PLAN VIEW

SECTION A-A

NOTE:

FOR END SECTION DIMENSIONS, SEE TABLE.

LONGITUDINAL SECTION

END ELEVATION

END SECTION DIMENSION TABLE												
DIA.	T (MIN.)	A (MIN.)	B (✱)	C (✱)	D (✱)	E (✱)	G	R1	R2	X	Y	APPROX. WT. LBS.
12"	2"	5"	23"	51"	74"	24"	2"	10 1/8"	9"	8"	28"	800
15"	2 1/4"	7"	24"	50"	74"	30"	2 1/4"	12 1/2"	11"	8"	28"	1100
18"	2 1/2"	11"	25"	49"	74"	36"	2 1/2"	15 1/2"	12"	8"	28"	1300
21"	2 3/4"	11"	33"	42"	75"	42"	2 3/4"	16 1/8"	13"	8"	28"	1500
24"	3"	12"	43"	32"	75"	48"	3"	16 3/16"	14"	8"	28"	1800
30"	3 1/2"	14"	53"	22"	75"	60"	3 1/2"	18 1/2"	15"	8"	28"	2400
36"	4"	17"	62"	37"	99"	72"	4"	24 5/16"	20"	8"	28"	4200
42"	4 1/2"	22"	62"	37"	99"	78"	4 1/2"	27 1/2"	22"	10"	28"	5600
48"	5"	24"	72"	28"	98"	84"	5"	28 1/2"	22"	10"	28"	7400
54"	5 1/2"	27"	65"	33 1/4" - 35"	98 1/4" - 100"	90"	5"	#	#	10"	28"	8040
60"	6"	30"	68"	39"	99"	96"	5"	#	#	12"	30"	8730
66"	6 1/2"	24"	72"-78"	21" - 27"	99"	102"	5 1/2"	#	#	12"	30"	10630
72"	7"	24"	78"	21"	99"	108"	8"	#	#	12"	30"	12520
78"	7 1/2"	24"	78"	21"	99"	114"	6 1/2"	#	#	12"	30"	14430
84"	8"	36"	90 1/2"	21"	111 1/2"	120"	6 1/2"	#	#	12"	30"	18160

✱ - TOLERANCE ± 1"

- RADIUS AS FURNISHED BY THE MANUFACTURER

WEIGHT SHOWN DOES NOT INCLUDE CONCRETE FOOTING.

SLOPE DETAIL

NOTES:

1. CONCRETE IN THESE END SECTIONS SHALL BE THE SAME GRADE AND STRENGTH AS SPECIFIED FOR REINFORCED CONCRETE PIPE A.S.T.M. DESIGNATION C 76 CLASS II. EXCEPT AS MODIFIED BY THE STANDARD SPECIFICATIONS.
2. REINFORCEMENT IN THE "C" PORTION SHALL BE THE SAME AS SPECIFIED FOR REINFORCED CONCRETE A.S.T.M. DESIGNATION C 76 CLASS II FOR THE SIZE OF CONNECTING PIPE.
3. REINFORCEMENT IN THE "B" PORTION SHALL HAVE A CROSS-SECTIONAL AREA EQUAL TO THAT OF ONE LAYER OF STEEL IN THE "C" PORTION.
4. THE END OF THE PIPE CULVERT SHALL BE PLACED IN THE CONCRETE END SECTION SO THAT THE FLOW LINES ARE FLUSH. THE JOINT SHALL BE COMPLETELY FILLED WITH NON-SHRINK MORTAR PER 705.22.
5. TO CHANGE THE FILL SLOPE TO THE SLOPE OF THE END SECTION, USE A TRANSITION SLOPE OF APPROXIMATELY 10' IN LENGTH TO PROVIDE A PLEASING APPEARANCE.
6. VARIATIONS IN DIMENSIONS: THE THICKNESS OF THE CONCRETE, THE POSITION OF STEEL AND THE INTERNAL DIAMETER OF THE PIPE SHALL CONFORM WITH THE VARIATIONS IN DIMENSIONS AS PROVIDED IN THE SPECIFICATIONS FOR REINFORCED CONCRETE CULVERT, STORM DRAINS AND SEWER PIPE A.S.T.M. DESIGNATION C 76.
7. CAST IN PLACE CONCRETE FOOTING: REINFORCED CONCRETE FOOTING USING CLASS QC-1 CONCRETE WITH EPOXY COATED STEEL REBARS SHALL MEET THE THE REQUIREMENTS OF 499.03 AND 509.02.
8. PAYMENT WILL BE MADE AT THE UNIT PRICE BID PER EACH FOR ITEM SPECIAL - __" PRECAST CONCRETE END SECTION AND SHALL INCLUDE THE COST OF ALL LABOR, EARTHWORK, FOOTING AND MATERIALS NECESSARY TO PLACEMENT OF THE PRECAST CONCRETE END SECTION.

DATE: OCTOBER 20, 2017

STANDARD DRAWING

PRECAST FLARED END SECTION

DR-1

1 / 1

OHIO TURNPIKE AND INFRASTRUCTURE COMMISSION

DR-1 2017.10.20.dwg: 10/25/17 - 4:27pm

TWO-LANE OPERATION

THREE-LANE OPERATION

(WITH BUFFER LANE)

NOTES:

1. FOR NIGHTTIME OPERATIONS ALL LIGHTS SHALL BE DIRECTED AT SUCH AN ANGLE SO AS NOT TO HINDER THE VISION OF ONCOMING TRAFFIC, YET SUFFICIENT TO LIGHT THE CONSTRUCTION AREA.

2. ORDER OF OPERATIONS.

   A. SET IMPACT ATTENUATOR FIRST.
   B. SET BARRIER WITH DIRECTION OF TRAFFIC FLOW.
   C. REMOVE BARRIER AGAINST DIRECTION OF TRAFFIC FLOW.
   D. REMOVE IMPACT ATTENUATOR.

3. CONTRACTOR SHALL ADJUST SIGN AND PORTABLE CHANGEABLE MESSAGE SIGN TO MAINTAIN REQUIRED SPACINGS.

4. IF THE DELIVERY TRUCKS RETURN TO THE OPEN TRAFFIC LANE, A "TRUCKS ENTERING HIGHWAY" SIGN SHALL BE LOCATED 1000 FEET AHEAD OF THE ENTRY LOCATION AND A FLAGGER SHALL BE LOCATED AT THE ENTRY LOCATION. THE FLAGGER AND ADDITIONAL SIGN IS NOT REQUIRED IF THE BARRIER DELIVERY TRUCKS EXIT THE WORK ZONE AT THE END OF THE CLOSED LANE.

5. FOR LEGENDS, DETAILS AND NOTES, SEE OTIC STANDARD DRAWING TCR-2

* - THESE ITEMS ARE NOT REQUIRED IF THERE IS NO EQUIPMENT, MATERIALS OR WORKERS IN THE BUFFER LANE.

DATE: OCTOBER 20, 2017

STANDARD DRAWING

REQUIREMENTS FOR PORTABLE BARRIER SETTING AND REMOVAL OPERATIONS

TCB-1

1 / 1

OHIO TURNPIKE AND INFRASTRUCTURE COMMISSION

TCB-1 2017.10.20.DWG; 10/25/17 - 4:41pm

TEMPORARY TRAFFIC CONTROL
GENERAL NOTES

1. ALL TRAFFIC CONTROL DEVICES, DRUMS, TRAFFIC CONTROL SIGNS, FLASHING ARROW PANELS, FLAGGERS, ETC., AS SHOWN AND LOCATED ON THE TEMPORARY TRAFFIC CONTROL DRAWINGS, SHALL BE INCORPORATED FOR THE VARIOUS TYPES OF WORK AREAS UNDER NORMAL TRAFFIC CONDITIONS. IF SPECIAL TRAFFIC CONDITIONS EXIST, THE TEMPORARY TRAFFIC CONTROL PLANS MAY HAVE TO BE MODIFIED. HOWEVER, NO MODIFICATIONS OF THE TEMPORARY TRAFFIC CONTROL PLANS SHALL BE MADE UNLESS APPROVED BY THE CHIEF ENGINEER.

   WHENEVER WORKERS ARE PRESENT AND NOT PHYSICALLY SEPARATED FROM TRAFFIC BY A BARRIER THEN A FLAGGER SHALL BE PRESENT.

2. SUPPLEMENTAL GUIDE SIGNS:

   A. ADVANCE GUIDE SIGNS FOR SERVICE OR TOLL PLAZAS:

      WHEN TRAFFIC IS SITUATED SO THAT PERMANENT MAINLINE ADVANCED GUIDE SIGNS FOR SERVICE AND TOLL PLAZAS ARE NOT READILY VISIBLE TO THE RELOCATED TRAFFIC LANE, SUPPLEMENTAL GUIDE SIGNS SHALL BE INSTALLED ADJACENT TO THE APPROPRIATE BI-DIRECTIONAL TRAFFIC LANE TO ALERT MOTORISTS OF THE APPROACHING PLAZA OR EXIT.

