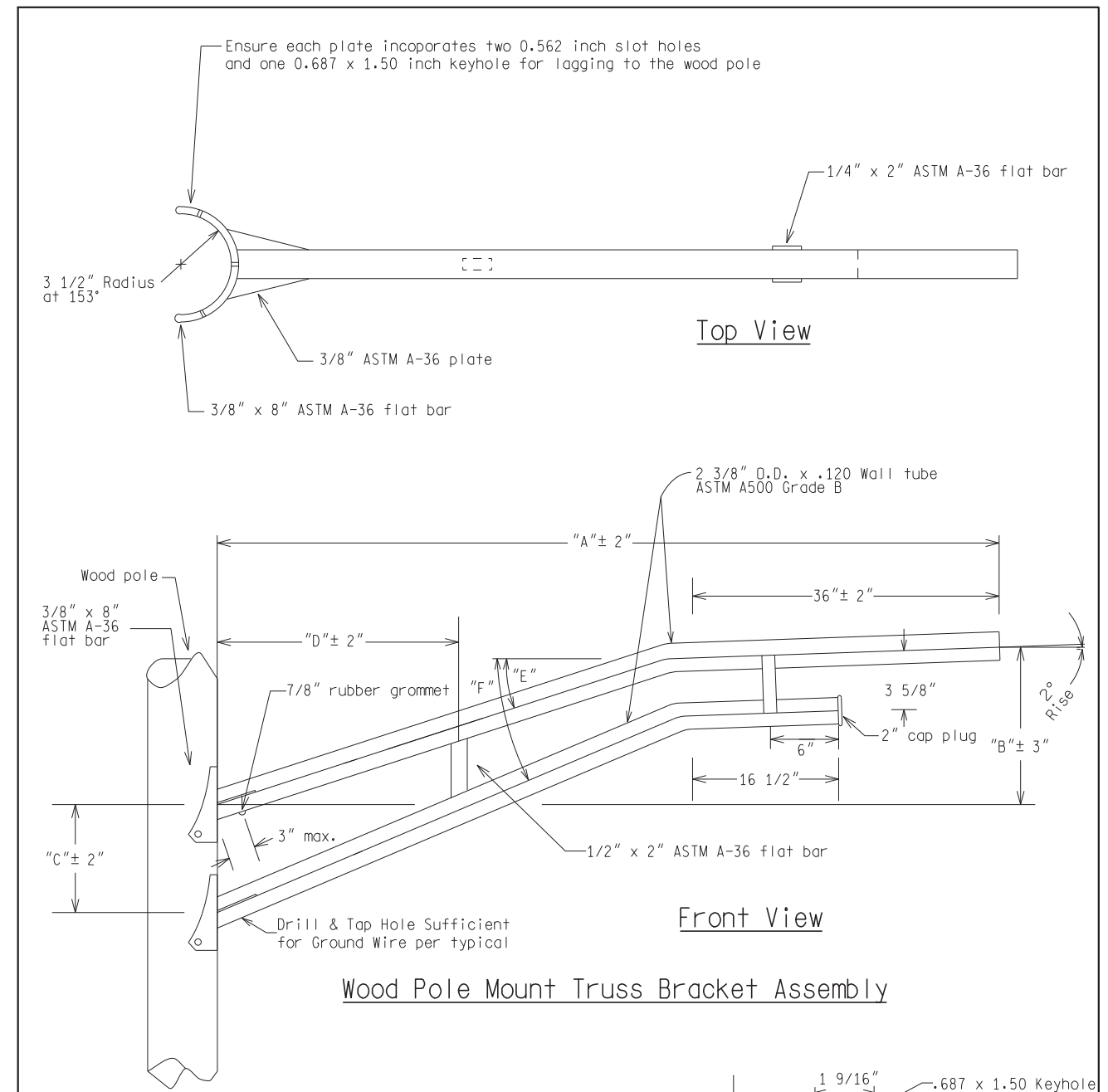
ENGINEER OF DEVELOPMENT

(SPECIAL DETAIL)
FHWA APPROVAL DATE

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN FOR
STEEL TRUSS BRACKETS

SIG-060-A

SHEET
1 of 3



Wood Pole Mount Truss Bracket Assembly

"Dimensions" Size Table

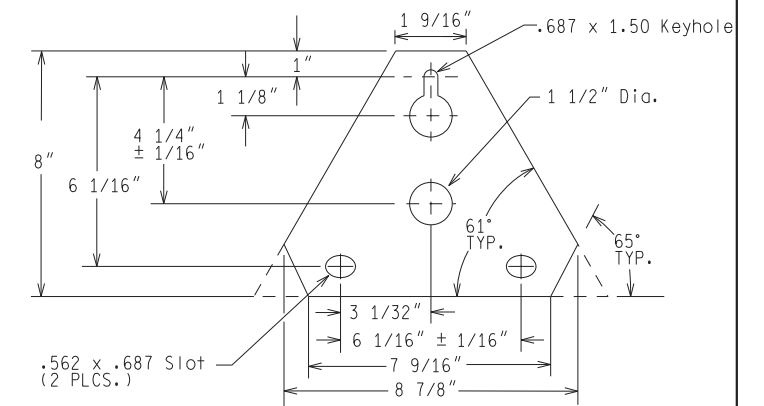
A	B	C	D	E	F
15'-0"	47 3/4"	18"	66"	18°	23°
12'-0"	36"	14 3/8"	48"	18°	23°
9'-0"	26 3/8"	12"	36"	18°	23°
6'-0"	12 1/2"	8 1/2"	18"	18°	23°

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN

FHWA APPROVAL DATE

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Mounting Plate Detail

SIG-060-A

SHEET
2 of 3

AS-LET PLAN REVISIONS

NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



FILE: 202084_SignalDetails.pdf

DATE: 04/09/18

DESIGN UNIT: SIGNALS

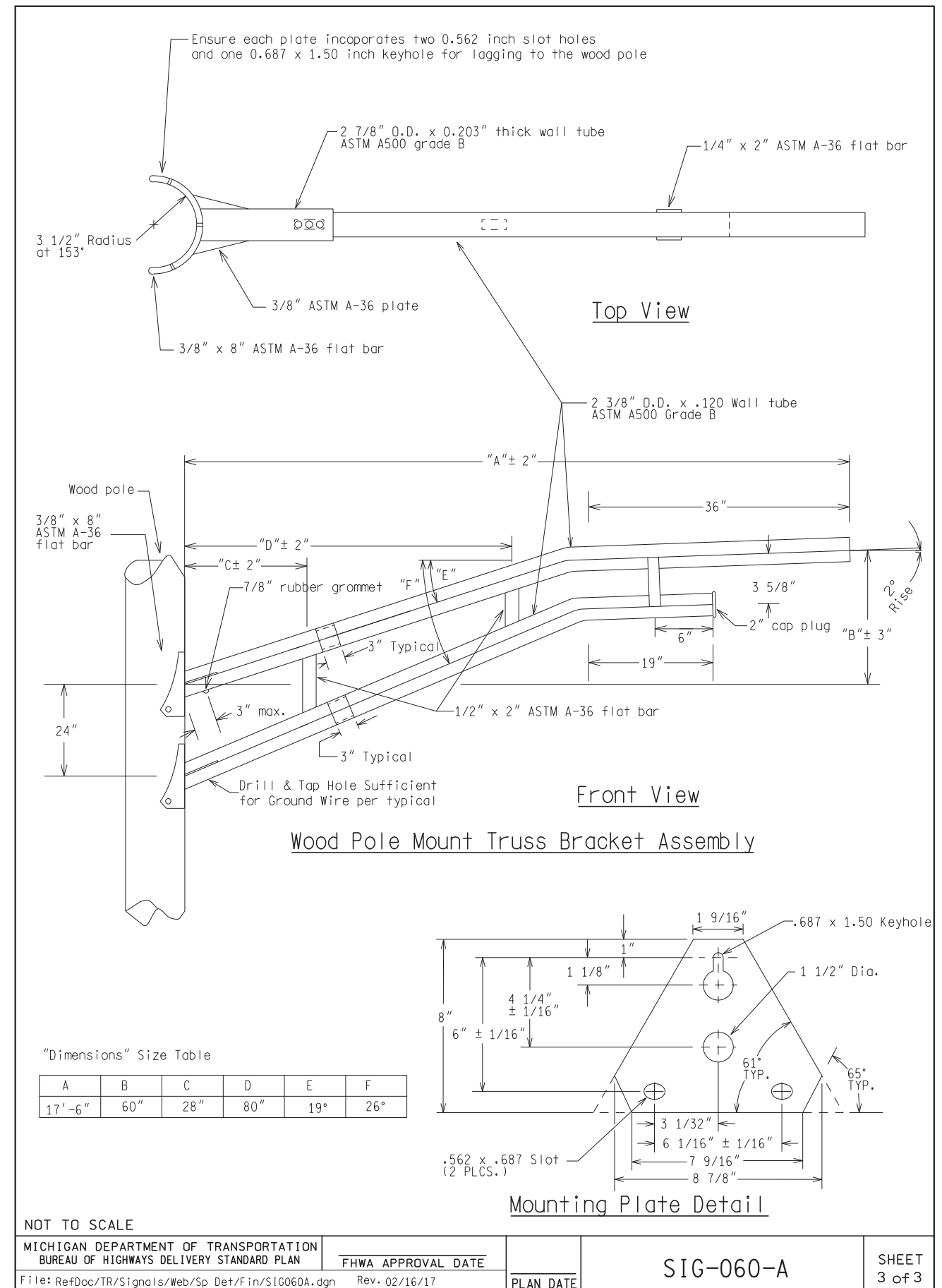
TSC: MUSKEGON

CS: 70023

JN: 202084A

DRAWING SHEET

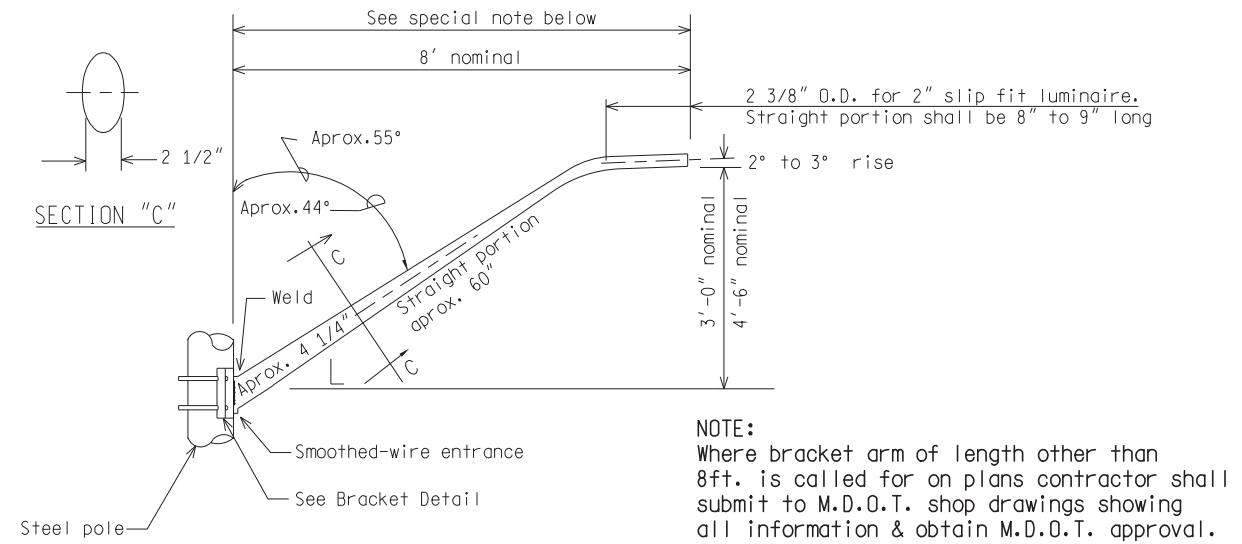
173



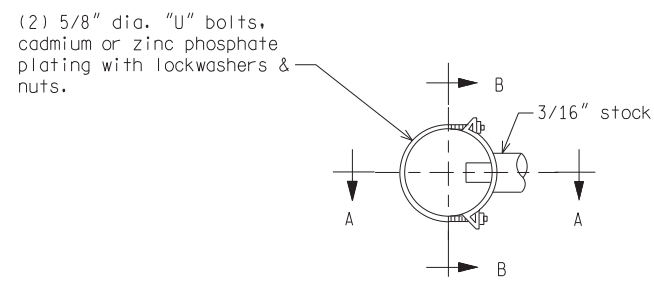
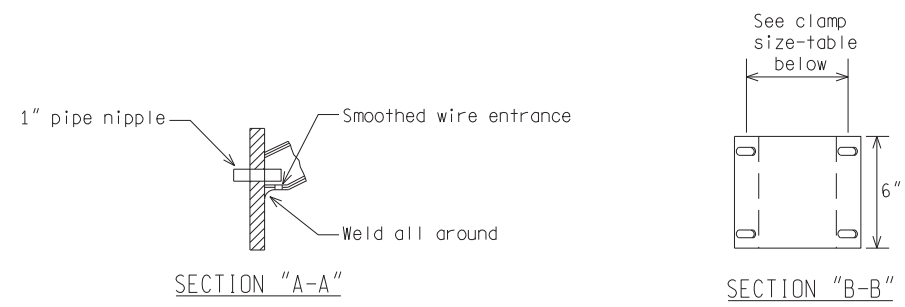
AS-LET PLAN REVISIONS							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



FILE: 202084_SignalDetails.pdf



CLAMP ON BRACKET ARM ASSEMBLY (STREET LIGHT)



CLAMP SIZE TABLE

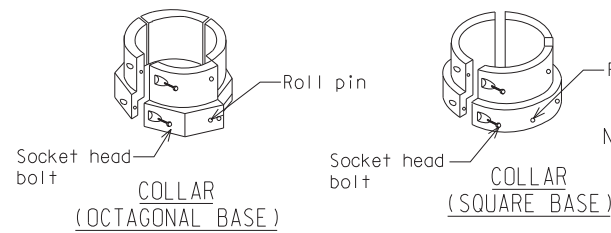
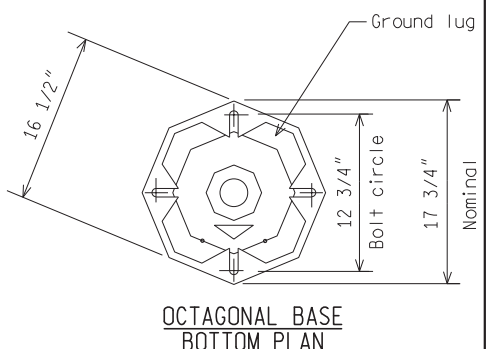
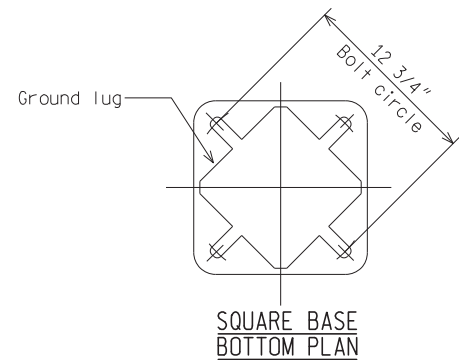
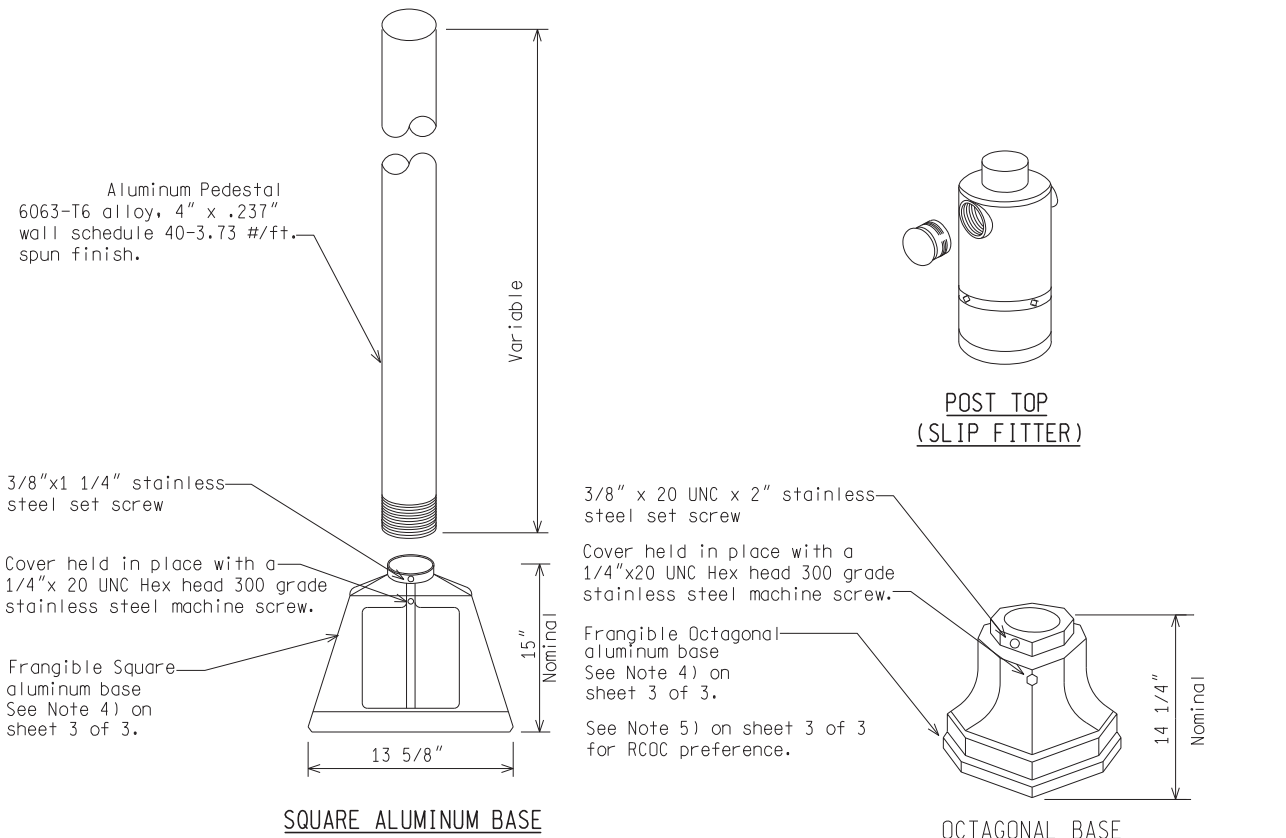
TYPE	POLE DIAMETER
A	3.6" - 4.5"
B	6.1" - 6.9"
C	7.5" - 8.5"

NOT TO SCALE

File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG061A.dgn Rev: 02/16/17

<p>PREPARED BY TRAFFIC AND SAFETY</p> <p>DRAWN BY: DJF</p> <p>CHECKED BY:</p>	<p>ENGINEER OF DELIVERY</p>	<p>MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN FOR</p> <p>CLAMP ON BRACKET ARM ASSEMBLY (STREET LIGHT)</p>	
	<p>ENGINEER OF DEVELOPMENT (SPECIAL DETAIL) FHWA APPROVAL DATE</p>	<p>PLAN DATE</p>	<p>SIG-061-A</p>

AS-LET PLAN REVISIONS									DATE: 04/09/18 DESIGN UNIT: SIGNALS TSC: MUSKEGON	CS: 70023 JN: 202084A	DRAWING	SHEET
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION					
								FILE: 202084_SignalDetails.pdf				175

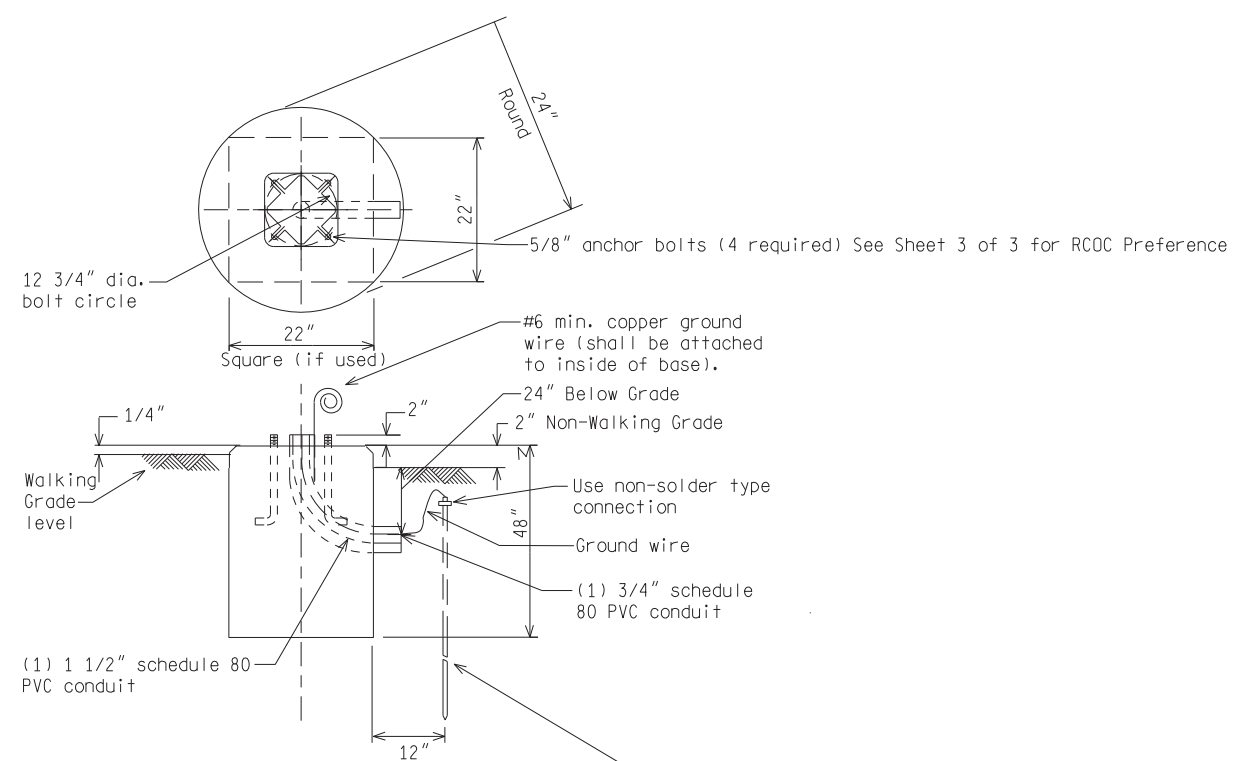


NOTE: Use pedestal collar for pedestal length greater than or equal to 14' (typical for 3 color traffic signals with pedestrian signals)

NOT TO SCALE

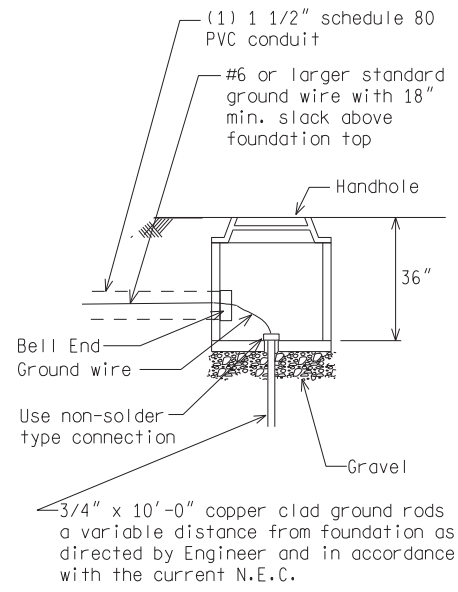
File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG070A.dgn Rev. 02/16/17

<p>MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN FOR</p>	ENGINEER OF DELIVERY	<p>PEDESTAL FOUNDATION</p>	
	ENGINEER OF DEVELOPMENT		
<p>PREPARED BY TRAFFIC AND SAFETY</p>	(SPECIAL DETAIL)	<p>SIG-070-A</p>	<p>SHEET 1 of 3</p>
<p>DRAWN BY:</p> <p>CHECKED BY:</p>	<p>FHWA APPROVAL DATE</p> <p>PLAN DATE</p>		



PEDESTAL FOUNDATION

See notes 1, 2 & 3 on sheet 3 of 3.

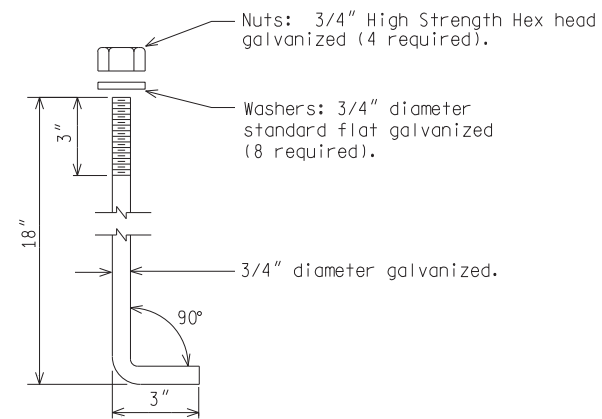


HANDHOLE DETAIL

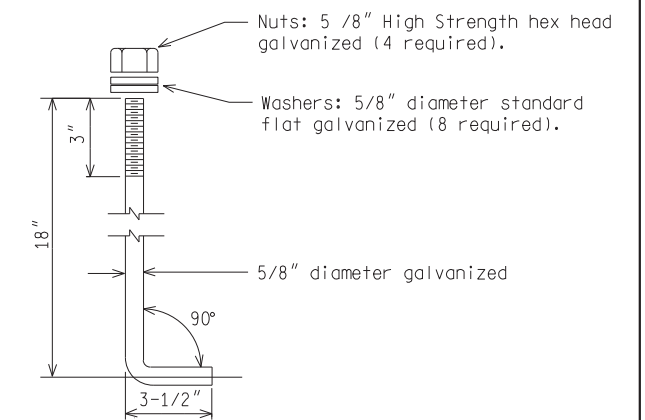
NOT TO SCALE

<p>MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN</p>	<p>(SPECIAL DETAIL) FHWA APPROVAL DATE</p>	<p>SIG-070-A</p>	<p>SHEET 2 of 3</p>
<p>File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG070A.dgn Rev. 02/16/17</p>	<p>PLAN DATE</p>		

AS-LET PLAN REVISIONS								<p>MICHIGAN DEPARTMENT OF TRANSPORTATION</p>	<p>DATE: 04/09/18</p> <p>DESIGN UNIT: SIGNALS</p> <p>TSC: MUSKEGON</p>	<p>CS: 70023</p> <p>JN: 202084A</p>	<p>DRAWING</p>	<p>SHEET</p>
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION					
								<p>FILE: 202084_SignalDetails.pdf</p>				<p>176</p>



For use on MDOT Trunkline.



For use on Oakland County Roads only.

ANCHOR BOLT DETAIL

NOTE: Anchor bolts are to be ASTM-A307 steel (4-required)

NOTES:

- 1) Alternate foundation may be constructed 22"x22" square - 48" deep.
- 2) Grounding system shall measure 10 ohm or less to ground.
- 3) Construction joints not permitted in foundation.
- 4) Pedestal base must meet the requirements of National Cooperative Highway Research Program Report 350 (NCHRP 350) or Manual for Assessing Safety Hardware (MASH) and have Federal Highway Administration (FHWA) acceptance. Pedestal base must also be certified to have a 4-inch maximum stub height after the support has broken away from its base, as specified in the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaries, and Traffic Signals and the AASHTO Roadside Design Guide.
- 5) Use the Octagonal Base as a preference by the Road Commission for Oakland County (RCOC), for use on Oakland County roads only.

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN	(SPECIAL DETAIL) FHWA APPROVAL DATE		SIG-070-A	SHEET 3 of 3
File: RefDoc/TR/Signals/Web/Sp Det/F in/SIG070A.dgn	Rev. 02/16/17	PLAN DATE		

AS-LET PLAN REVISIONS							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



FILE: 202084_SignalDetails.pdf

DATE: 04/09/18

CS: 70023

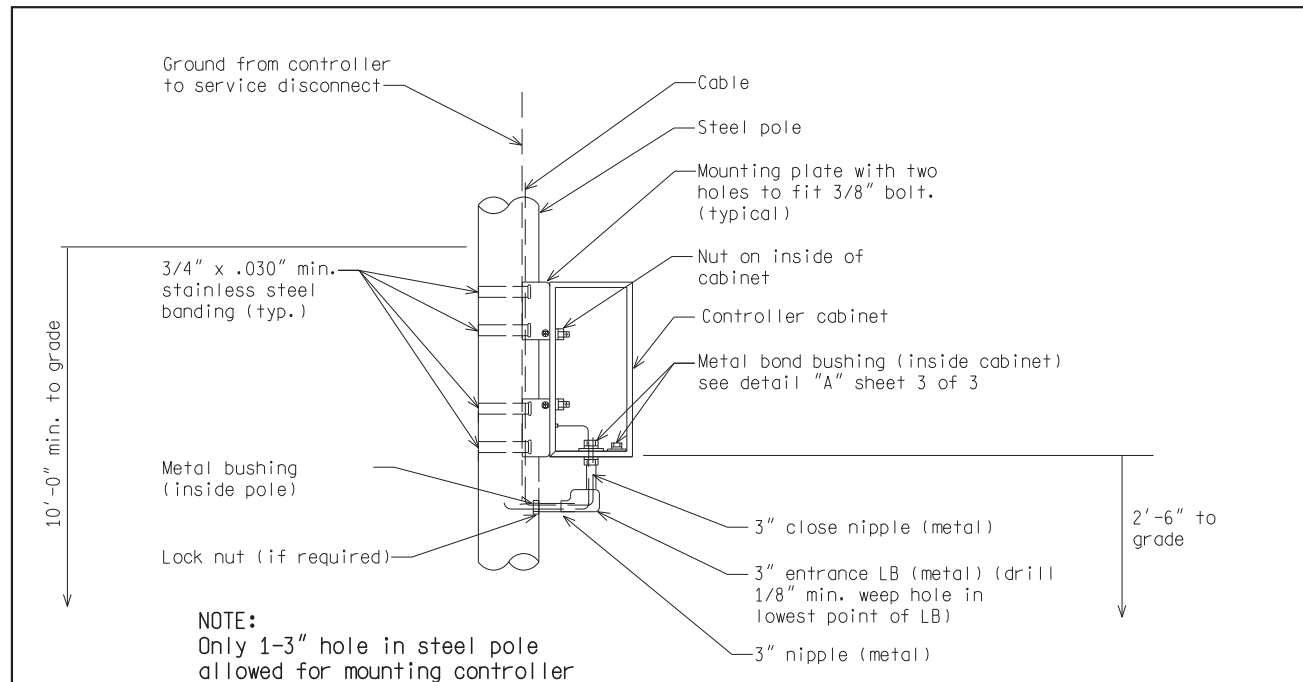
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JN: 202084A

TSC: MUSKEGON

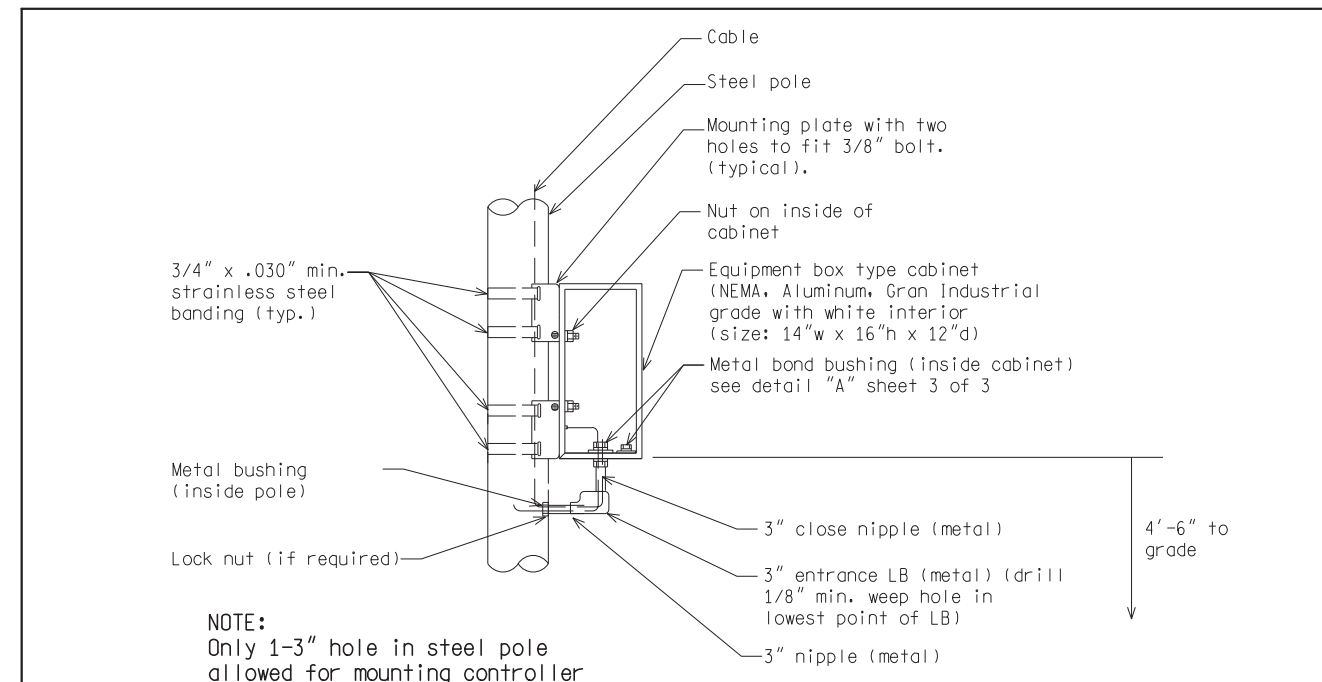
DRAWING SHEET

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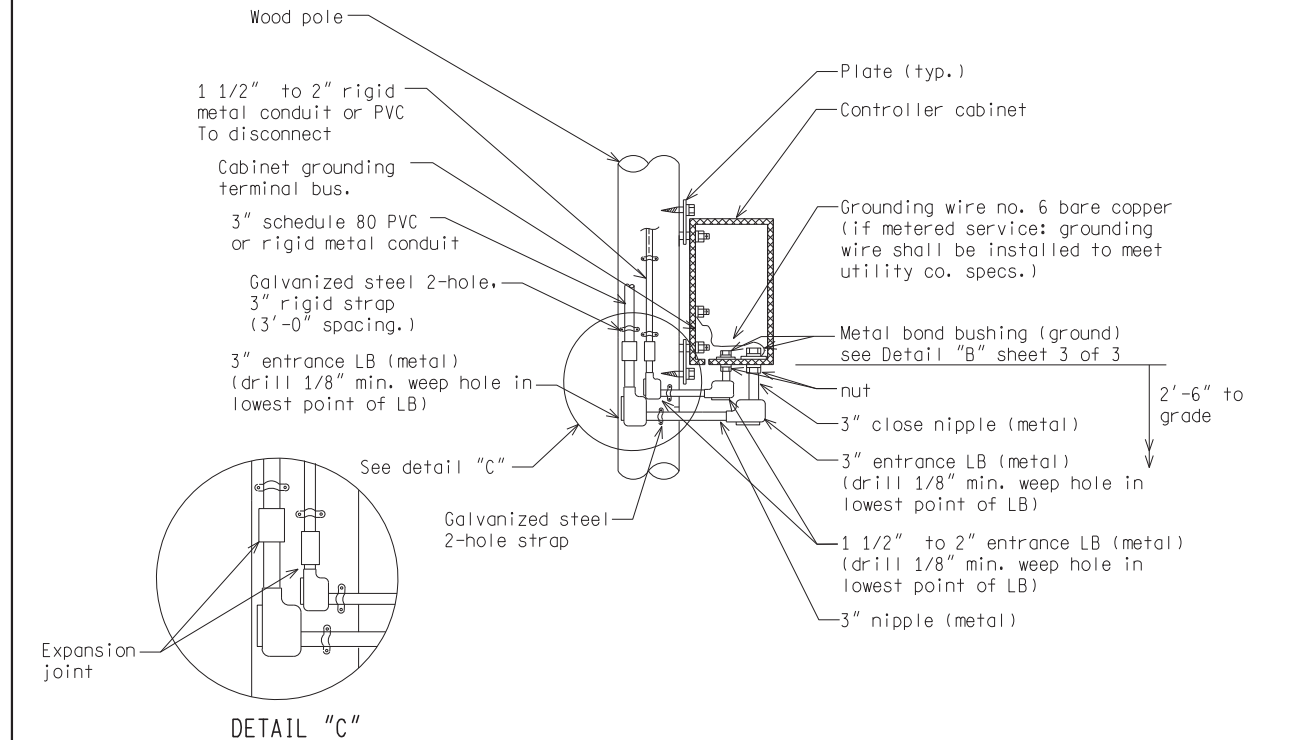
NOTE:
Only 1-3" hole in steel pole allowed for mounting controller

TRAFFIC SIGNAL CONTROLLER CABINET MOUNTED ON STEEL POLES

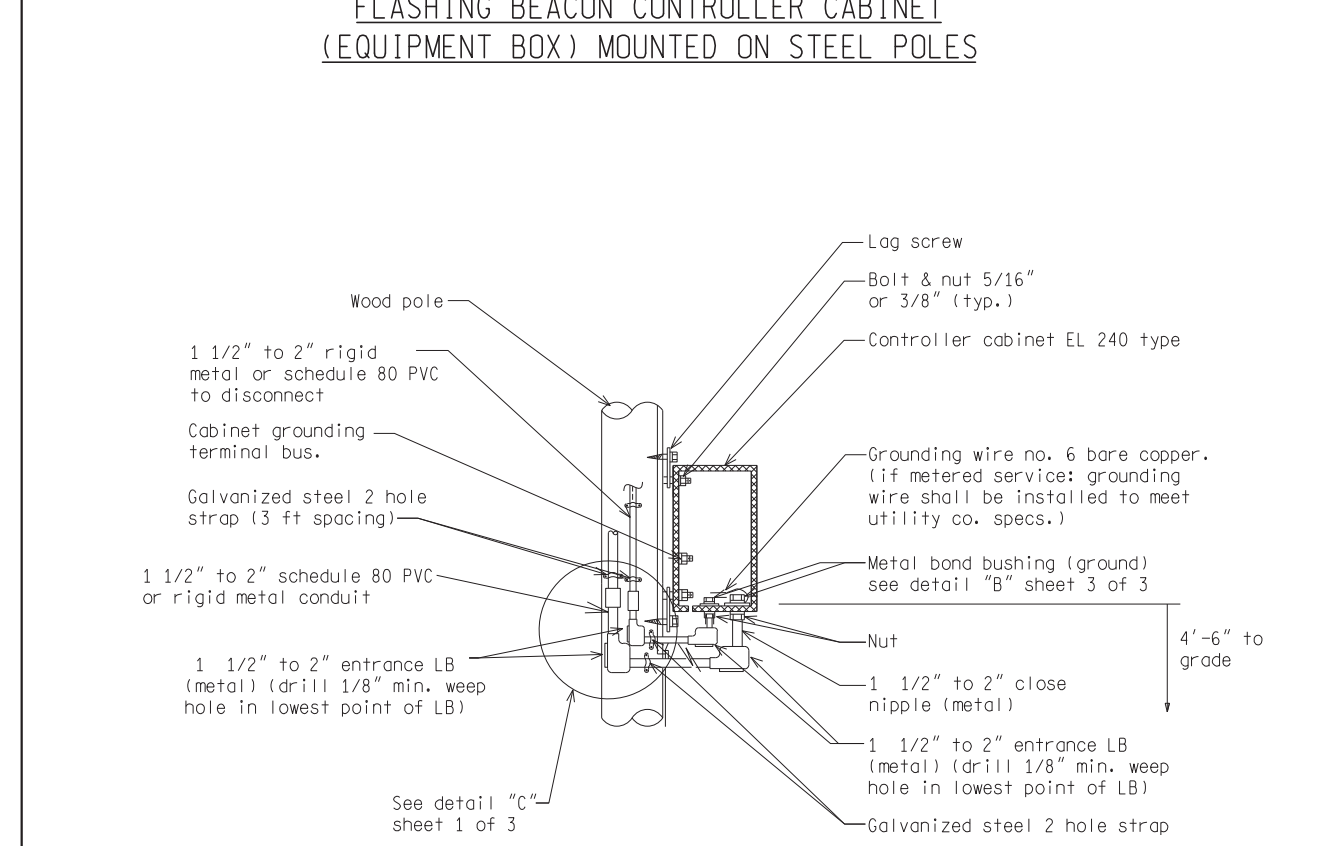


NOTE:
Only 1-3" hole in steel pole allowed for mounting controller

FLASHING BEACON CONTROLLER CABINET (EQUIPMENT BOX) MOUNTED ON STEEL POLES



TRAFFIC SIGNAL CONTROLLER CABINET MOUNTED ON WOOD POLES



FLASHING BEACON CONTROLLER CABINET (EL 240 TYPE OR EQUIVALENT) MOUNTED ON WOOD POLES

NOT TO SCALE

File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG100A.dgn Rev. 02/16/17

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN FOR
CONTROLLER CABINET MOUNTED ON STEEL OR WOOD POLES

ENGINEER OF DELIVERY _____

ENGINEER OF DEVELOPMENT _____

DRAWN BY: DJF (SPECIAL DETAIL)

CHECKED BY: _____ FHWA APPROVAL DATE _____

PLAN DATE _____ SIG-100-A SHEET 1 of 3

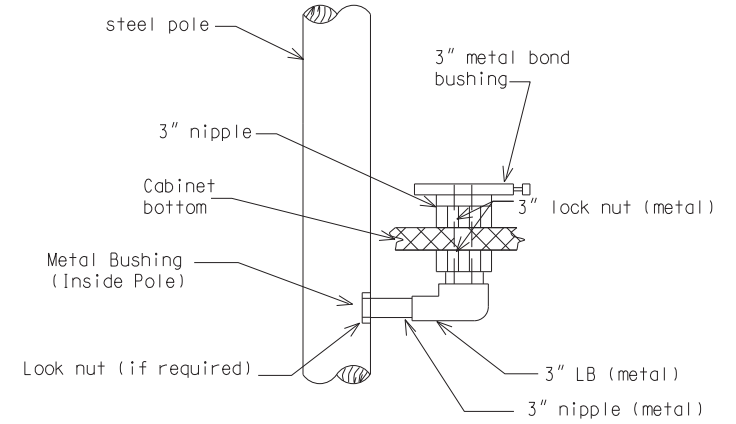
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MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN (SPECIAL DETAIL)
FHWA APPROVAL DATE _____

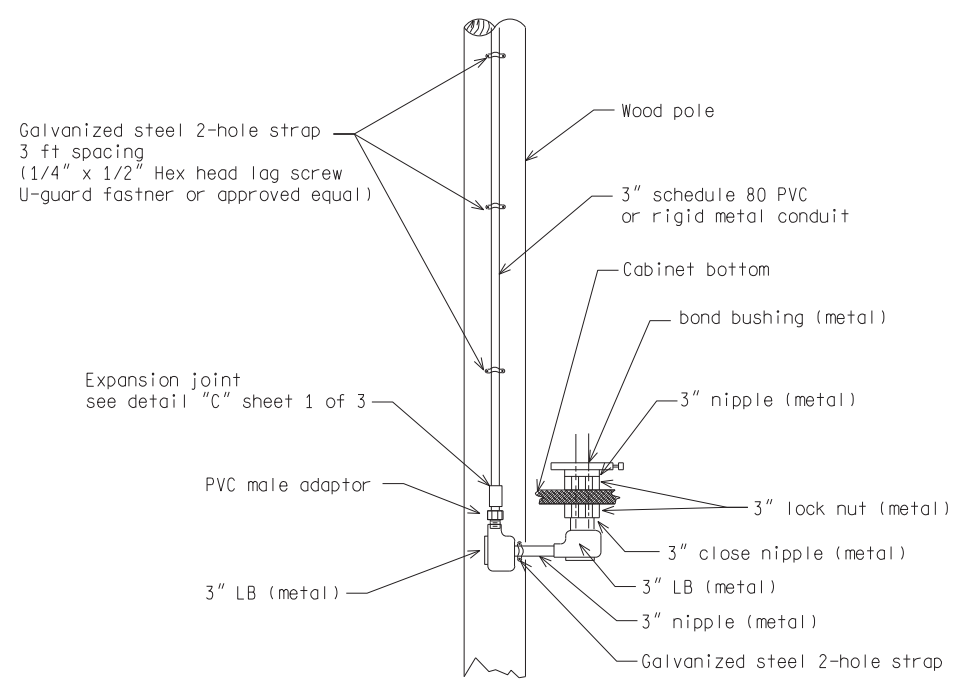
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PLAN DATE _____ SIG-100-A SHEET 2 of 3

AS-LET PLAN REVISIONS								MDOT Michigan Department of Transportation	DATE: 04/09/18	CS: 70023	DRAWING	SHEET
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION					
								FILE: 202084_SignalDetails.pdf	TSC: MUSKEGON	JN: 202084A		178



CONTROLLER CABINET MOUNTED ON STEEL POLE DETAIL "A"



CONTROLLER CABINET MOUNTED ON WOOD POLE DETAIL "B"

NOTE:
 The distance between LB's as shown on this detail is for clarity of the drawing only. Actual distance between LB's shall be minimized as is practical to the installation.