   B. SIGNS FOR ANY SINGLE LANE ZONES EXCEEDING TWO (2) MILES IN LENGTH:

      WHEN SINGLE LANE ZONES EXCEED TWO (2) MILES IN LENGTH, SIGNS ARE TO BE PLACED EVERY 2 MILES TO INFORM MOTORISTS OF THE NUMBER OF MILES OF SINGLE LANE TRAFFIC REMAINING AS WELL AS THE POSTED CONSTRUCTION ZONE SPEED LIMIT.

3. VEHICLE TYPES:

   SHADOW VEHICLE:

   A VEHICLE LOCATED A SHORT DISTANCE BEHIND A MOVING OPERATION WITH A TRUCK MOUNTED ATTENUATOR (TMA) OR TOWABLE TRAILER MOUNTED ATTENUATOR (TTMA) AND CHANGEABLE MESSAGE BOARD (CMB) OR APPROPRIATE SIGN. THE VEHICLE SHALL MEET THE TMA/TTMA MANUFACTURER'S REQUIREMENT FOR SIZE, WEIGHT, ETC.

   BARRIER VEHICLE:

   AN UNOCCUPIED SHADOW VEHICLE, WITH OR WITHOUT A TMA/TTMA, PARKED WITHIN A STATIONARY WORK ZONE PRIOR TO A LOCALIZED WORK AREA. THE TRUCK'S BRAKE SHOULD BE SET, THE TRANSMISSION PLACED IN PARK OR GEAR, AND THE FRONT WHEELS TURNED AWAY FROM THE WORK AREA. IF A TMA/TTMA IS NOT USED THEN THE VEHICLE SHALL HAVE A GROSS VEHICLE WEIGHT OF AT LEAST 19,500 POUNDS.

   IF TWO LOCALIZED WORK AREAS WITHIN THE SAME STATIONARY WORK ZONE ARE SEPARATED LONGITUDINALLY BY MORE THAN 950 FEET THEN EACH WORK AREA SHALL HAVE ITS OWN BARRIER VEHICLE AND FLAGGER.

   ADVANCED WARNING VEHICLE:

   A VEHICLE LOCATED A CONSIDERABLE DISTANCE PRIOR TO A MOVING OR STATIONARY OPERATION. THIS VEHICLE MAY BE A PATROL CAR, MAINTENANCE VEHICLE, OR ZONE TRUCK WITH FLASHING LIGHTS. FOR ANY PLANNED OPERATIONS, A CHANGEABLE MESSAGE BOARD SHOULD ALSO BE UTILIZED.

4. SCHEDULED DURATION OF WORK ZONES:

   LONG TERM STATIONARY ZONES:

   MORE THAN 3 DAYS, REFLECTORIZED TRAFFIC DRUMS AND POST MOUNTED SIGNS. SIGNS ON X - FOOTPRINT SIGN STANDS MAY BE USED IF AUTHORIZED BY CHIEF ENGINEER. (RESURFACING PROJECTS, PAVEMENT RECONSTRUCTION PROJECTS, ETC.)

   INTERMEDIATE TERM STATIONARY ZONES:

   OVERNIGHT TO 3 DAYS, ROLL UP SIGNS ON X-FOOTPRINT SIGN STANDS, REFLECTORIZED 42 INCH TRAFFIC CONES OR TRAFFIC DRUMS. (FULL DEPTH PAVEMENT REPAIRS, ETC.)

   SHORT TERM STATIONARY ZONES:

   FROM 1 TO 12 HOURS, SIGNS ON X-FOOTPRINT SIGN STANDS, 28 INCH OR 42 INCH TRAFFIC CONES IN DAYTIME HOURS AND REFLECTORIZED 42 INCH TRAFFIC CONES OR TRAFFIC DRUMS AT NIGHT TIME. (CRACK SEALING OPERATIONS, RPM REFLECTOR REPLACEMENT, GUARDRAIL REPAIR, WASH-OUT REPAIRS, PAVEMENT BLOW-UPS, ETC.)

   SHORT DURATION INTERMITTENT ZONES:

   LESS THAN 1 HOUR, APPROPRIATE TRUCK MOUNTED SIGNS. (SPRING CLEAN-UP, CATCH BASIN CLEANING, ETC.)

   NIGHT TIME ZONES:

   NIGHT TIME USE OF 42 INCH TRAFFIC CONES SHALL BE LIMITED TO THAT PORTION OF THE CLOSURE WHICH IS BEYOND THE SHOULDER TAPER AND LANE CLOSURE TAPER. TRAFFIC DRUMS MUST MUST BE USED FOR ALL TAPERS. FOR STANDARD DRAWING TCR-10, TRAFFIC DRUMS MUST BE USED FOR ALL TAPERS AND THE LONGITUDINAL SECTION BETWEEN THE FIRST AND SECOND LANE CLOSURE TAPER. MAXIMUM SPACING OF 42 INCH CONES, WHEN USED AT NIGHT, SHALL BE 50 FEET.

   MOBILE OPERATION:

   SLOW MOVING CONTINUOUS OR MOVING WITH INTERMITTENT SHORT STOPS, SHADOW VEHICLE WITH A TMA AND CMB OR APPROPRIATE SIGN. (SWEEPING OPERATIONS, WEED SPRAYING, ROADWAY POLICING, POTHOLE REPAIR, DELINEATOR CLEANING / REPAIR / REPLACEMENT, RPM CASTING INSTALLATION, LINE STRIPING, ETC.)

5. TMA/TTMA ARE CRASH CUSHIONS THAT ARE ATTACHED TO THE REAR OF OR TOWED BY PROTECTIVE VEHICLES TO REDUCE THE SEVERITY OF REAR-END COLLISIONS. TMA/TTMA ARE INTENDED TO BE USED ON SHADOW VEHICLES IN MOVING OPERATIONS (THAT PARTIALLY OR TOTALLY ENCROACH ON THE PAVED SHOULDER OR TRAVELED LANE), OPERATIONS IN WHICH THE SHADOW VEHICLE IS BEING OCCUPIED, AND WHEN THERE ARE FEW OR NO ADVANCED WARNING SIGNS OR TRAFFIC CONTROL DEVICES.

6. CONFLICTING SIGNS (70 MPH, EXIT SIGNS, LANE USAGE, ETC.) BETWEEN "ROAD WORK AHEAD" (TC-1) AND "END ROAD WORK" (TC-6) SHALL BE COVERED DURING ALL TEMPORARY TRAFFIC CONTROL OPERATIONS.

7. DEFINITIONS

   A. "EQUIPMENT" MEANS ALL TYPES OF EQUIPMENT, VEHICLES, AND TOOLS USED IN CONNECTION WITH ROADWAY MAINTENANCE OR CONTRACTUAL OBLIGATIONS ON THE TURNPIKE.

   B. "WORKER" INCLUDES EVERY PERSON, FIRM OR CORPORATION PERFORMING WORK IN CONNECTION WITH MAINTENANCE OR CONTRACTUAL OBLIGATIONS ON THE TURNPIKE.

   C. THE "CHIEF ENGINEER" IS THE CHIEF ENGINEER OF THE OHIO TURNPIKE & INFRASTRUCTURE COMMISSION ("COMMISSION") OR A DULY AUTHORIZED REPRESENTATIVE.

   D. IN TWO-LANE SECTIONS, THE "DRIVING LANE" IS THE RIGHT LANE WHEN LOOKING IN THE DIRECTION OF NORMAL TRAFFIC OPERATIONS.

   E. IN TWO-LANE SECTIONS, THE "PASSING LANE" IS THE LEFT LANE WHEN LOOKING IN THE DIRECTION OF NORMAL TRAFFIC OPERATIONS.

   F. IN THREE-LANE SECTIONS THE "RIGHT LANE" IS THE LANE FURTHEST TO THE RIGHT WHEN LOOKING IN THE DIRECTION OF NORMAL TRAFFIC OPERATIONS.

   G. IN THREE-LANE SECTIONS THE "CENTER LANE" IS THE MIDDLE LANE WHEN LOOKING IN THE DIRECTION OF NORMAL TRAFFIC OPERATIONS.

   H. IN THREE-LANE SECTIONS THE "LEFT LANE" IS THE LANE FURTHEST TO THE LEFT WHEN LOOKING IN THE DIRECTION OF NORMAL TRAFFIC OPERATIONS.

   I. THE "MEDIAN" IS THE GRASSED AREA LOCATED BETWEEN PASSING LANE SHOULDERS, OR THE GRASSED AREA LOCATED BETWEEN LEFT LANE SHOULDERS, OR THE PAVED AREA LOCATED BETWEEN LEFT LANE SHOULDERS WHERE PERMANENT MEDIAN BARRIER WALL IS PRESENT.