NOTE:
 If rigid metal conduit is used, the conduit must be bonded according to the current N.E.C.

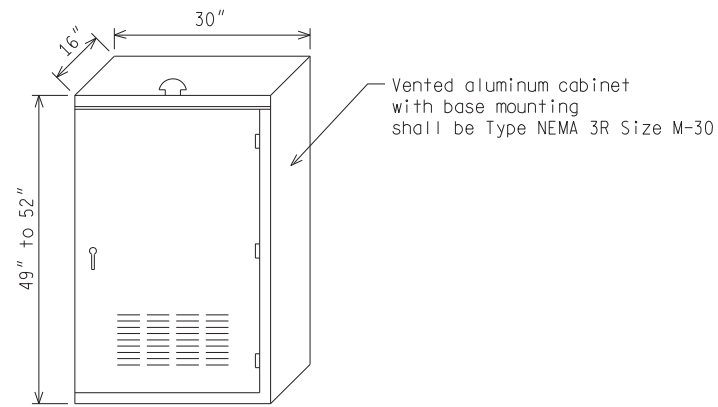
NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN	(SPECIAL DETAIL) FHWA APPROVAL DATE	PLAN DATE	SIG-100-A	SHEET 3 of 3
File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG100A.dgn Rev. 02/16/17				

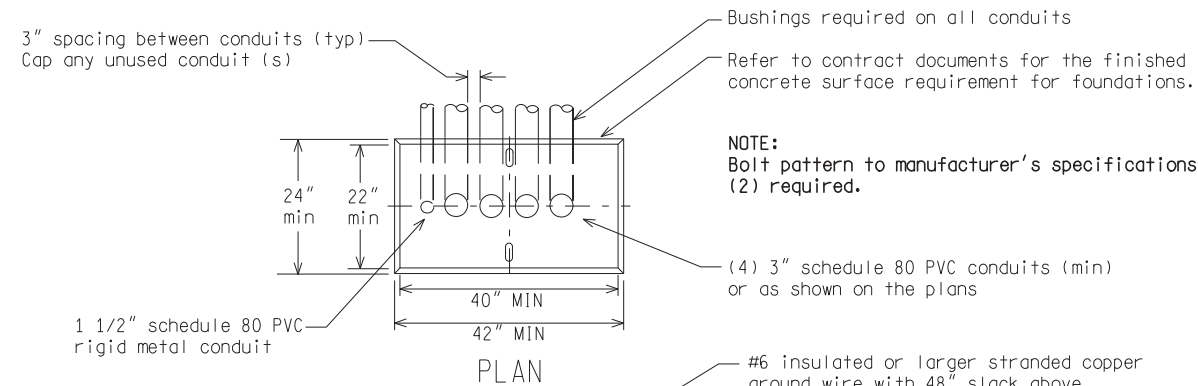
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NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



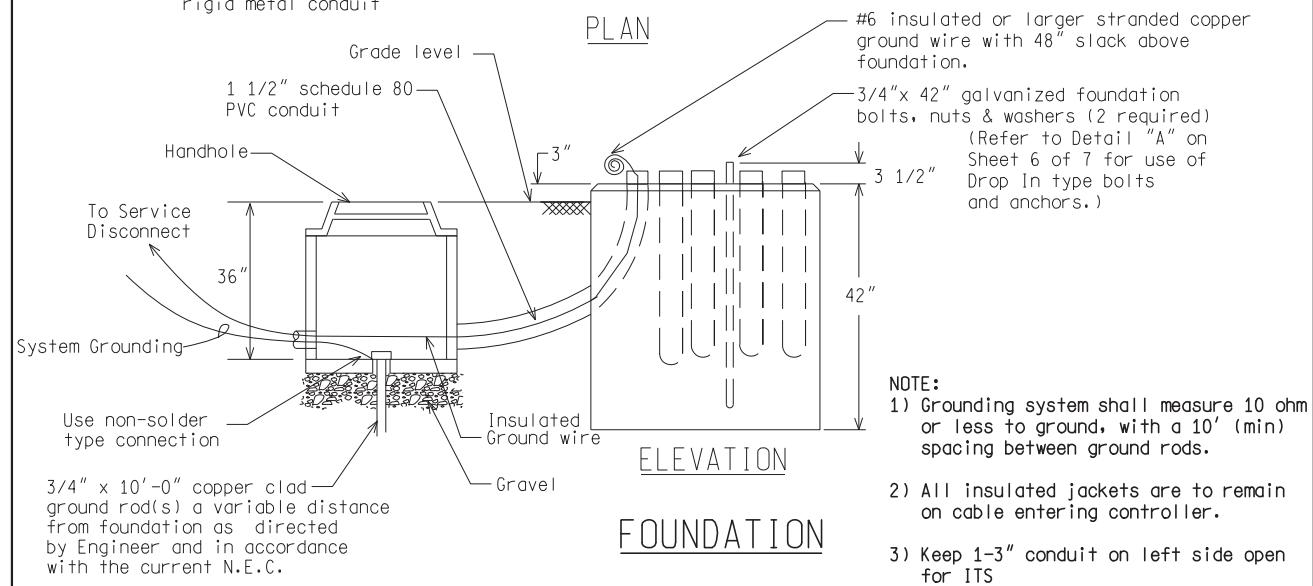
FILE: 202084_SignalDetails.pdf	DATE: 04/09/18	CS: 70023	DRAWING	SHEET
	DESIGN UNIT: SIGNALS	JN: 202084A		
	TSC: MUSKEGON			179



BASE MOUNTED TRAFFIC SIGNAL CONTROLLER CABINET



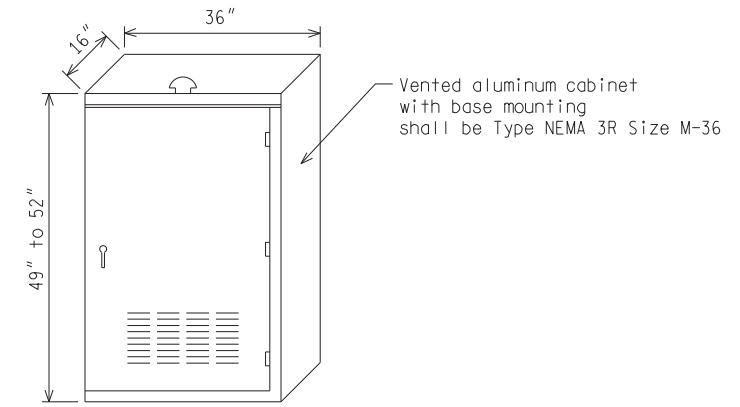
NOTE:
Bolt pattern to manufacturer's specifications (2) required.



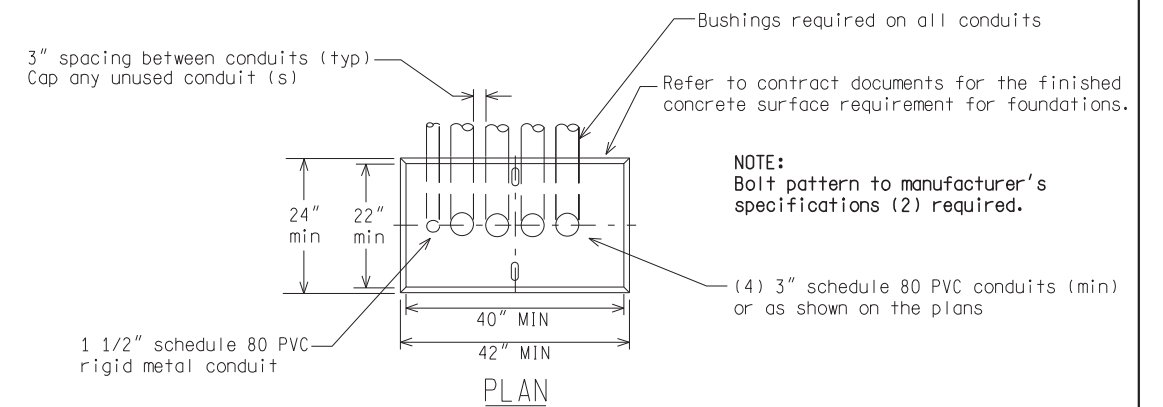
NOTE:
1) Grounding system shall measure 10 ohm or less to ground, with a 10' (min) spacing between ground rods.
2) All insulated jackets are to remain on cable entering controller.
3) Keep 1-3" conduit on left side open for ITS

NOT TO SCALE File: RefDoc/TR/Signals/Web/Sp Det/F in/SIG110A.dgn Rev. 02/16/17

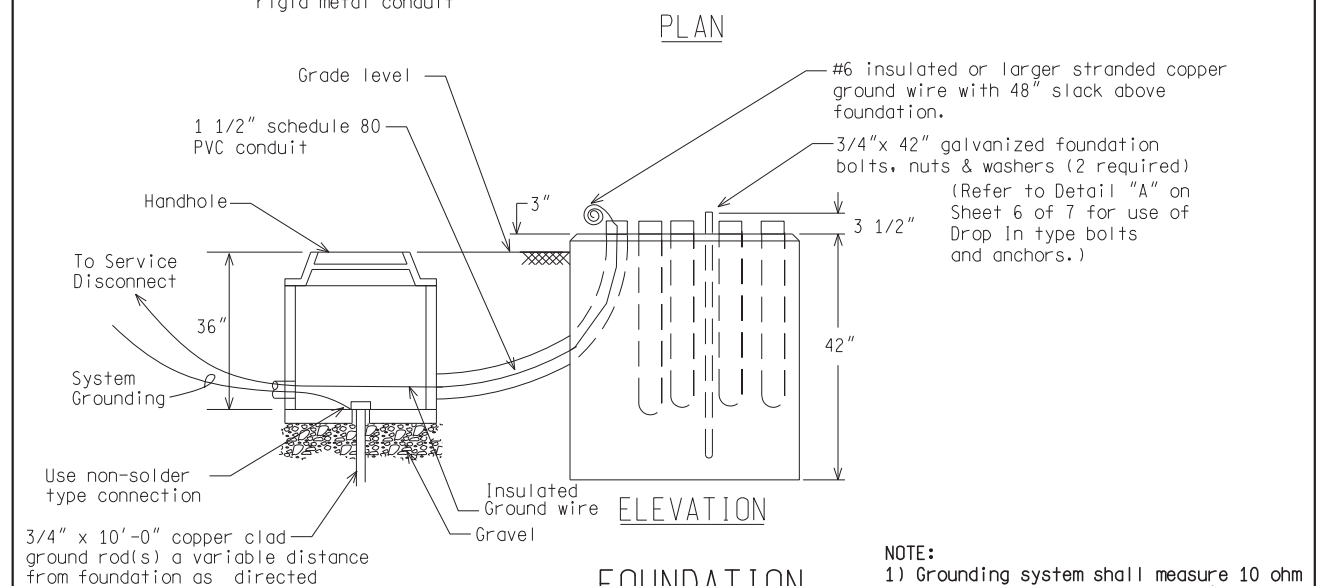
<p>MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN FOR</p>	ENGINEER OF DELIVERY	<p>BASE MOUNTED T.S. CONTROLLER CABINET/FOUNDATIONS</p>	<p>SHEET 1 of 7</p>
	ENGINEER OF DEVELOPMENT (SPECIAL DETAIL) FHWA APPROVAL DATE		



BASE MOUNTED TRAFFIC SIGNAL CONTROLLER CABINET



NOTE:
Bolt pattern to manufacturer's specifications (2) required.

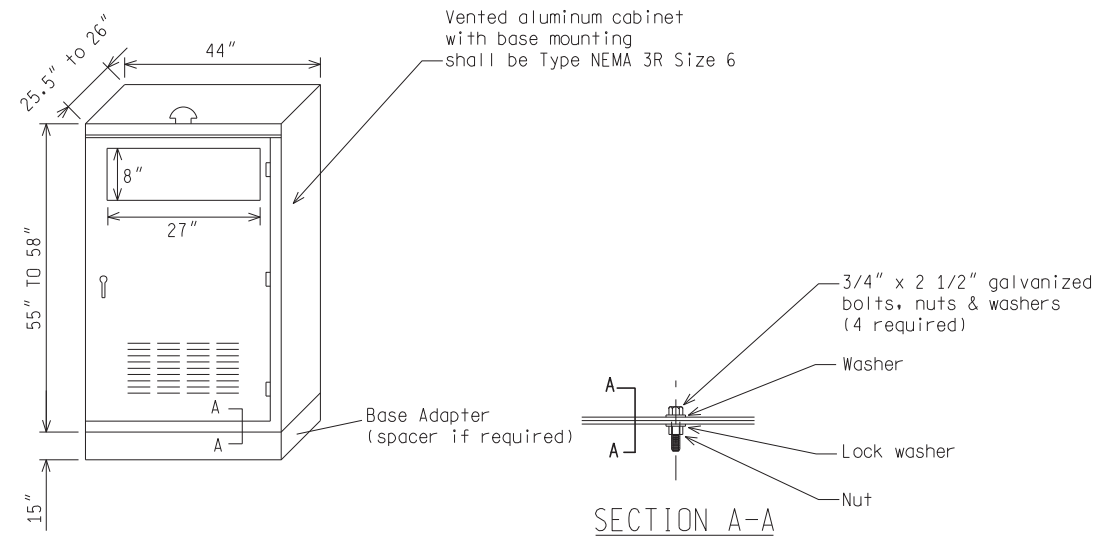


NOTE:
1) Grounding system shall measure 10 ohm or less to ground, with a 10' (min) spacing between ground rods.
2) All insulated jackets are to remain on cable entering controller.
3) Keep 1-3" conduit on left side open for ITS

NOT TO SCALE File: RefDoc/TR/Signals/Web/Sp Det/F in/SIG110A.dgn Rev. 02/16/17

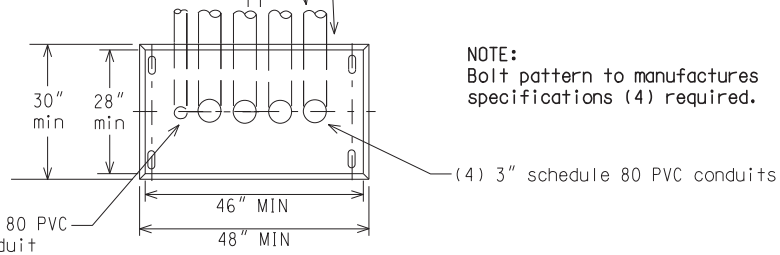
<p>MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN</p>	(SPECIAL DETAIL) FHWA APPROVAL DATE	<p>SIG-110-A</p>	<p>SHEET 2 of 7</p>
	PLAN DATE		

AS-LET PLAN REVISIONS									DATE: 04/09/18	CS: 70023	DRAWING	SHEET
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION		DESIGN UNIT: SIGNALS	JN: 202084A		
									TSC: MUSKEGON			



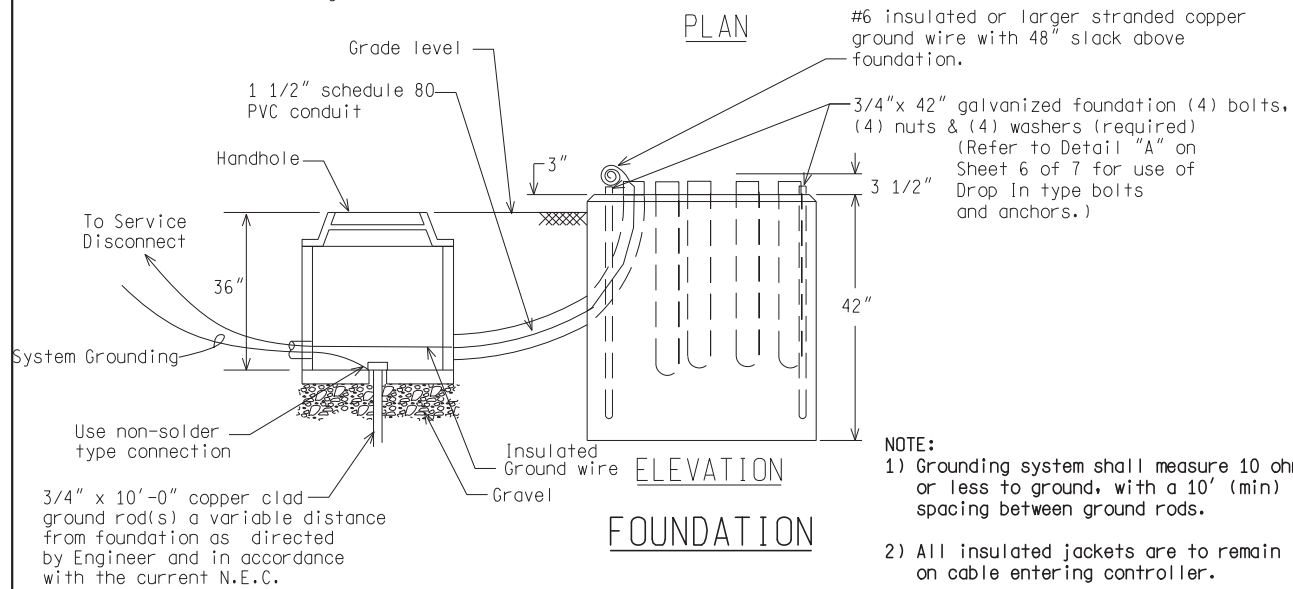
BASE MOUNTED TRAFFIC SIGNAL CONTROLLER CABINET

Bushings required on all conduits
 3" spacing between conduits (typ)
 Cap any unused conduit (s)
 Refer to contract documents for the finished concrete surface requirement for foundations.



NOTE:
 Bolt pattern to manufactures specifications (4) required.

PLAN

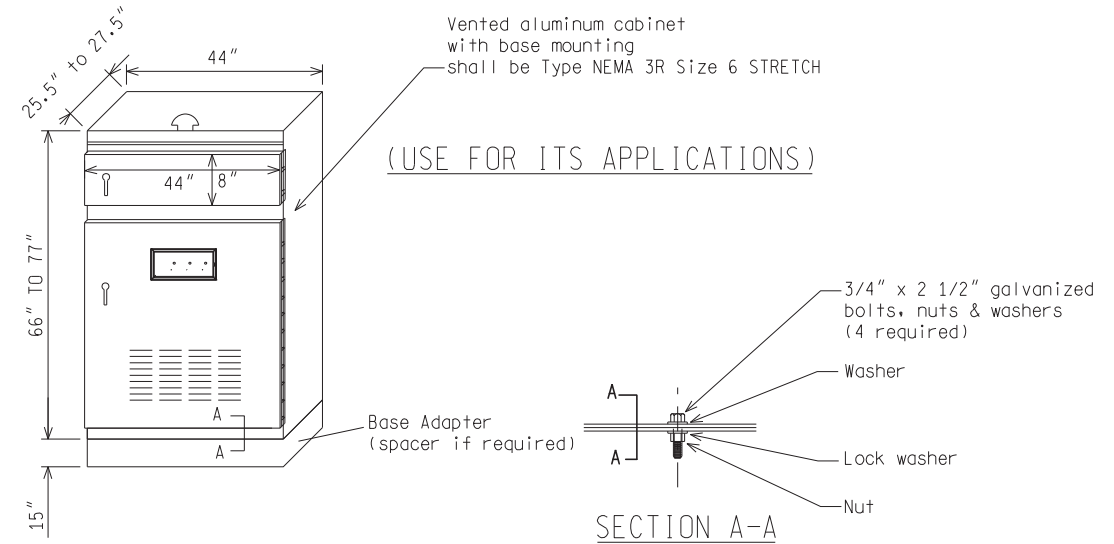


NOTE:
 1) Grounding system shall measure 10 ohm or less to ground, with a 10' (min) spacing between ground rods.
 2) All insulated jackets are to remain on cable entering controller.
 3) Keep 1-3" conduit on left side open for ITS

ELEVATION
FOUNDATION

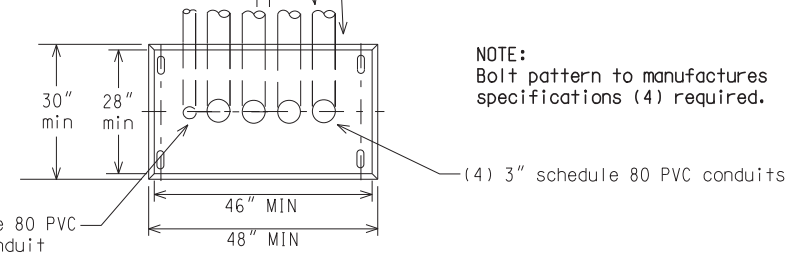
NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN	(SPECIAL DETAIL) FHWA APPROVAL DATE	PLAN DATE	SIG-110-A	SHEET 3 of 7
File:RefDoc/TR/Signals/Web/Sp Det/F in/SIG110A.dgn Rev. 02/16/17				



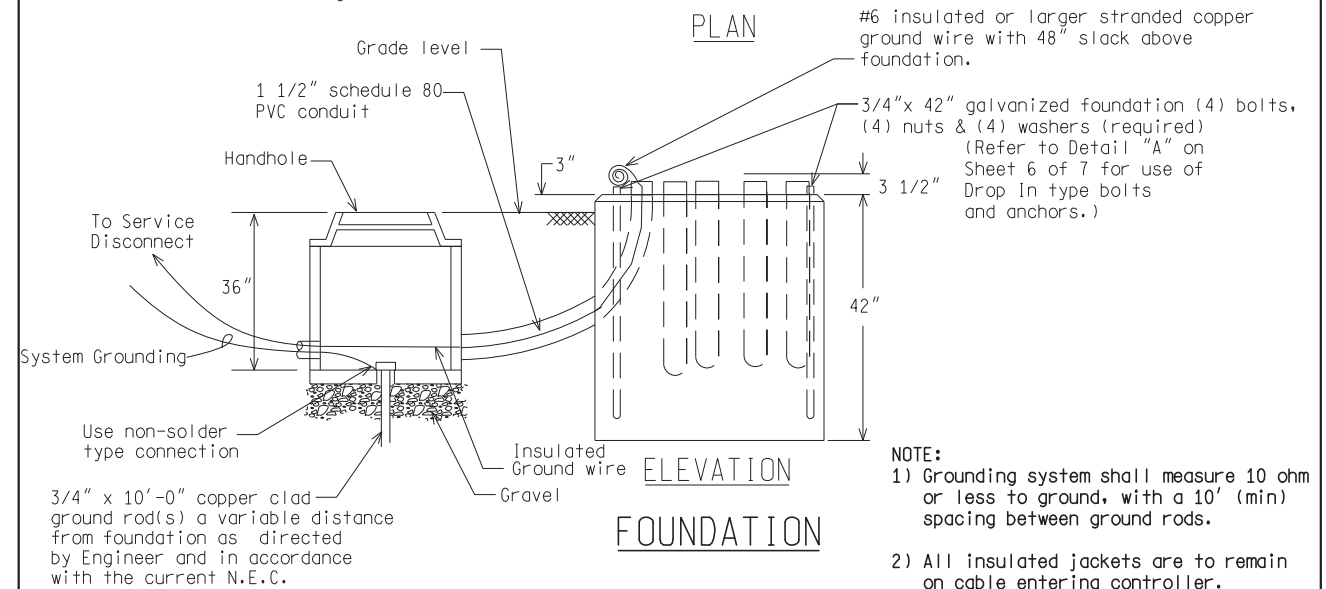
BASE MOUNTED TRAFFIC SIGNAL ITS CONTROLLER CABINET (IF USED)

Bushings required on all conduits
 3" spacing between conduits (typ)
 Cap any unused conduit (s)
 Refer to contract documents for the finished concrete surface requirement for foundations.



NOTE:
 Bolt pattern to manufactures specifications (4) required.

PLAN



NOTE:
 1) Grounding system shall measure 10 ohm or less to ground, with a 10' (min) spacing between ground rods.
 2) All insulated jackets are to remain on cable entering controller.
 3) Keep 1-3" conduit on left side open for ITS

ELEVATION
FOUNDATION

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN	(SPECIAL DETAIL) FHWA APPROVAL DATE	PLAN DATE	SIG-110-A	SHEET 4 of 7
File: RefDoc/TR/Signals/Web/Sp Det/F in/SIG110A.dgn Rev. 02/16/17				

AS-LET PLAN REVISIONS

NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



FILE: 202084_SignalDetails.pdf

DATE: 04/09/18

DESIGN UNIT: SIGNALS

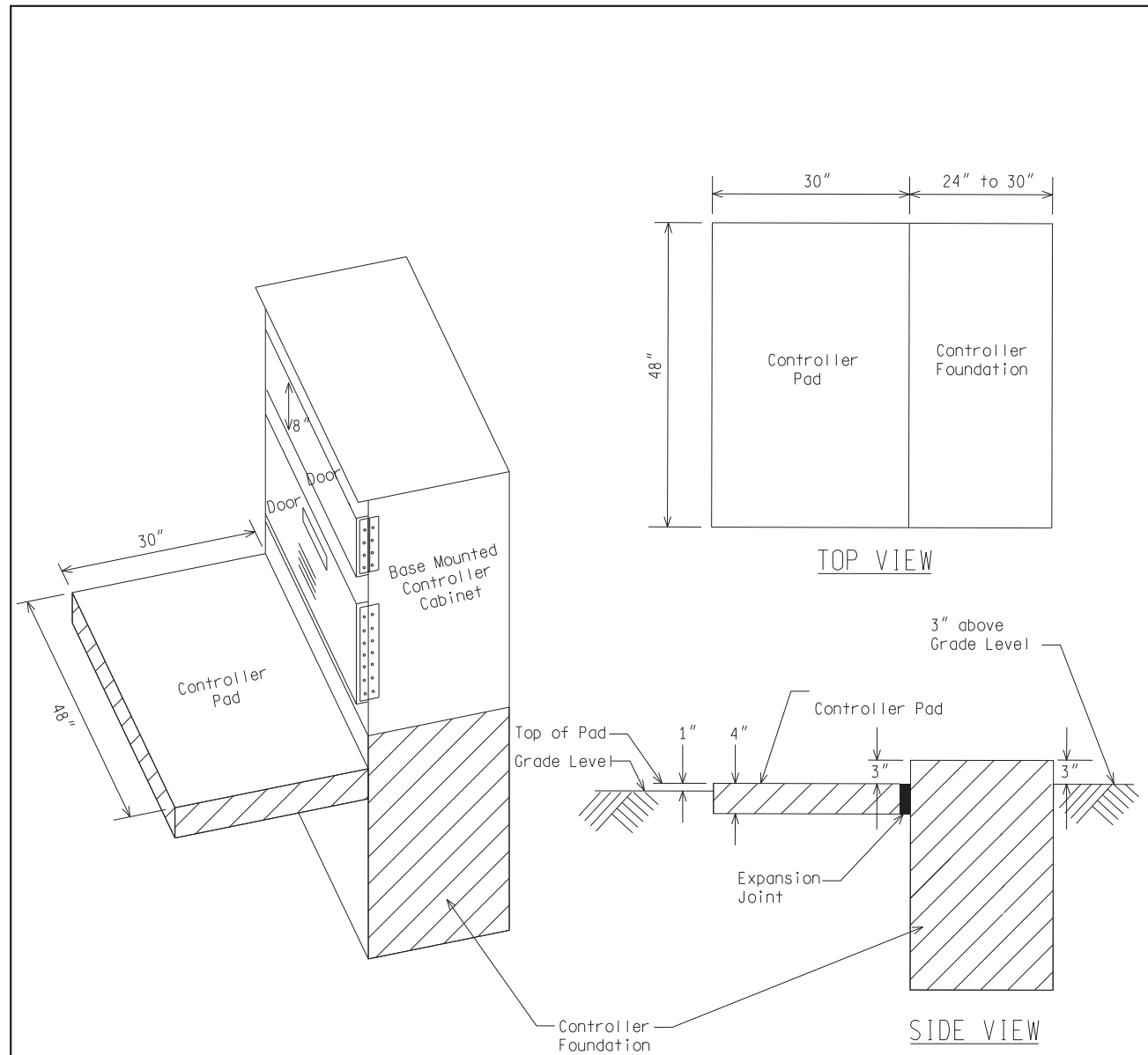
TSC: MUSKEGON

CS: 70023

JN: 202084A

DRAWING SHEET

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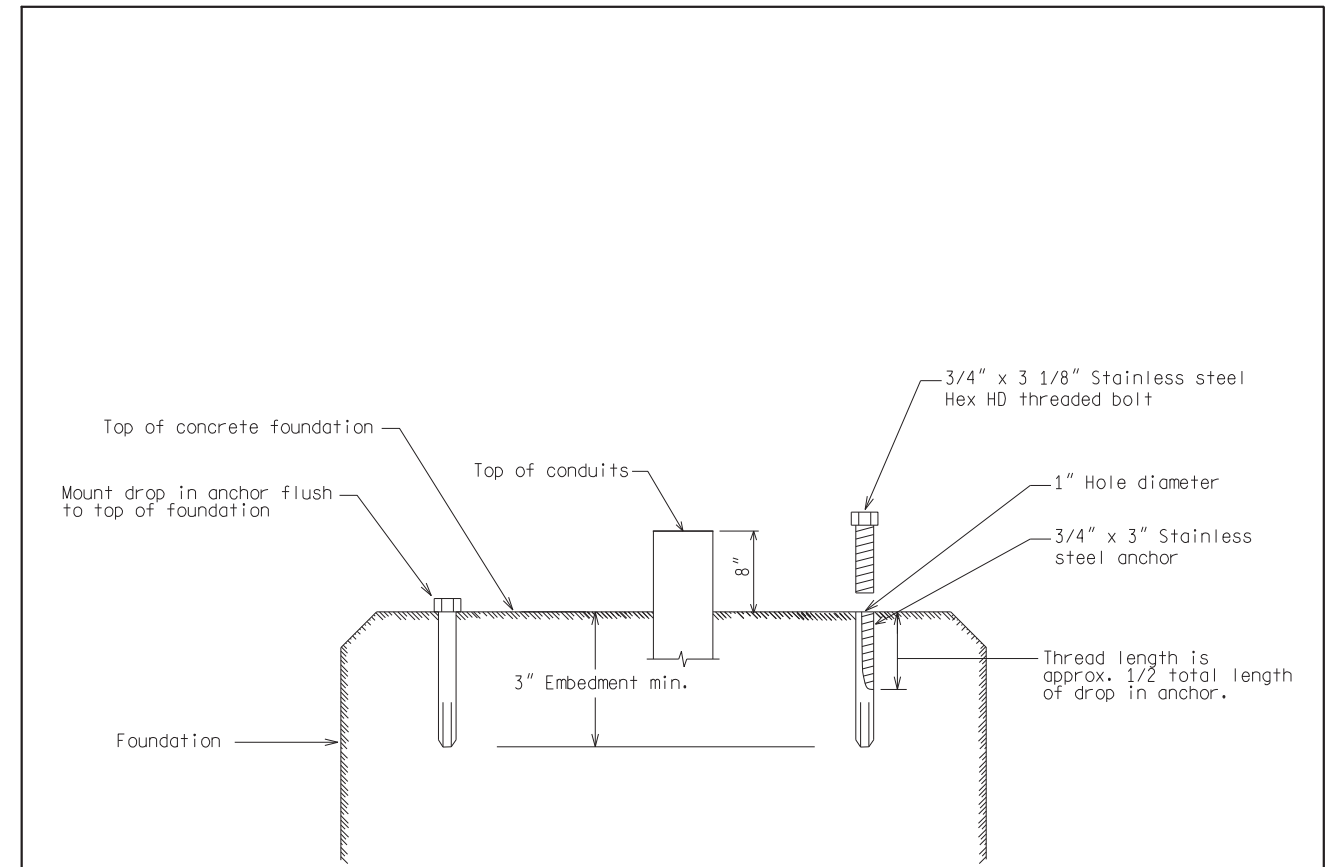


BASE MOUNTED CONTROLLER PAD

NOTE:
 Payment for controller pad to be included in controller foundation pay item.
 Controller cabinet door to open toward pad.

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN	(SPECIAL DETAIL) FHWA APPROVAL DATE		SIG-110-A	SHEET 5 of 7
File: RefDoc/TR/Signals/Web/Sp Det/F in/SIG110A.dgn	Rev. 02/16/17	PLAN DATE		



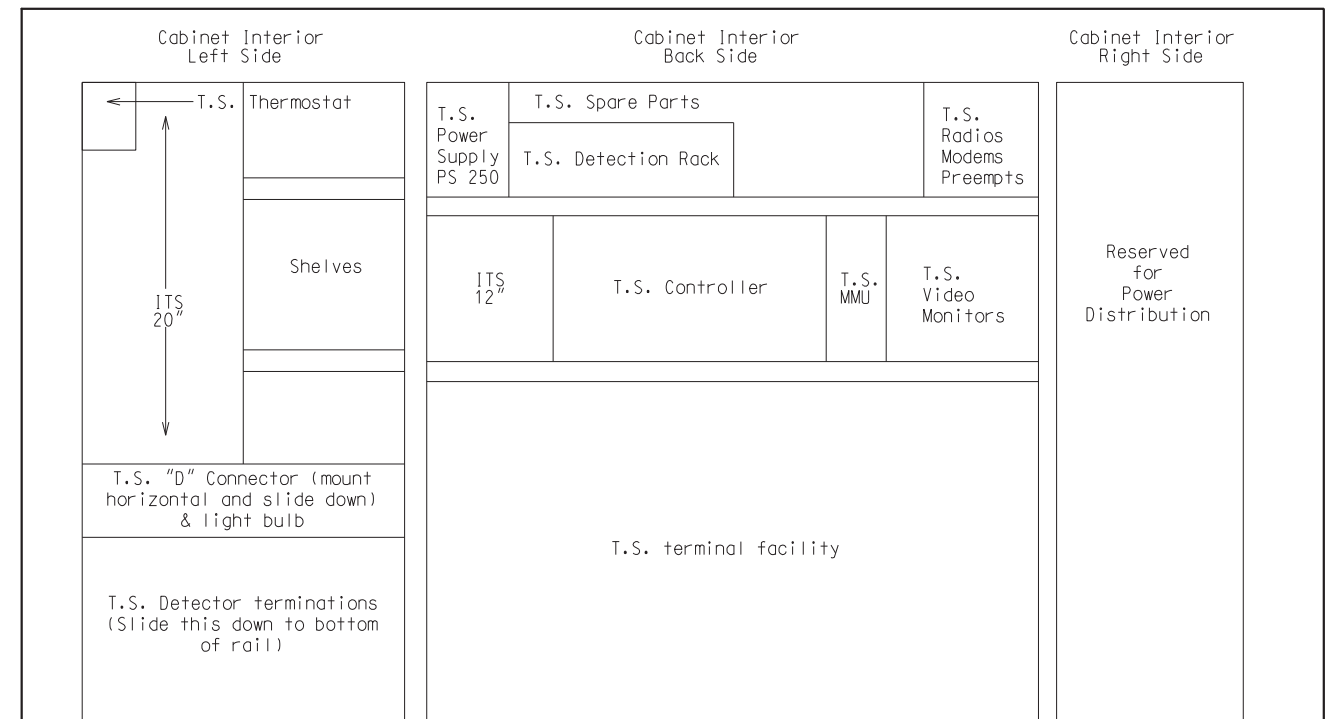
- Notes:
1. Use AISI 300 Series Stainless Steel for all bolts and anchors.
 2. Use Drop In foundation bolts and anchors as directed by the Engineer.

ALTERNATIVE DETAIL "A": DROP IN FOUNDATION BOLTS & ANCHORS

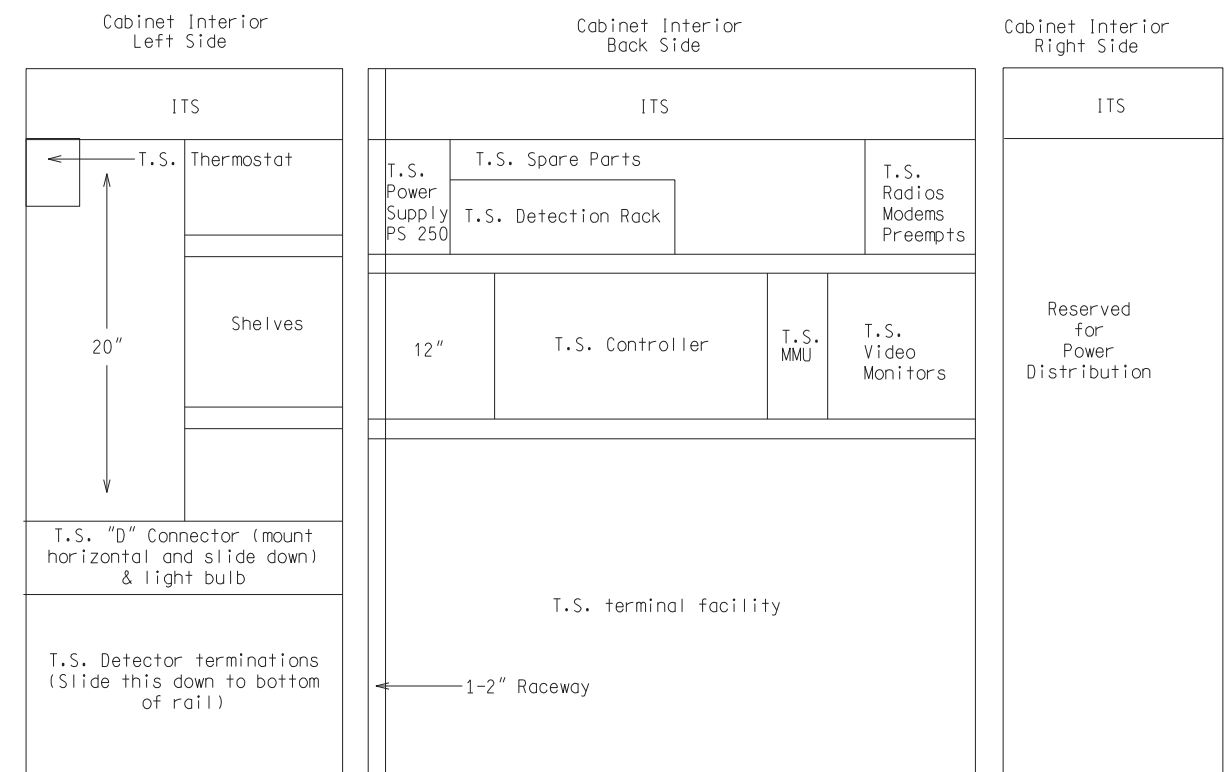
NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN	(SPECIAL DETAIL) FHWA APPROVAL DATE		SIG-110-A	SHEET 6 of 7
File: RefDoc/TR/Signals/Web/Sp Det/F in/SIG110A.dgn	Rev. 02/16/17	PLAN DATE		

AS-LET PLAN REVISIONS								MDOT Michigan Department of Transportation	DATE: 04/09/18		CS: 70023		DRAWING	SHEET
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION		DESIGN UNIT: SIGNALS	TSC: MUSKEGON	JN: 202084A			
								FILE: 202084_SignalDetails.pdf						182



TRAFFIC SIGNAL NEMA 3R SIZE 6 CABINET REQUIREMENTS



TRAFFIC SIGNAL NEMA 3R SIZE 6 STRETCH CABINET REQUIREMENTS
FOR
ITS APPLICATIONS

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN	(SPECIAL DETAIL) FHWA APPROVAL DATE	PLAN DATE	SIG-110-A	SHEET 7 of 7
File: RefDoc/TR/Signals/Web/Sp Det/F in/SIG110A.dgn	Rev. 02/16/17			

AS-LET PLAN REVISIONS							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

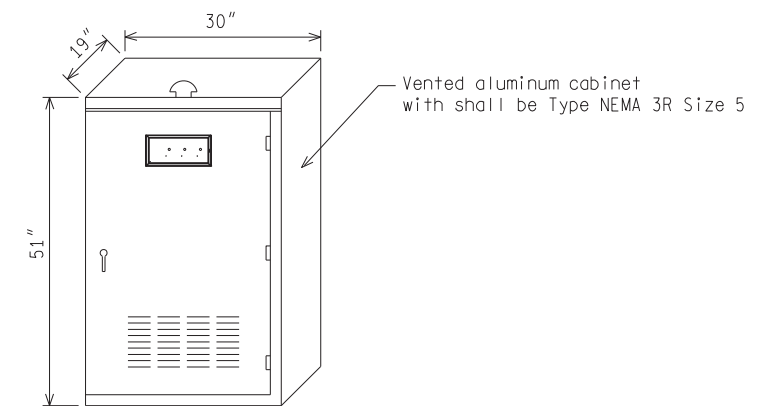


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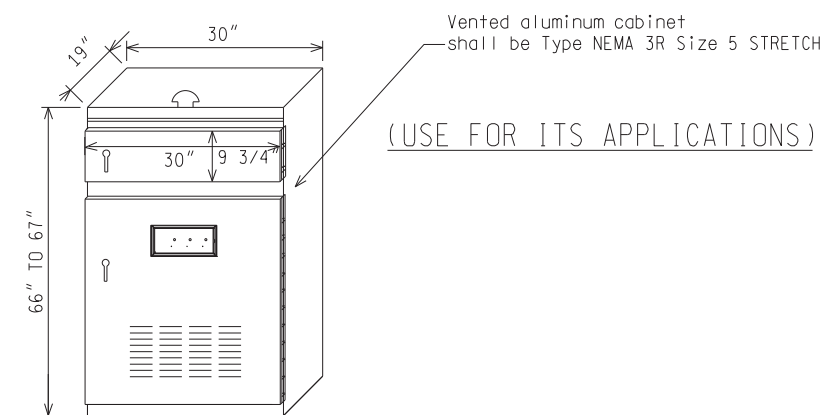
DATE: 04/09/18
DESIGN UNIT: SIGNALS
TSC: MUSKEGON

CS: 70023
JN: 202084A

DRAWING SHEET
183



POLE MOUNTED TRAFFIC SIGNAL CONTROLLER CABINET



POLE MOUNTED TRAFFIC SIGNAL ITS CONTROLLER CABINET (IF USED)

NOT TO SCALE

File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG111A.dgn Rev: 02/16/17



PREPARED BY
TRAFFIC AND SAFETY

DRAWN BY:
CHECKED BY:

ENGINEER OF DELIVERY

ENGINEER OF DEVELOPMENT

(SPECIAL DETAIL)
FHWA APPROVAL DATE

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN FOR
**POLE MOUNTED T.S.
CONTROLLER CABINET/FOUNDATIONS**

PLAN DATE

SIG-111-A

SHEET
1 of 1

AS-LET PLAN REVISIONS

NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



FILE: 202084_SignalDetails.pdf

DATE: 04/09/18

DESIGN UNIT: SIGNALS

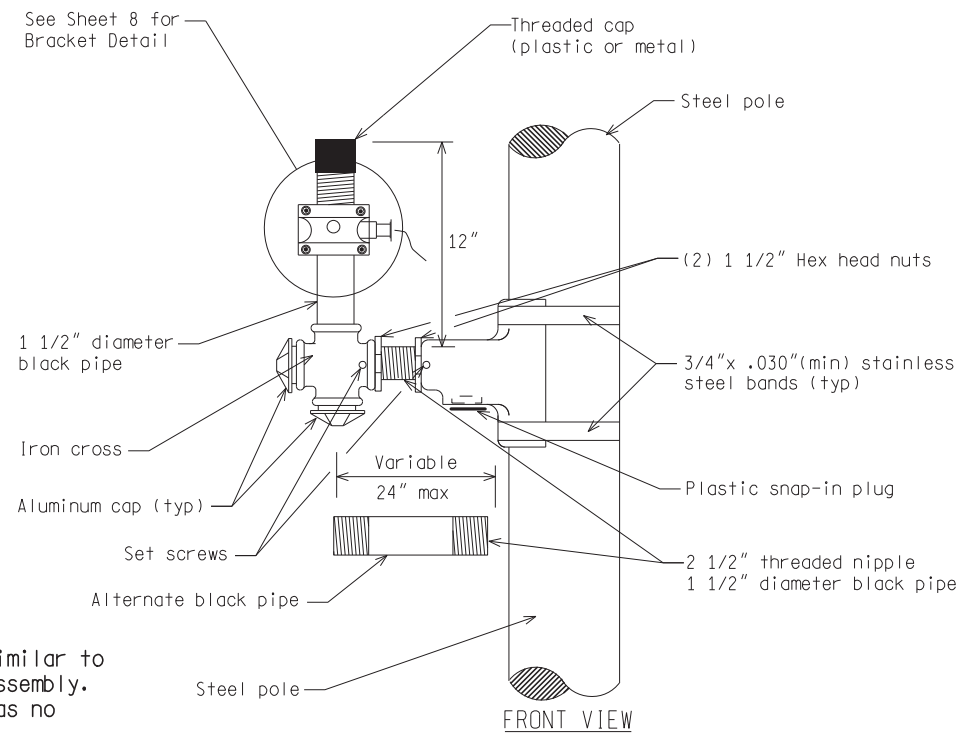
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CS: 70023

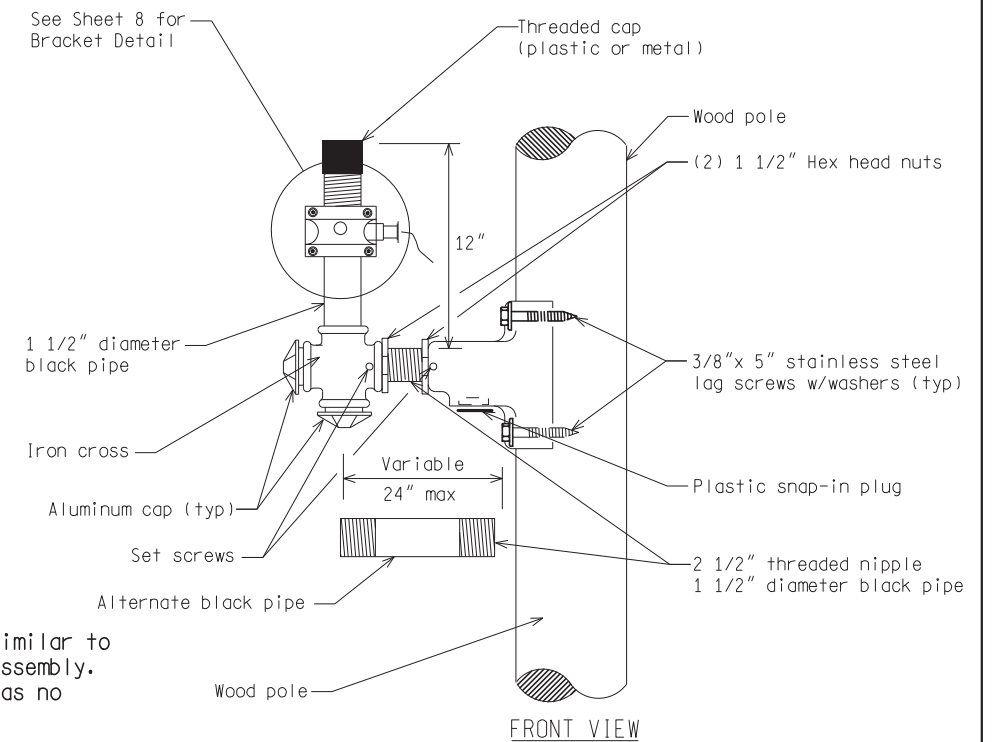
JN: 202084A

DRAWING SHEET

184



ANTENNA ATTACHMENT DETAIL (STEEL POLE)
FOR REMOTE LOCATION



ANTENNA ATTACHMENT DETAIL (WOOD POLE)
FOR REMOTE LOCATION

NOT TO SCALE

File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG130A.dgn Rev. 02/16/17



PREPARED BY
TRAFFIC AND SAFETY

DRAWN BY: MSM
CHECKED BY:

ENGINEER OF DELIVERY
ENGINEER OF DEVELOPMENT
(SPECIAL DETAIL)
FHWA APPROVAL DATE

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN FOR

ANTENNA
ATTACHMENT DETAIL

PLAN DATE SIG-130-A SHEET 1 of 8

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION (SPECIAL DETAIL)
BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN FHWA APPROVAL DATE

File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG130A.dgn Rev. 02/16/17

PLAN DATE

SIG-130-A

SHEET 2 of 8

AS-LET PLAN REVISIONS

NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



FILE: 202084_SignalDetails.pdf

DATE: 04/09/18

DESIGN UNIT: SIGNALS

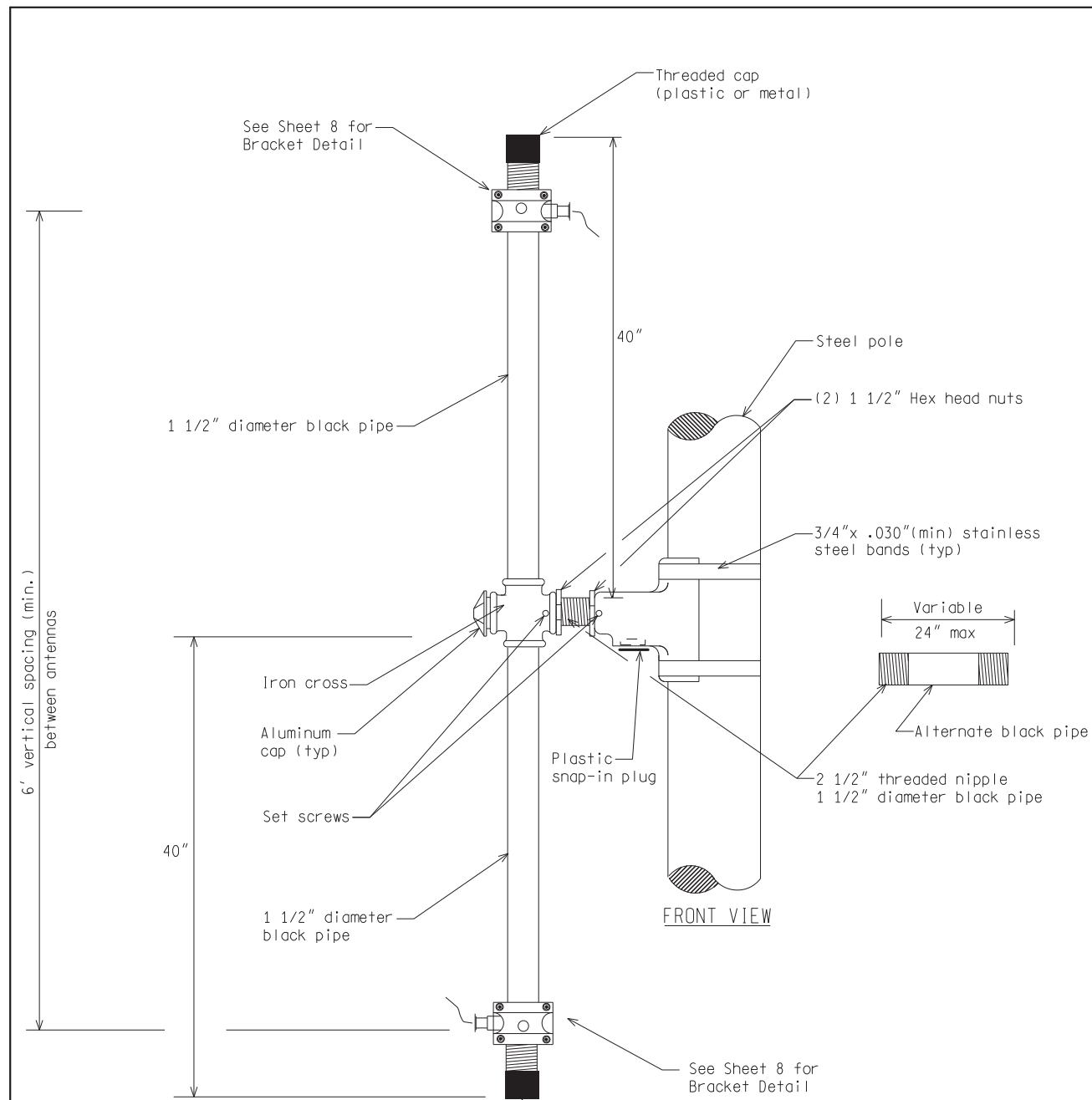
TSC: MUSKEGON

CS: 70023

JN: 202084A

DRAWING SHEET

185

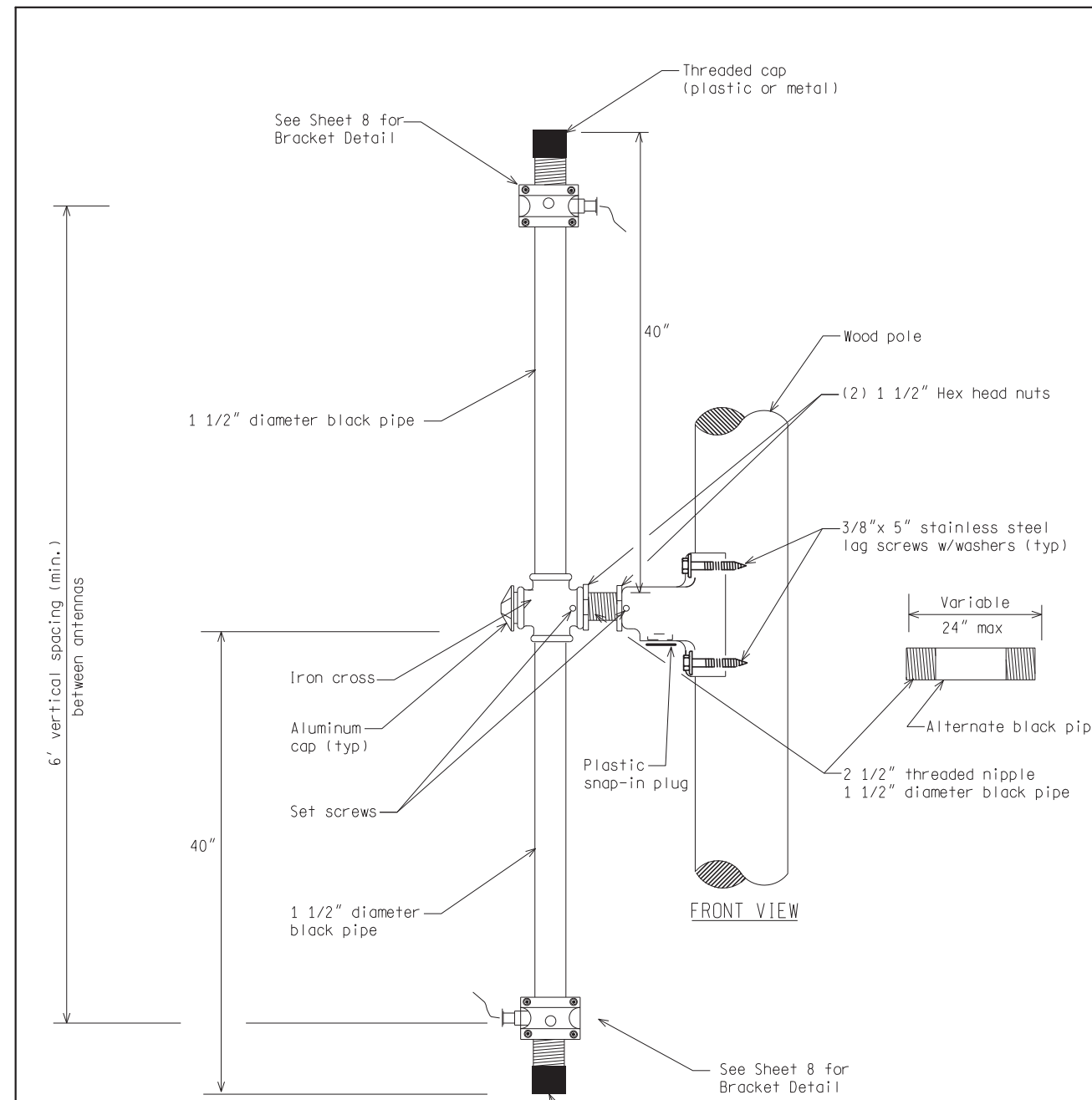


(* NOTE:
Finished assembly has no
threads exposed.

ANTENNA ATTACHMENT DETAIL (STEEL POLE)
FOR MASTER OR REPEATER LOCATION
SINGLE BRACKET METHOD PREFERRED

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN	(SPECIAL DETAIL) FHWA APPROVAL DATE	PLAN DATE	SIG-130-A	SHEET 3 of 8
File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG130A.dgn Rev. 02/16/17				



(* NOTE:
Finished assembly has no
threads exposed.

ANTENNA ATTACHMENT DETAIL (WOOD POLE)
FOR MASTER OR REPEATER LOCATION
SINGLE BRACKET METHOD PREFERRED

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN	(SPECIAL DETAIL) FHWA APPROVAL DATE	PLAN DATE	SIG-130-A	SHEET 4 of 8
File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG130A.dgn Rev. 02/16/17				

AS-LET PLAN REVISIONS

NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

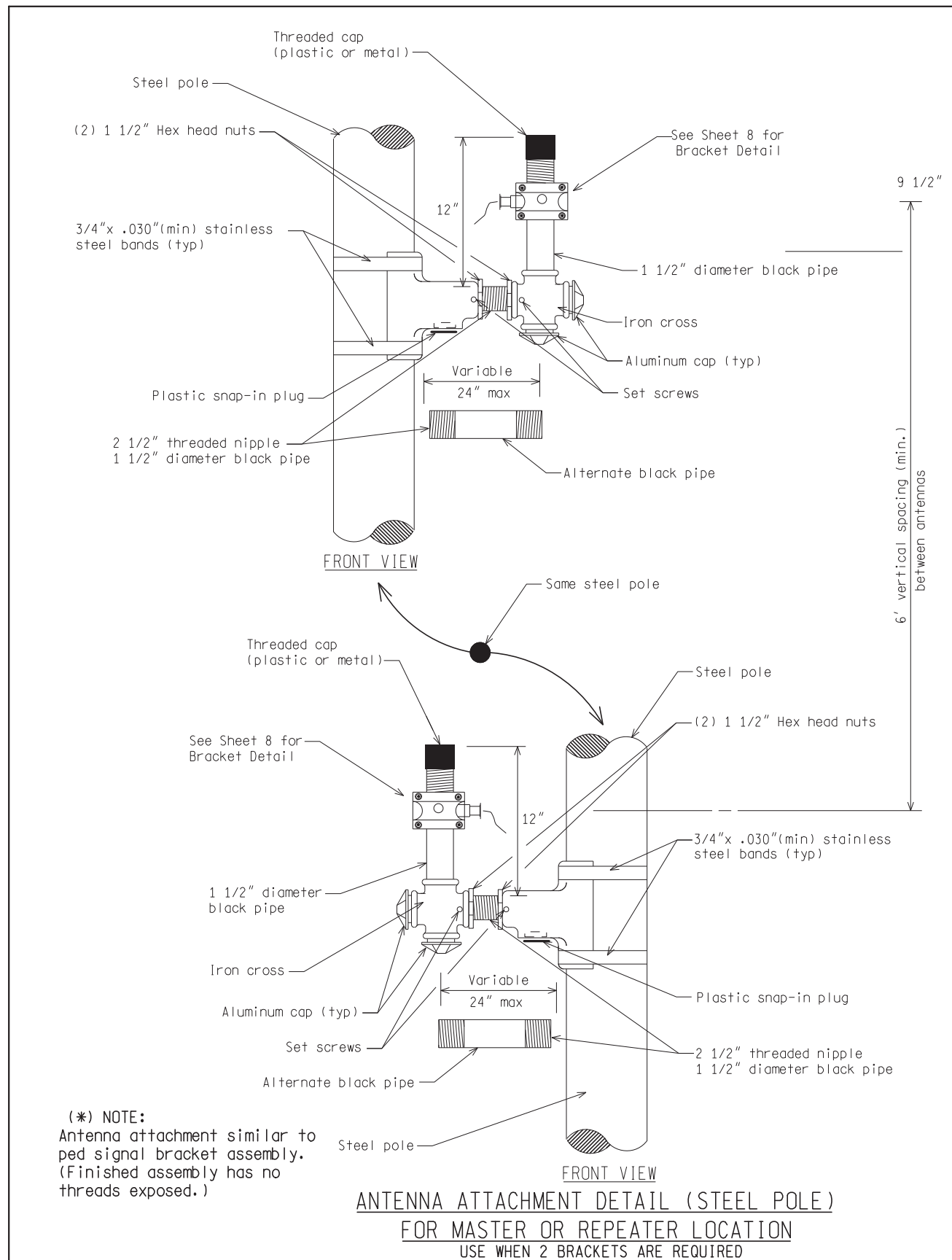


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DATE: 04/09/18
DESIGN UNIT: SIGNALS
TSC: MUSKEGON

CS: 70023
JN: 202084A

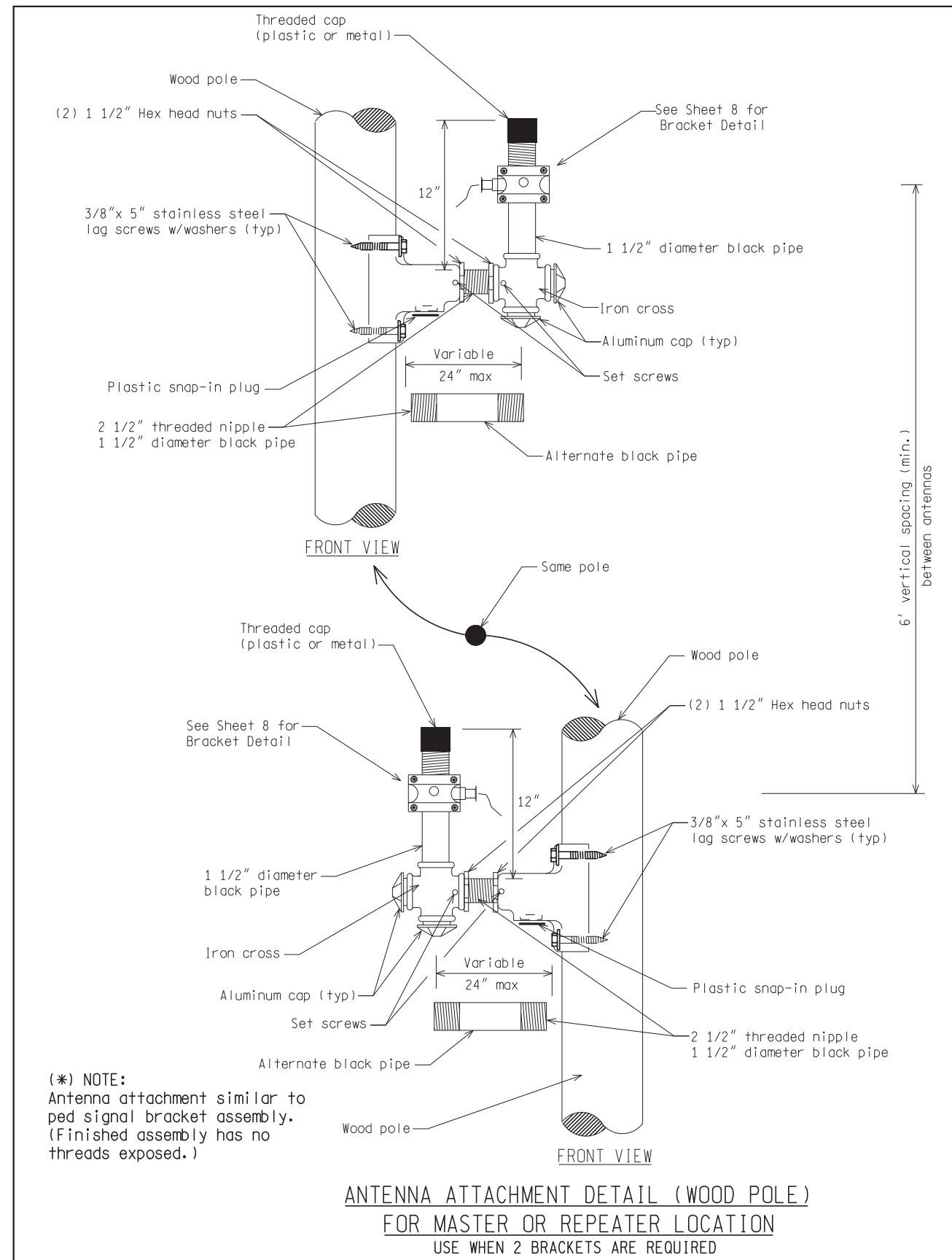
DRAWING SHEET
186



ANTENNA ATTACHMENT DETAIL (STEEL POLE)
FOR MASTER OR REPEATER LOCATION
USE WHEN 2 BRACKETS ARE REQUIRED

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN	(SPECIAL DETAIL) FHWA APPROVAL DATE	PLAN DATE	SIG-130-A	SHEET 5 of 8
File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG130A.dgn Rev. 02/16/17				

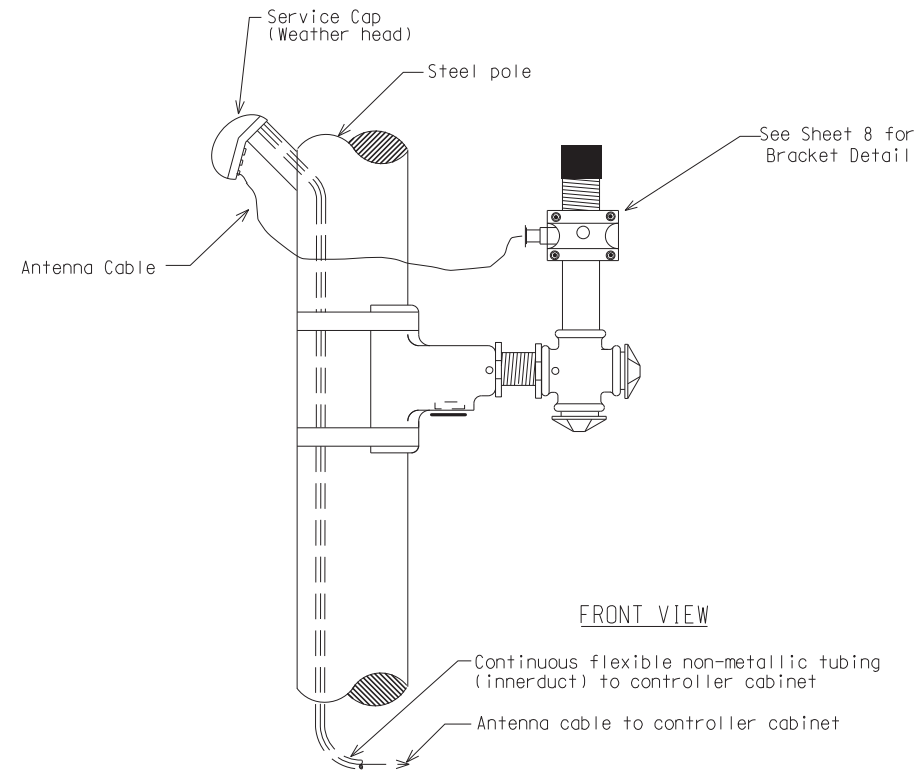


ANTENNA ATTACHMENT DETAIL (WOOD POLE)
FOR MASTER OR REPEATER LOCATION
USE WHEN 2 BRACKETS ARE REQUIRED

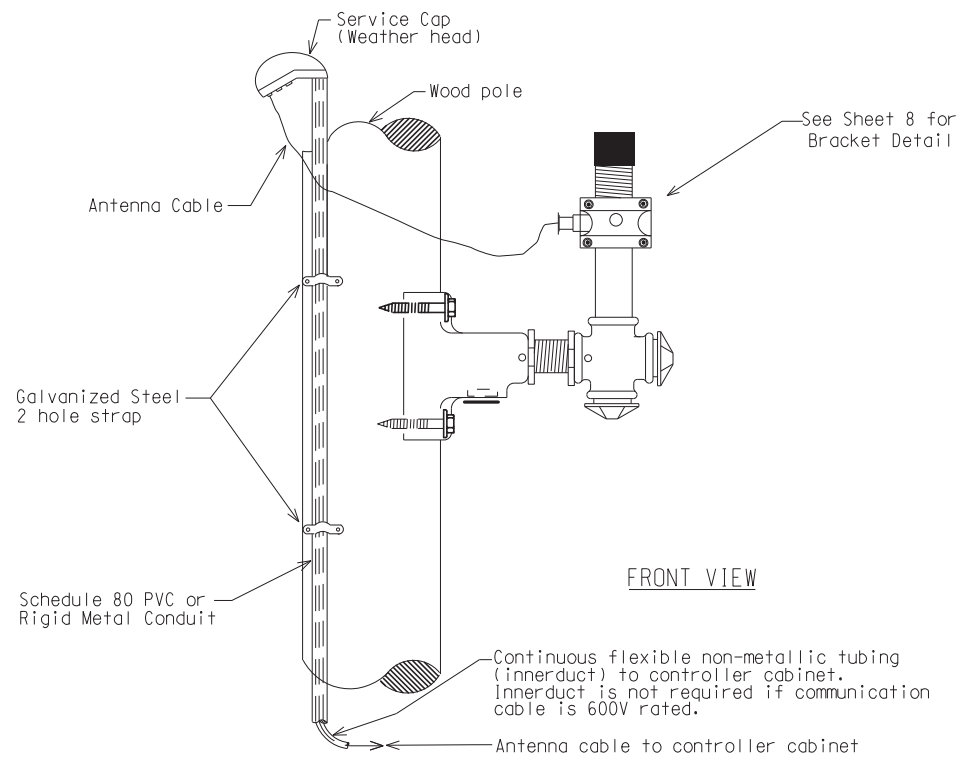
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MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN	(SPECIAL DETAIL) FHWA APPROVAL DATE	PLAN DATE	SIG-130-A	SHEET 6 of 8
File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG130A.dgn Rev. 02/16/17				

AS-LET PLAN REVISIONS								MDOT Michigan Department of Transportation	DATE: 04/09/18	DESIGN UNIT: SIGNALS	CS: 70023	DRAWING	SHEET
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION						
									TSC: MUSKEGON	JN: 202084A			187
									FILE: 202084_SignalDetails.pdf				



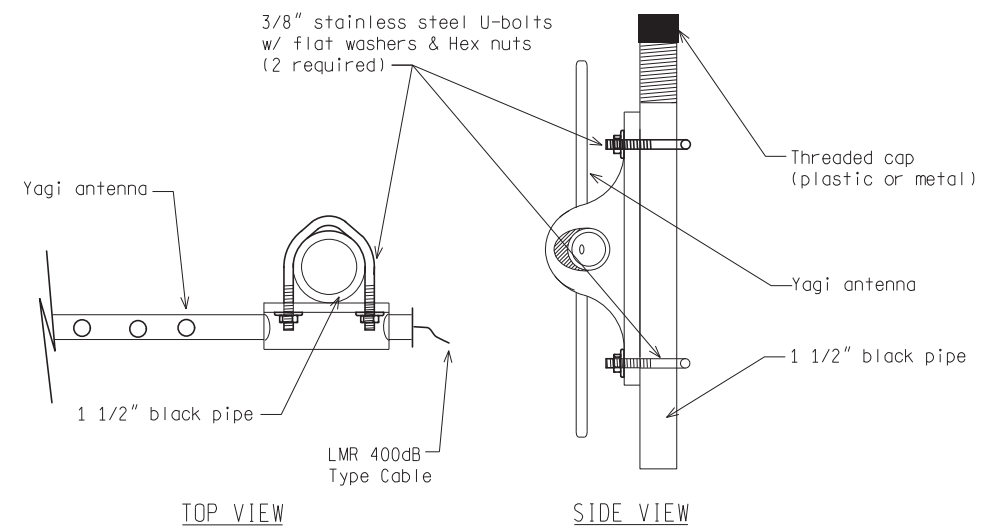
ANTENNA ATTACHMENT DETAIL (STEEL POLE)



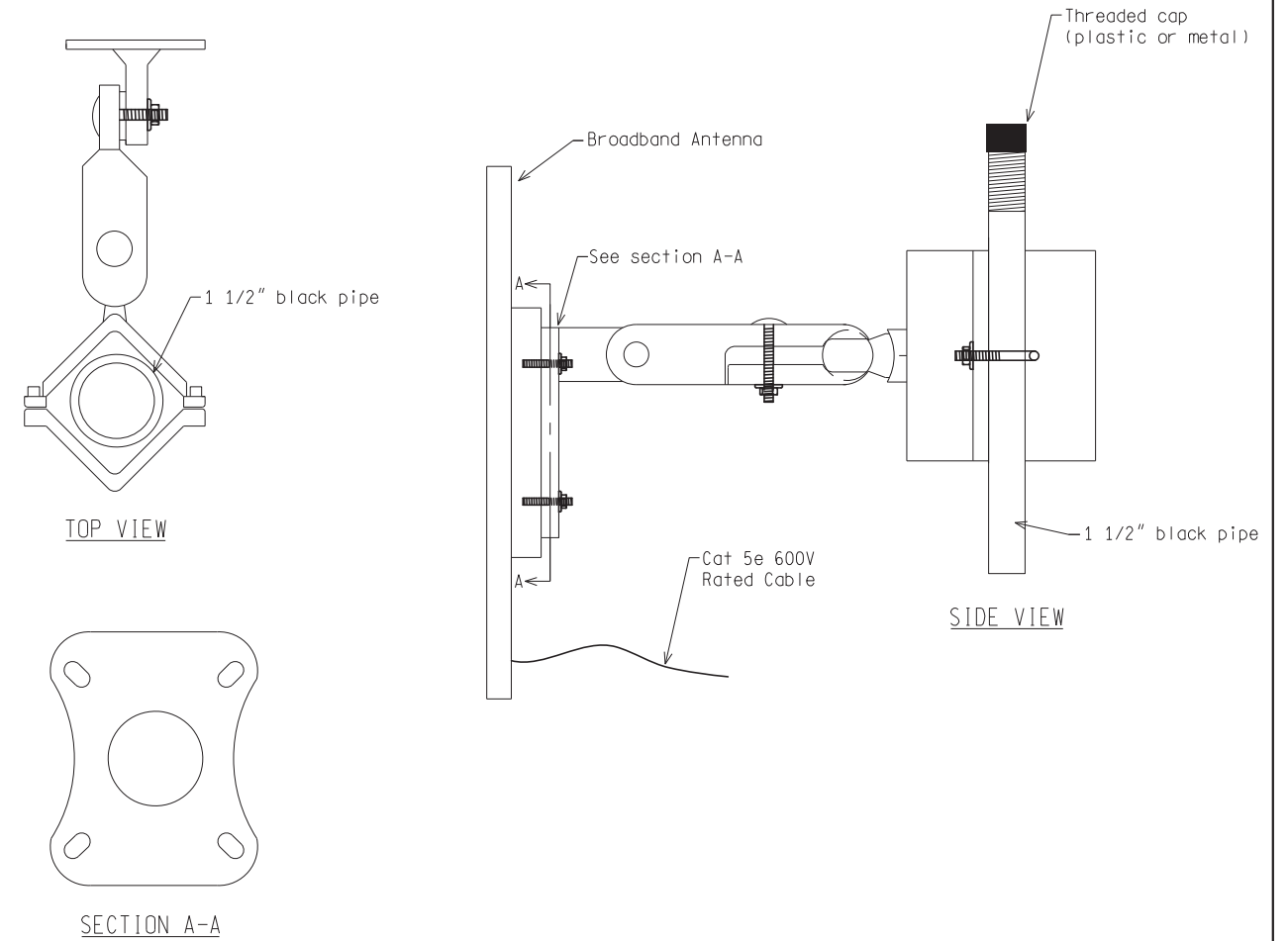
ANTENNA ATTACHMENT DETAIL (WOOD POLE)

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN		(SPECIAL DETAIL) FHWA APPROVAL DATE	PLAN DATE	SIG-130-A	SHEET 7 of 8
File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG130A.dgn Rev. 02/16/17					



YAGI ANTENNA BRACKET ATTACHMENT DETAIL



BROADBAND ANTENNA BRACKET ATTACHMENT DETAIL

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN		(SPECIAL DETAIL) FHWA APPROVAL DATE	PLAN DATE	SIG-130-A	SHEET 8 of 8
File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG130A.dgn Rev. 02/16/17					

AS-LET PLAN REVISIONS

NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

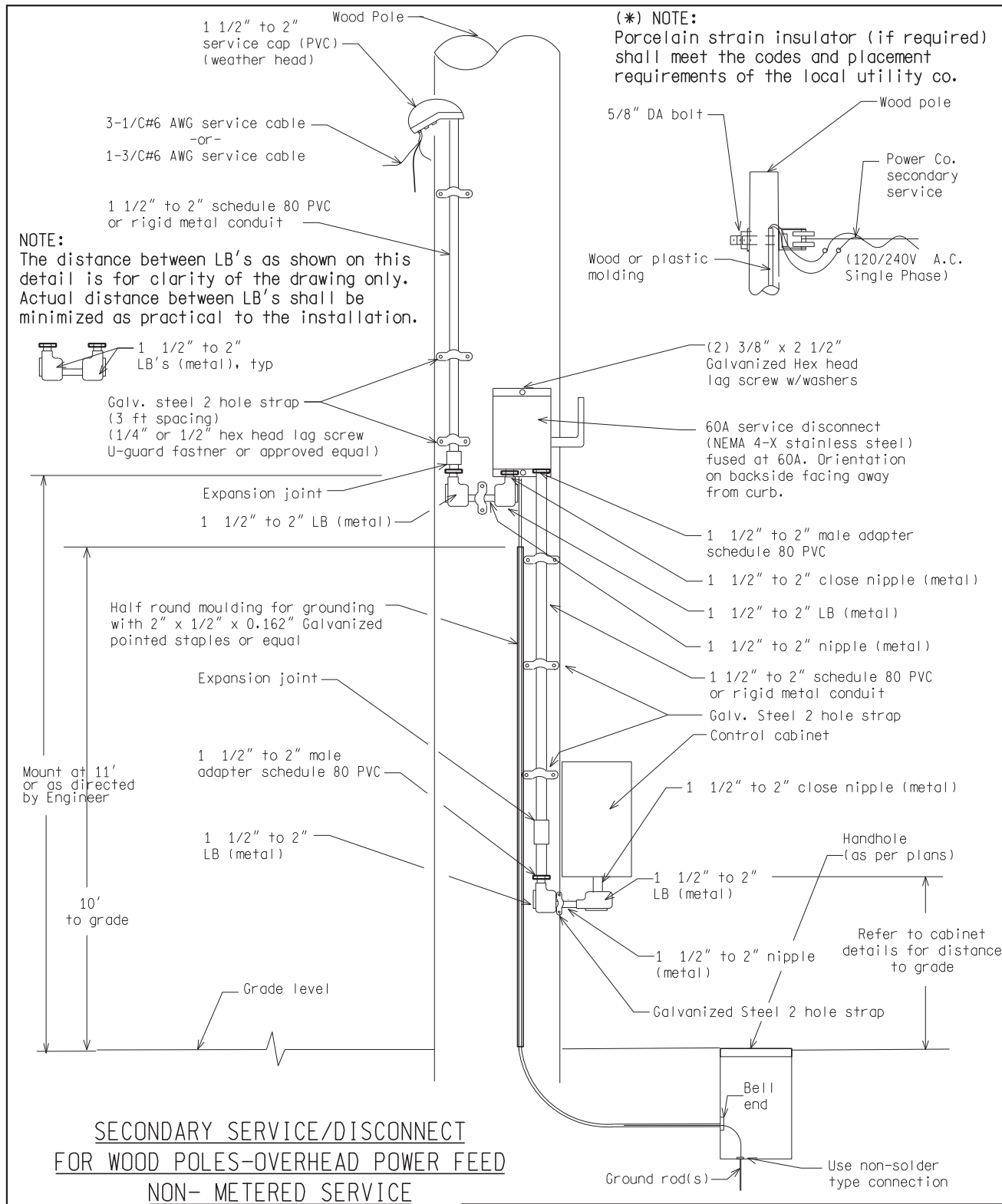


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CS: 70023
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DRAWING SHEET
188

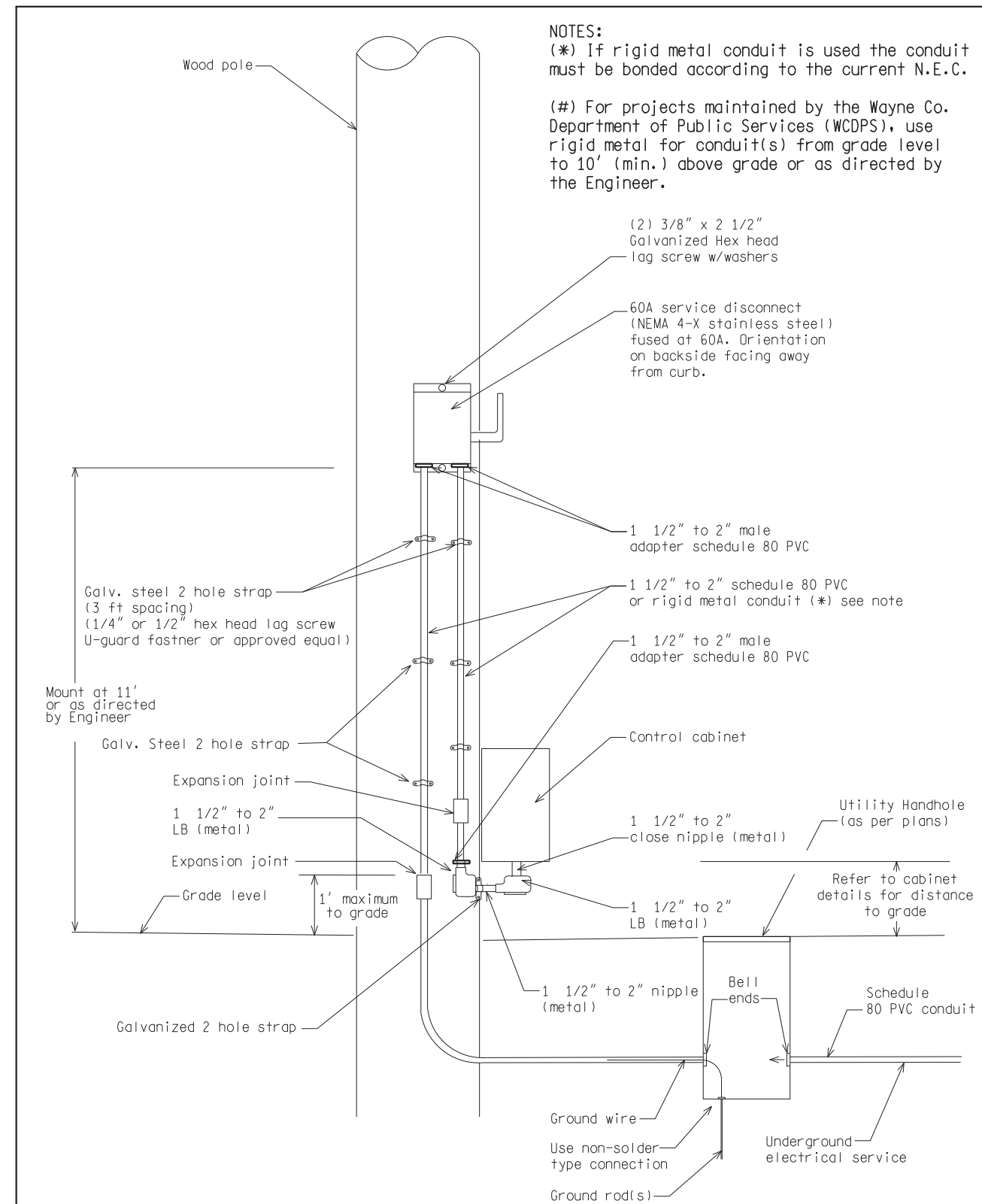


SECONDARY SERVICE/DISCONNECT FOR WOOD POLES-OVERHEAD POWER FEED
NON-METERED SERVICE

NOT TO SCALE

File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG200A.dgn Rev. 02/16/17

<p>MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN FOR</p>	ENGINEER OF DELIVERY	<p>SECONDARY SERVICE/DISCONNECT FOR WOOD POLES</p>	<p>SIG-200-A</p>	<p>SHEET 1 of 4</p>
	ENGINEER OF DEVELOPMENT			
<p>PREPARED BY TRAFFIC AND SAFETY</p>	(SPECIAL DETAIL)	PLAN DATE		
<p>DRAWN BY: DJF</p>	FHWA APPROVAL DATE			
<p>CHECKED BY:</p>				



SECONDARY SERVICE/DISCONNECT FOR WOOD POLES-UNDERGROUND POWER FEED
NON-METERED SERVICE

NOT TO SCALE

File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG200A.dgn Rev. 02/16/17

<p>MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN</p>	(SPECIAL DETAIL)	<p>SIG-200-A</p>	<p>SHEET 2 of 4</p>
	FHWA APPROVAL DATE		
PLAN DATE			

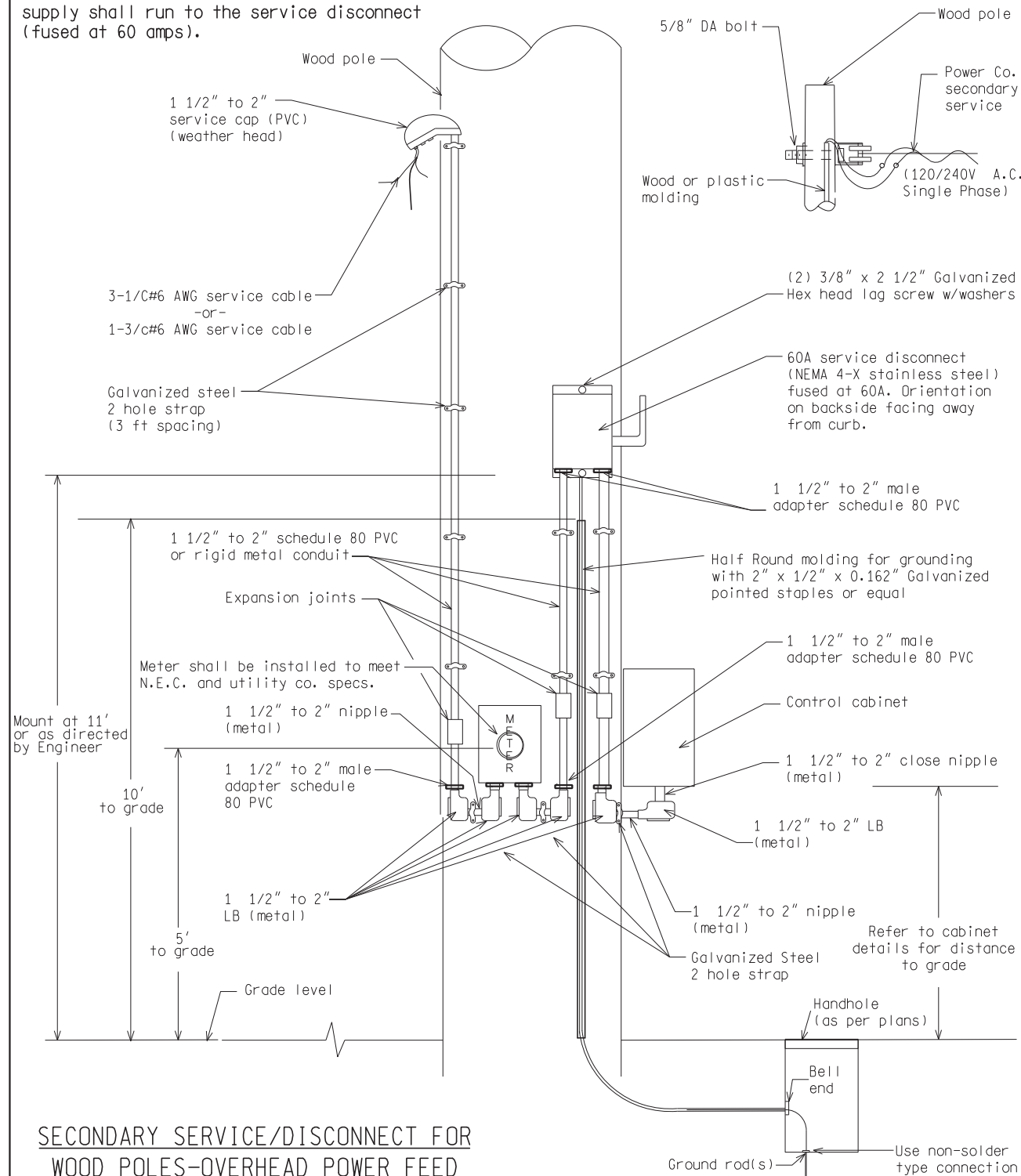
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NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



DATE: 04/09/18	CS: 70023	DRAWING	SHEET
DESIGN UNIT: SIGNALS	JN: 202084A		
TSC: MUSKEGON			189
FILE: 202084_SignalDetails.pdf			

(* NOTE:
This detail is illustrated as a metered installation. If the plans call for an un-metered installation, then the meter shall be omitted and a direct electrical supply shall run to the service disconnect (fused at 60 amps).