   J. THE "ROADWAY" IS THE PORTION OF THE HIGHWAY SURFACE THAT LIES BETWEEN THE EDGE LINES.

   K. "WORK SPACE" IS THAT PORTION OF THE ROADSIDE OR HIGHWAY CLOSED TO ROAD USERS AND SET ASIDE FOR WORKERS, EQUIPMENT, AND MATERIALS. CARE SHALL BE TAKEN SUCH THAT NO EQUIPMENT OR MATERIAL ENCROACHES ON AN ACTIVE LANE.

   L. "ACTIVITY AREA" IS THE SECTION OF THE HIGHWAY WHERE THE WORK ACTIVITY TAKES PLACE. IT IS COMPRISED OF THE WORK SPACE, THE TRAFFIC SPACE, AND THE BUFFER SPACE.

   M. "ACTIVE LANE" IS THAT PORTION OF THE ROADWAY THAT IS OPEN TO TRAFFIC.

8. STOPPING, STANDING, OR PARKING OF EQUIPMENT

   EQUIPMENT SHALL NOT BE STOPPED, LEFT STANDING, OR PARKED ON ANY BRIDGE CARRYING TURNPIKE TRAFFIC, TRAFFIC LANE, INTERCHANGE LANE, ACCELERATION LANE, DECELERATION LANE, SHOULDER OR ADJACENT TO A SHOULDER, MEDIAN GRASSED AREA, MEDIAN CROSSOVER, SERVICE ROAD AND ACCESS ROAD TO ANY MAINTENANCE BUILDING OR SERVICE PLAZA, EXCEPT AS PROVIDED HEREIN. CONSTRUCTION EQUIPMENT MAY BE STOPPED, LEFT STANDING OR PARKED IN THESE AREAS ONLY IF THE PROPER TRAFFIC CONTROL ZONE IS SET, WHICH INCLUDES TRAFFIC CONTROL DEVICES APPROPRIATE FOR THE PARTICULAR TYPE OF ZONE IN USE.

9. WORK SPACE REQUIREMENTS

   IF THE WORK SPACE IS 30 FEET OR MORE FROM THE ROADWAY EDGE LINE - NO WORK ZONE IS REQUIRED. IF THE WORK SPACE IS BEYOND THE PAVED SHOULDER, BUT LESS THAN 30 FEET FROM THE ROADWAY EDGE LINE, TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH OHIO TURNPIKE AND INFRASTRUCTURE COMMISSION (OTIC) STANDARD DRAWING TCR-9 (1 OF 2). IF THE WORK SPACE OCCUPIES ANY PORTION OF THE PAVED SHOULDER, TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH THE OTIC STANDARD DRAWING TCR-9 (1 OF 2). IF THE WORK SPACE OCCUPIES ANY PORTION OF A DRIVING LANE, PASSING LANE, RIGHT LANE, OR LEFT LANE, THE LANE SHALL BE CLOSED AND THE TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH OTIC STANDARD DRAWING TCR-2. IF THE WORK SPACE OCCUPIES ANY PORTION OF A CENTER LANE, THE CENTER LANE AND ONE ADJACENT LANE SHALL BE CLOSED IN ACCORDANCE WITH OTIC STANDARD DRAWING TCR-10.

10. SPEED REGULATIONS FOR EQUIPMENT TRAVELING ON TURNPIKE TO OR FROM THE WORK SPACE

    EXCEPT AS PROVIDED BELOW, EQUIPMENT SHALL, WHEN TRAVELING ON THE TURNPIKE TO OR FROM THE WORK SPACE, BE OPERATED AT A MINIMUM SPEED OF 50 MILES PER HOUR. IF SUCH SPEED IS NOT PRACTICABLE OR OBTAINABLE, THE EQUIPMENT SHALL BE TRANSPORTED BY A VEHICLE OPERATED AT THE ABOVE SAID SPEED.

    COMMISSION OWNED VEHICLES; INCLUDING; BUT, NOT LIMITED TO; BACKHOES AND LOADERS MAY TRAVEL TO AND FROM WORK SPACE AT SPEEDS SLOWER THAN 50 MILES PER HOUR PROVIDED A VEHICLE WITH ACTIVATED AMBER FLASHING SAFETY LIGHTS; AS DEFINED IN SECTION 17, HEREIN; FOLLOWS BEHIND THE SLOW MOVING VEHICLE, AND BOTH VEHICLES TRAVEL ON A PAVED SHOULDER.

    MOWERS MAY TRAVEL TO AND FROM WORK SPACE AT SPEEDS SLOWER THAN 50 MILES PER HOUR PROVIDED THEY ARE EQUIPPED WITH ACTIVATED AMBER FLASHING SAFETY LIGHTS; AS DEFINED IN SECTION 17, HEREIN; TRAVEL ON A PAVED SHOULDER, AND DISPLAY A "SLOW MOVING VEHICLE" (SMV) EMBLEM (TRIANGLE). THE SMV EMBLEM SHALL MEET THE REQUIREMENTS OF OHIO ADMINISTRATIVE CODE CHAPTER 4501-13. THE SMV EMBLEM SHALL BE COVERED IF THE EQUIPMENT IS BEING TRANSPORTED.

11. SPEED REGULATIONS FOR EQUIPMENT TRAVELING WITHIN WORK SPACE

    NO VEHICLE OR EQUIPMENT SHALL BE OPERATED IN EXCESS OF 25 MILES PER HOUR IN ANY PART OF THE ROADWAY CLOSED TO TRAFFIC, UNLESS AUTHORIZED BY THE CHIEF ENGINEER.

12. ONE-WAY TRAFFIC

    NO EQUIPMENT SHALL BE OPERATED ON THE TRAFFIC LANES, INTERCHANGE LANES, ACCELERATION LANES, DECELERATION LANES OR SHOULDERS EXCEPT IN THE DESIGNATED DIRECTION OF TRAVEL FOR RESPECTIVE LANES OR SHOULDERS, EXCEPT AS PROVIDED HEREIN. WHEN A WORK ZONE CLOSES A DIRECTIONAL LANE OR LANES, EQUIPMENT MAY BE OPERATED IN THE DIRECTION OPPOSITE TO THE NORMAL FLOW OF TRAFFIC PROVIDED THE EQUIPMENT IS IN THE CLOSED PORTION OF A WORK ZONE. WHEN A SHOULDER ZONE IS UTILIZED TO CLOSE A SHOULDER, EQUIPMENT SHALL BE OPERATED IN THE DESIGNATED DIRECTION OF TRAVEL FOR THE ADJACENT LANE.

LANE DESIGNATIONS

TCR-1 2017.10.20.dwg; 10/25/17 - 4:43pm

DATE: OCTOBER 20, 2017

STANDARD DRAWING

TEMPORARY TRAFFIC CONTROL
GENERAL NOTES

TCR-1

1 / 2

OHIO TURNPIKE AND INFRASTRUCTURE COMMISSION

TEMPORARY TRAFFIC CONTROL
GENERAL NOTES

13. MEDIAN CROSSINGS

COMMISSION OWNED VEHICLES AND EQUIPMENT MAY CROSS THE MEDIAN AT ESTABLISHED CROSSOVERS AND MAY U-TURN IN FRONT OF TOLLBOOTHS WITHOUT THE ASSISTANCE OF A FLAGGER. ALL OTHER VEHICLES AND EQUIPMENT MAY CROSS THE MEDIAN ONLY WITH PRIOR APPROVAL OF AND AT CROSSOVERS DESIGNATED BY THE CHIEF ENGINEER.

CROSSING THE MEDIAN SHALL BE KEPT TO A MINIMUM AND SHALL BE EXECUTED WITH EXTREME CARE SINCE SUCH TRAFFIC MOVEMENTS ARE UNUSUAL AND ARE, THEREFORE, POTENTIALLY HAZARDOUS TO NOT ONLY THE ROAD USER BUT ALSO THE CROSSING VEHICLES. ALL MEDIAN CROSSINGS BY VEHICLES AND EQUIPMENT SHALL BE EXECUTED IN STRICT COMPLIANCE WITH THE PROCEDURES PRESCRIBED IN THIS SECTION.

MEDIAN CROSSOVER PROCEDURES:

A. PASSENGER CARS AND PICKUP TRUCKS - ARE PERMITTED TO USE THE LEFT (MEDIAN) SHOULDER WHILE IN THE ACT OF REVERSING THEIR DIRECTION OF TRAVEL AT DESIGNATED CROSSOVERS. EXTREME CAUTION SHALL BE EXERCISED AT ALL TIMES - ESPECIALLY AT NIGHT AND DURING PERIODS OF INCLEMENT WEATHER.

B. SINGLE UNIT TRUCKS AND EQUIPMENT* - (EMPTY DUMP TRUCKS AND STAKE BODY TRUCKS, TRACTORS, MOWERS, ETC.) ARE TO FIRST PULL ONTO THE RIGHT (OUTSIDE) SHOULDER AND WAIT FOR CLEAR AND UNOBSTRUCTED PASSAGE, THEN PULL ACROSS THE TRAFFIC LANES INTO THE AREA DESIGNATED AND SPECIFICALLY PROVIDED FOR REVERSING TRAVEL DIRECTION. UPON ENTERING THE DESIGNATED AREA, THE OPERATOR SHALL AGAIN WAIT FOR CLEAR AND UNOBSTRUCTED PASSAGE BEFORE ENTERING THE TRAVEL LANES TO COMPLETE THE REVERSAL OF DIRECTION. A FLAGGER IS TO BE STATIONED AT ALL ACTIVE BI-DIRECTIONAL CROSSOVERS TO AID THIS TYPE OF CROSSING MANEUVER.