(* NOTE:
Porcelain strain insulator (if required) shall meet the codes and placement requirements of the local utility co.



SECONDARY SERVICE/DISCONNECT FOR
WOOD POLES-OVERHEAD POWER FEED
METERED SERVICE

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN
File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG200A.dgn Rev. 02/16/17

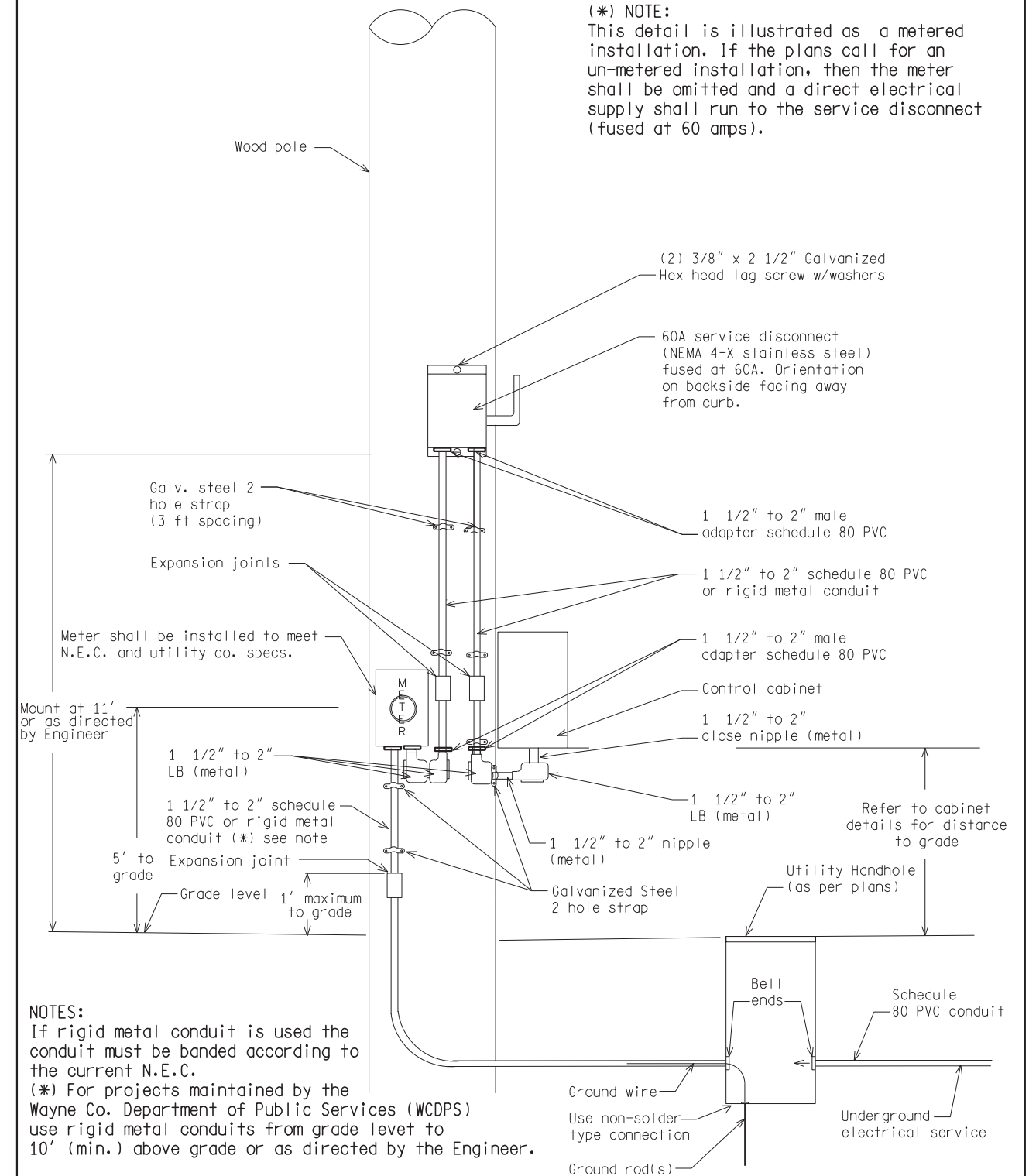
(SPECIAL DETAIL)
FHWA APPROVAL DATE

PLAN DATE

SIG-200-A

SHEET
3 of 4

(* NOTE:
This detail is illustrated as a metered installation. If the plans call for an un-metered installation, then the meter shall be omitted and a direct electrical supply shall run to the service disconnect (fused at 60 amps).



NOTES:
If rigid metal conduit is used the conduit must be banded according to the current N.E.C.
(* For projects maintained by the Wayne Co. Department of Public Services (WCDPS) use rigid metal conduits from grade level to 10' (min.) above grade or as directed by the Engineer.

SECONDARY SERVICE/DISCONNECT FOR
WOOD POLES-UNDERGROUND POWER FEED
METERED SERVICE

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN
File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG200A.dgn Rev. 02/16/17

(SPECIAL DETAIL)
FHWA APPROVAL DATE

PLAN DATE

SIG-200-A

SHEET
4 of 4

AS-LET PLAN REVISIONS

NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



FILE: 202084_SignalDetails.pdf

DATE: 04/09/18

DESIGN UNIT: SIGNALS

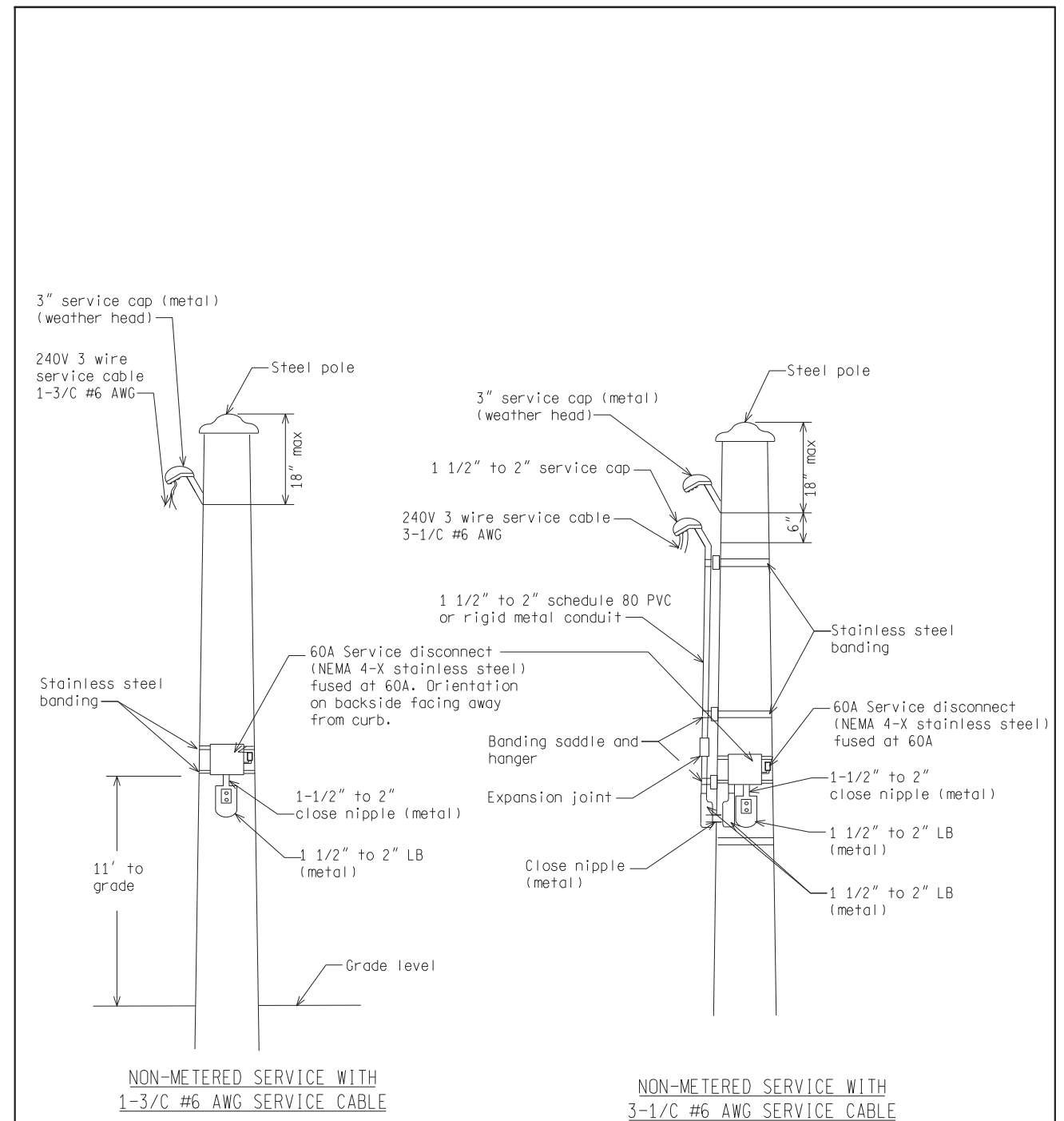
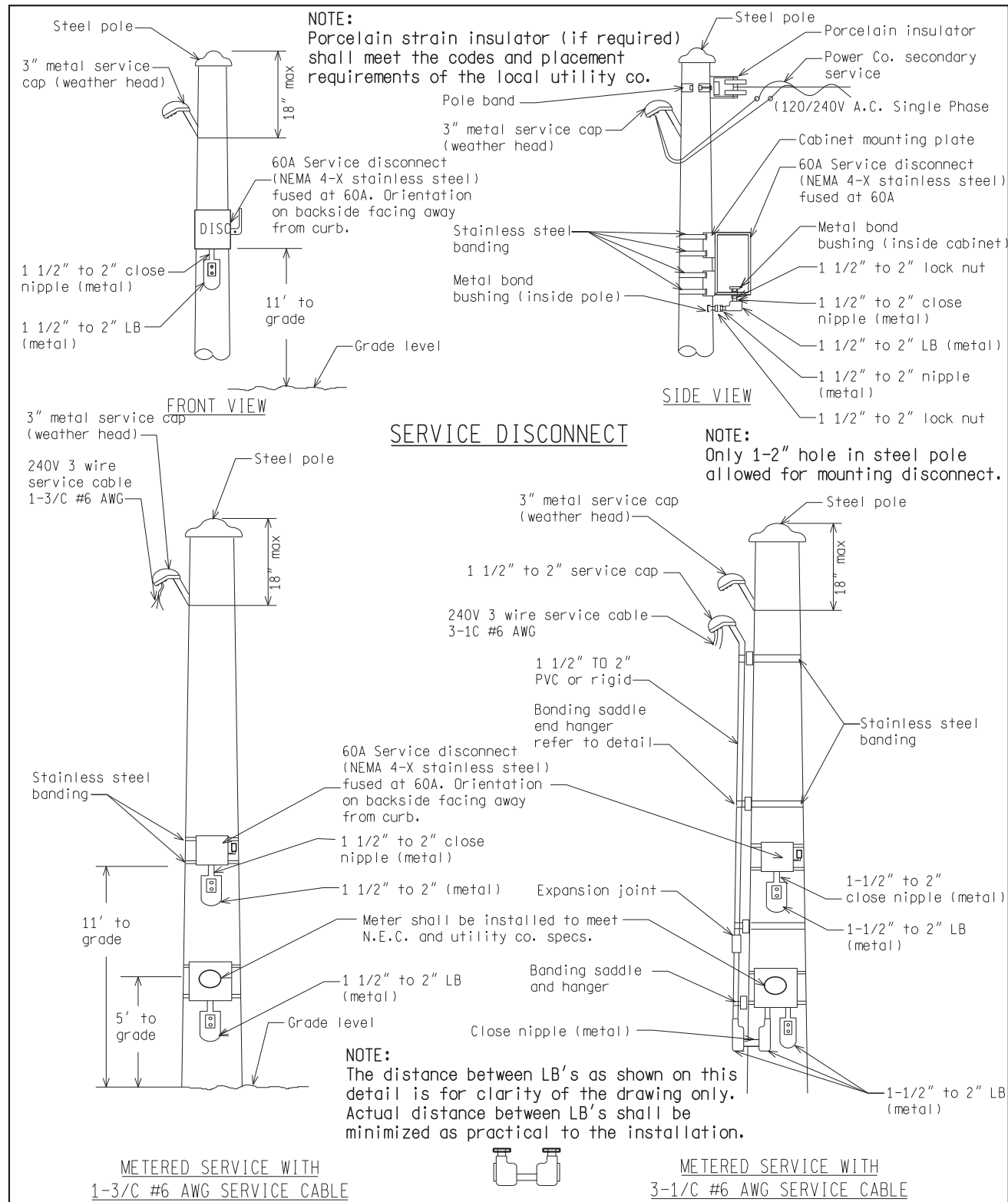
TSC: MUSKEGON

CS: 70023

JN: 202084A

DRAWING SHEET

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NOT TO SCALE

File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG201A.dgn Rev. 02/16/17

<p>MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN FOR</p>	ENGINEER OF DELIVERY	<p>SECONDARY SERVICE/DISCONNECT FOR STEEL POLES</p>	<p>SHEET 1 of 2</p>
	ENGINEER OF DEVELOPMENT		
<p>PREPARED BY TRAFFIC AND SAFETY</p>	(SPECIAL DETAIL)	<p>SIG-201-A</p>	<p>PLAN DATE</p>
<p>DRAWN BY: DJF</p> <p>CHECKED BY:</p>	FHWA APPROVAL DATE		

NOT TO SCALE

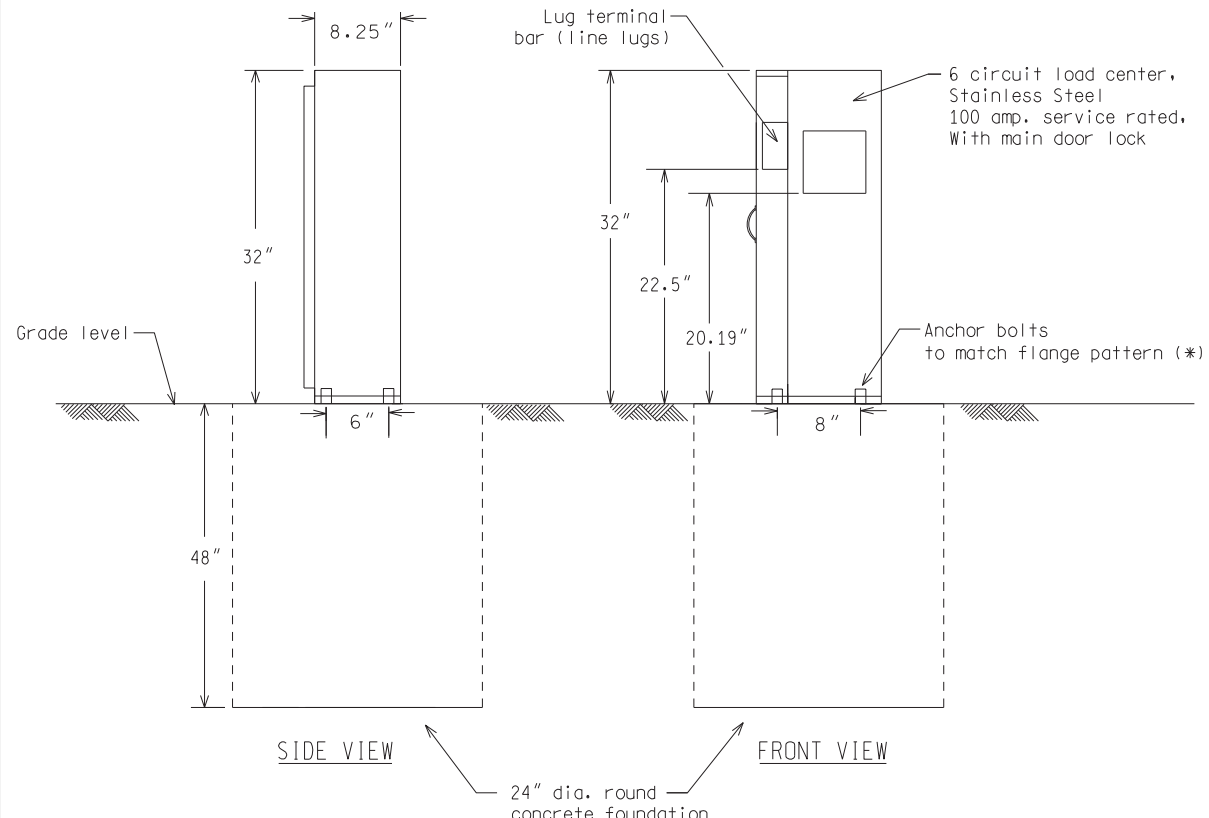
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<p>MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN</p>	(SPECIAL DETAIL)	<p>SIG-201-A</p>	<p>SHEET 2 of 2</p>
	FHWA APPROVAL DATE		
<p>DATE: 04/09/18</p> <p>DESIGN UNIT: SIGNALS</p> <p>TSC: MUSKEGON</p>	<p>CS: 70023</p> <p>JN: 202084A</p>	<p>PLAN DATE</p>	<p>FILE: 202084_SignalDetails.pdf</p>

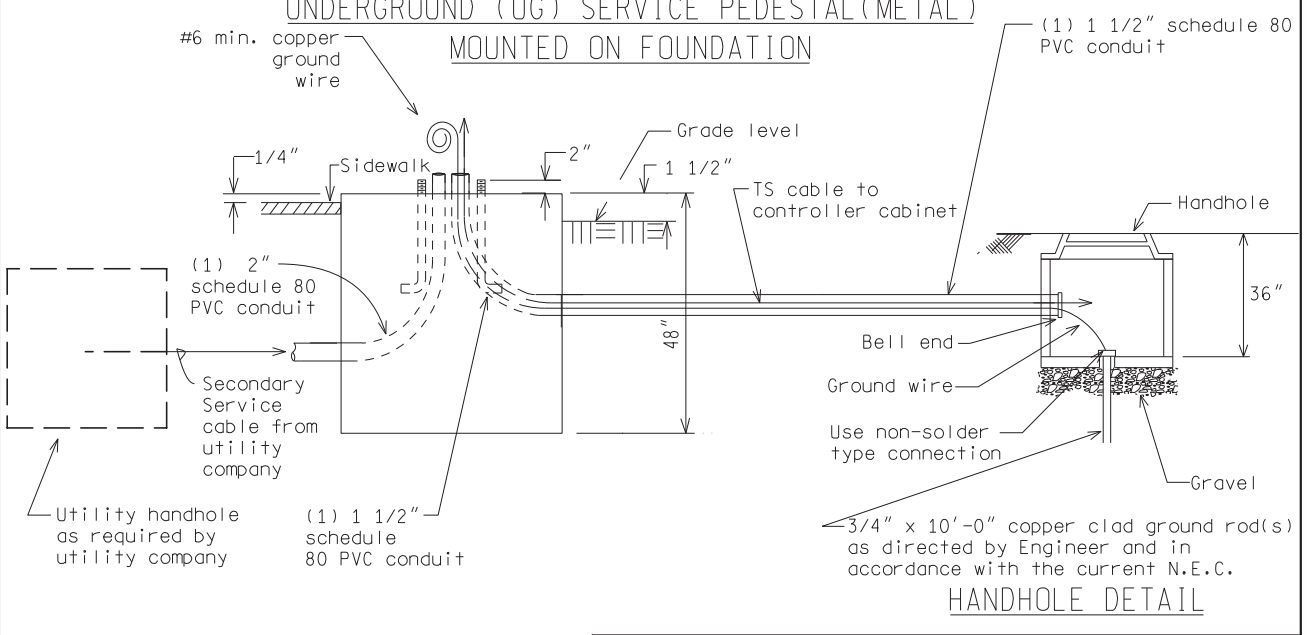
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NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION					

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(* NOTE: ASTM A-307 Galvanized anchor bolts, Stainless Steel drop in, or Epoxy anchored, to be used on existing foundations with proper grade and size.

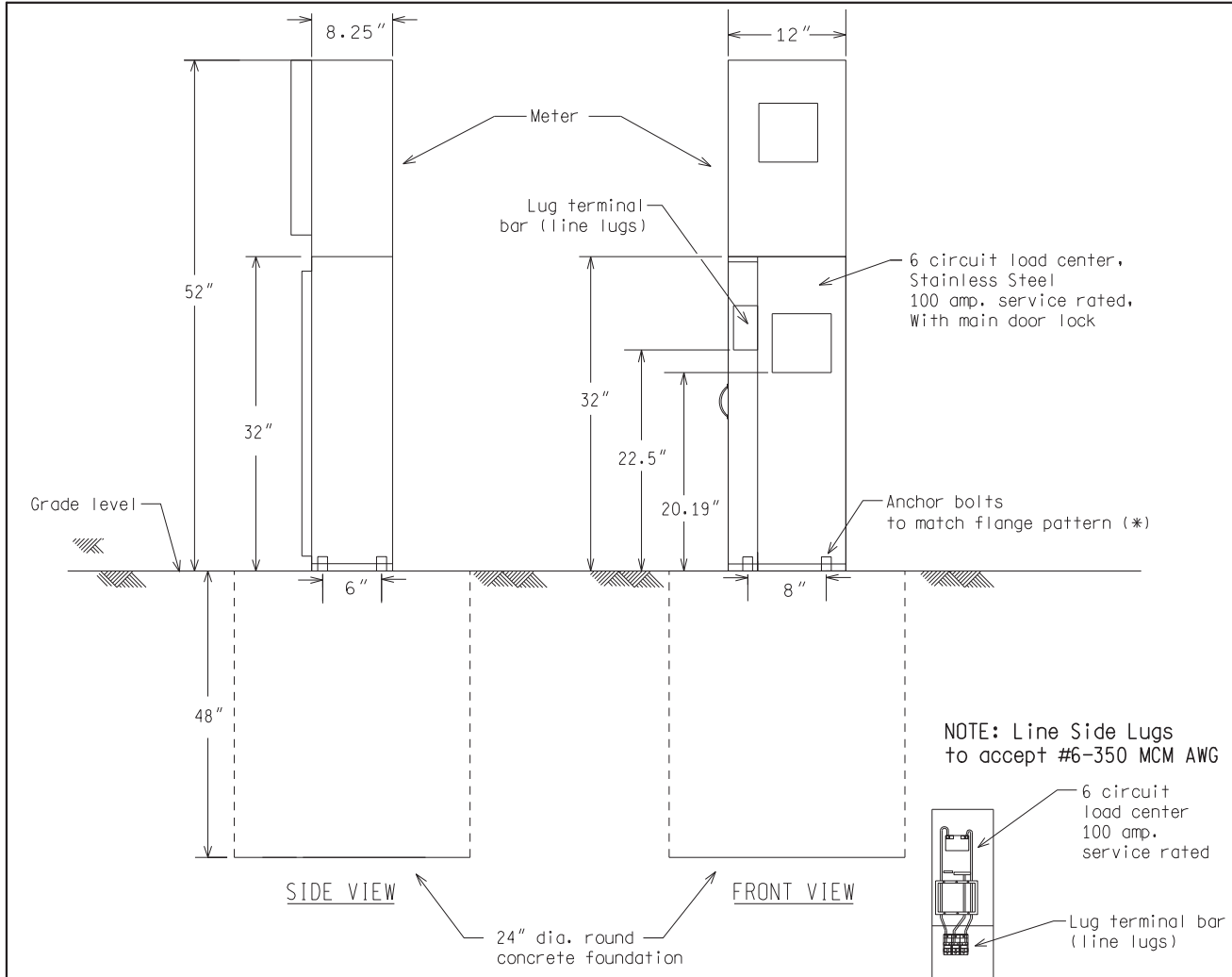


UNDERGROUND (UG) SERVICE PEDESTAL (METAL)
MOUNTED ON FOUNDATION

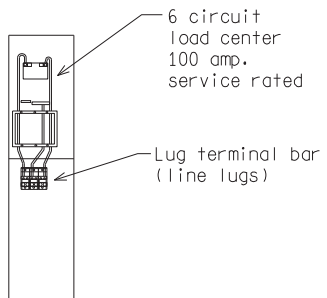


NOT TO SCALE File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG210A.dgn Rev. 02/16/17

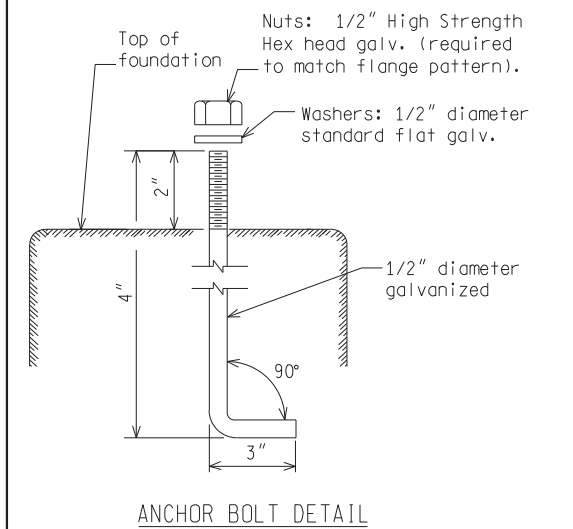
<p>MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN FOR</p>	ENGINEER OF DELIVERY	<p>MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN FOR</p> <p>UNDERGROUND SERVICE METERED AND UNMETERED</p>	<p>PLAN DATE</p>	<p>SIG-210-A</p>	<p>SHEET 1 of 3</p>
	ENGINEER OF DEVELOPMENT				
<p>PREPARED BY TRAFFIC AND SAFETY</p>	(SPECIAL DETAIL)				
<p>DRAWN BY: DSP</p>	FHWA APPROVAL DATE				
<p>CHECKED BY:</p>					



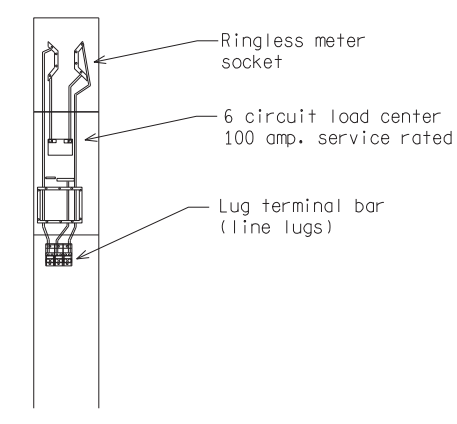
NOTE: Line Side Lugs to accept #6-350 MCM AWG



DETAIL WIRING DIAGRAM (Unmetered)



ANCHOR BOLT DETAIL

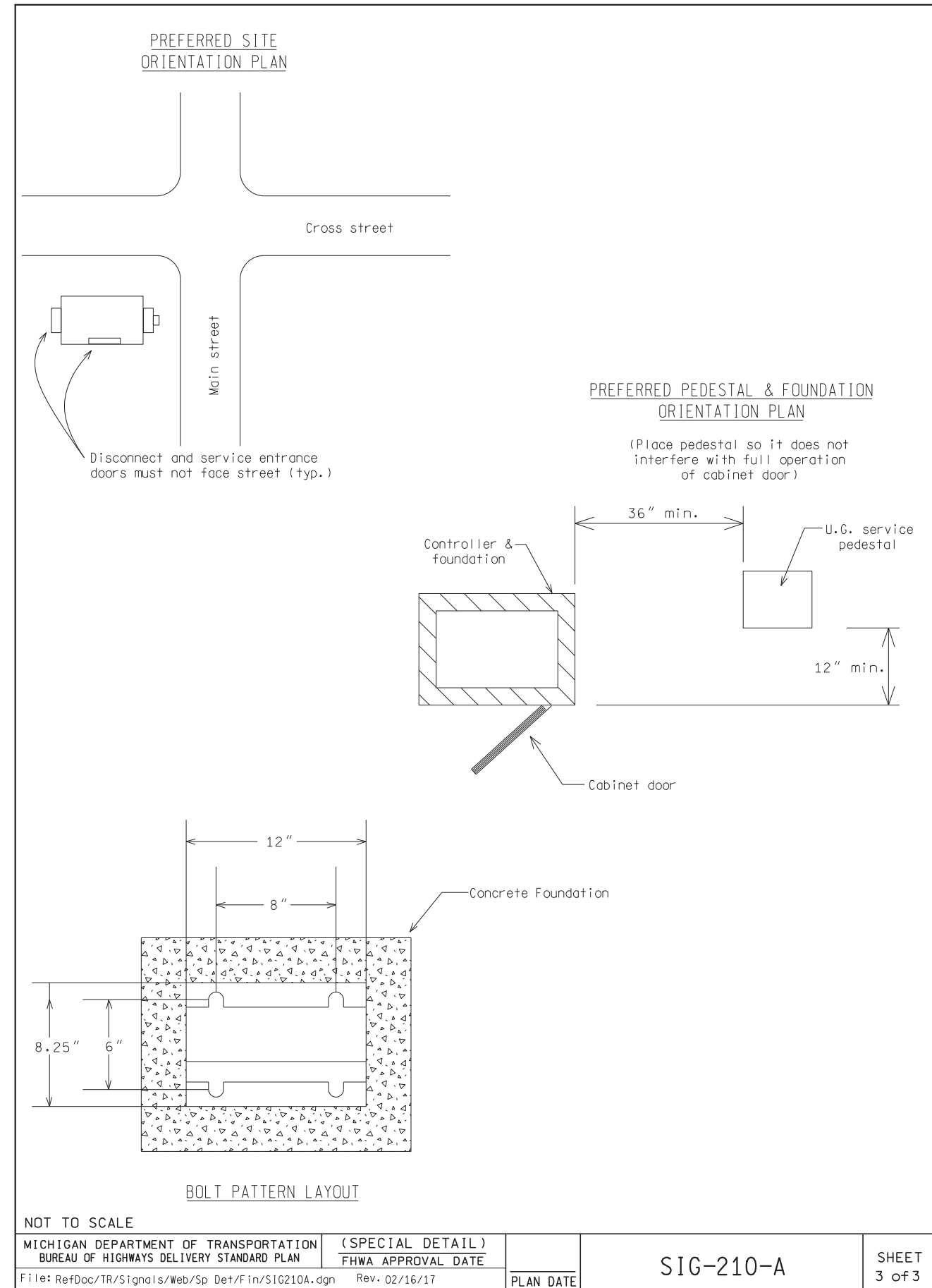


DETAIL WIRING DIAGRAM (metered)

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN	(SPECIAL DETAIL) FHWA APPROVAL DATE	PLAN DATE	SIG-210-A	SHEET 2 of 3
File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG210A.dgn Rev. 02/16/17				

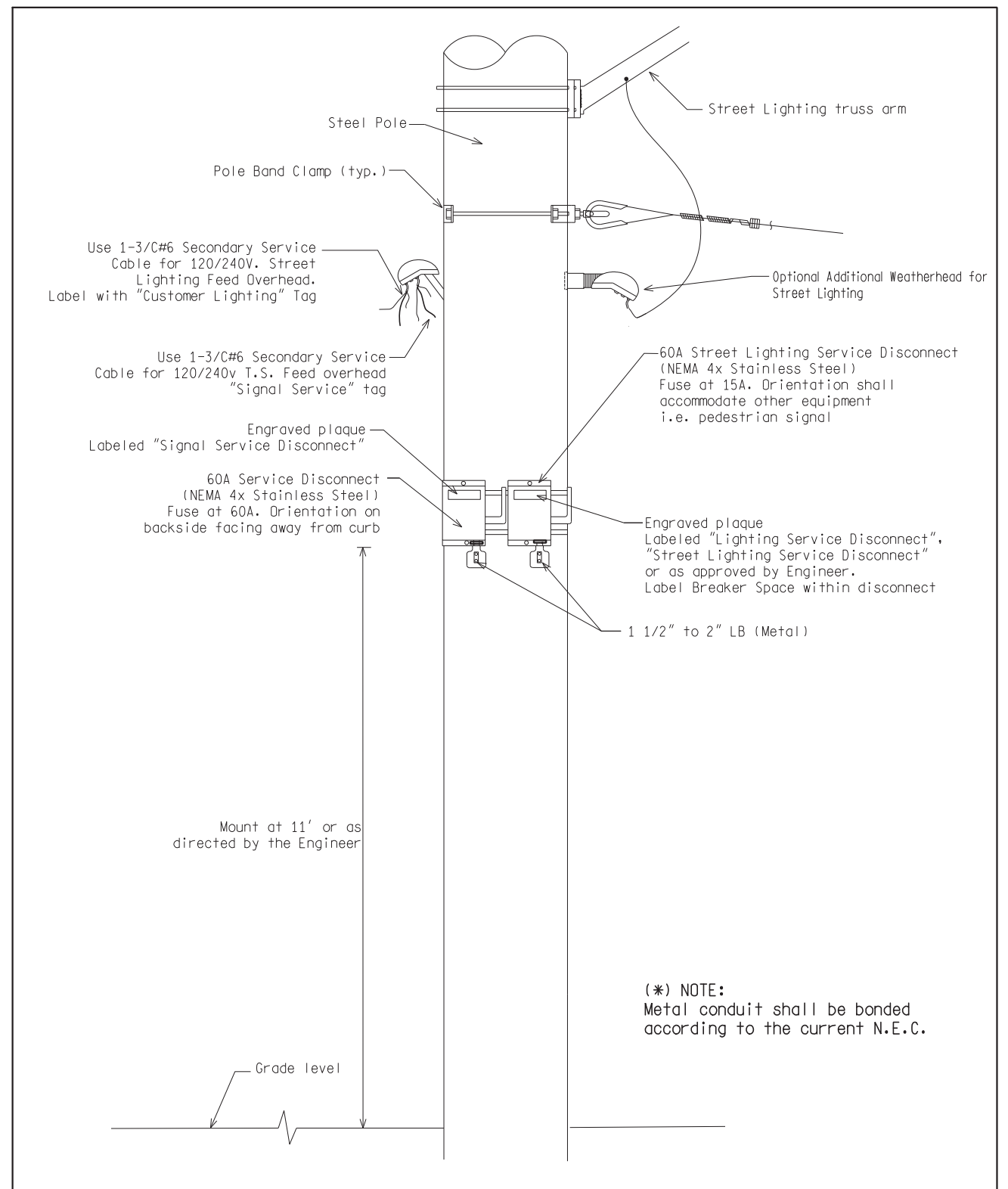
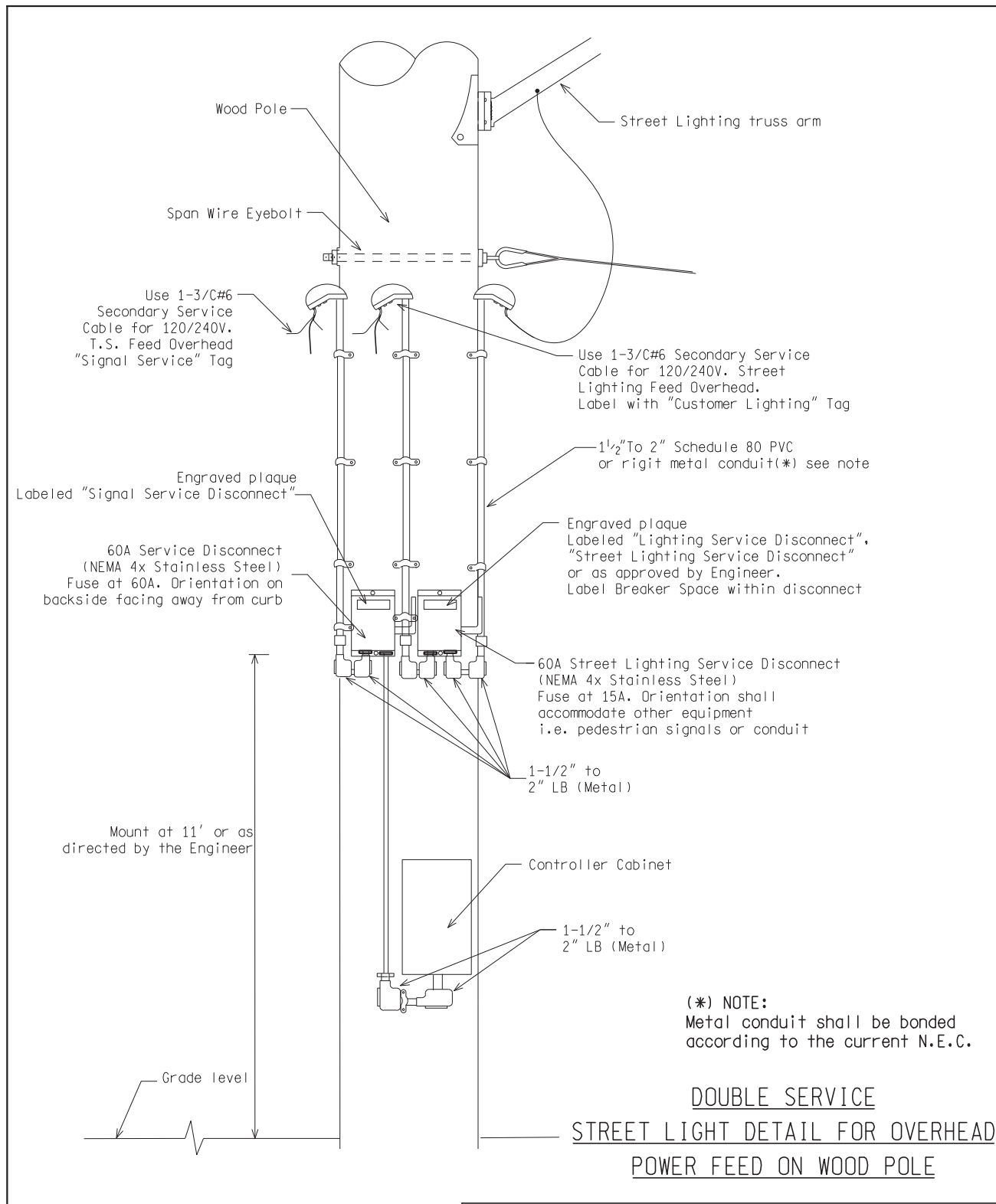
AS-LET PLAN REVISIONS								<p>MICHIGAN DEPARTMENT OF TRANSPORTATION</p>	<p>DATE: 04/09/18</p>	<p>CS: 70023</p>	<p>DRAWING</p>	<p>SHEET</p>
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION					
								FILE: 202084_SignalDetails.pdf	<p>DESIGN UNIT: SIGNALS</p>	<p>JN: 202084A</p>		192
									<p>TSC: MUSKEGON</p>			



AS-LET PLAN REVISIONS							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



DATE: 04/09/18	CS: 70023	DRAWING	SHEET
DESIGN UNIT: SIGNALS	JN: 202084A		
TSC: MUSKEGON			193
FILE: 202084_SignalDetails.pdf			



NOT TO SCALE

File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG220A.dgn Rev.