WHEN HEAVY TRAFFIC VOLUME DOES NOT ALLOW FOR CLEAR AND UNOBSTRUCTED PASSAGE, THE VEHICLE SHOULD PROCEED TO THE NEXT INTERCHANGE AND U-TURN IN FRONT OF THE TOLLBOOTHS WITH A FLAGGER'S ASSISTANCE. EXTREME CAUTION SHALL BE EXERCISED AT ALL TIMES - ESPECIALLY AT NIGHT AND/OR DURING PERIODS OF INCLEMENT WEATHER.

* - "SINGLE UNIT TRUCKS AND EQUIPMENT" WHICH EXCEED 24 FEET IN LENGTH ARE PROHIBITED FROM CROSSING THE MEDIAN AT LOCATIONS WITH CONCRETE BARRIERS. SUCH VEHICLES MAY CROSS THE MEDIAN IF THE PROCEDURES SET FORTH IN SUBPART C. FOR "SLOW-ACCELERATING VEHICLES" ARE UTILIZED. (NOTE: THIS PROHIBITION DOES NOT APPLY TO COMMISSION OWNED SINGLE AXLES VEHICLES AS WELL AS OTHER VEHICLES AND EQUIPMENT APPROVED BY BOTH THE OTIC MAINTENANCE ENGINEER AND CHIEF ENGINEER.)

C. SLOW-ACCELERATING VEHICLES - (TRACTOR TRAILER, TRACTOR LOW BOY, LOADED DUMP TRUCKS, LOADED STAKE BODY TRUCKS, CONCRETE TRUCKS, ETC.) ARE TO EXERCISE EXTREME CARE WHEN ATTEMPTING A MEDIAN CROSSING AND IN NO INSTANCE ARE TO ATTEMPT THIS MANEUVER WITHOUT THE ASSISTANCE OF A FLAGGER. ALL "SLOW ACCELERATING VEHICLES" ATTEMPTING TO MAKE A MEDIAN CROSSING SHALL DO SO ONLY UNDER THE PROTECTION OF 2 SINGLE LANES (PASSING OR LEFT LANE CLOSED) ZONES, 1 IN EACH DIRECTION, PRECEDING THE CROSSOVER IN QUESTION. "SLOW ACCELERATING VEHICLES" ARE TO ENTER THE CLOSED PORTION OF A SINGLE LANE ZONE APPROACHING A CROSSOVER, ENTER THE CROSSOVER AND MAKE THE NECESSARY MANEUVERS TO GET TURNED AROUND, ENTER THE SINGLE LANE ZONE ON THE OPPOSITE ROADWAY AND THEN PROCEED TO THE END OF THE CLOSED LANE AND THEN MERGE WITH TRAFFIC USING EXTREME CAUTION. IF 2 SINGLE LANE ZONES ARE NOT OR CANNOT BE SET, THEN "SLOW ACCELERATING VEHICLES" SHALL PROCEED TO THE NEAREST INTERCHANGE AND U-TURN IN FRONT OF THE TOLLBOOTHS WITH A FLAGGER'S ASSISTANCE.

SLOW-ACCELERATING COMMISSION OWNED SNOWPLOWS MAY UTILIZE ESTABLISHED CROSSOVERS IN ACCORDANCE WITH THE PROCEDURE SET FORTH IN SUBPART B. FOR "SINGLE UNIT TRUCKS AND EQUIPMENT" PROVIDED EXTREME CAUTION IS EXERCISED BY THE SNOWPLOW OPERATOR.

D. ALL VEHICLES - ARE PROHIBITED FROM CROSSING INACTIVE MEDIAN CROSSOVERS LOCATED WITHIN THE LIMITS OF BI-DIRECTIONAL WORK ZONES, UNLESS SPECIAL PERMISSION HAS FIRST BEEN OBTAINED FROM THE CHIEF ENGINEER.

14. WORK TIME

WORK INVOLVING OCCUPANCY OF THE TRAFFIC LANES, SHOULDERS, INTERCHANGE LANES, ACCELERATION LANES OR DECELERATION LANES SHALL NOT BE PERFORMED DURING THE HOURS OF DARKNESS, ADVERSE WEATHER CONDITIONS, OR ADVERSE ROADWAY CONDITIONS, UNLESS AUTHORIZED BY THE CHIEF ENGINEER. WHEN SUCH WORK IS AUTHORIZED, TRAFFIC AND WORKERS SHALL BE SAFEGUARDED BY THE USE OF RETRO-REFLECTORIZED SIGNS AND DRUMS, FLASHING ARROW PANELS AND OTHER TRAFFIC CONTROL DEVICES AS SHOWN ON THE OTIC TTC STANDARD DRAWINGS.

REQUEST FOR APPROVAL OF NIGHT WORK SHALL INCLUDE THE PROPOSED SCHEME FOR LIGHTING THE TTC ZONE AND APPROACHES. LIGHTING SHALL BE SHIELDED TO PREVENT DIRECT ILLUMINATION OF ADJACENT RESIDENCES AND THE TRAVELING PUBLIC.

EXCEPT FOR EMERGENCY SITUATIONS, FLAGGER STATIONS SHALL BE ILLUMINATED AT NIGHT.

15. TRAVEL DURING HOURS OF DARKNESS OR ADVERSE WEATHER OR ROADWAY CONDITIONS

NO EQUIPMENT, OTHER THAN THAT DESIGNED FOR NORMAL HIGHWAY TRAVEL, SHALL BE MOVED ON THE TURNPIKE DURING HOURS OF DARKNESS, PERIODS OF ADVERSE WEATHER CONDITIONS WHICH REDUCE NORMAL VISIBILITY, OR WHEN THE ROADWAY IS COVERED WITH SNOW AND ICE; UNLESS SPECIAL PERMISSION HAS FIRST BEEN OBTAINED FROM THE CHIEF ENGINEER.

16. WORKERS CROSSING TRAFFIC LANES

WORKERS ON FOOT SHALL NOT CROSS TRAFFIC LANES, ACCELERATION LANES, DECELERATION LANES, INTERCHANGE RAMPS, OR ANY OTHER TRAFFIC LANE OPEN TO TRAFFIC WITHOUT EXERCISING EXTREME CAUTION. WORKERS SHALL NOT CROSS MORE THAN 2 LANES WHEN DEPLOYING OR REMOVING TTC DEVICES.

IN SECTIONS WHERE THERE ARE 3 LANES OPEN TO TRAFFIC, SIGNS SHOULD BE DEPLOYED ALONG THE OPEN LANE SIDE FIRST SO TRAFFIC IS NOT DIRECTED TO MERGE INTO EMPLOYEES SETTING SIGNS. ONLY ONE SIDE SHALL BE SET AT A TIME. COMPLETE THE OPEN LANE SIDE BEFORE SETTING ANY SIGNS ALONG THE CLOSED LANE SIGN SIDE.

IN SECTIONS WHERE THERE WILL BE 3 LANES OPEN TO TRAFFIC, SIGNS SHOULD BE REMOVED ALONG THE PREVIOUSLY CLOSED LANE SIDE FIRST SO TRAFFIC IS NOT DIRECTED TO MERGE INTO THE EMPLOYEES REMOVING SIGNS. ONLY ONE SIDE SHALL BE REMOVED AT A TIME. COMPLETELY REMOVE THE PREVIOUSLY CLOSED LANE SIDE BEFORE REMOVING ANY SIGNS ALONG THE PREVIOUSLY OPEN LANE SIDE OF THE ROAD.

ALL WORKERS ON FOOT AND CROSSING ACTIVE LANES OR RAMPS SHALL WEAR HIGH-VISIBILITY SAFETY APPAREL AS DESCRIBED UNDER SECTION 18 HEREIN.

17. AMBER FLASHING SAFETY LIGHTS

ALL EQUIPMENT DESIGNED FOR NORMAL HIGHWAY TRAVEL SHALL BE EQUIPPED WITH AMBER HIGH-INTENSITY ROTATING, FLASHING, OSCILLATING, OR STROBE LIGHTS. SUCH AMBER FLASHING SAFETY LIGHTS SHALL BE VISIBLE TO APPROACHING AND TRAILING TRAFFIC. ALTHOUGH VEHICLE HAZARD WARNING LIGHTS ARE PERMITTED TO BE USED TO SUPPLEMENT HIGH-INTENSITY ROTATING, FLASHING, OSCILLATING, OR STROBE LIGHTS, THEY SHALL NOT BE USED INSTEAD OF HIGH-INTENSITY ROTATING, FLASHING, OSCILLATING, OR STROBE LIGHTS.