<p>MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN FOR</p>	ENGINEER OF DELIVERY	<p>SECONDARY SERVICE FOR STREET LIGHTING AND STREET NAME SIGNS</p>	02/16/17	<p>SIG-220-A</p>	<p>SHEET 1 of 4</p>
	ENGINEER OF DEVELOPMENT		<p>(SPECIAL DETAIL) FHWA APPROVAL DATE</p>		

PREPARED BY: TRAFFIC AND SAFETY

DRAWN BY: DSP

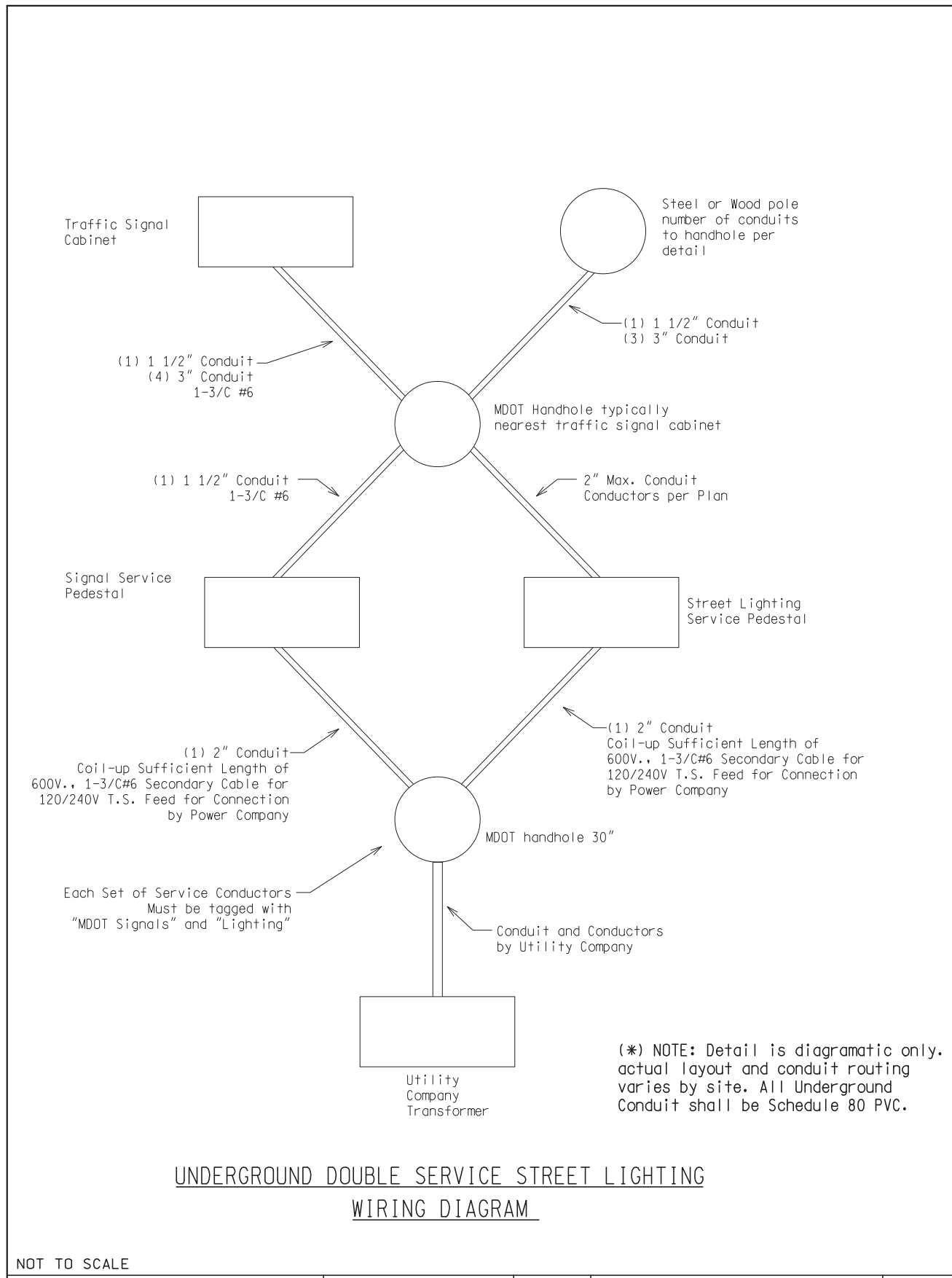
CHECKED BY:

NOT TO SCALE

File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG220A.dgn Rev.

<p>MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN</p>	(SPECIAL DETAIL)	<p>02/16/17</p>	<p>SIG-220-A</p>	<p>SHEET 2 of 4</p>
	FHWA APPROVAL DATE			

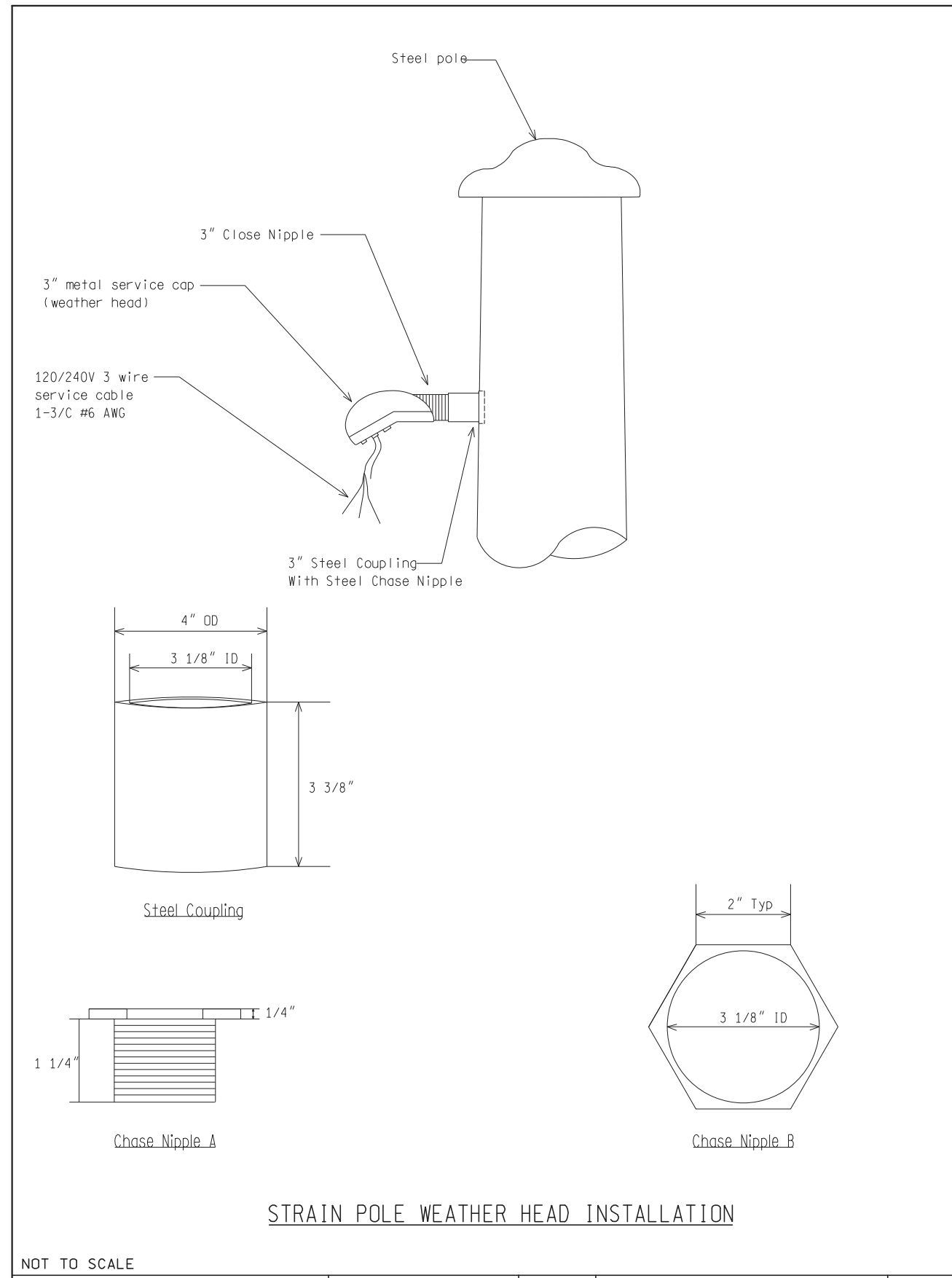
AS-LET PLAN REVISIONS								<p>MICHIGAN DEPARTMENT OF TRANSPORTATION</p>	<p>DATE: 04/09/18</p>	<p>CS: 70023</p>	<p>DRAWING</p>	<p>SHEET</p>
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION					
								<p>FILE: 202084_SignalDetails.pdf</p>	<p>TSC: MUSKEGON</p>	<p>JN: 202084A</p>		<p>194</p>



UNDERGROUND DOUBLE SERVICE STREET LIGHTING
WIRING DIAGRAM

NOT TO SCALE

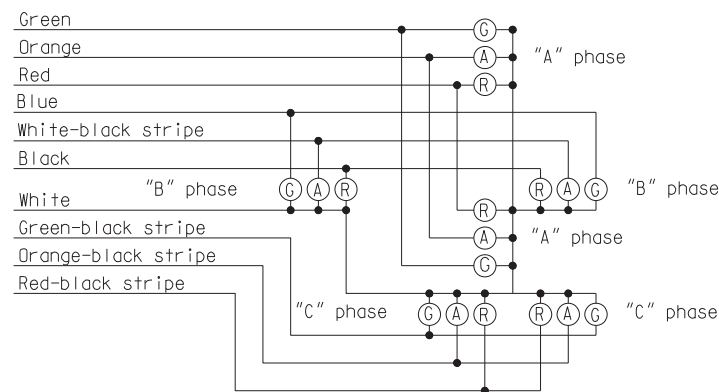
MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN	(SPECIAL DETAIL) FHWA APPROVAL DATE	02/16/17	SIG-220-A	SHEET 3 of 4
File: RefDoc/TR/Signals/Web/Sp Det/F in/SIG220A.dgn Rev.		PLAN DATE		



STRAIN POLE WEATHER HEAD INSTALLATION

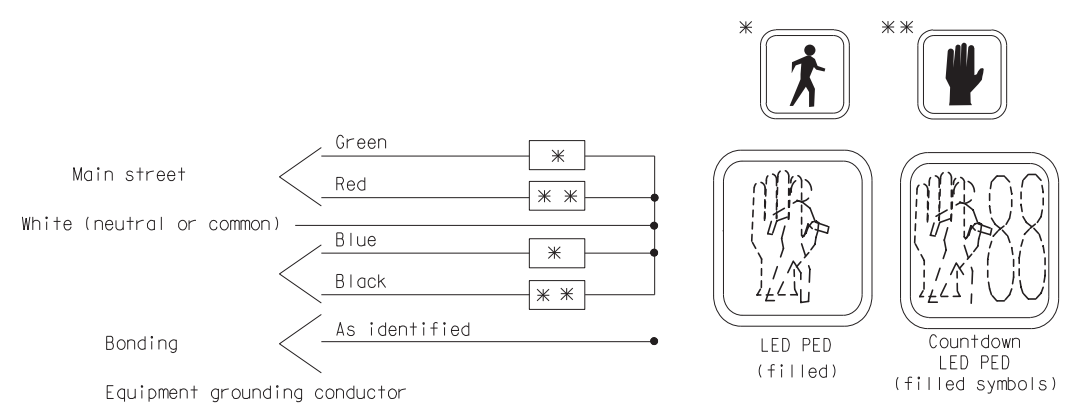
NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN	(SPECIAL DETAIL) FHWA APPROVAL DATE	02/16/17	SIG-220-A	SHEET 4 of 4
File: RefDoc/TR/Signals/Web/Sp Det/F in/SIG220A.dgn Rev.		PLAN DATE		



COLOR CODE FOR WIRING CONNECTING TRAFFIC SIGNAL LAMPS

NOTE: No splices allowed between traffic signal head and controller.

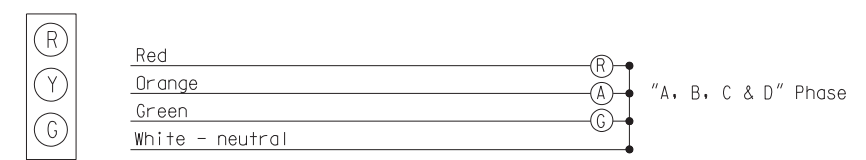


**COLOR CODE FOR WIRING CONNECTING PEDESTRIAN SIGNAL LAMPS
(WALKING PERSON - HAND SYMBOL)**

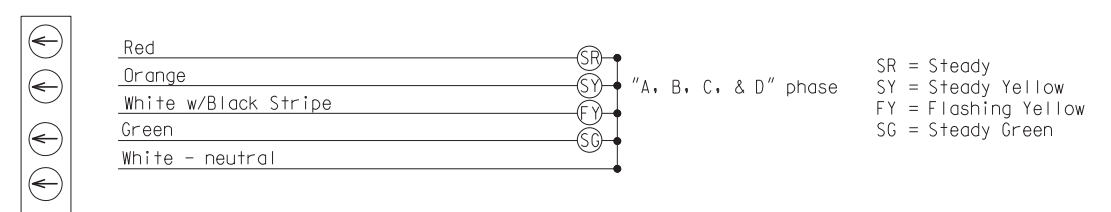
NOT TO SCALE

File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG230A.dgn Rev. 02/16/17

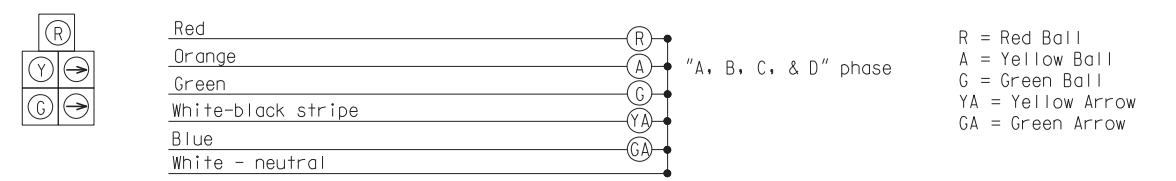
<p>PREPARED BY TRAFFIC AND SAFETY</p>	ENGINEER OF DELIVERY	<p>MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN FOR COLOR CODE WIRING/ EQUIPMENT GROUNDING</p>	<p>PLAN DATE</p>	<p>SIG-230-A</p>	<p>SHEET 1 of 6</p>
	ENGINEER OF DEVELOPMENT				
<p>DRAWN BY: DJF</p> <p>CHECKED BY:</p>	(SPECIAL DETAIL)				
	FHWA APPROVAL DATE				



STANDARD - 3 COLOR SIGNAL DISPLAY



FLASHING YELLOW ARROW (FYA) - 4 COLOR SIGNAL DISPLAY



DOG HOUSE W/RIGHT TURNS - 5 COLOR SIGNAL DISPLAY

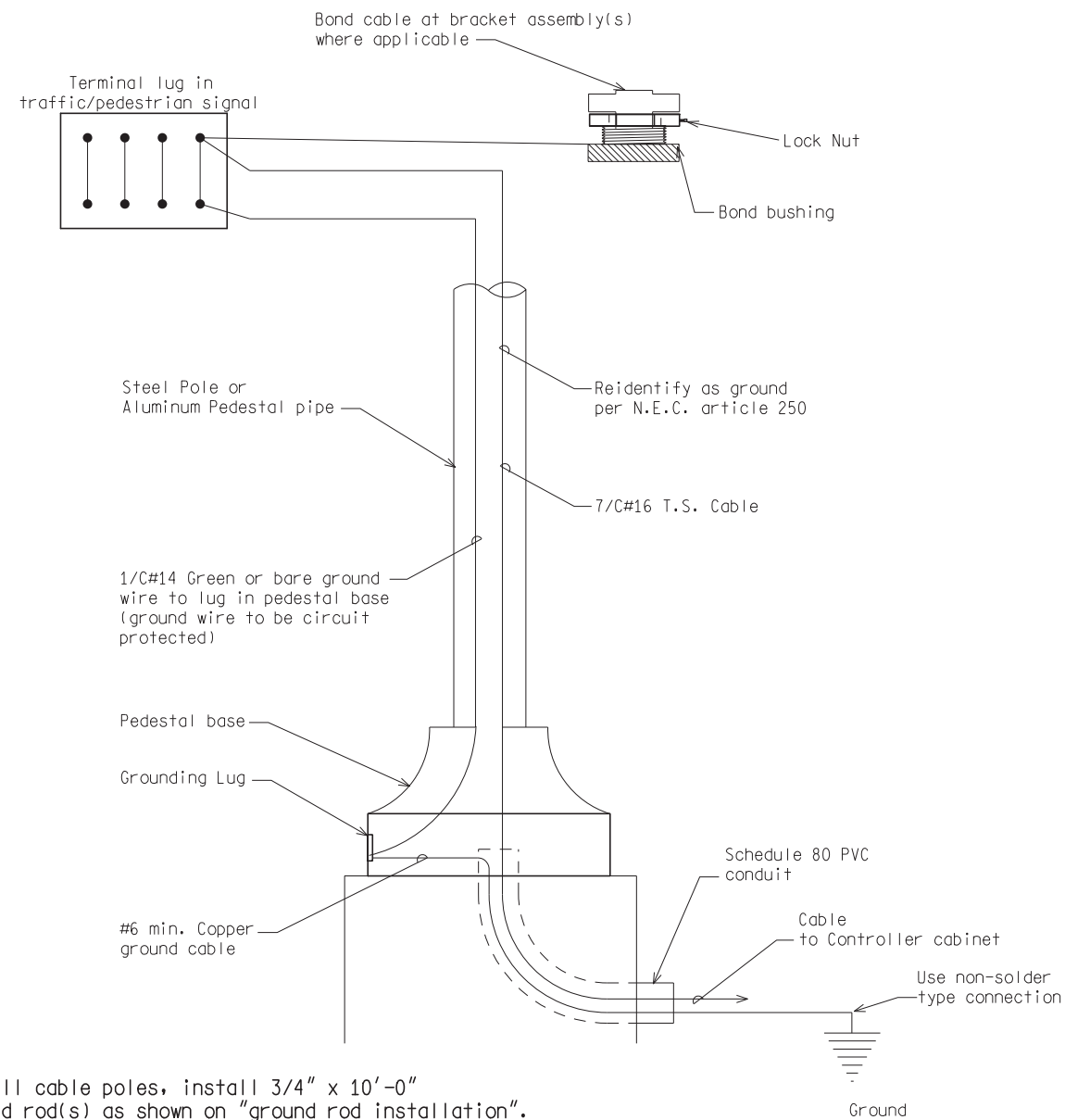
COLOR CODE FOR WIRING CONNECTING TRAFFIC SIGNAL LAMPS

NOT TO SCALE

File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG230A.dgn Rev. 02/16/17

<p>MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN</p>	(SPECIAL DETAIL)	<p>PLAN DATE</p>	<p>SIG-230-A</p>	<p>SHEET 2 of 6</p>
	FHWA APPROVAL DATE			

AS-LET PLAN REVISIONS									<p>DATE: 04/09/18</p> <p>DESIGN UNIT: SIGNALS</p> <p>TSC: MUSKEGON</p>	<p>CS: 70023</p> <p>JN: 202084A</p>	<p>DRAWING</p>	<p>SHEET</p>
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION					
								FILE: 202084_SignalDetails.pdf				196

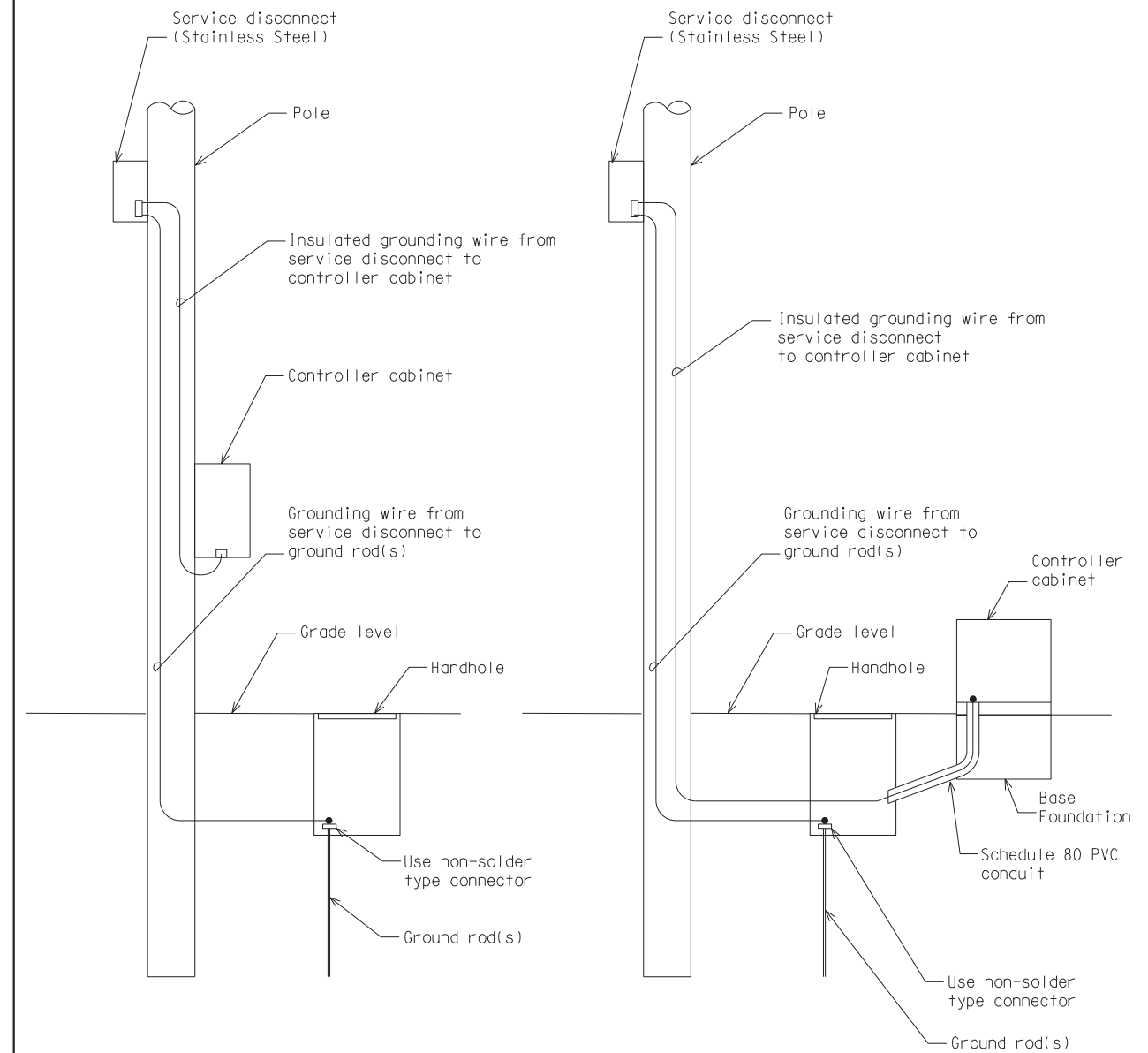


NOTE:
 For all cable poles, install 3/4" x 10'-0"
 ground rod(s) as shown on "ground rod installation".
 Connect ground rod(s) with #6 min. copper wire to
 messenger wire with non-solder type connection.

STEEL POLE/PEDESTAL GROUNDING DETAIL

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN	(SPECIAL DETAIL) FHWA APPROVAL DATE		SIG-230-A	SHEET 3 of 6
File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG230A.dgn Rev. 02/16/17		PLAN DATE		



GROUNDING

Install 3/4 " x 10'-0" copper clad ground rod(s)
 as required to provide less than 10 OHM resistance
 to ground.

Grounding wire #6 AWG min. bare copper grounding wire
 shall be installed to meet N.E.C. and utility
 company specs.

Ground wire from disconnect to ground rod to be in
 moulding (wood pole or post) or inside the pole
 (steel). Ground wire from disconnect to controller
 cabinet to be in conduit (wood pole, wood post, and
 steel pole).

CONTROLLER CABINET GROUNDING DETAIL

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN	(SPECIAL DETAIL) FHWA APPROVAL DATE		SIG-230-A	SHEET 4 of 6
File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG230A.dgn Rev. 02/16/17		PLAN DATE		

AS-LET PLAN REVISIONS							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

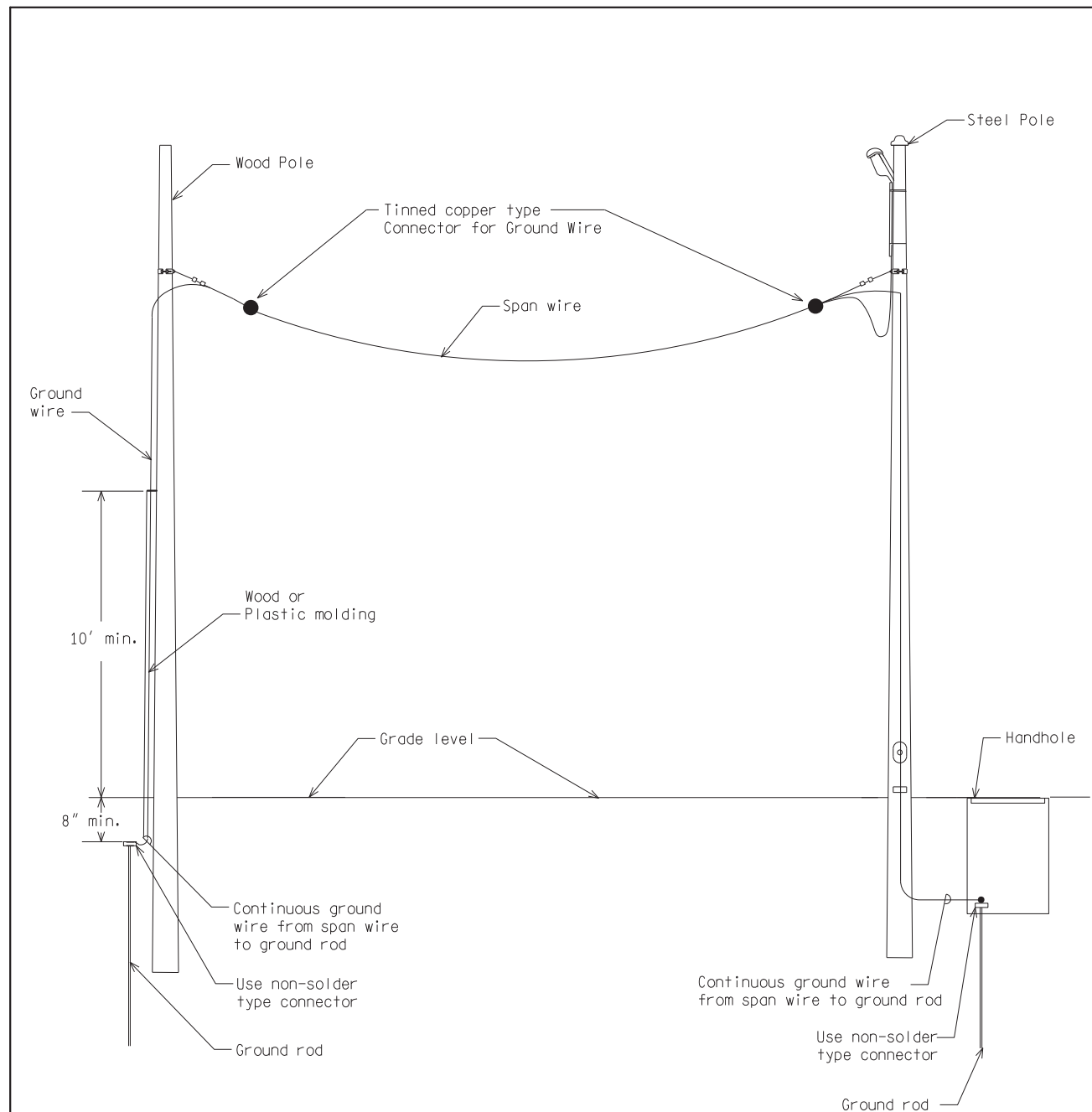


FILE: 202084_SignalDetails.pdf

DATE: 04/09/18
 DESIGN UNIT: SIGNALS
 TSC: MUSKEGON

CS: 70023
 JN: 202084A

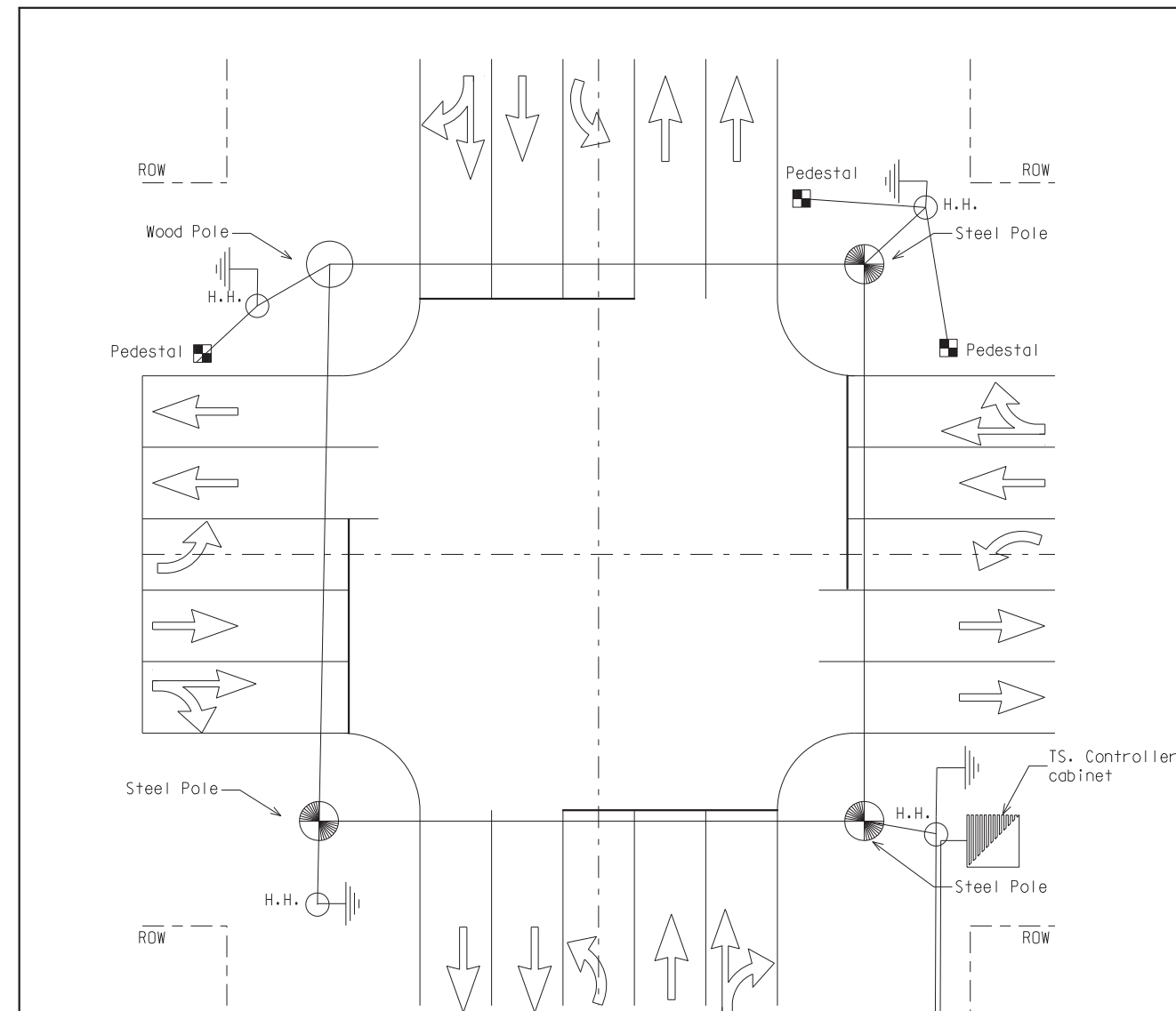
DRAWING SHEET
 197



SPAN WIRE GROUNDING DETAIL

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN	(SPECIAL DETAIL) FHWA APPROVAL DATE	PLAN DATE	SIG-230-A	SHEET 5 of 6
File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG230A.dgn Rev. 02/16/17				



SYSTEM GROUNDING DETAL

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN	(SPECIAL DETAIL) FHWA APPROVAL DATE	PLAN DATE	SIG-230-A	SHEET 6 of 6
File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG230A.dgn Rev. 02/16/17				

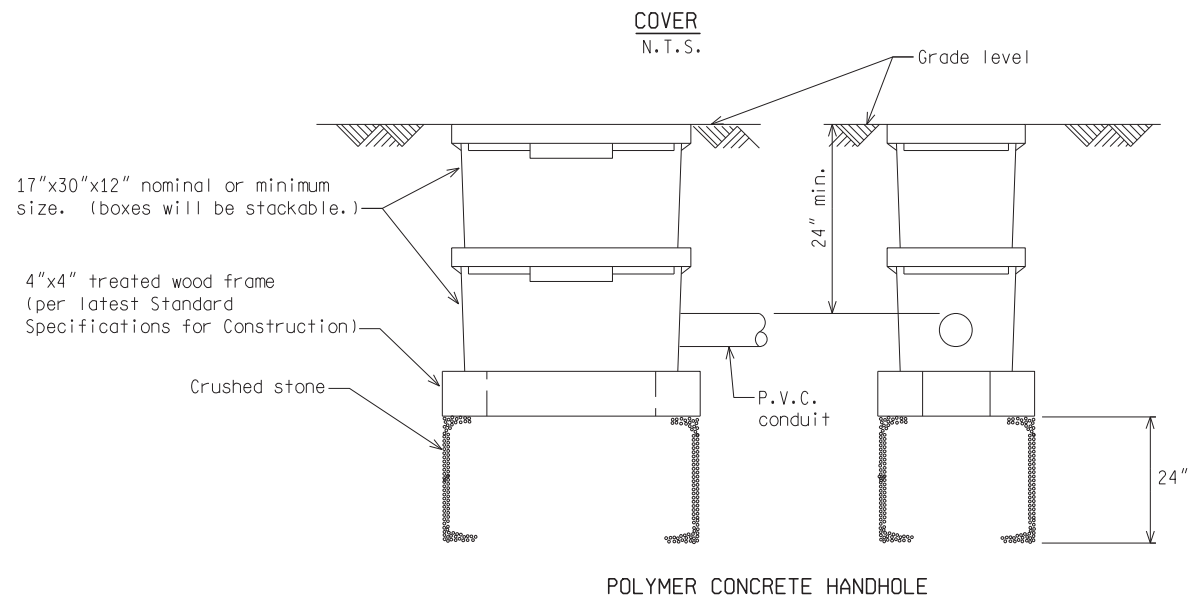
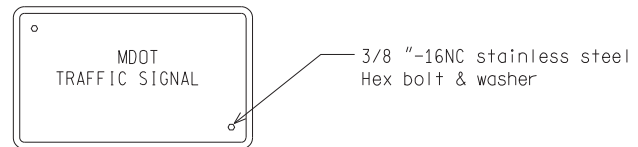
- 1) All ground rods shall be 3/4" x 10' in length copperclad.
- 2) Ground rods shall be drive straight down, so that only the required portions of of the ground rod is exposed to attach the ground wires.
- 3) All ground rods shall be connected to each other or to a span wire with a single #6 AWG copper conductor.
- 4) Each ground wire attaching to a ground rod shall have its own approved acorn type connector.
- 5) Do not install any ground rods within 10' of any other ground rods from other grounding.
- 6) The grounding system shall measure 10 ohms or less.
- 7) A separate insulated green #6 AWG copper ground is required from the service disconnect (safety switch) to the ground bussbar in the controller cabinet.
- 8) Ground rod for each steel pole, wood pole, pedestal and/or traffic signal controller cabinet shall be located in the adjacent handhole as indicated on the plans or as directed by the Engineer.
- 9) All metal bases must be connected to a ground rod with a #6 ground wire.

AS-LET PLAN REVISIONS							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



DATE: 04/09/18	CS: 70023	DRAWING	SHEET
DESIGN UNIT: SIGNALS	JN: 202084A		
TSC: MUSKEGON			198
FILE: 202084_SignalDetails.pdf			

NOTE:
Logo imprint may read "Traffic Signal"
for non MDOT installations

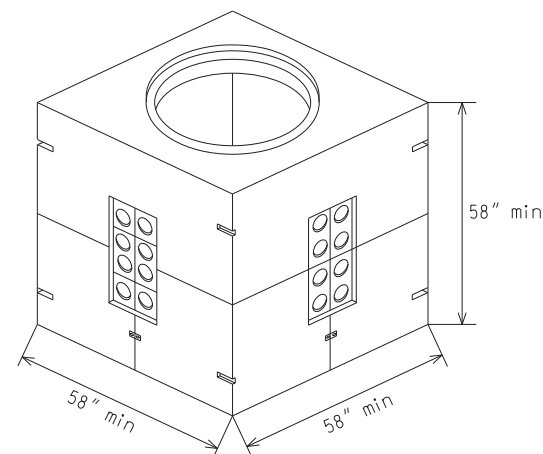


POLYMER CONCRETE HANDHOLE

- NOTES PERTAIN TO PRECAST OR BRICK:
- 1) The material and workmanship shall be in accordance with the current M.D.O.T. Standard Specifications for Construction.
 - 2) All concrete masonry shall be grade 30M.
 - 3) The inner surface of the handhole shall be smooth.
 - 4) Heavy Duty covers shall be castings which meet the requirements of the current specifications for gray iron castings ASTM designation A48 and shall have a minimum strength as provided for Class No. 30 gray iron castings.
 - 5) All castings shall be cleaned by sand blasting.
 - 6) The seating face of the cover and the seat for the same on the frame if required, shall be ground or machined so that the cover shall have an even bearing on its seat to prevent rocking or tilting.
 - 7) The castings shall be free of pouring faults, blow holes, cracks, and other imperfections. They shall be sound, true to form and thickness, clean and neatly finished and shall be coated with tar pitch varnish.
 - 8) Light Duty cover shall be bolted to frame with not less than 2 countersunk Hex head bronze bolts.
 - 9) The Heavy Duty cover & frame shall be East Jordan Iron Works #8206 Neenah Foundry, #R-6662-HP for square cover or East Jordan Iron Works #2860 Type "A", Neenah Foundry #R-6052 D for circular cover or an approved equal.
 - 10) Handhole shall be equipped with cable rack and hooks to train cable.

NOT TO SCALE

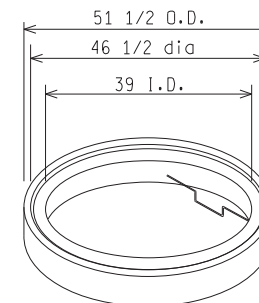
MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN	(SPECIAL DETAIL) FHWA APPROVAL DATE	PLAN DATE	SIG-240-A	SHEET 3 of 6
File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG240A.dgn Rev. 02/16/17				



	Length	Width	Height
Inside	48	48	48
Outside	58	58	58
Recommended Hole size	82	82	--

	Min Thickness	Min Weight lbs
Wall	5	Top 3300
Roof	5	Bottom 3850
Floor	5	Total 7150

NOTE:
Galvanized step is standard with
grade ring ASTM C478.



Dimensions	
A	Min Wt. (lbs)
6	440
9	650
12	860

GRADE RING WITH 39" I.D. &
46 1/2" RECESS

4' x 4' x 4' PRECAST CONCRETE HANDHOLE

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN	(SPECIAL DETAIL) FHWA APPROVAL DATE	PLAN DATE	SIG-240-A	SHEET 4 of 6
File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG240A.dgn Rev. 02/16/17				

AS-LET PLAN REVISIONS							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



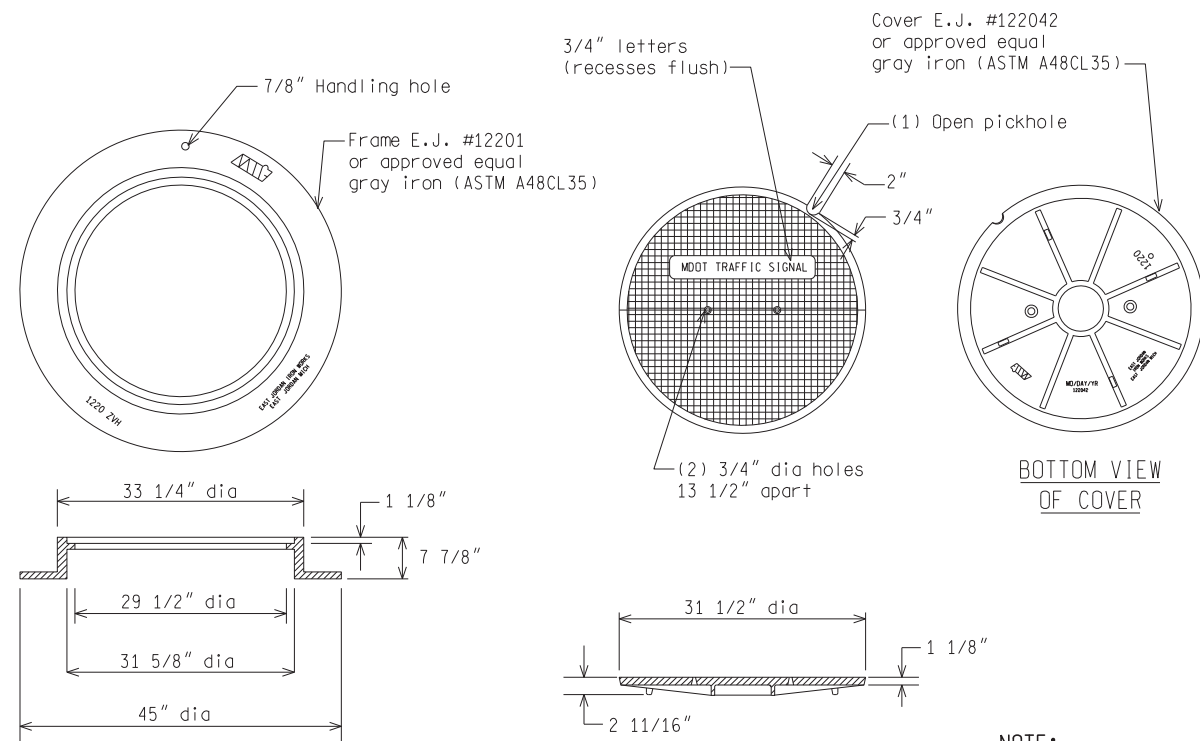
FILE: 202084_SignalDetails.pdf

DATE: 04/09/18
DESIGN UNIT: SIGNALS
TSC: MUSKEGON

CS: 70023
JN: 202084A

DRAWING SHEET
200

NOTE:
Logo imprint on cover shall read "MDOT Traffic Signal" for MDOT installations



FRAME SECTION
MANHOLE FRAME
(HEAVY DUTY)
Estimated weight 410 lbs

NOTE:
Machined surface

COVER SECTION
MANHOLE COVER
(HEAVY DUTY)
Estimated weight 245 lbs

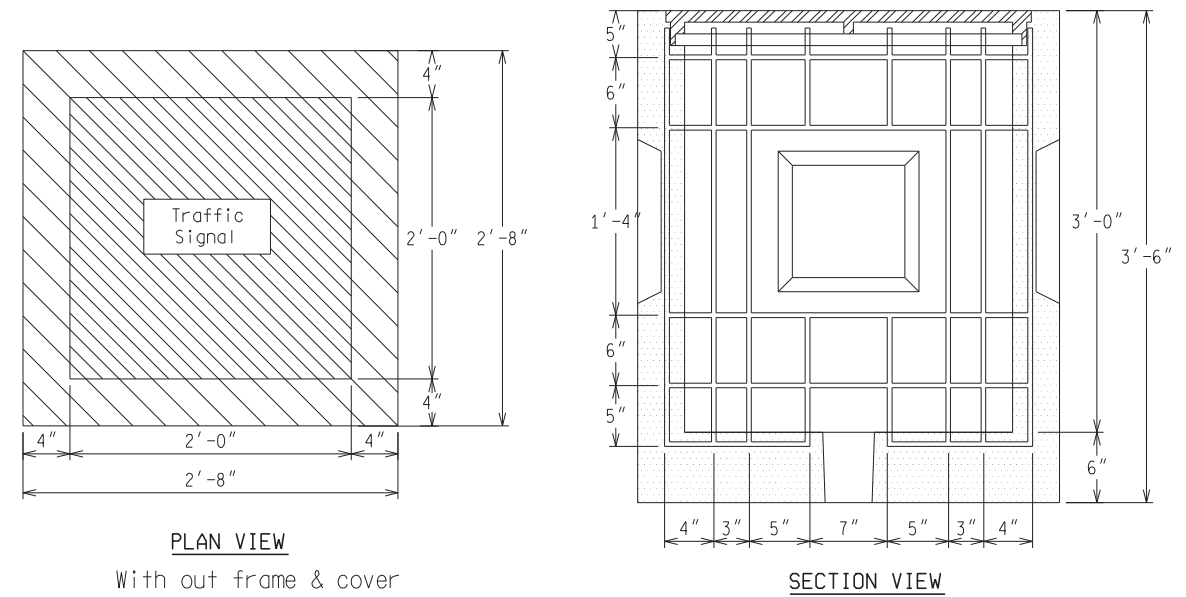
NOTE:
Machined surface

4' x 4' x 4' PRECAST CONCRETE HANDHOLE

NOT TO SCALE

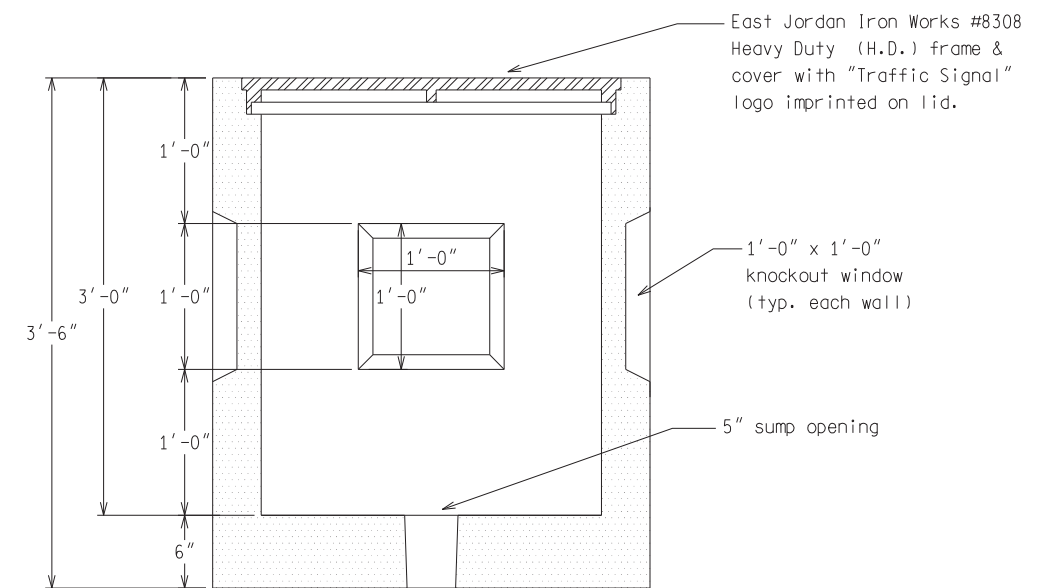
MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN	(SPECIAL DETAIL) FHWA APPROVAL DATE	PLAN DATE	SIG-240-A	SHEET 5 of 6
File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG240A.dgn Rev. 02/16/17				

Concrete: 4500 p.s.i. @ 28 days
Reinforcement: Grade 60 rebar
All bars are #4



PLAN VIEW
With out frame & cover

SECTION VIEW
Typ. reinforcement all walls



SECTION VIEW

2' x 2' SQUARE x 3' HANDHOLE

For use on Oakland County roads only.