THE FLASHING SAFETY LIGHTS SHALL BE ACTIVATED WHENEVER EQUIPMENT IS ON THE SHOULDER, WHENEVER EQUIPMENT IS ENTERING OR EXITING A WORK SPACE, AND WHENEVER EQUIPMENT IS CROSSING THE MEDIAN.

18. FLAGGER

FLAGGERS SHALL BE FAMILIAR WITH, AND FLAGGING SHALL BE IN ACCORDANCE WITH, THE LATEST VERSION OF THE "FLAGGING HANDBOOK FOR TRAFFIC CONTROL ON THE OHIO TURNPIKE".

SINCE FLAGGERS ARE RESPONSIBLE FOR HUMAN SAFETY IT IS IMPORTANT THAT THEY ARE MENTALLY ALERT, COURTEOUS BUT WITH A FIRM MANNER, PROPERLY ATTIRED WITH A NEAT APPEARANCE, AWARE OF THE RESPONSIBILITY FOR THE SAFETY OF THE WORKERS AND THE TRAVELING PUBLIC, AND INFORMED OF THE EXACT TRAFFIC MOVEMENTS THAT THEY ARE TO CONTROL.

FLAGGERS SHALL WEAR HIGH VISIBILITY SAFETY APPAREL, WHICH MEETS OR EXCEEDS THE PERFORMANCE CLASS 3 REQUIREMENTS OF THE LATEST REVISION OF ANSI/ISEA 107 PUBLICATION AND LABELED AS MEETING THE LATEST REVISION OF ANSI 107 STANDARD PERFORMANCE FOR CLASS 3 RISK EXPOSURE.

19. OTIC INCIDENT RESPONSE VEHICLES, ZONE VEHICLES AND ZONE PERSONS

IT IS WIDELY RECOGNIZED THAT THE RISK OF TRAFFIC CRASHES INCREASES WHEN CONGESTION DEVELOPS AND QUEUES (TRAFFIC BACK-UPS) FORM, ESPECIALLY ON HIGHWAYS LIKE THE OHIO TURNPIKE WHERE SPEEDS ARE HIGH AND DRIVERS ARE ACCUSTOMED TO UNENCUMBERED TRAVEL. QUEUING CAN LEAD TO INCREASED REAR-END CRASH RISK DUE TO THE HIGHER SPEED OF TRAFFIC APPROACHING THE BACK OF THE QUEUE.

DURING A TRAFFIC INCIDENT OR ANY OTHER OCCURRENCE CAUSING A TRAFFIC QUEUE, THE MAIN PRIORITY OF THE OTIC INCIDENT RESPONDER (IR) OR ZONE PERSON (ZP) IS TO PROTECT THE BACK OF THE QUEUE. THIS SHALL BE ACCOMPLISHED BY POSITIONING THE INCIDENT RESPONSE VEHICLE (IRV) / ZONE VEHICLE (ZV) ON THE ROADWAY SHOULDER AND APPROXIMATELY 1,000 FEET BEHIND THE REAR OF STOPPED/SLOWED TRAFFIC, WHILE MOVING FORWARD OR BACKWARD AS NEEDED TO MAINTAIN THE PROPER DISTANCE. THE DISTANCE FROM THE QUEUE SHOULD BE INCREASED IF THERE IS LIMITED SIGHT DISTANCE DUE TO ROADWAY GEOMETRY.

IRV / ZV EQUIPPED WITH A PORTABLE CHANGEABLE MESSAGE SIGN (PCMS) MUST BE USED TO WARN DRIVERS OF THE CONDITIONS AHEAD.

IF TRAFFIC IS QUEUED FOR ANY REASON, THE IRV / ZV SHALL MOVE INTO POSITION IMMEDIATELY AND PLACE OTIC MESSAGE 1 (SHOWN BELOW) ON THE PCMS. THE IR / ZP SHALL THEN NOTIFY THE OTIC COMMUNICATION CENTER (COMMCENTER) OF THEIR LOCATION AND THE MESSAGE DISPLAYED ON THEIR PCMS.

OTIC PCMS MESSAGE 1: (DISPLAY EACH PANEL FOR 2 SECONDS)

		S	L	O	W		
T	R	A	F	F	I	C	
	A	H	E	A	D		

			B	E			
P	R	E	P	A	R	E	D
	T	O		S	T	O	P

THE COMMCENTER MAY DIRECT THE ZP TO DISPLAY AN ALTERNATE MESSAGE ON THE ZV PCMS. THE ZV PCMS SHALL DISPLAY ONLY MESSAGE 1 UNLESS DIRECTED OTHERWISE BY THE COMMCENTER.

20. REMOVAL OF TTC DEVICES

ALL TTC DEVICES (EXCEPT 42 INCH TRAFFIC CONES, DRUMS, AND/OR TEMPORARY SIGNS MOUNTED ON POSTS SET IN THE GROUND), INCLUDING SIGN STANDS, SHALL BE REMOVED AT THE CLOSE OF THE WORK DAY UNLESS THE STATE OF THE WORK IS SUCH THAT THE DEVICES ARE STILL NEEDED TO CONTROL TRAFFIC.

21. TRACKED OR SPILLED EARTH, GRAVEL, ETC.

ANY DEBRIS TRACKED OR SPILLED ON TRAFFIC LANES OR SHOULDERS SHALL BE IMMEDIATELY REMOVED AND TRAFFIC SHALL BE ADEQUATELY SAFEGUARDED DURING THE PERIOD SUCH DEBRIS IS ON THE ROAD AND WHILE BEING REMOVED.

IF PONDING WATER IS PRESENT OR MAY ENTER THE ACTIVE LANE OF TRAFFIC, DUE TO CONSTRUCTION/WORK ACTIVITIES, PUMPS OR OTHER MEANS MUST BE EMPLOYED TO REMOVE AND PREVENT SUCH PONDING WATER ENTERING ACTIVE LANES.

22. MOVEMENT OF CONTRACTOR'S OVER-SIZE / OVER-WEIGHT EQUIPMENT

NO CONTRACTOR'S EQUIPMENT EXCEEDING THE MAXIMUM VEHICLE DIMENSIONS AS PROVIDED IN OHIO ADMINISTRATIVE CODE SECTION 5537-3-01 OF "PROHIBITED USES", SHALL BE MOVED OVER THE TURNPIKE WITHOUT OBTAINING PERMISSION FROM THE CHIEF ENGINEER.

23. STORAGE OF EQUIPMENT AND MATERIALS

IF EQUIPMENT OR MATERIALS ARE STORED OR PARKED WITHIN THE RIGHT-OF-WAY, THEY SHALL BE LOCATED NOT LESS THAN 6 FEET BEHIND EXISTING GUARDRAIL AND A MINIMUM DISTANCE OF 360 FEET FROM THE APPROACH END OF THE EXISTING GUARDRAIL; OR, IN THE ABSENCE OF GUARDRAIL, NOT LESS THAN 30 FEET BEYOND THE ROADWAY EDGE LINE. SUCH ITEMS MAY BE STORED IN A WORK SPACE THAT IS SHIELDED FROM TRAFFIC BY TEMPORARY PORTABLE BARRIER INSTALLED IN ACCORDANCE WITH AND AS A REQUIREMENT OF THE CONTRACT PLANS. FLAMMABLE LIQUIDS SHALL NOT BE STORED IN THE MEDIAN OR IN CROSSOVER AREAS, UNLESS THOSE AREAS ARE SHIELDED FROM TRAFFIC BY TEMPORARY PORTABLE BARRIER INSTALLED IN ACCORDANCE WITH AND AS A REQUIREMENT OF THE CONTRACT PLANS. EQUIPMENT OR MATERIAL SHALL BE LOCATED NOT LESS THAN 6 FEET 3 INCHES BEHIND UNANCHORED 50 INCH PORTABLE CONCRETE BARRIER OR 5 FEET 6 INCHES BEHIND UNANCHORED 32 INCH PORTABLE CONCRETE BARRIER.

THIS REQUIREMENT INCLUDES THE LOCATION OF PORTABLE TOILETS LOCATED IN THE WORK ZONE. IN ADDITION, EQUIPMENT USED AT NIGHT, SUCH AS LIGHT PLANTS, SHALL BE STORED AS DESCRIBED ABOVE DURING THE DAYTIME.

24. X - FOOTPRINT SIGN STANDS

X - FOOTPRINT SIGN STANDS SHALL NOT BE PLACED ON MAINLINE BRIDGES UNLESS APPROVED BY THE CHIEF ENGINEER.

25. MODIFICATION OF PROCEDURES

IN THE EVENT THE STANDARD PROCEDURES ESTABLISHED HEREIN PRESENT AN UNREASONABLE HARDSHIP UPON, OR CANNOT BE FULLY IMPLEMENTED BY THE MAINTENANCE FORCES OR CONTRACTORS IN THE PERFORMANCE OF THEIR WORK, THEY SHALL REQUEST PERMISSION TO USE AN ALTERNATE METHOD FROM THE CHIEF ENGINEER. ALTERNATE METHOD OR PROCEDURE SUBMITTALS MUST BE STAMPED BY AN OHIO REGISTERED PROFESSIONAL ENGINEER. ALTERNATE METHODS OR PROCEDURES SHALL NOT BE UTILIZED WITHOUT FIRST OBTAINING PERMISSION FROM THE CHIEF ENGINEER.

NOTE:

* - SUBSTITUTE "RIGHT LANE CLOSED" SIGNS (TC-2R, TC-5R, TC-4R) FOR "LEFT LANE CLOSED" SIGNS (SHOWN) WHEN RIGHT LANE IS CLOSED.

\# - THE BUFFER SPACE SHALL BE KEPT FREE OF WORK ACTIVITIES, EQUIPMENT, VEHICLES AND MATERIALS

STANDARD SINGLE LANE CLOSURE

TWO-LANE AND THREE-LANE ROADWAY

DETAILS

28" TRAFFIC CONE

NOTES:

TRAFFIC CONES SHALL BE THE SLIMLINE OR TRIMLINE STYLE WITH THE BODY OF THE TRAFFIC CONE CONSTRUCTED OF POLYVINYL CHLORIDE MATERIAL. THE BASE OF THE TRAFFIC CONE SHALL BE CONSTRUCTED OF POLYVINYL CHLORIDE OR MOLDED RUBBER MATERIAL. THE CONE SHALL BE HOLLOW. THE NET WEIGHT OF THE CONE SHALL NOT BE LESS THAN 5½ POUNDS.

THE EXTERIOR OF THE CONE SHALL BE HIGH VISIBILITY, FADE RESISTANT, IMPREGNATED FLUORESCENT ORANGE. THE GUIDE SHALL HAVE ONE RETROREFLECTIVE WHITE STRIPE ENCIRCLING THE CONE AND BE NOT LESS THAN 4 INCHES IN WIDTH. THE STRIPE SHALL BE PERMANENTLY APPLIED SO THAT THE TOP EDGE IS APPROXIMATELY 3 INCHES FROM THE CONE APEX.

EACH CONE IS TO HAVE A SLIP-OVER COLLAR BASE. THE SLIP-OVER COLLAR BASE SHALL BE BLACK IN COLOR AND SHALL BE CONSTRUCTED OF A RUBBER MATERIAL AND SHALL WEIGH NOT LESS THAN 5 POUNDS. THE SLIP-OVER COLLAR BASE SHALL BE FULLY COMPATIBLE WITH THE PHYSICAL PROPERTIES OF THE CONE.

A ONE-PIECE TRAFFIC CONE MEETING THE ABOVE MATERIAL REQUIREMENTS AND HAVING A NET WEIGHT OF APPROXIMATELY 10½ POUNDS, WITH THE WEIGHT DISTRIBUTED TO ENSURE MAXIMUM STABILITY, MAY BE USED.

42" TRAFFIC CONE

NOTES:

42 INCH TRAFFIC CONES SHALL BE A TWO PIECE DESIGN CONSISTING OF A HOLLOW STEM AND A WEIGHTED BASE. THE STEM SHALL BE MANUFACTURED FROM ULTRAVIOLET STABILIZED, HIGH VISIBILITY ORANGE IMPACT RESISTANT LOW DENSITY POLYETHYLENE AND SHALL HAVE AN INTEGRAL MOLDED HANDLE AT THE TOP OF THE STEM AND SHALL BE CERTIFIED BY THE MANUFACTURER TO MEET NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM, (NCHRP) REPORT 350 CRASH TEST STANDARDS.

EACH CONE IS TO HAVE A SLIP-OVER COLLAR BASE. THE SLIP-OVER COLLAR BASE SHALL BE BLACK IN COLOR AND SHALL BE MANUFACTURED FROM MOLDED RUBBER MATERIAL AND SHALL WEIGH 16 POUNDS. THE SLIP-OVER COLLAR BASE SHALL BE FULLY COMPATIBLE WITH THE PHYSICAL PROPERTIES OF THE CONE.

THE 42 INCH CONE SHALL HAVE A MINIMUM OF 4 EACH, NOMINAL 6 INCH WIDE RETROREFLECTIVE STRIPES STARTING FROM THE TOP IN FLUORESCENT ORANGE, WHITE, FLUORESCENT ORANGE, WHITE SEQUENCE. ANY NONRETROREFLECTIVE SPACES BETWEEN THE FLUORESCENT ORANGE AND WHITE STRIPES SHALL NOT EXCEED 3 INCHES IN WIDTH.

THE RETROREFLECTIVE SHEETING SHALL BE NO. 3910 WHITE AND NO. 3914 FLUORESCENT ORANGE SCOTCHLITE DIAMOND GRADE WORK ZONE SHEETING AS MANUFACTURED BY 3M, OR EQUAL AS APPROVED BY THE CHIEF ENGINEER, CONSIDERING REFLECTIVITY, DURABILITY, PLIABILITY AND ADHESION QUALITIES.

TRAFFIC DRUM

NOTES:

THE TRAFFIC DRUM SHALL BE A TWO PIECE, BREAKAWAY STYLE, DESIGNED THAT DAMAGE AFTER IMPACT WILL BE MINIMAL THROUGH A TEMPERATURE OF -15 °F TO +125 °F. THE DRUM SHALL BE CONSTRUCTED OF NOT LESS THAN ⅛ INCH THICK, IMPACT RESISTANT, POLYETHYLENE, FORMULATED TO ALLOW THE DRUM TO RETURN TO THE ORIGINAL DESIGN AFTER IMPACT.

THE DRUM SHALL BE A MINIMUM OF 36 INCHES IN HEIGHT AND A MINIMUM OF 18 INCHES IN DIAMETER. THE DRUM SHALL CONTAIN 5 RECESSED BANDS WHICH SHALL ACCEPT RETROREFLECTIVE SHEETING BANDS OF 6 INCH WIDTH. THE DRUM SHALL BE DESIGNED WITH ONE OR MORE FLAT SIDES OR WITH AN ANTI-ROLL DEVICE, TO MINIMIZE ROLLING, SHOULD THE UNIT BE KNOCKED OVER. TOTAL WEIGHT OF THE DRUM SHALL BE NOT LESS THAN 12 POUNDS.

COLOR OF THE DRUM SHALL BE COLOR STABILIZED, SAFETY ORANGE. TO PROVIDE STABILITY OF THE DRUM THE WEIGHTED BASE PORTION SHALL BE THE RUBBER COLLAR WEIGHTING TYPE WITH COMPATIBLE DRUM. DOUBLE WEIGHTING OF DRUMS MAY BE NECESSARY TO PREVENT MOVEMENT.

THE TRAFFIC DRUM SHALL HAVE A MINIMUM OF 4 EACH, NOMINAL 6 INCH WIDE, RETROREFLECTIVE STRIPES APPLIED TO THE DRUM RECESSED BANDS, STARTING FROM THE TOP, IN FLUORESCENT ORANGE, WHITE, FLUORESCENT ORANGE, WHITE SEQUENCE. THE RETROREFLECTIVE SHEETING SHALL BE NO. 3810 WHITE AND NO. 3814 ORANGE AS MANUFACTURED BY THE 3M COMPANY, HIGH IMPACT CHANNELIZER MATERIAL AS MANUFACTURED BY REFLEXITE NORTH AMERICA, OR EQUAL AS APPROVED BY THE CHIEF ENGINEER, CONSIDERING REFLECTIVITY, DURABILITY, PLIABILITY AND ADHESION QUALITIES.