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN	(SPECIAL DETAIL) FHWA APPROVAL DATE	PLAN DATE	SIG-240-A	SHEET 6 of 6
File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG240A.dgn Rev. 02/16/17				

AS-LET PLAN REVISIONS							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

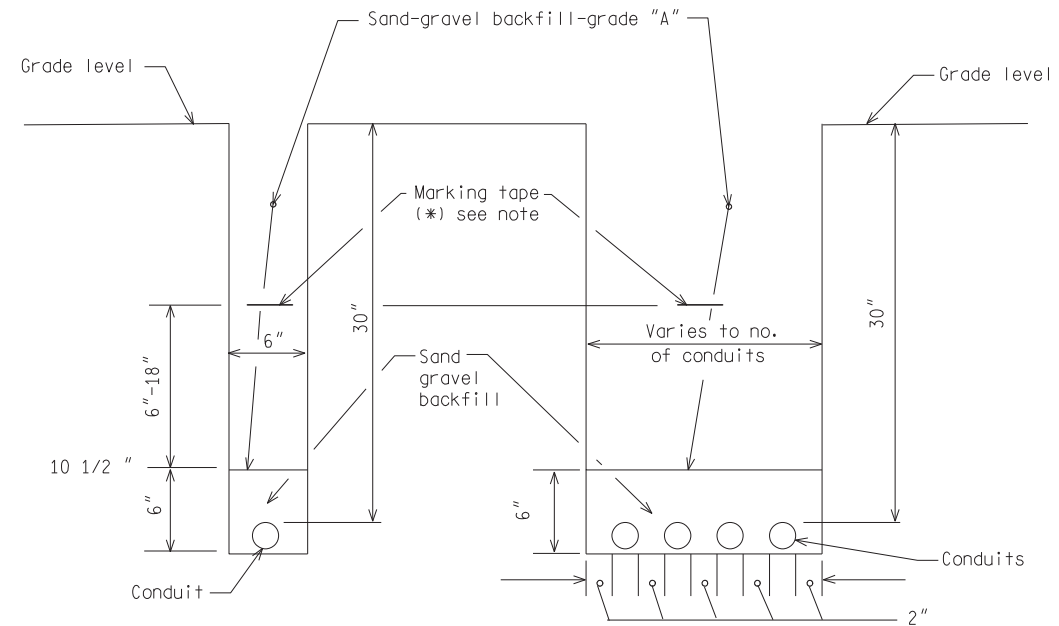


FILE: 202084_SignalDetails.pdf

DATE: 04/09/18
DESIGN UNIT: SIGNALS
TSC: MUSKEGON

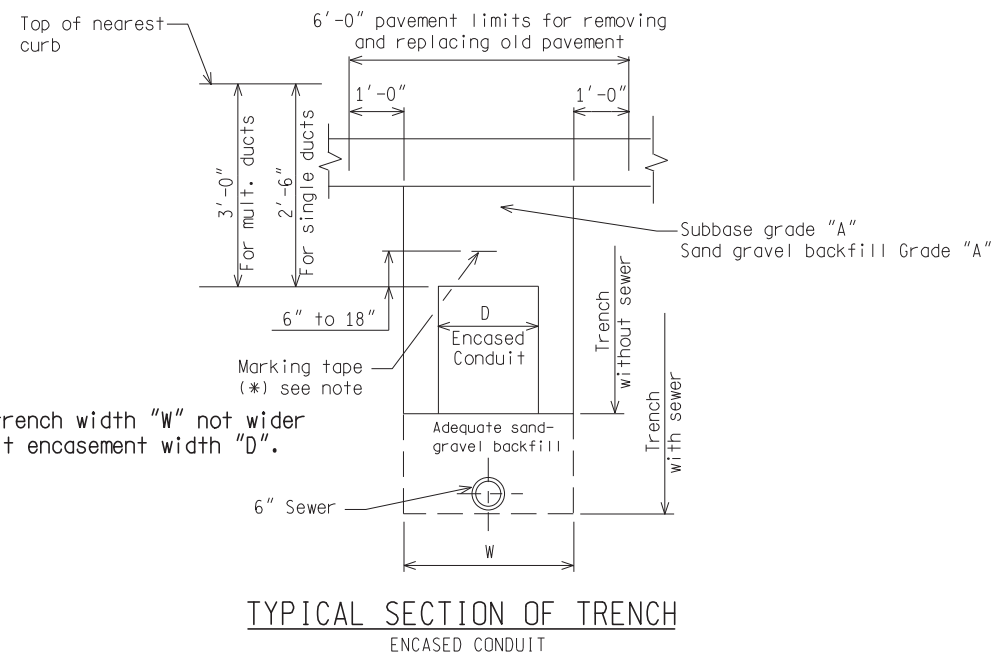
CS: 70023
JN: 202084A

DRAWING SHEET
201



(*) NOTE:
Marking tape shall have proper logo as supplied by the Engineer and installed by the Contractor.

DIRECT BURIAL CONDUIT(S)/CABLE(S)



NOTE:
Preferred trench width "W" not wider than conduit encasement width "D".

TYPICAL SECTION OF TRENCH
ENCASED CONDUIT

NOT TO SCALE

File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG250A.dgn Rev. 02/16/17



PREPARED BY
TRAFFIC AND SAFETY

DRAWN BY: DJF
CHECKED BY:

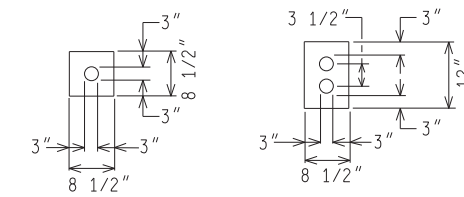
ENGINEER OF DELIVERY

ENGINEER OF DEVELOPMENT
(SPECIAL DETAIL)
FHWA APPROVAL DATE

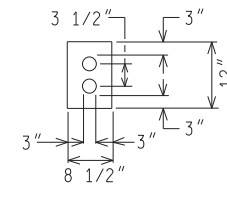
MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN FOR
CONDUIT
(DIRECT BURIAL/ENCASED)

SIG-250-A

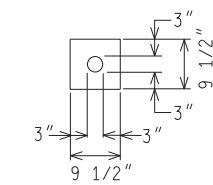
SHEET
1 of 2



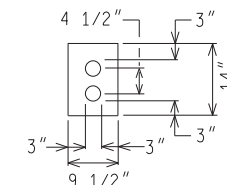
1 2" CONDUIT



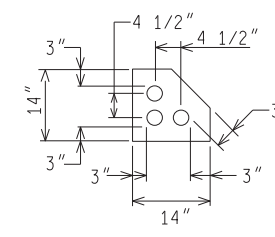
2 2" CONDUIT



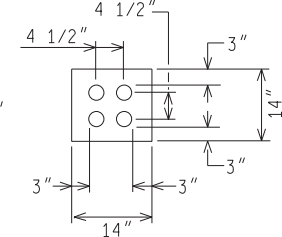
ONE
2 1 1/2" CONDUIT



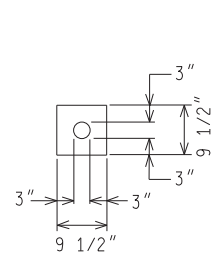
TWO
2 1 1/2" CONDUIT



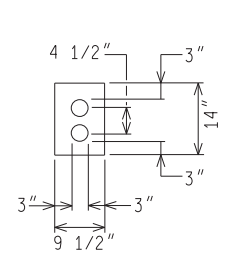
THREE
2 1 1/2" CONDUIT



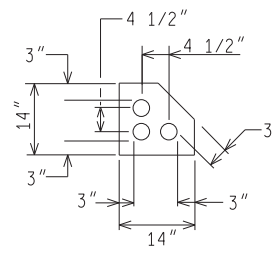
FOUR
2 1 1/2" CONDUIT



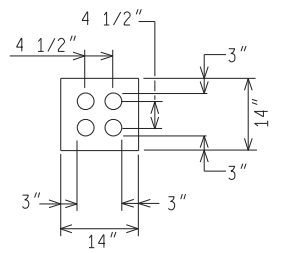
1 3" CONDUIT



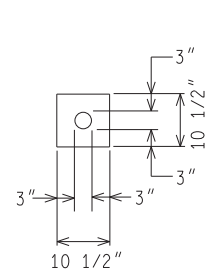
2 3" CONDUIT



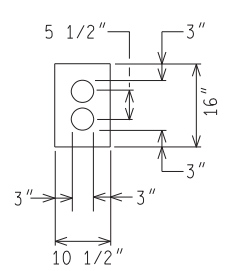
3 3" CONDUIT



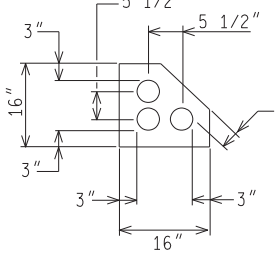
4 3" CONDUIT



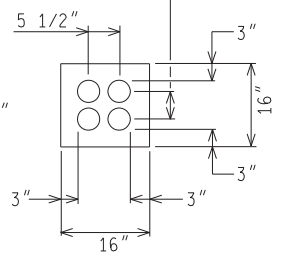
1 4" CONDUIT



2 4" CONDUIT



3 4" CONDUIT



4 4" CONDUIT

ENCASED CONDUIT SECTIONS

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN

(SPECIAL DETAIL)
FHWA APPROVAL DATE

File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG250A.dgn Rev. 02/16/17

PLAN DATE

SIG-250-A

SHEET
2 of 2

AS-LET PLAN REVISIONS

NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



FILE: 202084_SignalDetails.pdf

DATE: 04/09/18

DESIGN UNIT: SIGNALS

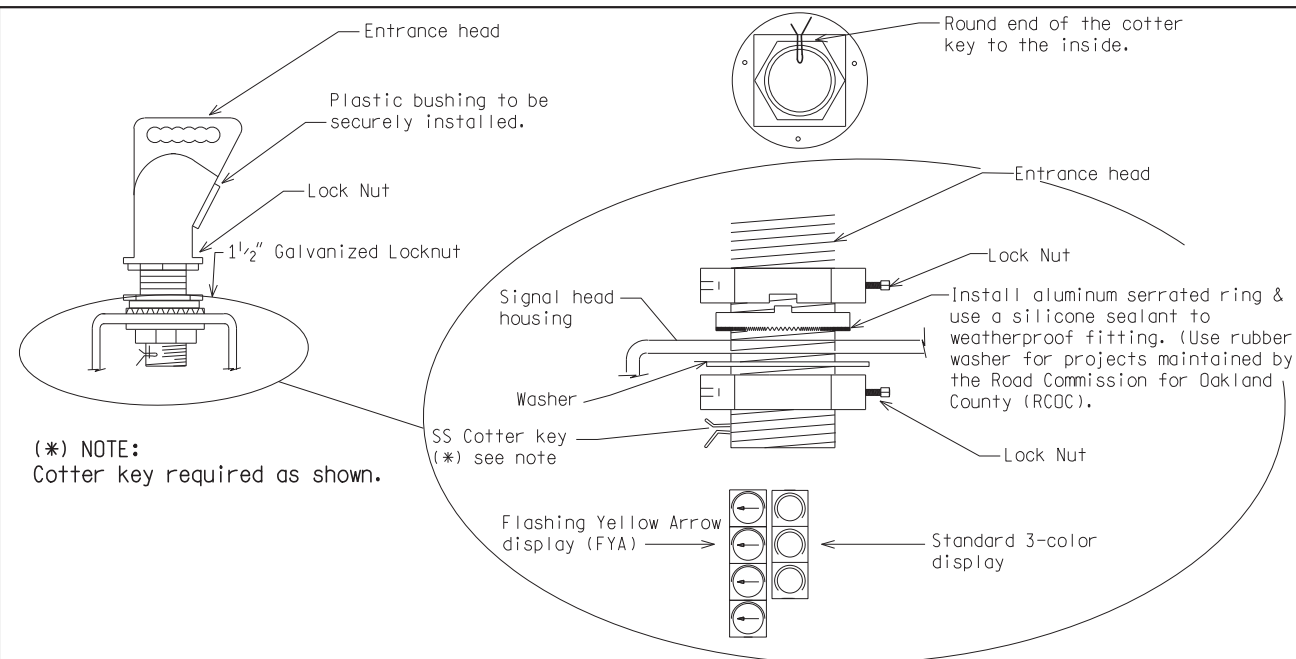
TSC: MUSKEGON

CS: 70023

JN: 202084A

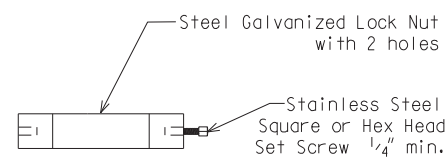
DRAWING SHEET

202

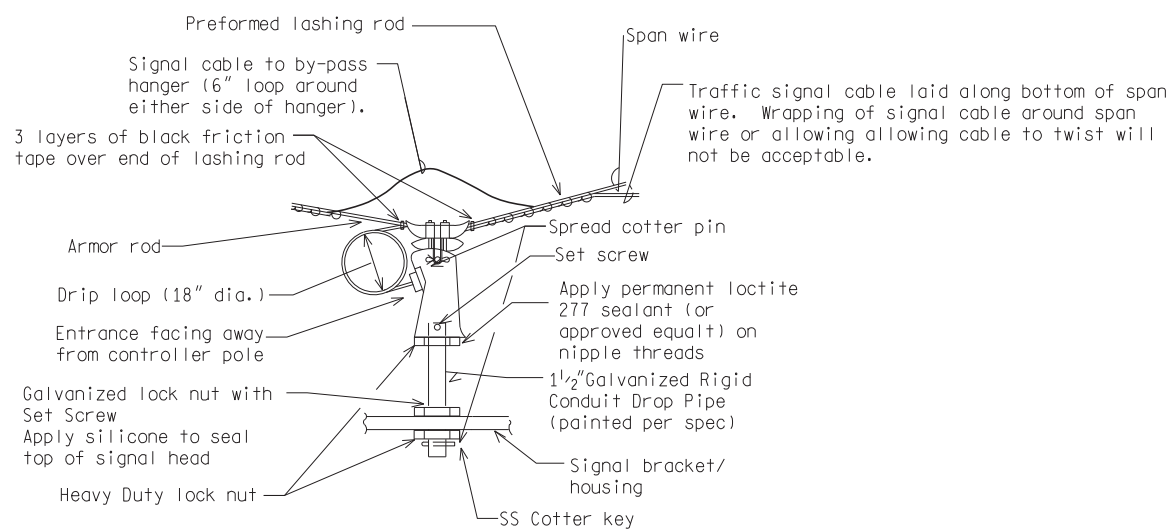


(* NOTE:
Cotter key required as shown.

ONE-WAY TRAFFIC SIGNAL HEAD



OH SIGNAL LOCK NUT DETAIL



HANGER ATTACHMENT

NOT TO SCALE

File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG300A.dgn Rev. 02/16/17



PREPARED BY
TRAFFIC AND SAFETY

DRAWN BY: DJF
CHECKED BY:

ENGINEER OF DELIVERY

ENGINEER OF DEVELOPMENT

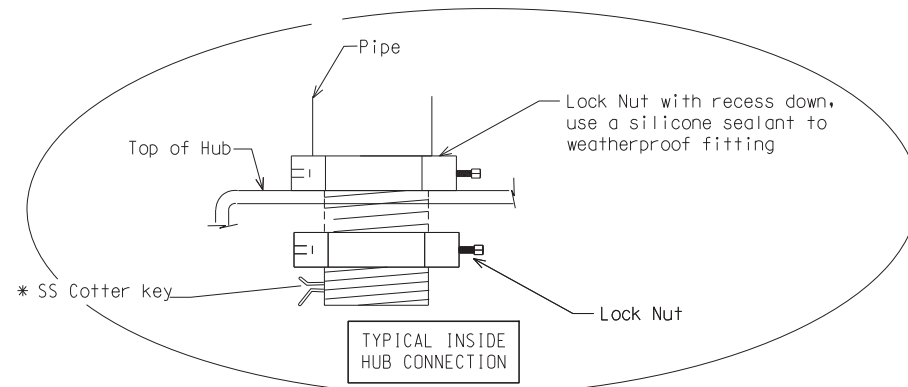
(SPECIAL DETAIL)
FHWA APPROVAL DATE

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN FOR

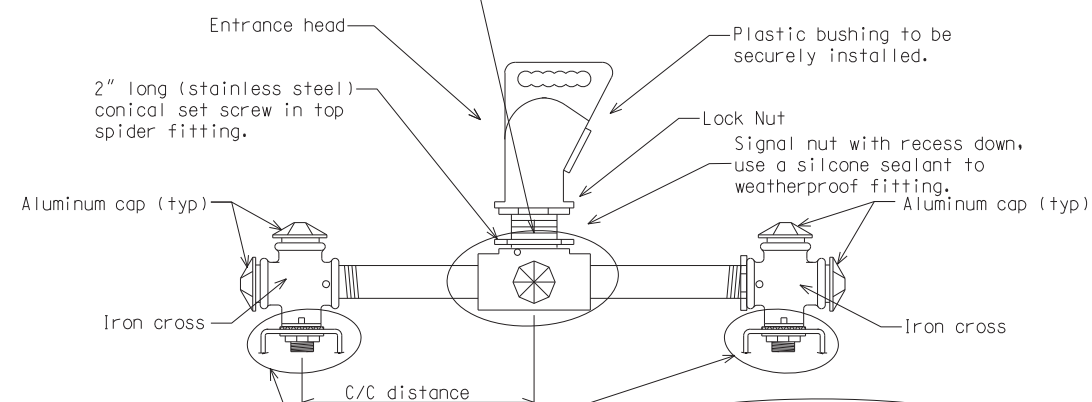
**SPAN WIRE MOUNTED
T.S. BRACKET ASSEMBLY**

SIG-300-A

SHEET
1 of 3



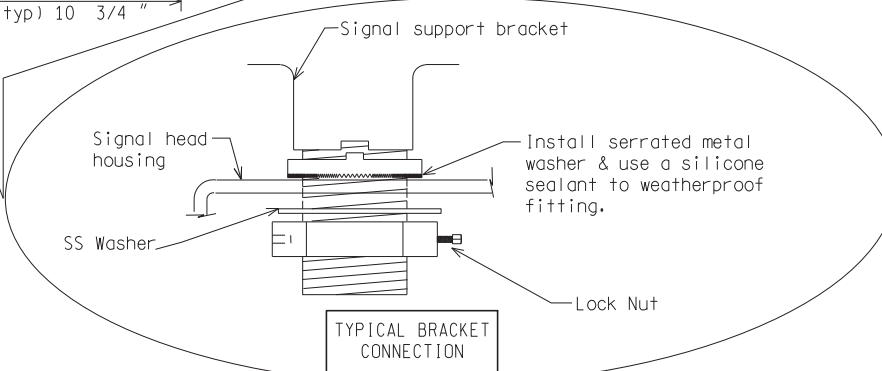
TYPICAL INSIDE HUB CONNECTION



NOTE:
2-way T.S. shown
3-way T.S. & 4-way similar

MULTIPLE-WAY TRAFFIC SIGNAL HEAD(S)

NOTE:
1) Exterior surface of all mounting assemble located below span clamps, including stems, lock nuts, and related hardware must match the current FHWA Highway yellow color tolerance chart per the Standard Specifications for Construction.
2) Tolerance within $\pm 1/8"$ for all bracketing.



TYPICAL BRACKET CONNECTION

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN (SPECIAL DETAIL)
FHWA APPROVAL DATE

File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG300A.dgn Rev. 02/16/17

PLAN DATE

SIG-300-A

SHEET
2 of 3

AS-LET PLAN REVISIONS							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



FILE: 202084_SignalDetails.pdf

DATE: 04/09/18

DESIGN UNIT: SIGNALS

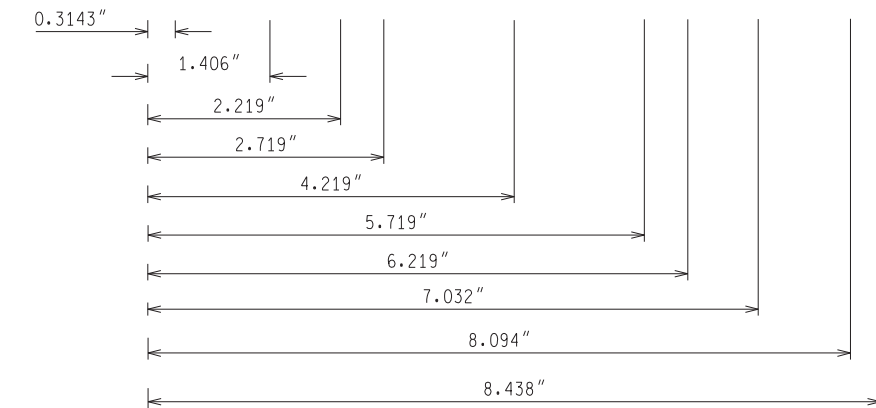
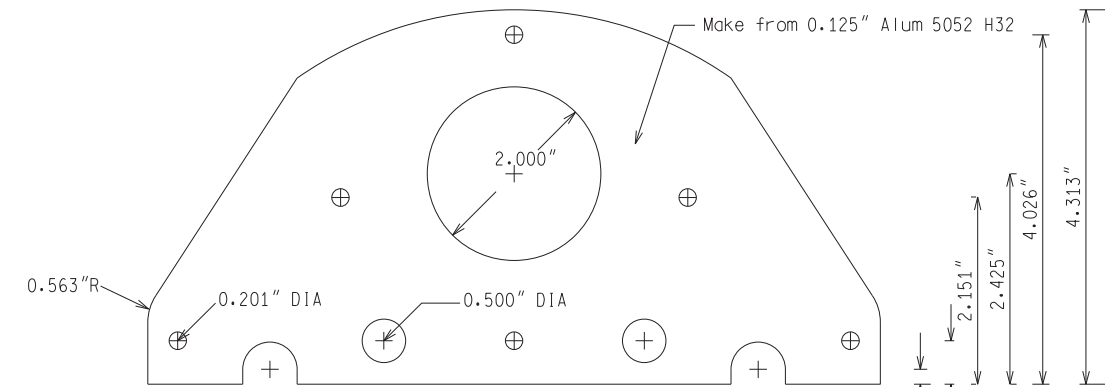
TSC: MUSKEGON

CS: 70023

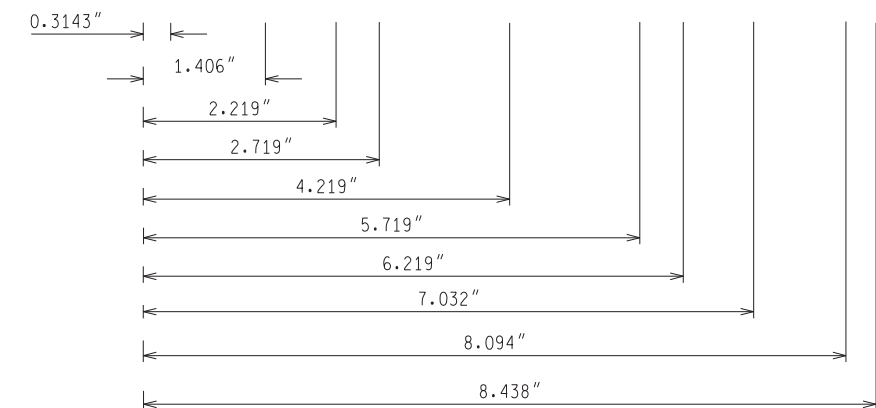
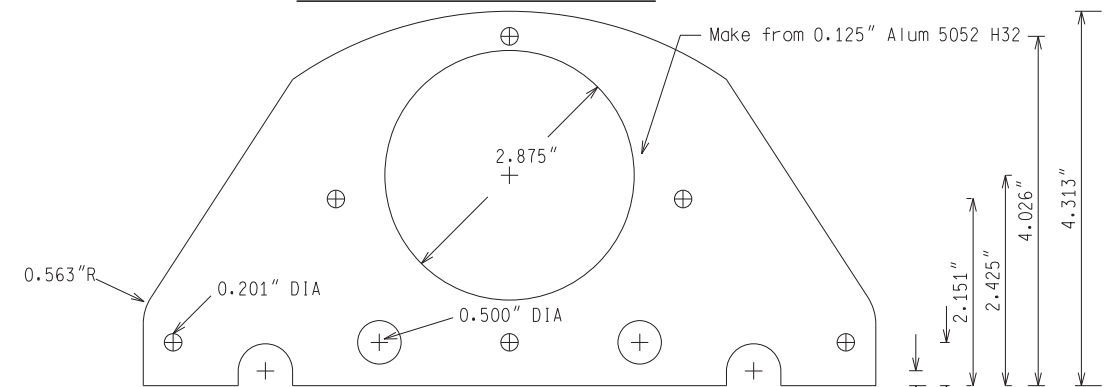
JN: 202084A

DRAWING SHEET

203



INSIDE SIGNAL HOUSING



OUTSIDE SIGNAL HOUSING

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN	(SPECIAL DETAIL) FHWA APPROVAL DATE	PLAN DATE	SIG-300-A	SHEET 3 of 3
File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG300A.dgn Rev. 02/16/17				

AS-LET PLAN REVISIONS							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION

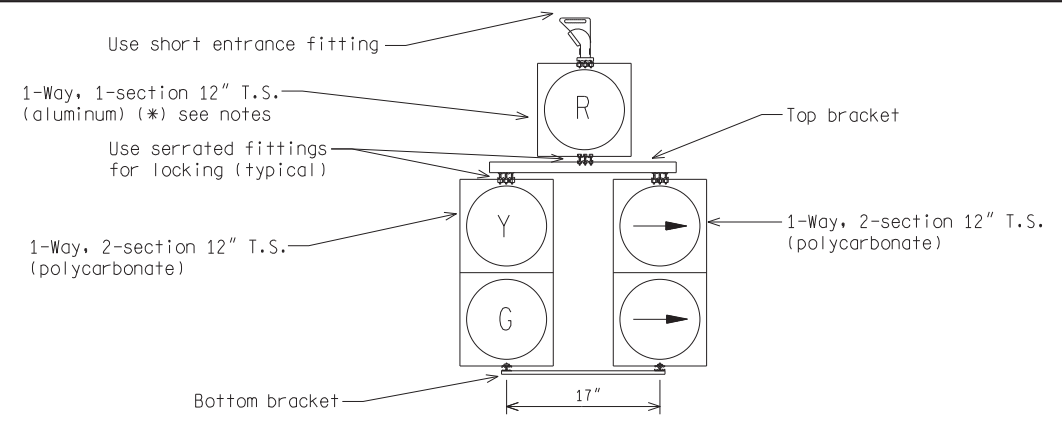


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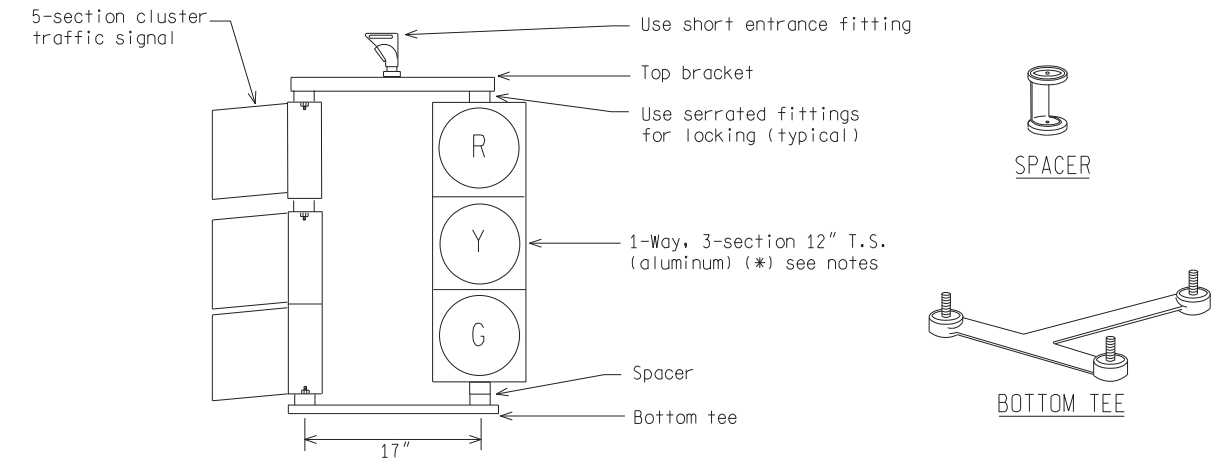
DATE: 04/09/18
DESIGN UNIT: SIGNALS
TSC: MUSKEGON

CS: 70023
JN: 202084A

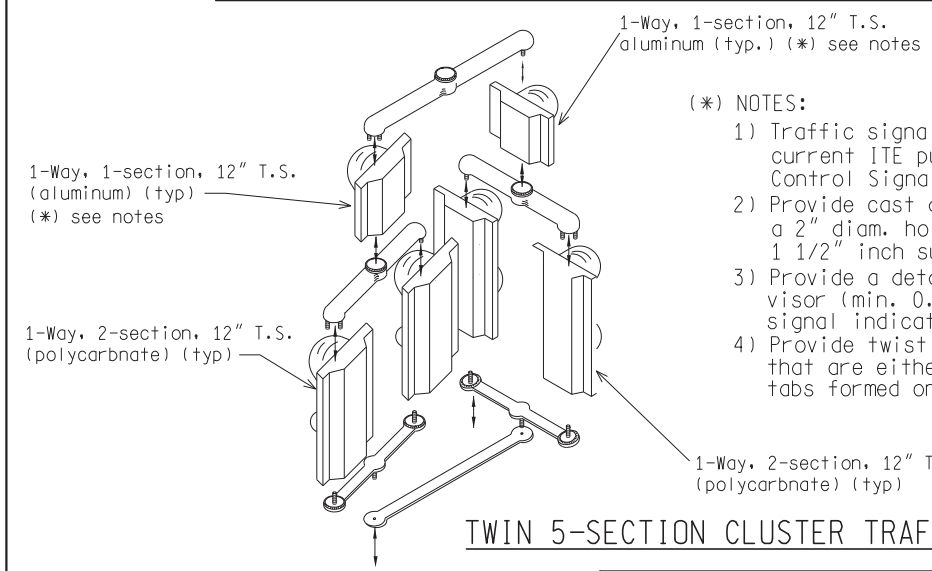
DRAWING SHEET
204



5-SECTION CLUSTER (DOGHOUSE) TRAFFIC SIGNAL



COMBINATION 5-SECTION CLUSTER & 1-WAY T.S. (ALUMINUM)



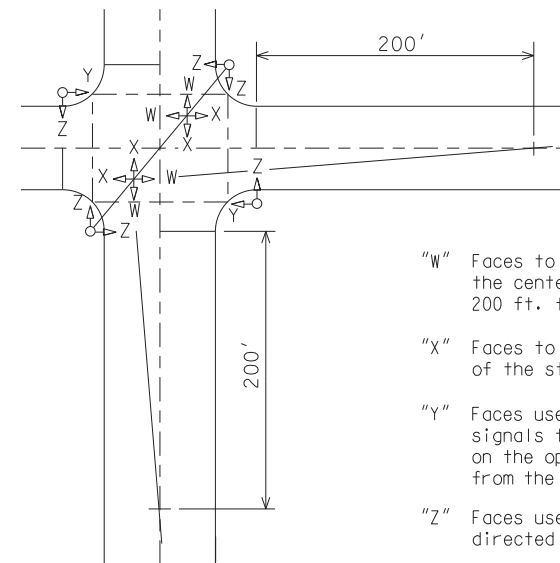
- (*) NOTES:
- 1) Traffic signals must conform to the current ITE publication "Vehicle Traffic Control Signal Heads."
 - 2) Provide cast aluminum alloy housings with a 2" diam. hole top and bottom to receive 1 1/2" inch supporting pipe.
 - 3) Provide a detachable, sheet aluminum visor (min. 0.057" thick), for each signal indication.
 - 4) Provide twist on slots for visor mounting that are either in the visor or on the tabs formed on the visor.

TWIN 5-SECTION CLUSTER TRAFFIC SIGNAL

NOT TO SCALE File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG302A.dgn Rev. 02/16/17

<p>PREPARED BY TRAFFIC AND SAFETY</p> <p>DRAWN BY: DJF</p> <p>CHECKED BY:</p>	<p>ENGINEER OF DELIVERY</p> <hr/> <p>ENGINEER OF DEVELOPMENT</p> <p>(SPECIAL DETAIL)</p> <p>FHWA APPROVAL DATE</p>	<p>MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN FOR</p> <p>BRACKETING FOR 5-SECTION HEADS</p> <p>SIG-302-A</p> <p>SHEET 1 of 1</p>
PLAN DATE		

AS-LET PLAN REVISIONS									DATE: 04/09/18 DESIGN UNIT: SIGNALS TSC: MUSKEGON	CS: 70023 JN: 202084A	DRAWING	SHEET
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION					
								FILE: 202084_SignalDetails.pdf				205



NOTE:
Where field conditions require deviation from these standards, Engineer will furnish specific directional setting for signals at time of installation.

"W" Faces to be directed to intersect a point on the centerline of the street they control 200 ft. from the stop bar.

"X" Faces to be directed parallel to the centerline of the street they control.

"Y" Faces used as starting signals with near side signals to be directed to intersect a point on the opposite stop bar approximately 4 ft. from the curb.

"Z" Faces used as pedestrian signals to be directed along crosswalks.