NOTES

1. DRUM/CONE SPACING IS 50 FEET ON-CENTER IN TAPERS, CROSSOVERS AND RAMPS; 100 FEET ON-CENTER IN TANGENTS UNLESS OTHERWISE NOTED.
2. FINAL LOCATION OF TEMPORARY TRAFFIC CONTROL DEVICES MAY NEED TO BE ADJUSTED TO PROVIDE MAXIMUM VISIBILITY.
3. SIGNS USED FOR LONG TERM STATIONARY ZONES, WHICH ARE LOCATED ON THE LEFT SIDE OF AN OPEN 3-LANE SECTION OF ROADWAY ARE TO BE MOUNTED ON MEDIAN BARRIER CLAMPS WHEN THE MEDIAN BARRIER WALL HEIGHT IS 6 FEET OR LESS. SIGNS ON X - FOOTPRINT SIGN STANDS MAY BE USED IF AUTHORIZED BY THE CHIEF ENGINEER. WHEN THE MEDIAN BARRIER WALL IS OVER 6 FEET HIGH, SIGNS SHALL BE MOUNTED ON APPROVED SIGN SUPPORTS LOCATED ON THE SHOULDER.
4. FOR SHORT TERM AND DAYTIME ZONES, SIGNS SHALL BE MOUNTED ON X-FOOTPRINT SIGN STANDS THAT MEET THE REQUIREMENTS OF SP 730. IF A TC-3 OR TC-13 IS REQUIRED ON A PORTABLE SIGN STAND THEN USE A TC-28 OR TC-29, RESPECTIVELY. FOR BI-DIRECTIONAL AND LONG TERM STATIONARY ZONES SIGNS ARE TO BE MOUNTED ON BREAKAWAY POSTS OR APPROVED SIGN SUPPORTS, UNLESS OTHERWISE SHOWN.
5. "END ROAD WORK" AND "SPEED LIMIT 70 MPH" SIGN SHALL BE OMITTED IF ANOTHER ACTIVE WORK ZONE'S ADVANCED SIGNAGE IS LOCATED LESS THAN 1.5 MILES FROM THE INTENDED LOCATION OF THE "END ROAD WORK" SIGN.
6. IN LONG TERM STATIONARY ZONES REMOVE REFLECTORS FROM ALL EXISTING RAISED PAVEMENT MARKERS (RPM'S) THAT ARE IN CONFLICT WITH TEMPORARY TRAVEL LANES AND PAVEMENT MARKINGS.
7. ANY EXISTING SPEED LIMIT SIGN(S) LOCATED BETWEEN THE TC-1 AND TC-6 SIGNS SHALL BE COVERED WHILE THE ZONE IS IN PLACE.
8. ALL MAINTENANCE OF TRAFFIC DEVICES AND ZONES SHALL FOLLOW THESE STANDARDS. IF SITE SPECIFIC TRAFFIC CONDITIONS EXIST, THE MAINTENANCE OF TRAFFIC PLANS MAY BE MODIFIED TO SUIT THESE CONDITIONS; HOWEVER, NO MODIFICATIONS TO THE MAINTENANCE OF TRAFFIC PLANS SHALL BE MADE UNLESS APPROVED BY THE CHIEF ENGINEER.
9. WHEN WORKERS ARE REQUIRED TO WORK NEXT TO LIVE TRAFFIC (E.G., FULL DEPTH REPAIR, RPM REPLACEMENT, ETC.) A SINGLE TEMPORARY LANE MAY BE PARTIALLY SHIFTED ON TO THE SHOULDER DURING SHORT TERM ZONES OR SHORT DURATION INTERMITTENT ZONES. THE TEMPORARY SINGLE LANE "BUMP OUT" SHALL BE ALIGNED SUCH THAT THE WHEELS OF THE VEHICLES STRADDLE THE SONIC NAP ALERT PATTERN (SNAP).

   IF A "BUMP OUT" IS NEEDED WITHIN A HALF-MILE OF THE START OF THE SINGLE TEMPORARY LANE THEN THE LANE CLOSURE TAPER SHOULD BE EXTENDED SO TRAFFIC IS SHIFTED ONTO THE SHOULDER AT THE BEGINNING OF THE WORK ZONE AND A "RUMBLE STRIPS AHEAD" SIGN SHALL BE PLACED 500 FEET PRIOR TO THE ARROW BOARD.

   IF A "BUMP OUT" IS NEEDED FURTHER INTO THE WORK ZONE, THEN THE "BUMP OUT" TAPER SHOULD BE SET AT A 70:1 TAPER RATE. THE "BUMP OUT" TAPER SHALL BE LOCATED SO THERE IS AN 800 FOOT BUFFER SPACE, SPACE FOR A BARRIER VEHICLE, AND 100 FOOT SPACE FOR THE FLAGGER PRIOR TO THE WORK AREA. A LANE SHIFT SIGN (TC-7L/R) SHALL BE PLACED 1,000 FEET PRIOR TO THE START OF THE "BUMP OUT" TAPER. A "RUMBLE STRIPS AHEAD" SIGN SHALL BE PLACED 500 FEET PRIOR TO THE START OF THE "BUMP OUT" TAPER.

   THE "BUMP OUT" SHOULD BE TAPERED BACK TO THE SINGLE TEMPORARY LANE AFTER THE WORK AREA. THIS TAPER SHOULD BE SET AT A 70:1 TAPER RATE AND A LANE SHIFT SIGN (TC-7L/R) SHALL BE PLACED 1,000 FEET PRIOR TO THE START OF THE TAPER.

   IF MULTIPLE "BUMP OUTS" ARE NEEDED THROUGHOUT THE WORK ZONE THEN THE SINGLE TEMPORARY LANE SHOULD REMAIN SHIFTED UNTIL AFTER THE LAST "BUMP OUT" AREA.

   DRUM / CONES SPACING IS 50 FEET ON-CENTER IN THE "BUMP OUT" TAPER AND TANGENT SECTION.

LEGEND

- TYPE III PORTABLE BARRICADE WITH APPROPRIATE SIGN
- SIGN MOUNTED ON X-FOOTPRINT SIGN STAND (SEE NOTES 4 & 5)
- SIGN MOUNTED ON BREAKAWAY OR YIELDING POST(S)
- SIGN MOUNTED ON PERFORATED STEEL SQUARE TUBE SUPPORT (PSST)
- REFLECTORIZED TRAFFIC DRUMS
- REFLECTORIZED TRAFFIC CONES
- WORK AREA
- WORK SPACE
- BUFFER SPACE
- FLAGGER LOCATION (ALL WORKING HOURS)
- ARROW BOARD (AB) TYPE C PER ODOT SUPPLEMENTAL SPECIFICATION 821
- BARRIER VEHICLE
- WORK VEHICLE

DATE: OCTOBER 20, 2017

STANDARD DRAWING

TEMPORARY TRAFFIC CONTROL DETAILS, LEGEND, NOTES AND STANDARD SINGLE LANE CLOSURE

TCR-2

1 / 1

OHIO TURNPIKE AND INFRASTRUCTURE COMMISSION

TCR-2 2017.10.20.DWG; 10/25/17 - 4:44pm

WORK BEYOND THE SHOULDER

NOTES:

1. IF THE WORK AREA IS IN THE MEDIAN, PLACE AN ADVANCE WARNING SIGN ON THE LEFT AND RIGHT SIDE OF THE ROADWAY.
2. THE ADVANCE WARNING SIGN(S) MAY BE OMITTED WHERE THE WORK AREA IS MORE THAN 15 FEET FROM THE EDGE OF THE ROADWAY.
3. THE ADVANCE WARNING SIGN(S) MAY BE ELIMINATED IF A VEHICLE WITH ACTIVATED AMBER COLORED HIGH-INTENSITY ROTATING, FLASHING, OSCILLATING, OR STROBE LIGHTS IS USED.
4. VEHICLE HAZARD WARNING SIGNALS MAY BE USED TO SUPPLEMENT BUT NOT REPLACE THE AMBER COLORED HIGH-INTENSITY ROTATING, FLASHING, OSCILLATING, OR STROBE LIGHTS PER TCR-1.
5. SEE OTIC STANDARD DRAWING TCR-1 FOR DEFINITIONS.
6. SEE OTIC STANDARD DRAWING TCR-2 FOR LEGEND AND DETAILS.

STATIONARY SHOULDER CLOSURE

NOTES:

1. FOR SHORT DURATION INTERMITTENT CLOSURES, WARNING SIGNS MAY BE OMITTED WHEN THE BARRIER VEHICLE DISPLAYS AMBER COLORED HIGH-INTENSITY ROTATING, FLASHING, OSCILLATING, OR STROBE LIGHTS PER TCR-1 IF THE DISTANCE BETWEEN WORK LOCATIONS IS ONE MILE OR MORE, AND IF THE BARRIER VEHICLE TRAVELS AT VEHICULAR TRAFFIC SPEEDS BETWEEN LOCATIONS.
2. VEHICLE HAZARD WARNING SIGNALS MAY BE USED TO SUPPLEMENT BUT NOT REPLACE THE AMBER COLORED HIGH-INTENSITY, ROTATING, FLASHING, OSCILLATING, OR STROBE LIGHTS.
3. IF AN ARROW PANEL IS USED, THE CAUTION MODE SHALL BE USED. THE ARROW PANEL MAY BE MOUNTED ON THE BARRIER VEHICLE OR IT MAY BE TRAILER MOUNTED.
4. CONES SHALL BE SPACED 50 FEET CENTER TO CENTER. CONES MAY BE OMITTED FOR SHORT DURATION INTERMITTENT ZONES.
5. IF THE WORK AREA IS IN THE MEDIAN, PLACE AN ADVANCE WARNING SIGN ON THE LEFT AND RIGHT SIDE OF THE ROADWAY.
6. SEE OTIC STANDARD DRAWING TCR-1 FOR DEFINITIONS.
7. SEE OTIC STANDARD DRAWING TCR-2 FOR LEGEND AND DETAILS.
8. SHORT DURATION INTERMITTENT CLOSURES FOR NON-CONSTRUCTION ACTIVITIES (SURVEYING, INSPECTION, DEBRIS REMOVAL, ETC.) DO NOT REQUIRE BARRIER VEHICLE OR FLAGGER; HOWEVER, THE WORK VEHICLE MUST DISPLAY AMBER COLORED HIGH-INTENSITY ROTATING, FLASHING, OSCILLATING OR STROBE LIGHTS.