DIAGONAL SPAN WIRE STANDARD FOR DIRECTIONAL SETTINGS OF TRAFFIC SIGNALS

NOT TO SCALE

File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG310A.dgn Rev: 02/16/17



PREPARED BY
TRAFFIC AND SAFETY

DRAWN BY: DJF
CHECKED BY:

ENGINEER OF DELIVERY

ENGINEER OF DEVELOPMENT

(SPECIAL DETAIL)
FHWA APPROVAL DATE

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN FOR
ALIGNMENT OF TRAFFIC
SIGNAL HEADS (DIAGONAL)

PLAN DATE

SIG-310-A

SHEET
1 of 1

AS-LET PLAN REVISIONS							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



FILE: 202084_SignalDetails.pdf

DATE: 04/09/18

DESIGN UNIT: SIGNALS

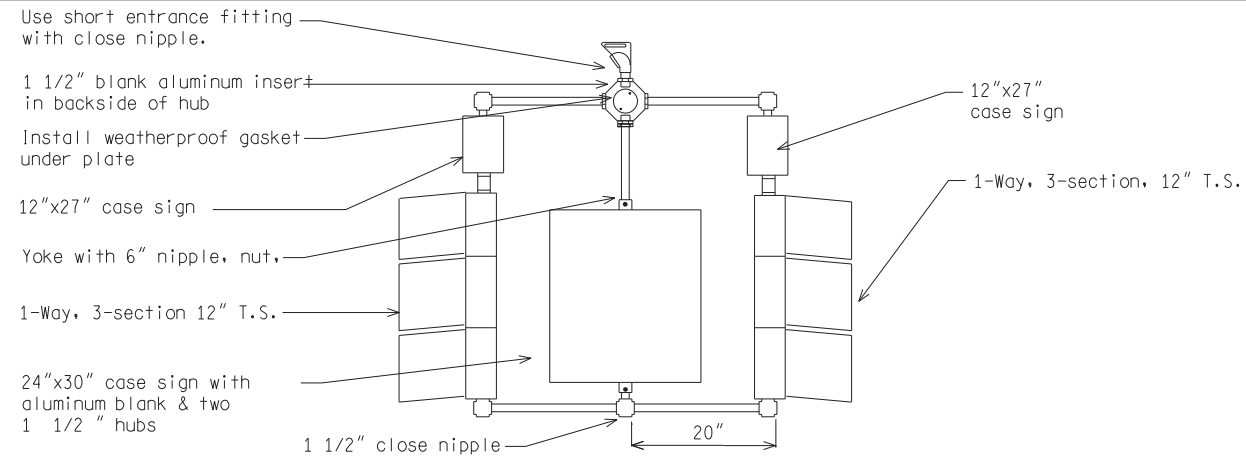
TSC: MUSKEGON

CS: 70023

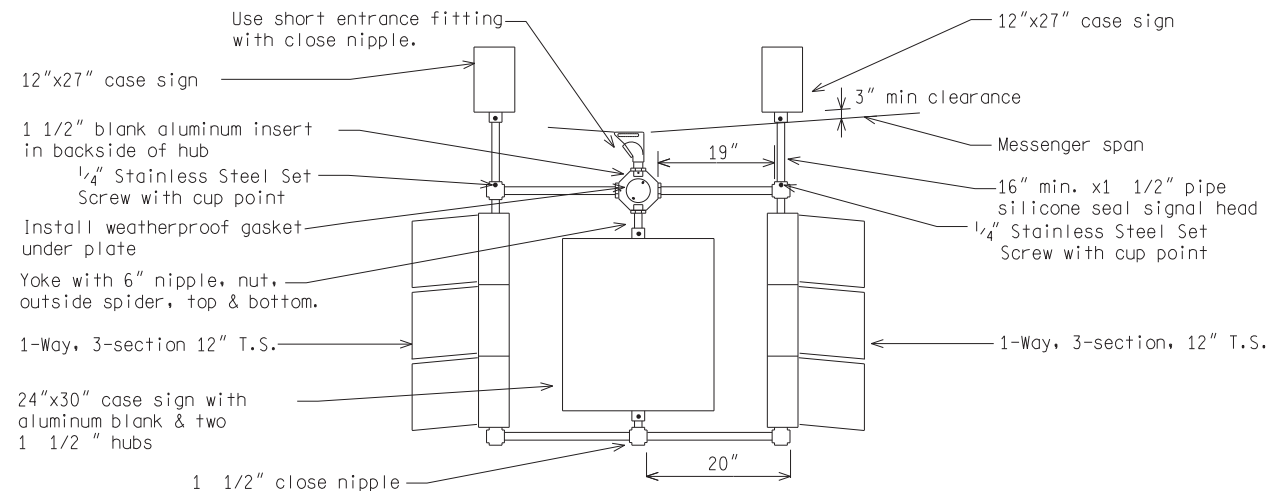
JN: 202084A

DRAWING SHEET

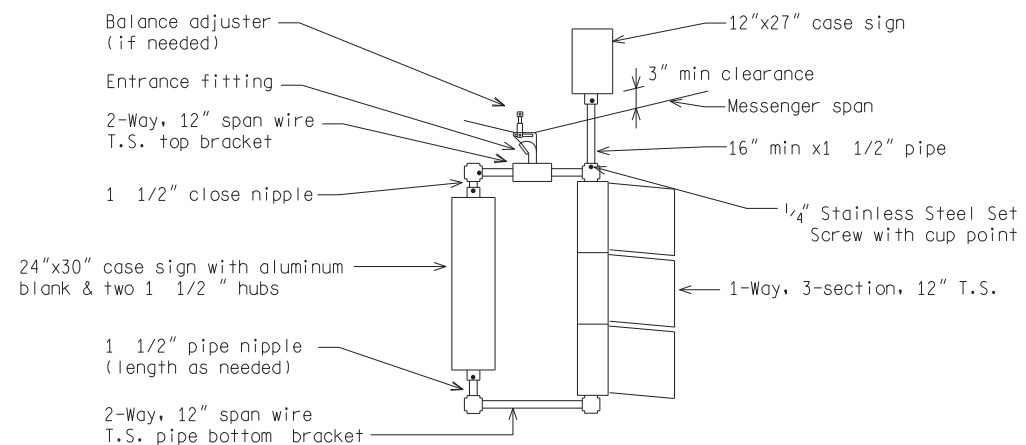
206



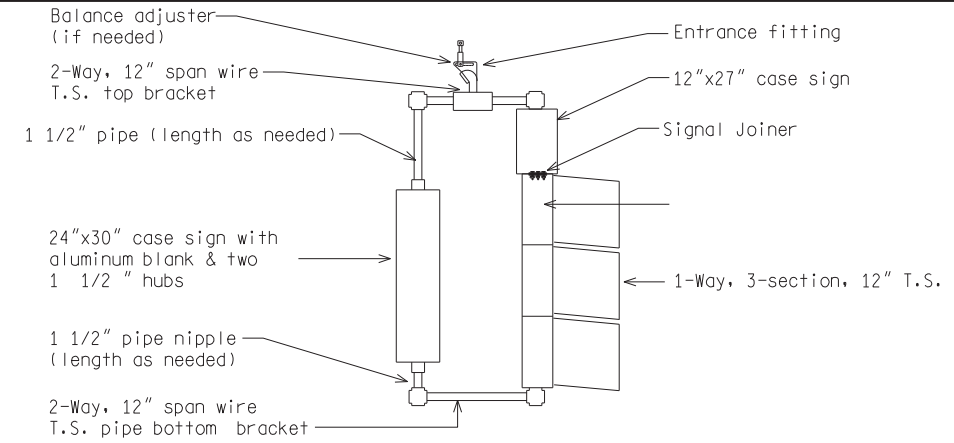
PREFERRED METHOD 2-WAY T.S./CASE SIGN COMBINATION BELOW HUB



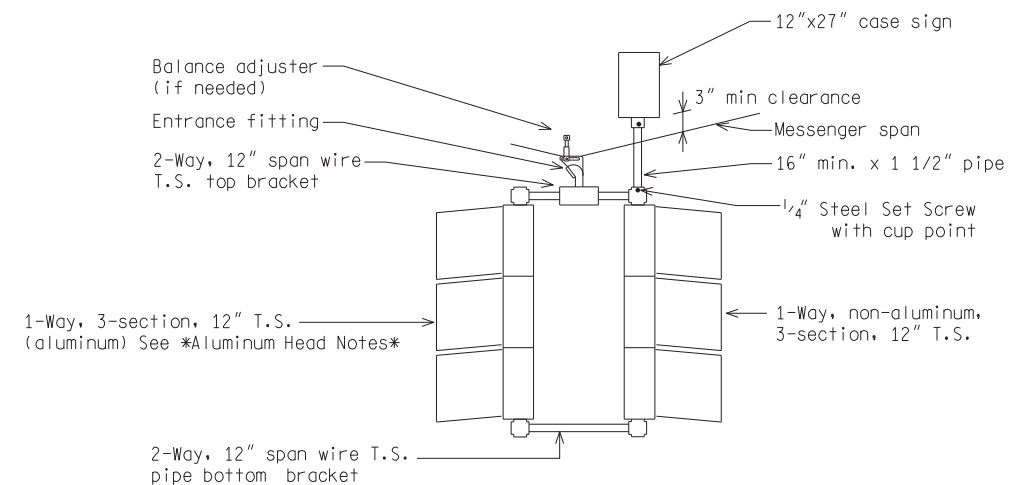
(ALTERNATE) 2-WAY T.S./CASE SIGN COMBINATION ABOVE HUB



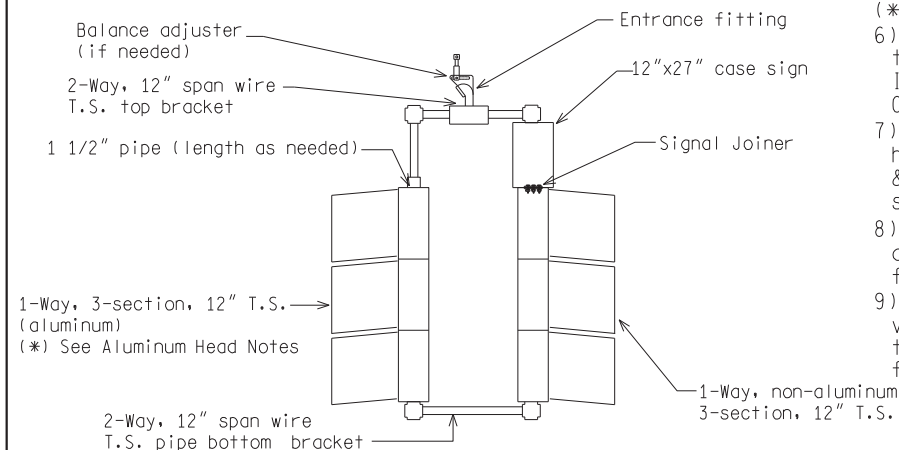
1-WAY T.S./CASE SIGN COMBINATION ABOVE HUB



1-WAY T.S./CASE SIGN COMBINATION BELOW HUB



1-WAY (ALUMINUM) & 1-WAY T.S./CASE SIGN COMBINATION ABOVE HUB



1-WAY (ALUMINUM) & 1-WAY T.S./CASE SIGN COMBINATION BELOW HUB

- (* Aluminum Head Notes:
- 6) Traffic signals must conform to the requirements of the current ITE publication "Vehicle Traffic Control Signal Heads."
 - 7) Provide cast alum. alloy housings with a 2" diam. hole top & bottom to receive 1 1/2" supporting pipe.
 - 8) Provide a detachable, sheet alum. visor (min. 0.057" thick), for each signal indication.
 - 9) Provide twist on slots for visor mounting that are either in the visor or on the tabs formed on the visor.

NOT TO SCALE

File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG311A.dgn Rev. 02/16/17



ENGINEER OF DELIVERY

ENGINEER OF DEVELOPMENT

(SPECIAL DETAIL)
FHWA APPROVAL DATE

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN FOR
BRACKETING FOR SIGNAL
HEAD/CASE SIGN COMBINATIONS

SIG-311-A

SHEET
1 of 5

DRAWN BY: DJF
CHECKED BY:

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN

(SPECIAL DETAIL)
FHWA APPROVAL DATE

File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG311A.dgn Rev. 02/16/17

PLAN DATE

SIG-311-A

SHEET
2 of 5

AS-LET PLAN REVISIONS

NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



FILE: 202084_SignalDetails.pdf

DATE: 04/09/18

DESIGN UNIT: SIGNALS

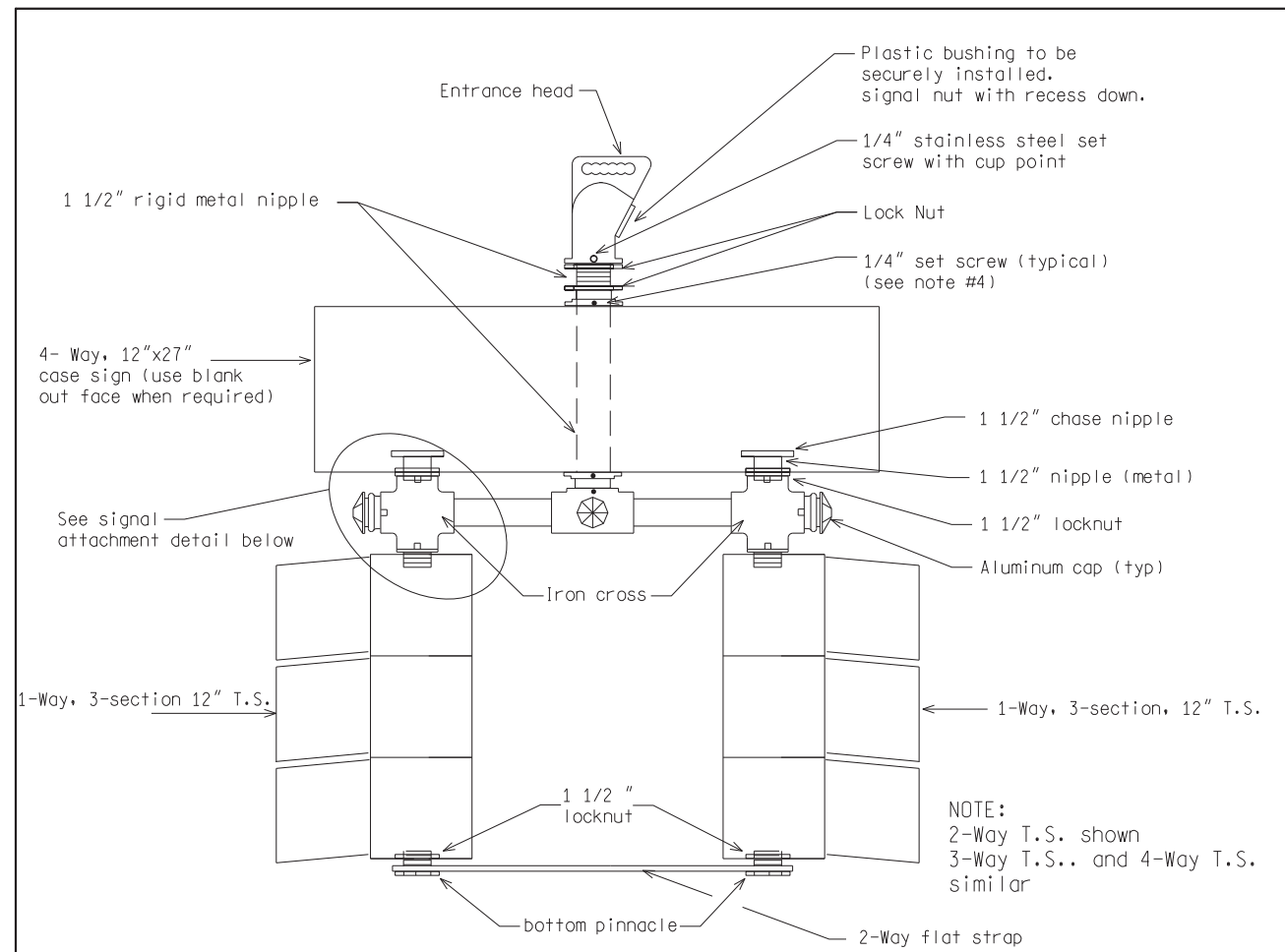
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CS: 70023

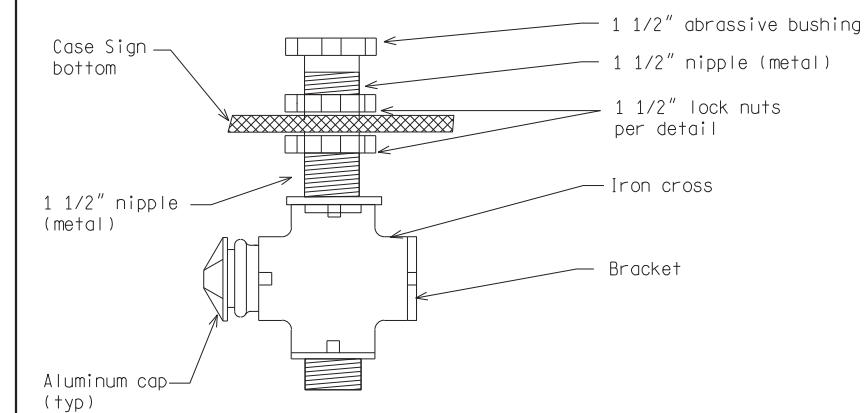
JN: 202084A

DRAWING SHEET

207



SPAN WIRE MOUNTED T.S. BRACKET ASSEMBLY WITH 4-WAY CASE SIGN COMBINATION BELOW HUB

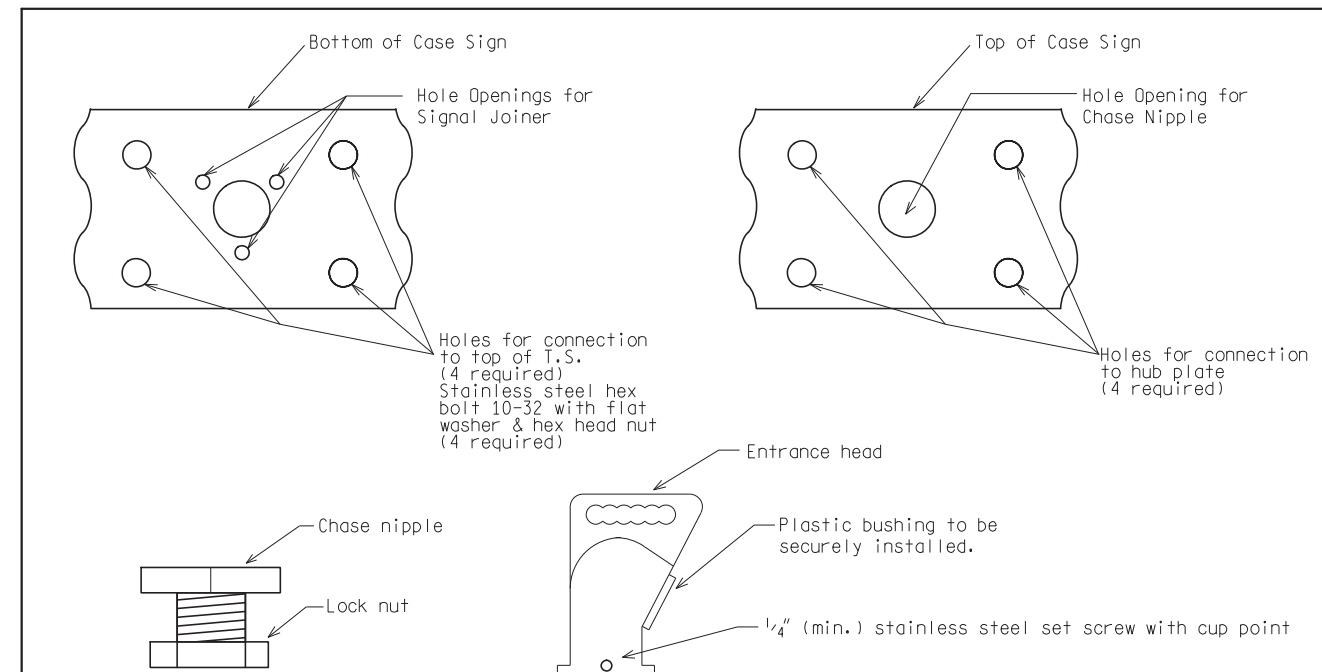


SIGNAL ATTACHMENT DETAIL

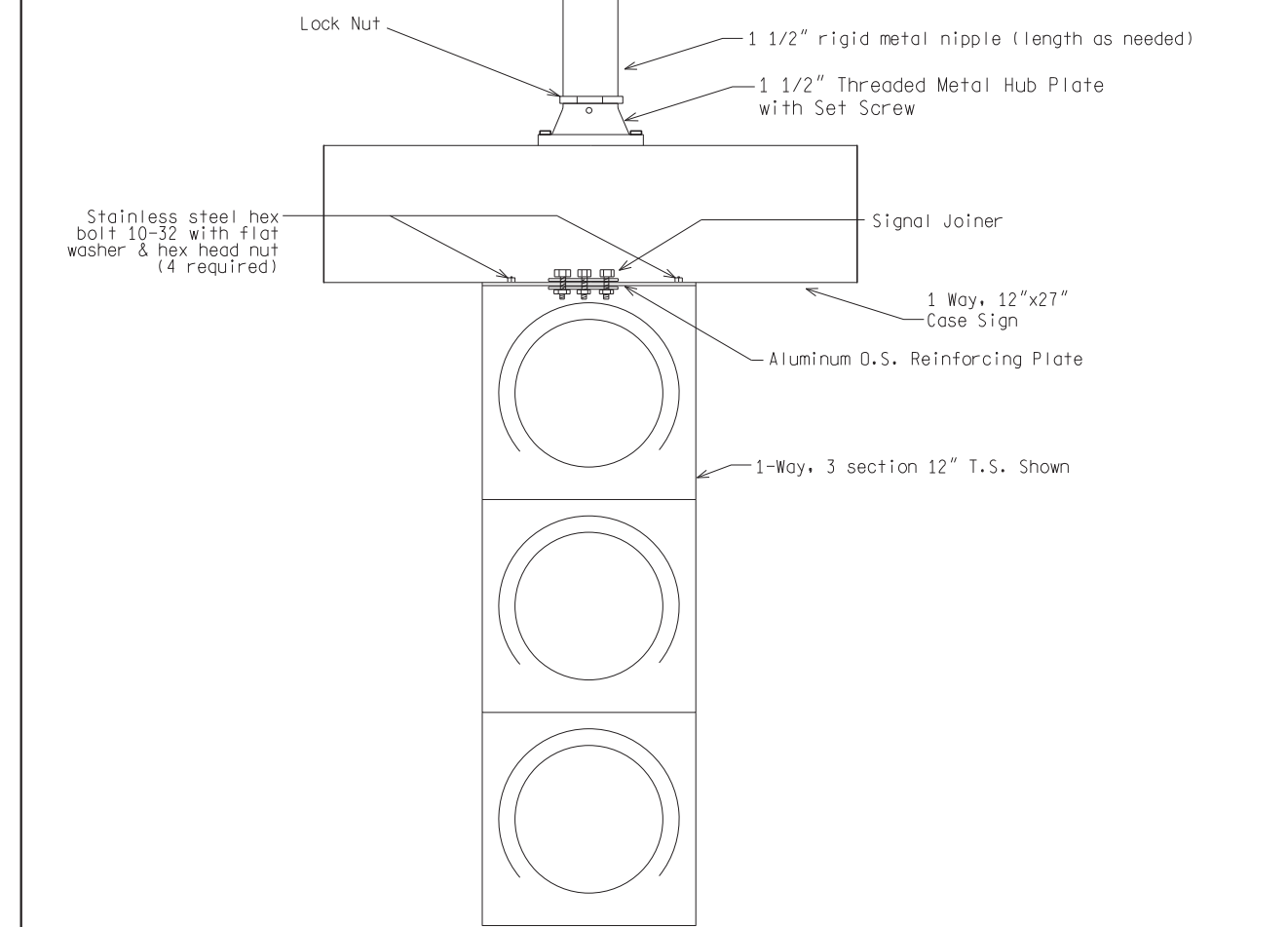
- NOTES for all details:
- 1) All pipe sizes include thread.
 - 2) Install pinnacles in all unused openings in hubs, crosses & tees.
 - 3) 4-Way case sign legend to be as shown on plans.
 - 4) Denotes 1/4" stainless steel set screw (typical)
 - 5) Apply silicon sealant to the fittings on the top of case signs, and the top and bottom connections of signal heads

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN	(SPECIAL DETAIL) FHWA APPROVAL DATE		SIG-311-A	SHEET 3 of 5
File: RefDoc/TR/Signals/Web/Sp Det/F in/SIG311A.dgn	Rev. 02/16/17	PLAN DATE		



ALTERNATE SIGNAL JOINER DETAIL

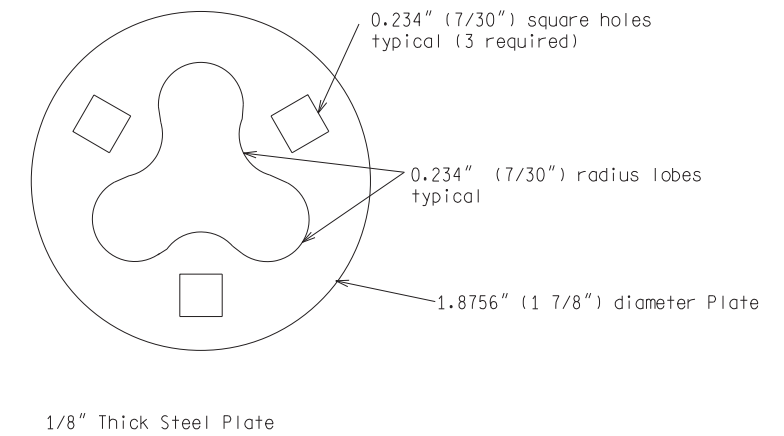
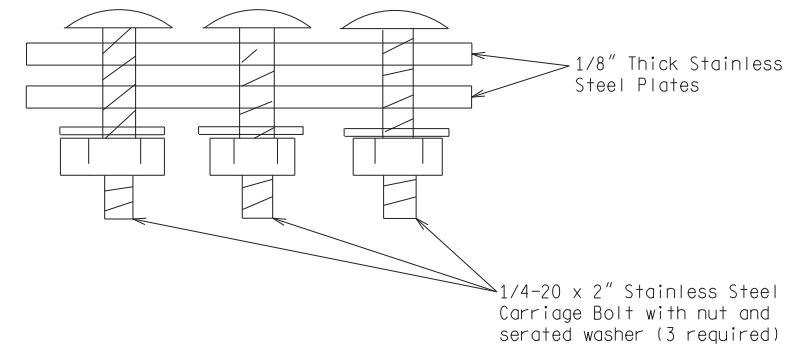


T.S. MOUNTED BELOW CASE SIGN

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN	(SPECIAL DETAIL) FHWA APPROVAL DATE		SIG-311-A	SHEET 4 of 5
File: RefDoc/TR/Signals/Web/Sp Det/F in/SIG311A.dgn	Rev. 02/16/17	PLAN DATE		

AS-LET PLAN REVISIONS								MDOT Michigan Department of Transportation	DATE: 04/09/18	DESIGN UNIT: SIGNALS	CS: 70023	JN: 202084A	DRAWING	SHEET
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION							
FILE: 202084_SignalDetails.pdf									TSC: MUSKEGON					208



SIGNAL JOINER

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN	(SPECIAL DETAIL) FHWA APPROVAL DATE		SIG-311-A	SHEET 5 of 5
File: RefDoc/TR/Signals/Web/Sp Det/F in/SIG311A.dgn	Rev. 02/16/17	PLAN DATE		

AS-LET PLAN REVISIONS

NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



FILE: 202084_SignalDetails.pdf

DATE: 04/09/18

DESIGN UNIT: SIGNALS

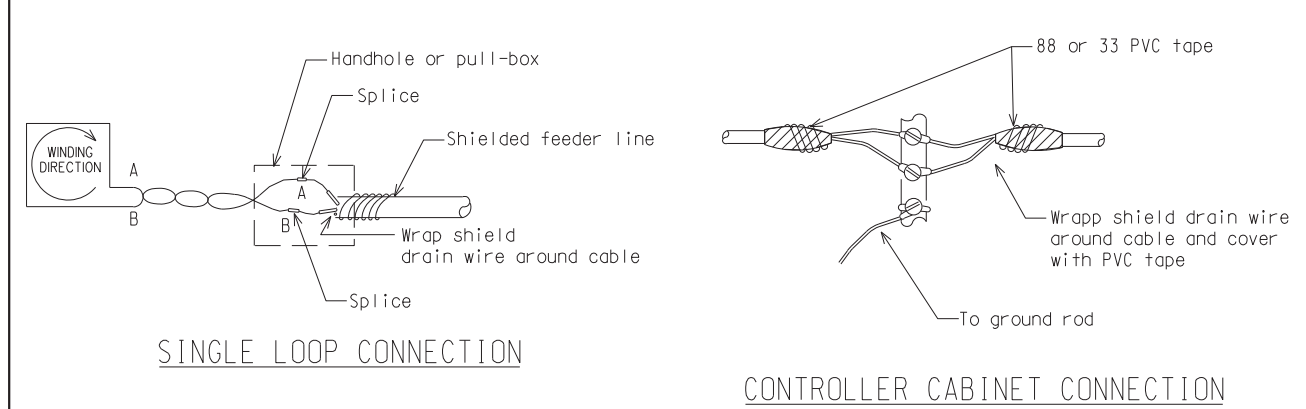
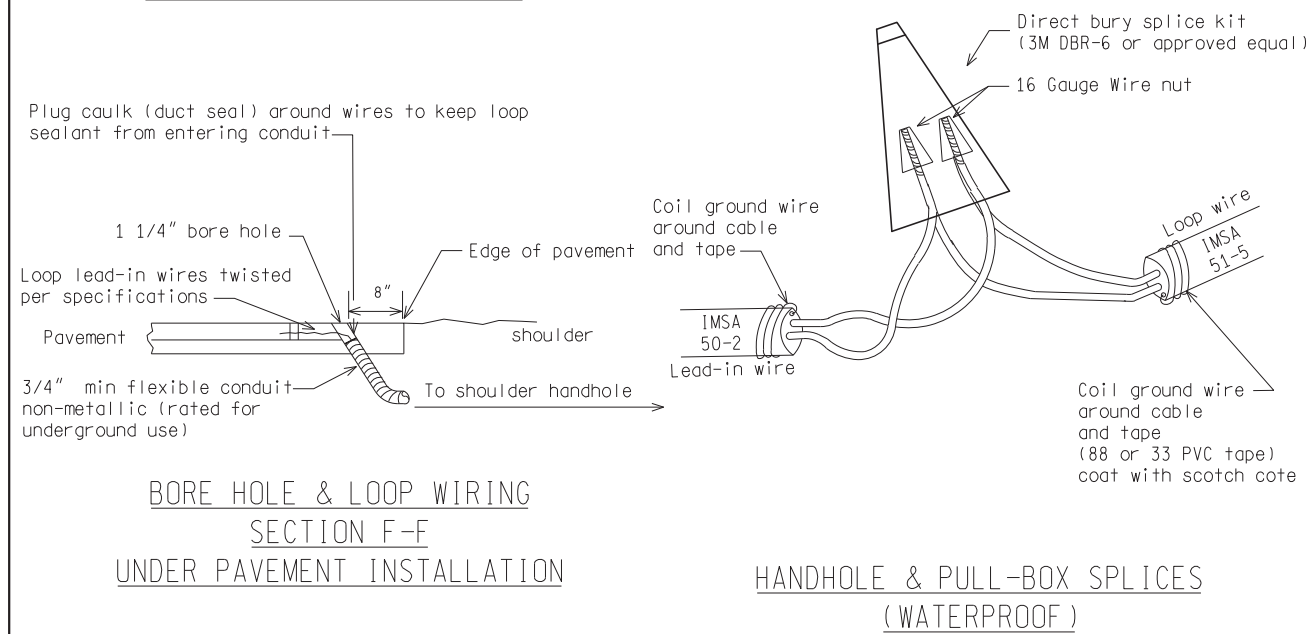
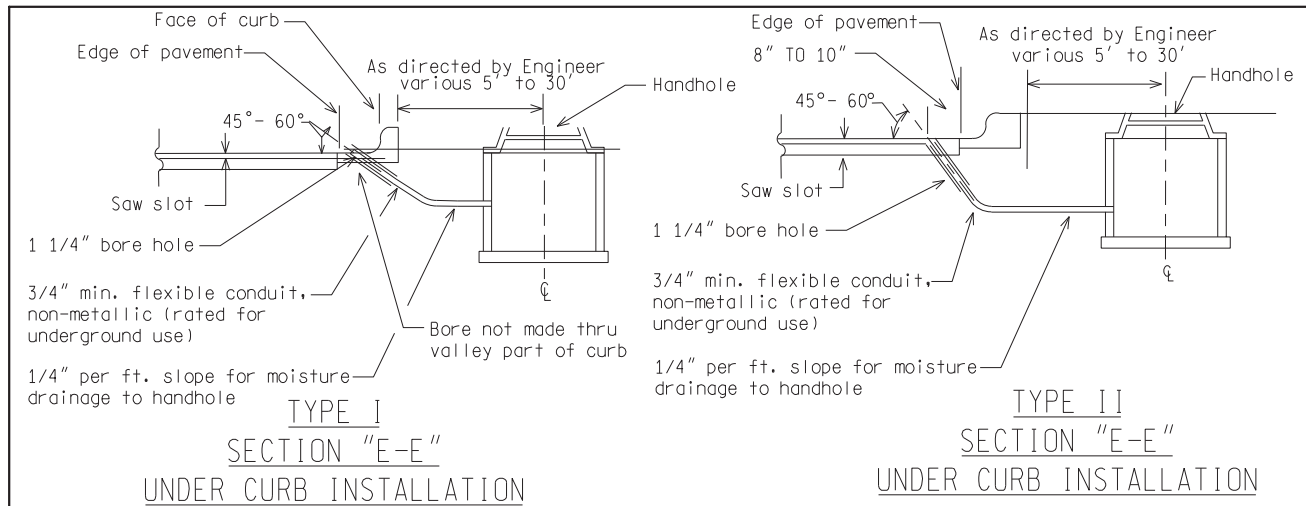
TSC: MUSKEGON

CS: 70023

JN: 202084A

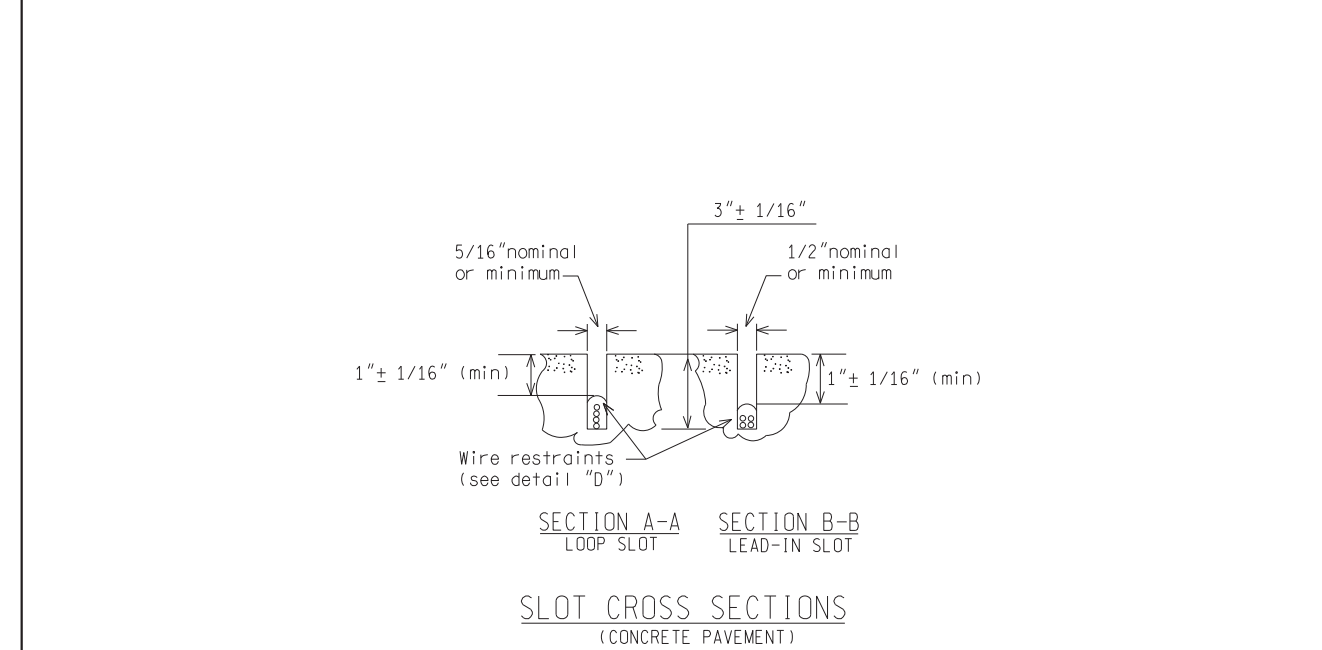
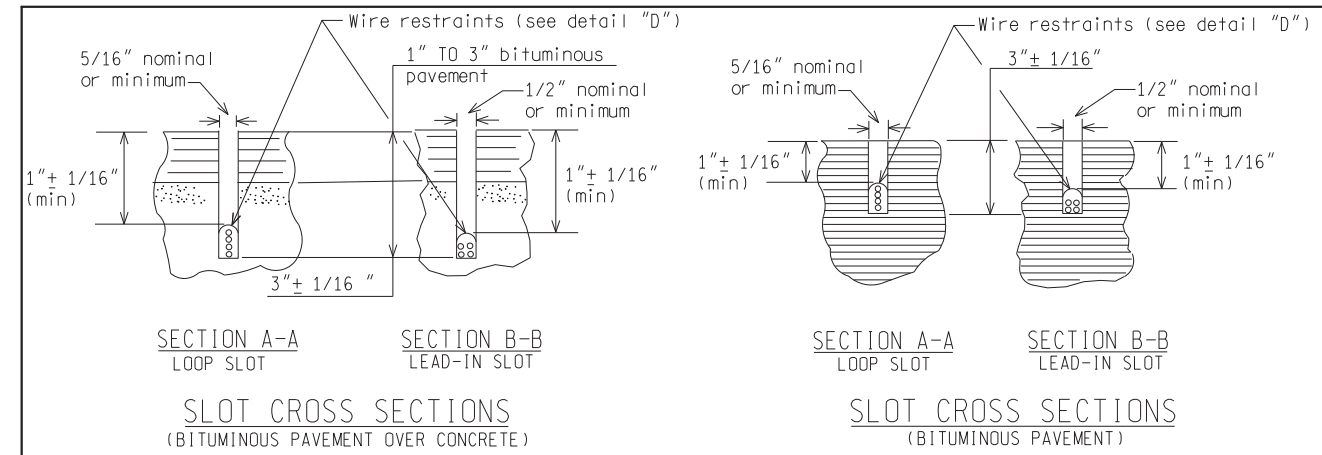
DRAWING SHEET

209



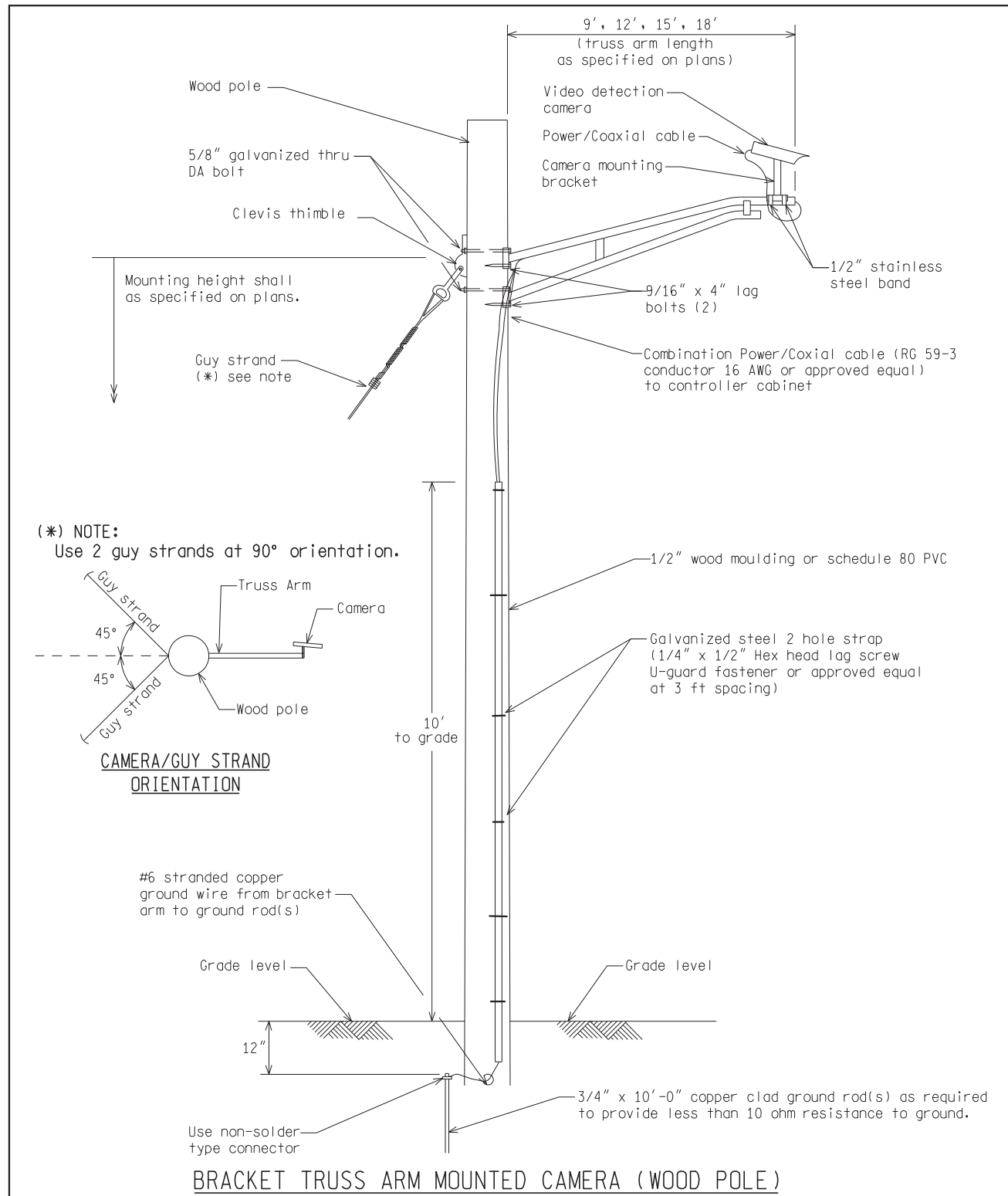
NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN	(SPECIAL DETAIL) FHWA APPROVAL DATE	PLAN DATE	SIG-410-A	SHEET 3 of 4
File: RefDoc/TR/Signals/Web/Sp Det/F in/SIG410A.dgn Rev. 02/16/17				



NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN	(SPECIAL DETAIL) FHWA APPROVAL DATE	PLAN DATE	SIG-410-A	SHEET 4 of 4
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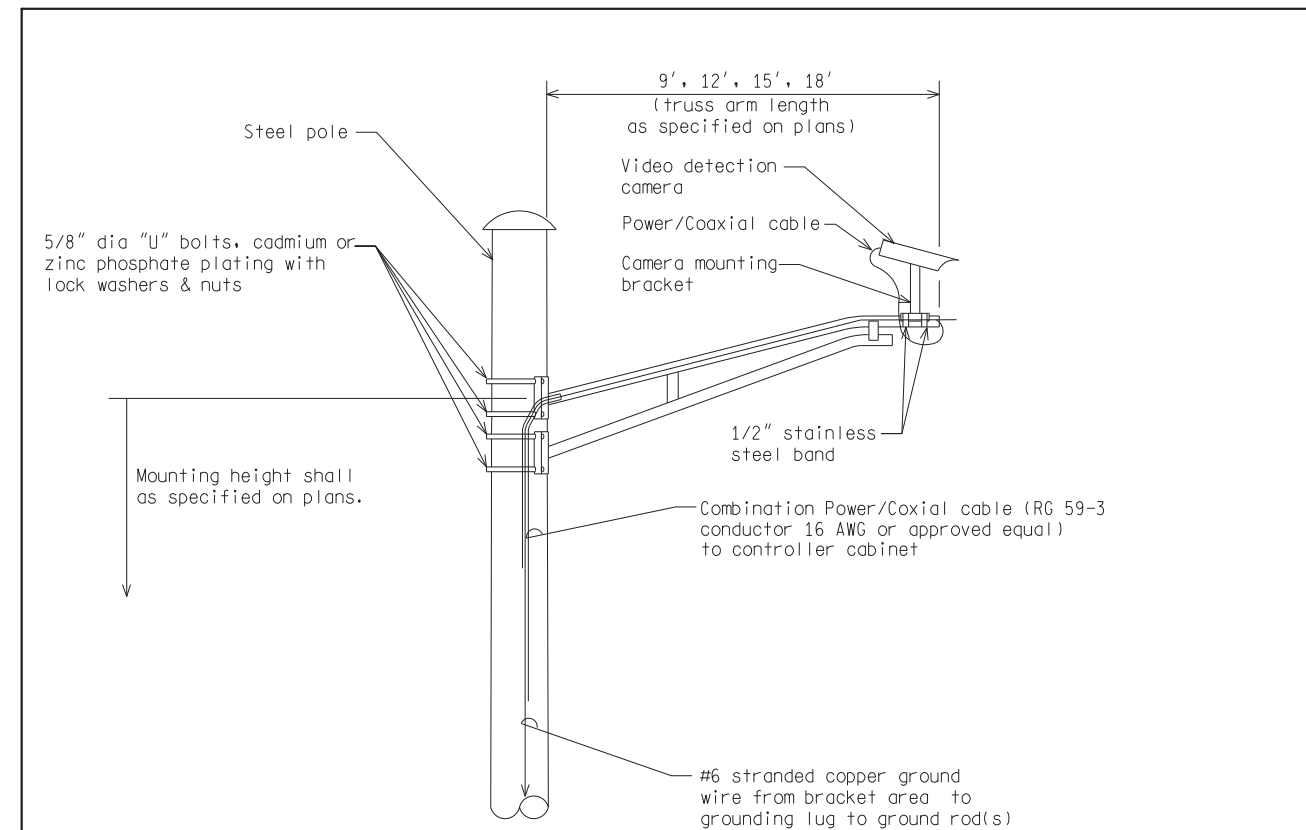


BRACKET TRUSS ARM MOUNTED CAMERA (WOOD POLE)

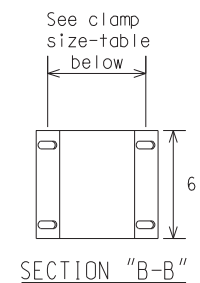
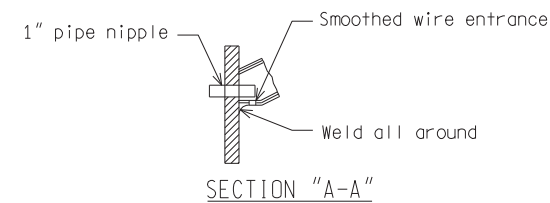
NOT TO SCALE

File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG430A.dgn Rev. 02/16/17

<p>MICHIGAN DEPARTMENT OF TRANSPORTATION</p>	ENGINEER OF DELIVERY	MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN FOR	
	ENGINEER OF DEVELOPMENT	VIDEO DETECTION CAMERA	
PREPARED BY TRAFFIC AND SAFETY DRAWN BY: DJF CHECKED BY:	(SPECIAL DETAIL) FHWA APPROVAL DATE	SIG-430-A	SHEET 1 of 2



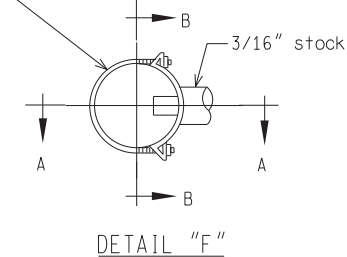
BRACKET TRUSS ARM MOUNTED CAMERA (STEEL POLE)



CLAMP SIZE TABLE

TYPE	POLE DIAMETER
A	3.6" - 4.5"
B	6.1" - 6.9"

(2) 5/8" dia. "U" bolts, cadmium or zinc phosphate plating with lockwashers & nuts.



NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN	(SPECIAL DETAIL) FHWA APPROVAL DATE	PLAN DATE	SIG-430-A	SHEET 2 of 2
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File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG430A.dgn Rev. 02/16/17

AS-LET PLAN REVISIONS							
NO.	DATE	AUTH	DESCRIPTION	NO.	DATE	AUTH	DESCRIPTION



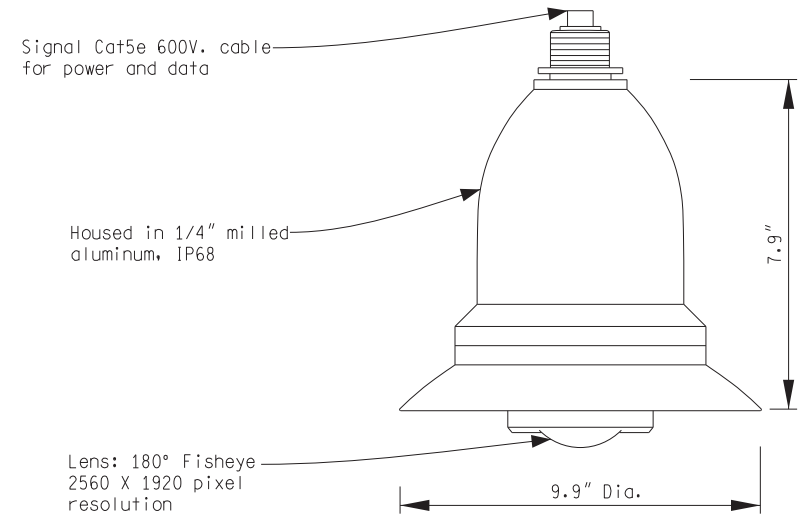
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DATE: 04/09/18
DESIGN UNIT: SIGNALS
TSC: MUSKEGON

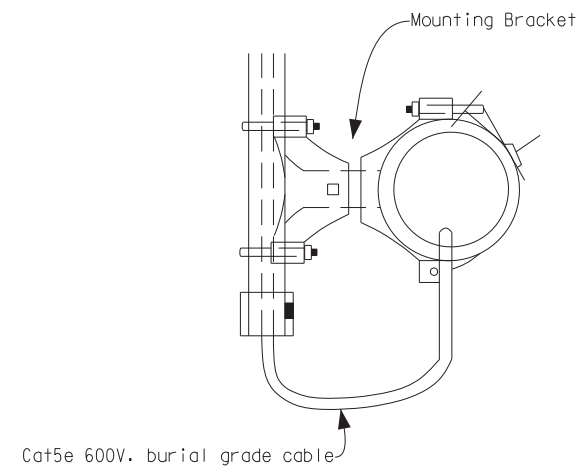
CS: 70023
JN: 202084A

DRAWING SHEET
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HEMISPHERICAL CAMERA



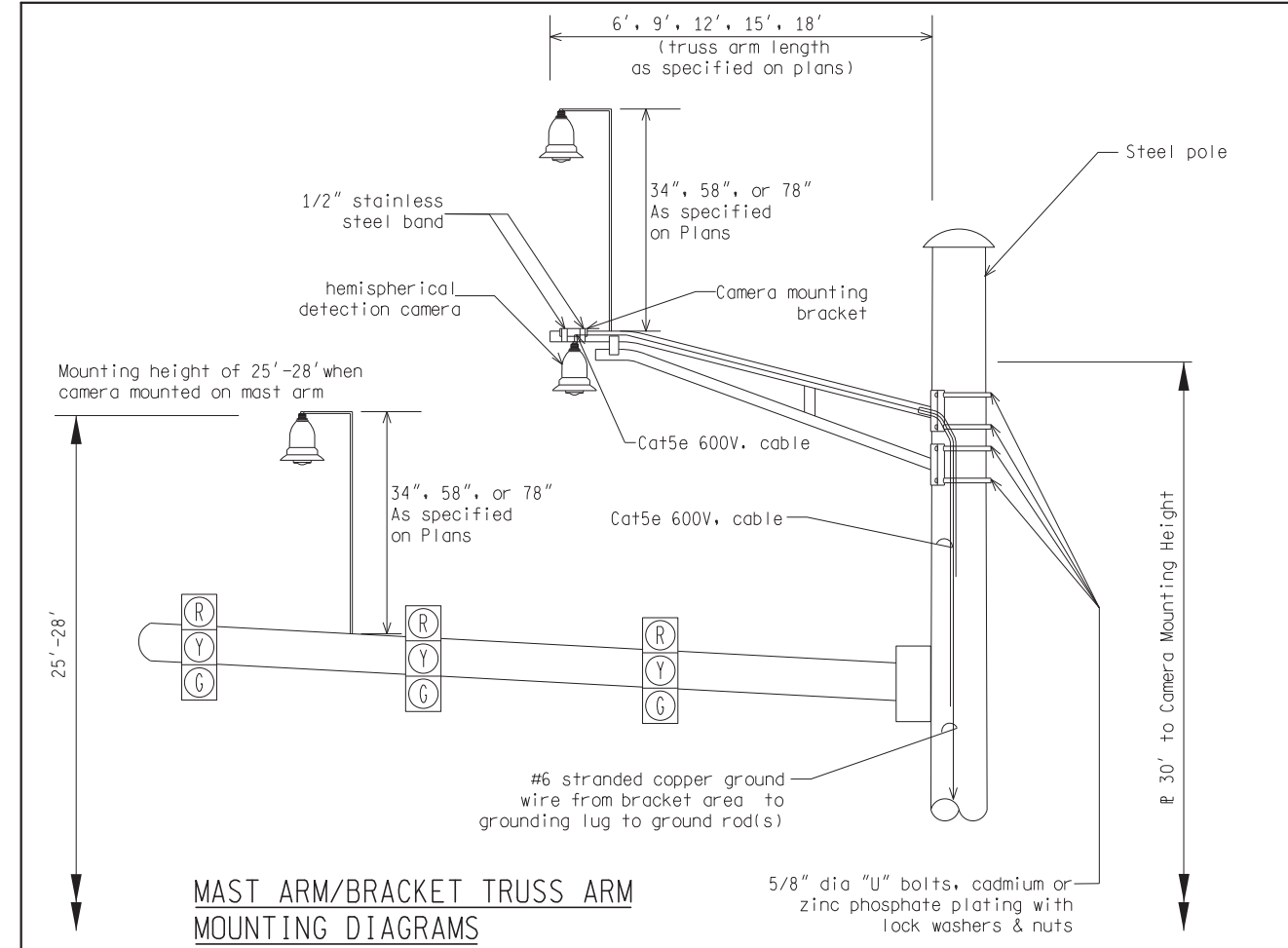
TYPICAL WIRING OF BRACKET ARM/MAST ARM MOUNTED HEMISPHERICAL CAMERA AND MOUNTING BRACKET



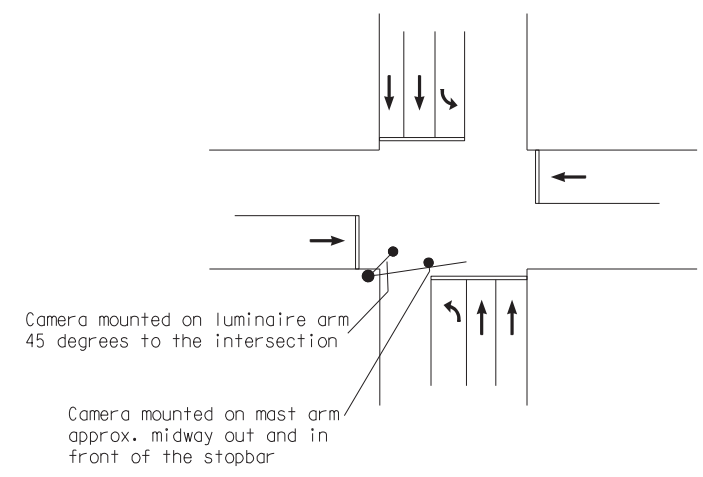
NOT TO SCALE

File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG431A.dgn Rev. 02/16/17

<p>PREPARED BY TRAFFIC AND SAFETY</p>	ENGINEER OF DELIVERY	<p>MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN FOR HEMISPHERICAL VIDEO DETECTION SYSTEM</p>	<p>SHEET 1 of 2</p>
	ENGINEER OF DEVELOPMENT (SPECIAL DETAIL) FHWA APPROVAL DATE		



HEMISPHERICAL CAMERA PLACEMENT RELATIVE TO INTERSECTION

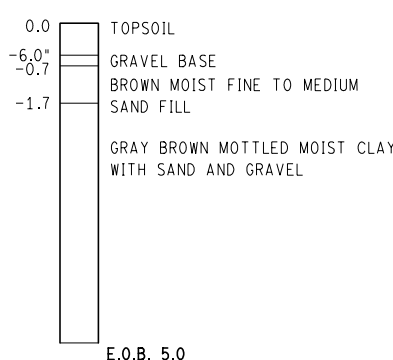
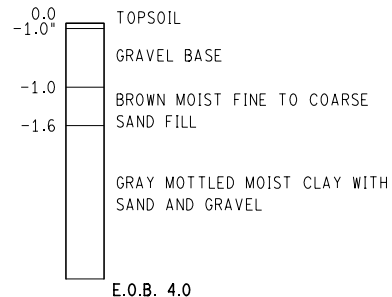
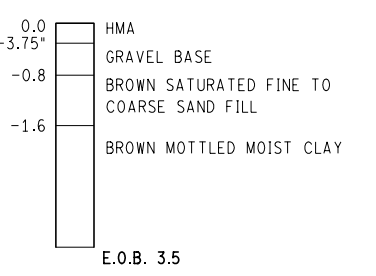


- Notes:
1. Camera should be mounted at least 30' high when using a luminaire arm and no less than 25' when using a mast arm. Or as specified on the plans.
 2. Mast arm mounts are only acceptable if the camera can be located near the center of the intersection with no occlusion.
 3. Camera must be less than 75' from the intersection center when mounted on a luminaire arm and 50' on mast arm
 4. Camera should be located with the least amount of occlusion.
 5. Installer should aim for the best "head-on" view of all approaches.
 6. Hemispherical camera shall only be installed on steel poles

NOT TO SCALE

File: RefDoc/TR/Signals/Web/Sp Det/Fin/SIG431A.dgn Rev. 02/16/17

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF HIGHWAYS DELIVERY STANDARD PLAN	(SPECIAL DETAIL) FHWA APPROVAL DATE	PLAN DATE	SIG-431-A	SHEET 2 of 2
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SOIL BORING NO. B-37 STA: XXX+XX LOCATION: I-196 WB EXIT RAMP TO I-196 BL WB, 11.5 LT OF WHITE LINE ELEV. 650.6	SOIL BORING NO. B-38 STA: XXX+XX LOCATION: I-196 WB EXIT RAMP TO I-196 BL WB, 8 RT OF YELLOW LINE ELEV. 650.8	SOIL BORING NO. B-62 STA: XXX+XX LOCATION: I-196 WB EXIT RAMP TO I-196 BL WB, 5.5 LT OF WHITE LINE ELEV. 648.6
 <p>E.O.B. 5.0</p> <p>BORING DATE: 11/22/17 WATER DURING DRILLING: 1.25 WATER LEVEL AFTER AUGER REMOVAL: NONE CAVE-IN DEPTH: NONE COORDINATES: N=483031.00, E=12690496.50 LAT=42.8141, LONG=-85.9801 REMARKS: BOREHOLE BACKFILLED WITH COMPACTED CUTTINGS.</p>	 <p>E.O.B. 4.0</p> <p>BORING DATE: 11/22/17 WATER DURING DRILLING: 1.6 WATER LEVEL AFTER AUGER REMOVAL: NONE CAVE-IN DEPTH: NONE COORDINATES: N=483050.75, E=12690605.19 LAT=42.8141, LONG=-85.9797 REMARKS: AUGER REFUSAL IN HARD CLAY. BOREHOLE BACKFILLED WITH COMPACTED CUTTINGS.</p>	 <p>E.O.B. 3.5</p> <p>BORING DATE: 11/21/17 WATER DURING DRILLING: 1.5 WATER LEVEL AFTER AUGER REMOVAL: 1.5 CAVE-IN DEPTH: NONE COORDINATES: N=483122.83, E=12690664.10 LAT=42.8143, LONG=-85.9795 REMARKS: HMA CORE IN POOR CONDITION. AUGER REFUSAL ON COARSE GRAVEL OR COBBLE. BOREHOLE BACKFILLED WITH COMPACTED CUTTINGS. LAB TESTING: THE BROWN FINE TO COARSE SAND FILL FROM 0.8 TO 1.6 PASSES THE REQUIREMENTS FOR MDOT CLASS II AND MDOT CLASS IIAA WITH 4% LOSS BY WASH</p>

NOTES:

BORINGS WERE OBTAINED BY MATERIALS TESTING CONSULTANTS, INC.

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED.



THE SOIL BORING REPRESENTS POINT INFORMATION. PRESENTATION OF THIS INFORMATION IN NO WAY IMPLIES THAT SUBSURFACE CONDITIONS ARE THE SAME AT LOCATIONS OTHER THAN EXACT LOCATION OF THE BORING.

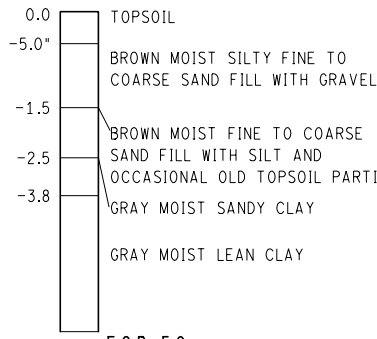
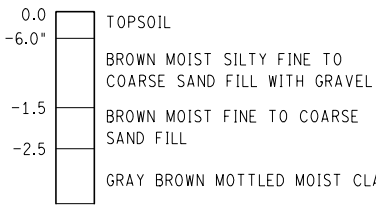
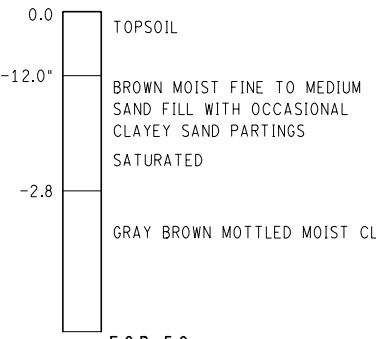

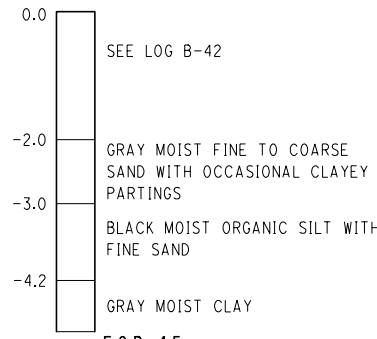
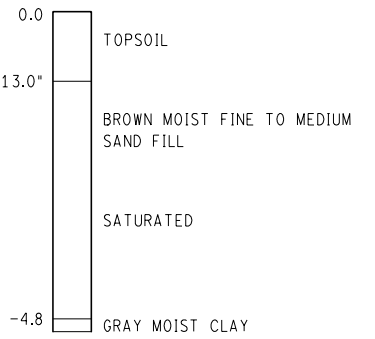
GROUNDWATER LEVELS MAY FLUCTUATE AND MAY BE DIFFERENT AT THE TIME OF CONSTRUCTION.

THE UNIFIED FIELD SOIL CLASSIFICATION SYSTEM (MODIFIED UNIFIED DESCRIPTION) METHOD USED TO CLASSIFY SOIL.

YELLOW AND/OR WHITE LINES CORRESPOND TO EXISTING LINES AT THE TIME OF DRILLING.

SB-28 THROUGH SB-38 AND SB-62 NO STATIONING ALONG OFF RAMP AVAILABLE AT THE TIME OF FIELD WORK.

NO.		DATE	AUTH	DESCRIPTION	NO.		DATE	AUTH	DESCRIPTION	 		DRAWN BY: CK CHK'D BY: DS FILE: 201572CONBOR.dgn	DATE: 4/10/18 CORR BY: CK TSC: OTTAWA	CS: 70023 JN: 201572A, 202084A	SOIL BORING DATA I-196BL W OF HOMESTEAD TO I-196 WB EXIT RAMP I-196 WB EXIT RAMP	DRAWING	SHEET
										NO SCALE							217

<p>SOIL BORING NO. B-39 ELEV. 661.1 STA: 63+25.57 LT LOCATION: NB MAIN AVE WIDENING AREA, 18 LT OF MAIN AVE WHITE LINE</p>  <p>BORING DATE: 11/21/17 WATER DURING DRILLING: NONE WATER LEVEL AFTER AUGER REMOVAL: NONE CAVE-IN DEPTH: NONE COORDINATES: N=482490.64, E=12687011.60 LAT=42.8124, LONG=-85.9930 REMARKS: BOREHOLE BACKFILLED WITH COMPACTED CUTTINGS.</p>	<p>SOIL BORING NO. B-40 ELEV. 660.5 STA: 64+00.56 LT LOCATION: NB MAIN AVE WIDENING AREA, 18 LT OF MAIN AVE WHITE LINE</p>  <p>BORING DATE: 11/21/17 WATER DURING DRILLING: 2.0 WATER LEVEL AFTER AUGER REMOVAL: 2.0 CAVE-IN DEPTH: NONE COORDINATES: N=482456.58, E=12687073.88 LAT=42.8123, LONG=-85.9928 REMARKS: AUGER REFUSAL ON VERY STIFF CLAY. BOREHOLE BACKFILLED WITH COMPACTED CUTTINGS.</p>	<p>SOIL BORING NO. B-41 ELEV. 660.7 STA: 64+70.45 RT LOCATION: SB MAIN AVE WIDENING AREA, 15 RT OF MAIN AVE WHITE LINE</p>  <p>BORING DATE: 11/22/17 WATER DURING DRILLING: 2.3 WATER LEVEL AFTER AUGER REMOVAL: 4.8 CAVE-IN DEPTH: NONE COORDINATES: N=482333.17, E=12687066.14 LAT=42.8120, LONG=-85.9928 REMARKS: BOREHOLE BACKFILLED WITH COMPACTED CUTTINGS.</p>	<p>SOIL BORING NO. B-42 ELEV. 662.0 STA: 64+80.55 LT LOCATION: NB MAIN AVE WIDENING AREA, 17 LT OF MAIN AVE WHITE LINE</p>  <p>BORING DATE: 11/21/17 WATER DURING DRILLING: NONE WATER LEVEL AFTER AUGER REMOVAL: NONE CAVE-IN DEPTH: NONE COORDINATES: N=482408.62, E=12687136.02 LAT=42.8122, LONG=-85.9926 REMARKS: AUGER REFUSAL ON UNKNOW FLAT OBSTRUCTION, POSSIBLE OLD ROAD. BOREHOLE BACKFILLED WITH COMPACTED CUTTINGS.</p>	<p>SOIL BORING NO. B-42A ELEV. 663.2 STA: 64+80.58 LT LOCATION: NB MAIN AVE WIDENING AREA, 20 LT OF MAIN AVE WHITE LINE</p>  <p>BORING DATE: 11/21/17 WATER DURING DRILLING: NONE WATER LEVEL AFTER AUGER REMOVAL: NONE CAVE-IN DEPTH: NONE COORDINATES: NOT OBTAINED FOR OFFSET BORING. REMARKS: B-42 RELOCATED 3.5 EAST. AUGER REFUSAL DUE TO VERY STIFF CLAY. BOREHOLE BACKFILLED WITH COMPACTED CUTTINGS.</p>	<p>SOIL BORING NO. B-43 ELEV. 663.2 STA: 65+50.47 RT LOCATION: SB MAIN AVE WIDENING AREA, 14 RT OF MAIN AVE WHITE LINE</p>  <p>BORING DATE: 11/22/17 WATER DURING DRILLING: 3.2 WATER LEVEL AFTER AUGER REMOVAL: 3.2 CAVE-IN DEPTH: NONE COORDINATES: N=482280.26, E=12687114.66 LAT=42.8118, LONG=-85.9926 REMARKS: BOREHOLE BACKFILLED WITH COMPACTED CUTTINGS.</p>
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NOTES:

BORINGS WERE OBTAINED BY MATERIALS TESTING CONSULTANTS, INC.

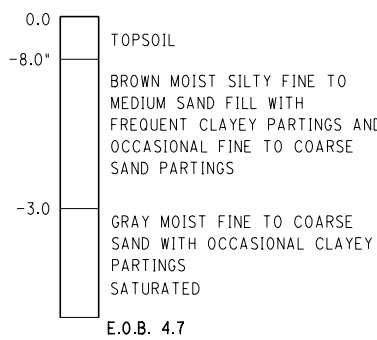
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THE SOIL BORING REPRESENTS POINT INFORMATION. PRESENTATION OF THIS INFORMATION IN NO WAY IMPLIES THAT SUBSURFACE CONDITIONS ARE THE SAME AT LOCATIONS OTHER THAN EXACT LOCATION OF THE BORING.

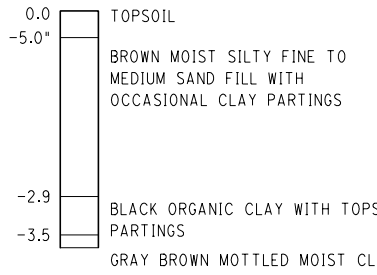
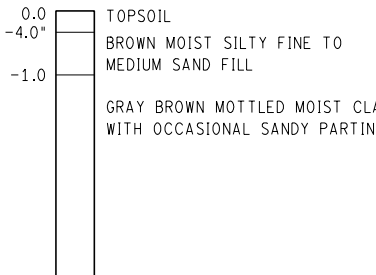
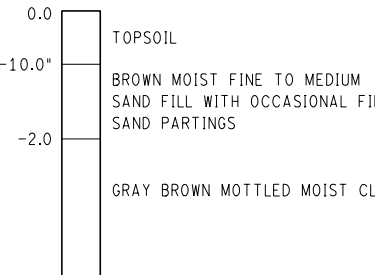
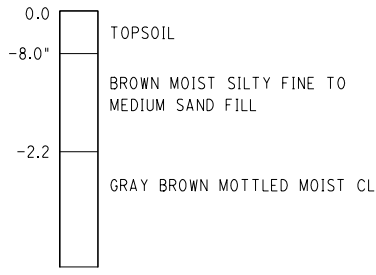
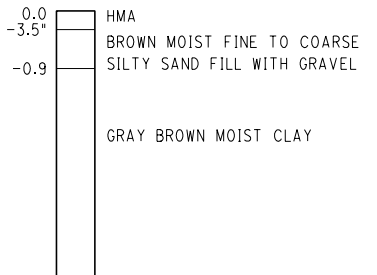
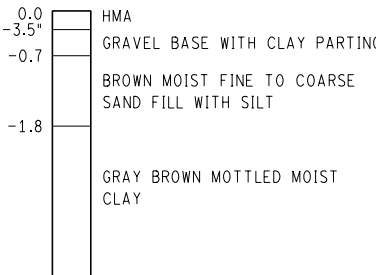
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THE UNIFIED FIELD SOIL CLASSIFICATION SYSTEM (MODIFIED UNIFIED DESCRIPTION) METHOD USED TO CLASSIFY SOIL.

YELLOW AND/OR WHITE LINES CORRESPOND TO EXISTING LINES AT THE TIME OF DRILLING.

<p>SOIL BORING NO. B-44 ELEV. 664.5 STA: 65+36.42 LT LOCATION: NB MAIN AVE WIDENING AREA, 30 LT OF MAIN AVE WHITE LINE</p>  <p>BORING DATE: 11/21/17 WATER DURING DRILLING: 4.2 WATER LEVEL AFTER AUGER REMOVAL: 4.2 CAVE-IN DEPTH: NONE COORDINATES: N=482328.21, E=12687191.19 LAT=42.8120, LONG=-85.9924 REMARKS: HAND AUGER REFUSAL ON POSSIBLE COARSE GRAVEL OR COBBLE. BOREHOLE BACKFILLED WITH COMPACTED CUTTINGS.</p>

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<p>SOIL BORING NO. B-45 ELEV. 662.0 STA: 212+30, 54 LT LOCATION: SB M-121 OUTSIDE SHOULDER, 10 LT OF WHITE LINE</p>  <p>E.O.B. 3.7</p> <p>BORING DATE: 11/22/17 WATER DURING DRILLING: NONE WATER LEVEL AFTER AUGER REMOVAL: NONE CAVE-IN DEPTH: NONE COORDINATES: N=482691.85, E=12686974.46 LAT=42.8130, LONG=-85.9932 REMARKS: AUGER REFUSAL DUE TO COARSE GRAVEL OR COBBLE. BOREHOLE BACKFILLED WITH COMPACTED CUTTINGS.</p>	<p>SOIL BORING NO. B-46 ELEV. 661.9 STA: 212+30, 11 LT LOCATION: SB M-121 INSIDE SHOULDER, 11.3 RT OF YELLOW LINE</p>  <p>E.O.B. 5.0</p> <p>BORING DATE: 11/22/17 WATER DURING DRILLING: NONE WATER LEVEL AFTER AUGER REMOVAL: NONE CAVE-IN DEPTH: NONE COORDINATES: N=482666.32, E=12687013.01 LAT=42.8129, LONG=-85.9931 REMARKS: BOREHOLE BACKFILLED WITH COMPACTED CUTTINGS.</p>	<p>SOIL BORING NO. B-47 ELEV. 662.1 STA: 212+25, 55 RT LOCATION: NB M-121 OUTSIDE SHOULDER, 16.5 RT OF WHITE LINE</p>  <p>E.O.B. 5.0</p> <p>BORING DATE: 11/22/17 WATER DURING DRILLING: NONE WATER LEVEL AFTER AUGER REMOVAL: NONE CAVE-IN DEPTH: NONE COORDINATES: N=482626.22, E=12687064.90 LAT=42.8128, LONG=-85.9929 REMARKS: BOREHOLE BACKFILLED WITH COMPACTED CUTTINGS.</p>	<p>SOIL BORING NO. B-48 ELEV. 663.0 STA: 214+25, 48 LT LOCATION: SB M-121 OUTSIDE SHOULDER, 11 LT OF WHITE LINE</p>  <p>E.O.B. 4.0</p> <p>BORING DATE: 11/22/17 WATER DURING DRILLING: NONE WATER LEVEL AFTER AUGER REMOVAL: NONE CAVE-IN DEPTH: NONE COORDINATES: N=482857.79, E=12687086.20 LAT=42.8134, LONG=-85.9928 REMARKS: AUGER REFUSAL DUE TO VERY STIFF CLAY. BOREHOLE BACKFILLED WITH COMPACTED CUTTINGS.</p>	<p>SOIL BORING NO. B-49 ELEV. 663.0 STA: 214+25, 13 LT LOCATION: SB M-121 INSIDE SHOULDER, 5.5 RT OF YELLOW LINE</p>  <p>E.O.B. 5.0</p> <p>BORING DATE: 11/22/17 WATER DURING DRILLING: NONE WATER LEVEL AFTER AUGER REMOVAL: NONE CAVE-IN DEPTH: NONE COORDINATES: N=482833.99, E=12687119.32 LAT=42.8134, LONG=-85.9927 REMARKS: HMA CORE IN POOR CONDITION WITH FULL DEPTH VERTICAL CRACKS. BOREHOLE BACKFILLED WITH COMPACTED CUTTINGS. LAB TESTING: THE BROWN FINE TO COARSE SILTY SAND FILL WITH GRAVEL FROM 3.5" TO 0.9" FAILS THE REQUIREMENTS FOR MDOT CLASS II AND MDOT CLASS IIAA WITH 13% LOSS BY WASH</p>	<p>SOIL BORING NO. B-50 ELEV. 663.2 STA: 214+25, 46 RT LOCATION: NB M-121 OUTSIDE SHOULDER, 7.5 RT OF WHITE LINE</p>  <p>E.O.B. 5.0</p> <p>BORING DATE: 11/22/17 WATER DURING DRILLING: NONE WATER LEVEL AFTER AUGER REMOVAL: NONE CAVE-IN DEPTH: NONE COORDINATES: N=482800.83, E=12687172.07 LAT=42.8133, LONG=-85.9925 REMARKS: BOREHOLE BACKFILLED WITH COMPACTED CUTTINGS. LAB TESTING: THE BROWN FINE TO COARSE SAND FILL WITH SILT FROM 0.7 TO 1.8 PASSES THE REQUIREMENTS FOR MDOT CLASS II AND MDOT CLASS IIAA WITH 5% LOSS BY WASH</p>
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NOTES:

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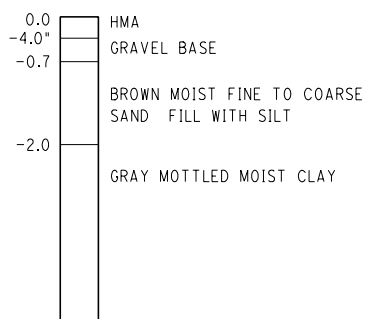
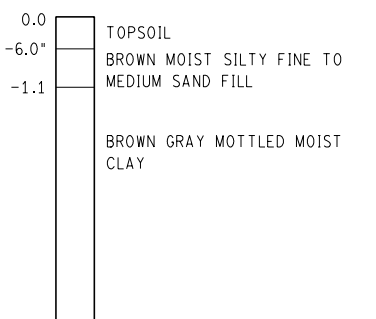
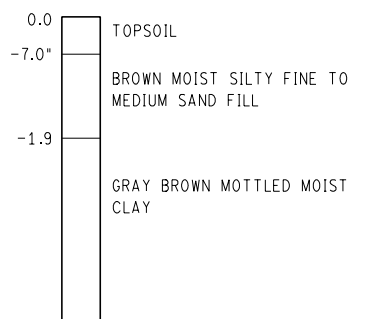
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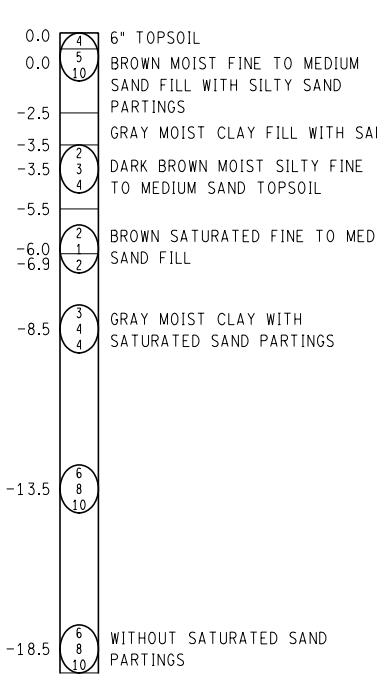
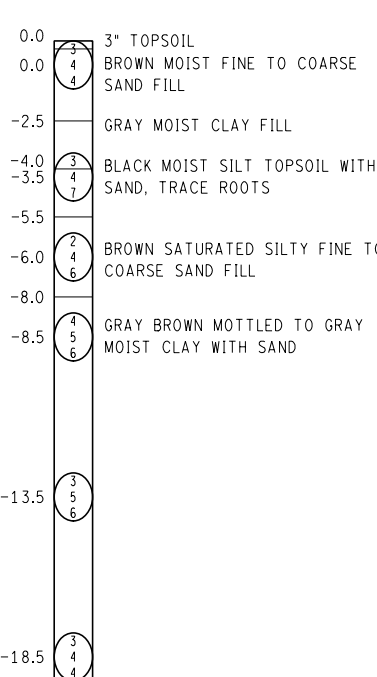
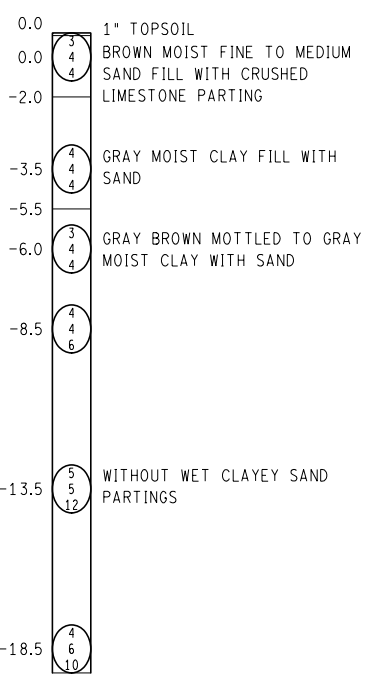
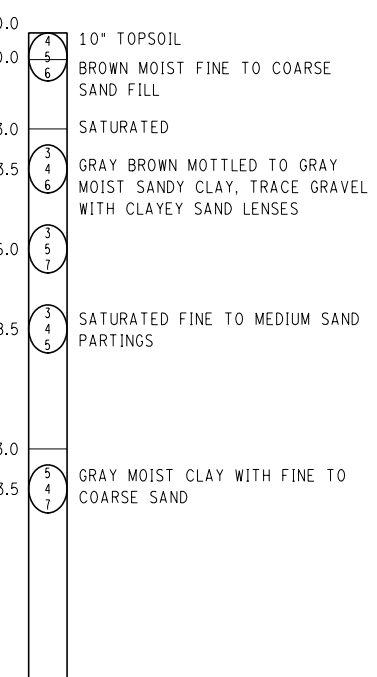
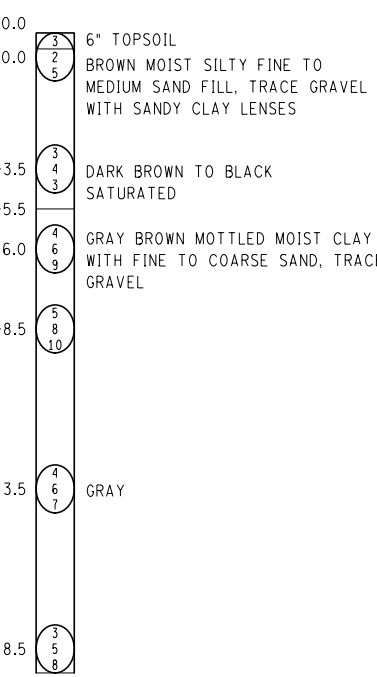
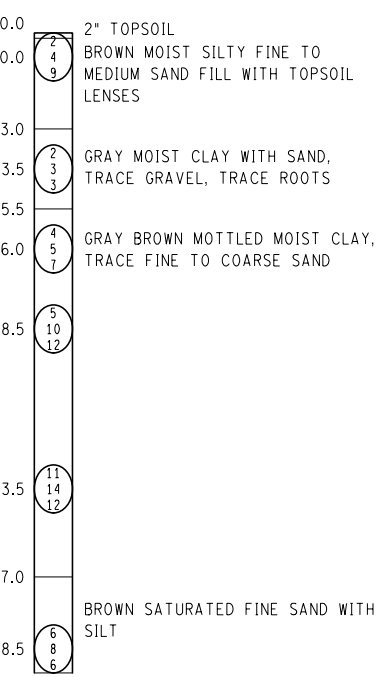
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YELLOW AND/OR WHITE LINES CORRESPOND TO EXISTING LINES AT THE TIME OF DRILLING.

<p>SOIL BORING NO. B-51 ELEV. 664.1 STA: 216+50, 45 LT LOCATION: SB M-121 OUTSIDE SHOULDER, 3 LT OF WHITE LINE</p>  <p>E.O.B. 5.0</p> <p>BORING DATE: 11/22/17 WATER DURING DRILLING: 5.0 WATER LEVEL AFTER AUGER REMOVAL: 5.0 CAVE-IN DEPTH: NONE COORDINATES: N=483040.41, E=12687218.69 LAT=42.8139, LONG=-85.9923 REMARKS: BOREHOLE BACKFILLED WITH COMPACTED CUTTINGS. LAB TESTING: THE BROWN FINE TO COARSE SAND FILL WITH SILT FROM 0.7 TO 2.0 PASSES THE REQUIREMENTS FOR MDOT CLASS II AND FAILS FOR MDOT CLASS IIAA WITH 7% LOSS BY WASH</p>	<p>SOIL BORING NO. B-52 ELEV. 664.4 STA: 216+55, 9.5 LT LOCATION: SB M-121 INSIDE SHOULDER, 12.5 RT OF YELLOW LINE</p>  <p>E.O.B. 5.0</p> <p>BORING DATE: 11/22/17 WATER DURING DRILLING: NONE WATER LEVEL AFTER AUGER REMOVAL: NONE CAVE-IN DEPTH: NONE COORDINATES: N=483020.08, E=12687252.94 LAT=42.8139, LONG=-85.9922 REMARKS: BOREHOLE BACKFILLED WITH COMPACTED CUTTINGS.</p>	<p>SOIL BORING NO. B-53 ELEV. 664.2 STA: 216+50, 56 RT LOCATION: NB M-121 OUTSIDE SHOULDER, 15.5 RT OF WHITE LINE</p>  <p>E.O.B. 5.0</p> <p>BORING DATE: 11/22/17 WATER DURING DRILLING: NONE WATER LEVEL AFTER AUGER REMOVAL: NONE CAVE-IN DEPTH: NONE COORDINATES: N=482982.81, E=12687303.92 LAT=42.8138, LONG=-85.9920 REMARKS: BOREHOLE BACKFILLED WITH COMPACTED CUTTINGS.</p>
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SOIL BORING NO. B-64 ELEV. 659.1 STA : 1203+40, 48 LT WB LOCATION: SIGNAL POLE: WB I-196 AT HOMESTEAD DR, 13 LT OF WB I-196 BL WHITE LINE	SOIL BORING NO. B-65 ELEV. 664.0 STA : 1210+34, 75 LT WB LOCATION: SIGNAL POLE: WB I-196 AT MAIN AVE, 3.4 LT OF WB I-196 BL WHITE LINE	SOIL BORING NO. B-66 ELEV. 671.1 STA : 1218+65, 60 LT WB LOCATION: SIGNAL POLE: EB & WB I-196 BL AT 84TH AVE, 6 LT OF WB I-196 BL WHITE LINE	SOIL BORING NO. B-101 ELEV. 661.7 STA : 1211+80, 10 RT WEST MEDIAN LOCATION: SIGNAL POLE: EB & WB I-196 BL AT MAIN AVE X-OVER, 53 LT OF MAIN AVE X-OVER WHITE LINE	SOIL BORING NO. B-102 ELEV. 667.4 STA : 1217+10, 8.4 LT WEST MEDIAN LOCATION: SIGNAL POLE: EB & WB I-196 BL AT 84TH AVE, 8.4 LT OF 84TH AVE YELLOW LINE	SOIL BORING NO. B-103 ELEV. 666.7 STA : 1218+65, 22 RT WEST MEDIAN LOCATION: SIGNAL POLE: EB & WB I-196 BL AT 84TH AVE, 90 RT OF 84TH AVE WHITE LINE
 <p>E.O.B. 20.0</p> <p>BORING DATE: 12/4/17 WATER DURING DRILLING: 5.5 WATER LEVEL AFTER AUGER REMOVAL: 5.6 CAVE-IN DEPTH: 6.0 COORDINATES: N=481816.1, E=12686546.5 LAT=42.8105, LONG=-85.9947 REMARKS: BOREHOLE BACKFILLED WITH COMPACTED CUTTINGS.</p>	 <p>E.O.B. 20.0</p> <p>BORING DATE: 12/4/17 WATER DURING DRILLING: 6.5 WATER LEVEL AFTER AUGER REMOVAL: 13.7 CAVE-IN DEPTH: NA COORDINATES: N=482231.16, E=12687113.78 LAT=42.8117, LONG=-85.9926 REMARKS: 9 S OF EXISTING WOODEN POLE. BOREHOLE BACKFILLED WITH COMPACTED CUTTINGS. HAND AUGER BORING B-65A WAS PERFORMED AT THE PROPOSED SIGNAL POLE LOCATION AND ENCOUNTERED 8" TOPSOIL OVER DARK BROWN TO BLACK SILTY SAND FILL WITH CONCRETE AND TILE FRAGMENTS, AND TOPSOIL PARTINGS TO 7.4. NATURAL GRAY SATURATED FINE TO MEDIUM SAND EXTENDED TO 8.5. B-65A TERMINATED WITHIN GRAY BROWN MOTTLED MOIST CLAY WITH SAND AT 9.</p>	 <p>E.O.B. 20.0</p> <p>BORING DATE: 12/4/17 WATER DURING DRILLING: NONE WATER LEVEL AFTER AUGER REMOVAL: NA CAVE-IN DEPTH: 4.5 COORDINATES: N=482472.23, E=12687945.89 LAT=42.8124, LONG=-85.9896 REMARKS: BOREHOLE BACKFILLED WITH COMPACTED CUTTINGS.</p>	 <p>E.O.B. 22.0</p> <p>BORING DATE: 2/28/18 WATER DURING DRILLING: 3 WATER LEVEL AFTER AUGER REMOVAL: 2.5 CAVE-IN DEPTH: 2.5 COORDINATES: N=482223.77, E=12687286.38 LAT=42.8117, LONG=-85.9919 REMARKS: BOREHOLE BACKFILLED WITH COMPACTED CUTTINGS. HAND AUGER BORING, B-101A, WAS PERFORMED AT THE PROPOSED STRAIN POLE LOCATION AND ENCOUNTERED 6" TOPSOIL OVER BROWN MOIST FINE TO COARSE SAND FILL WITH FREQUENT CLAY LENSES TO 1.5. B-101A ENCOUNTERED AUGER REFUSAL WITHIN NATURAL GRAY BROWN MOTTLED MOIST SANDY CLAY AT 5.5.</p>	 <p>E.O.B. 20.0</p> <p>BORING DATE: 2/28/18 WATER DURING DRILLING: 5.5 WATER LEVEL AFTER AUGER REMOVAL: 4.5 CAVE-IN DEPTH: 4.5 COORDINATES: N=482363.42, E=12687799.23 LAT=42.8121, LONG=-85.9901 REMARKS: UNABLE TO PERFORM HAND AUGER BORING AT STRAIN POLE LOCATION WITHIN CONCRETE PAVEMENT AT THE INTERSECTION OF I-196 BL AND 84TH AVE. BOREHOLE BACKFILLED WITH COMPACTED CUTTINGS.</p>	 <p>E.O.B. 20.0</p> <p>BORING DATE: 2/28/18 WATER DURING DRILLING: 15 WATER LEVEL AFTER AUGER REMOVAL: 13.4 CAVE-IN DEPTH: 2.0 COORDINATES: N=482396.41, E=12687948.68 LAT=42.8122, LONG=-85.9895 REMARKS: BOREHOLE BACKFILLED WITH COMPACTED CUTTINGS.</p>

NOTES:

BORINGS WERE OBTAINED BY MATERIALS TESTING CONSULTANTS, INC.

NUMBERS IN CIRCLES DENOTE NUMBER OF BLOWS REQUIRED TO DRIVE A 2 in. O.D. SPLIT SPOON SAMPLER 3 SUCCESSIVE 6 in. INCREMENTS USING A 140 lb. HAMMER FALLING 30 in., ASTM D 1586. HAMMER EFFICIENCY IS APPROXIMATELY 85%. CME 55 DRILL RIG.

WHERE THE SAMPLER IS DRIVEN DISTANCES OTHER THAN 6 in., THE DISTANCE IS SHOWN IN THE CIRCLE WITH NUMBER OF BLOWS IN THE FORM OF A FRACTION. DISTANCE IS IN INCHES.

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED.

THE SOIL BORING REPRESENTS POINT INFORMATION. PRESENTATION OF THIS INFORMATION IN NO WAY IMPLIES THAT SUBSURFACE CONDITIONS ARE THE SAME AT LOCATIONS OTHER THAN EXACT LOCATION OF THE BORING.

GROUNDWATER LEVELS MAY FLUCTUATE AND MAY BE DIFFERENT AT THE TIME OF CONSTRUCTION.

CONSISTENCY OF COHESIVE SOIL WAS ESTIMATED BY USE OF A CALIBRATED POCKET PENETROMETER.

REFERENCED STATIONS CORRESPOND TO MAIN AVE STATIONING OR TO PROPOSED NEW WB & EB I-196 BL STATIONING.