DATE: OCTOBER 20, 2017

STANDARD DRAWING

TEMPORARY TRAFFIC CONTROL
SHORT DURATION / SHORT TERM SHOULDER CLOSURE

TCR-9

OHIO TURNPIKE AND INFRASTRUCTURE COMMISSION

TCR-9 2017.10.20.DWG; 10/25/17 - 4:45pm

NOTES:

1. FOR SHORT DURATION OR INTERMITTENT CLOSURES, WARNING SIGNS MAY BE OMITTED WHEN THE WORK VEHICLE DISPLAYS AMBER COLORED HIGH-INTENSITY ROTATING, FLASHING, OSCILLATING, OR STROBE LIGHTS PER TCR-1 IF THE DISTANCE BETWEEN WORK LOCATIONS IS ONE MILE OR MORE, AND IF THE WORK VEHICLE TRAVELS AT VEHICULAR TRAFFIC SPEEDS BETWEEN LOCATIONS.
2. VEHICLE HAZARD WARNING SIGNALS MAY BE USED TO SUPPLEMENT BUT NOT REPLACE THE AMBER COLORED HIGH-INTENSITY ROTATING, FLASHING, OSCILLATING, OR STROBE LIGHTS.
3. IF AN ARROW BOARD IS USED, THE CAUTION MODE SHALL BE USED. THE ARROW BOARD MAY BE MOUNTED ON THE BARRIER VEHICLE OR IT MAY BE TRAILER MOUNTED.
4. CONES SHALL BE SPACED 50 FEET CENTER TO CENTER. CONES MAY BE OMITTED FOR SHORT DURATION INTERMITTENT ZONES.
5. SEE OTIC STANDARD DRAWING TCR-1 FOR DEFINITIONS.
6. SEE OTIC STANDARD DRAWING TCR-2 FOR LEGEND AND DETAILS.

RAMP SHOULDER CLOSURE

NOTES:

1. THE DOUBLE ARROW MODE OF THE ARROW BOARD SHALL BE USED.
2. CONES SHALL BE SPACED 20 FEET CENTER TO CENTER, EXCEPT AS SHOWN.
3. SEE OTIC STANDARD DRAWING TCR-1 FOR DEFINITIONS.
4. SEE OTIC STANDARD DRAWING TCR-2 FOR LEGEND AND DETAILS.

DATE: OCTOBER 20, 2017

STANDARD DRAWING

TEMPORARY TRAFFIC CONTROL
SHORT DURATION / SHORT TERM SHOULDER CLOSURE

TCR-9

2 / 2

OHIO TURNPIKE AND INFRASTRUCTURE COMMISSION

OHIO TURNPIKE

TCR-9 2017.10.20.DWG; 10/25/17 - 4:46pm

SINGLE LANE CLOSURE WITH PORTABLE BARRIER (TPB)

(LEFT LANE CLOSURE SHOWN, RIGHT LANE CLOSURE SIMILAR)
(TWO LANE SECTION SHOWN, THREE LANE CLOSURE SIMILAR)

NOTES:

1. IMPACT ATTENUATOR FROM CURRENT ODOT APPROVED LIST, ODOT TYPE 3 AND SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS.
2. THE IMPACT ATTENUATOR AND PORTABLE BARRIER NEEDED FOR THIS DETAIL SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR SP 614 - MAINTAINING TRAFFIC AND SHALL INCLUDE ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO SET, RESET, AND REMOVE THE IMPACT ATTENUATOR AND PORTABLE BARRIER.
3. DISTANCE BASED ON MANUFACTURER'S RECOMMENDATION.
4. SP 626 BARRIER REFLECTORS @ 10' SPACING (YELLOW FOR LEFT LANE CLOSURE, WHITE FOR RIGHT LANE CLOSURE)
5. IMPACT ATTENUATORS INSTALLED AT LOCATIONS OTHER THAN UNDERPASS BRIDGE (SHOWN) SHALL BE INSTALLED PER ODOT STANDARD CONSTRUCTION DRAWING MT - 101.75.

DATE: DECEMBER 31, 2019

STANDARD DRAWING

TEMPORARY TRAFFIC CONTROL SINGLE LANE CLOSURE WITH PORTABLE BARRIER

TCR-14

OHIO TURNPIKE AND INFRASTRUCTURE COMMISSION

OHIO TURNPIKE

1 / 1

TCR-14 2019.12.31.DWG; 12/19/19 - 2:23pm

NOTES:

ALL SIGN SIZES ARE 48"x 48" EXCEPT AS FOLLOWS:
TC-3 (48"x60"); TC-6 (48"x24"); TC-10F (30"x24"); TC-10M (30"x16"); TC-13 AND 14 (48"x60"); TC-15 (72"x48"); TC-16 (60"x48"); TC-17 (60"x30"); TC-21 (48"X36"); TC-22L&R AND TC-23 (72"x36"); TC-28 (36"x48"); TC-29 (36"X48").

SPECIAL SIZES FOR SIGNS ON X-FOOTPRINT SIGN STANDS:
TC-3 (36"X48") AND TC-13 (36"x48").

ALL SIGNS ARE BLACK LEGENDS AND BORDERS ON FLUORESCENT ORANGE BACKGROUND EXCEPT AS FOLLOWS:
TC-9: WHITE ON RED. TC-13, TC-14, TC-29 AND THE BOTTOM HALF OF TC-3 AND TC-28 ARE BLACK ON WHITE. TC-19 IS WHITE ON GREEN. TC-8 AND TC-24 ARE RED, WHITE AND BLACK ON FLUORESCENT ORANGE; TC-20 RED ON WHITE.

DATE: OCTOBER 20, 2017

STANDARD DRAWING

TEMPORARY TRAFFIC CONTROL
SIGNS FOR MAINTENANCE AND CONSTRUCTION

TCR-15

1 / 1

OHIO TURNPIKE AND INFRASTRUCTURE COMMISSION

TCR-15 2017.10.20.dwg; 2/20/19 - 11:48am

PLAN

WIRE FABRIC DETAIL

SECTION A-A

NOTES

STEEL REINFORCING: In normal or wider lane widths, reinforcing may consist of two units with an approved longitudinal hinge. The hinge shallconsist of W4 or D4 steel wires connecting the Two units such that the longitudinal members on either side of the hinge will be properly spaced when the reinforcing is in the final postion.

Reinforcing steel in final position shall not touch either the dowels or tie bars.

THIS DRAWING REPLACES BP-1.1 DATED 10-28-94.

REVISION DATE 7-28-2000

STATE OF OHIO DEPARTMENT OF TRANSPORTATION ADMINISTRATOR
Larry F. Sutherland

STDS. ENGINEER M. Evans

OFFICE OF PAVEMENT ENGINEERING

STANDARD ROADWAY CONSTRUCTION DRAWING

CONCRETE PAVEMENT REINFORCING

SCD NUMBER BP-1.1

ACCEPTABLE METHOD OF FORMING JOINT

SAWED JOINT

NOTES

GENERAL: Longitudinal joints shall be used when specified on the typical section and shall be constructed as shown on this drawing in Items 451 and 452 Pavement and Item 305 Base.

The joint shall be on the centerline of the pavement unless otherwise shown on the plans. Where the pavement width exceeds 16', an additional longitudinal joint shall be introduced into the jointing details as directed by the Engineer.

Tie bars shall be #5 deformed bars. A satisfactory device shall be used to hold the tie bars in proper positions or they may be installed by a mechanical installing device. Tie bars shall be centered on the longitudinal joint as nearly as practical.

BUTT JOINT: The longitudinal joint between adjoining slabs poured in separate operations shall be butt joint with hook bolts or tie bars, unless otherwise shown on the plans. Bent tie bars shall not be permitted.

TYPE D (DRILLED TIED LONGITUDINAL) JOINT: Type D joints shall be constructed in accordance with CMS 255.05. The nylon or plastic retention disc shall be clear or opaque white in color. Grout shall meet the requirements or CMS 255.02. 5/8" expansion anchors, 712.01.A may be used in lieu of the #5 x 24" deformed bar and shall be installed according to the manufacture's recommendations.

The use of self drilling expansion shield anchors, 712.01.B shall not be permitted.

See sheet 2/2 for additional details.

TYPE D (DRILLED TIED LONGITUDINAL) JOINT

BUTT JOINT
w/ HOOK BOLT

BUTT JOINT
w/ TIE BAR

THIS DRAWING REPLACES BP-2.1 DATED 7-19-13.

STANDARD ROADWAY CONSTRUCTION DRAWING

LONGITUDINAL PAVEMENT JOINTS

OFFICE OF PAVEMENT ENGINEERING

STATE OF OHIO DEPARTMENT OF TRANSPORTATION ADMINISTRATOR: David J. Humphrey

STDS. ENGINEER: D. Miller

REVISION DATE: 7-17-2015

SCD NUMBER: BP-2.1

PLAN

HOOK BOLT ALTERNATE

HOOK BOLT

NYLON OR PLASTIC GROUT RETENTION DISCS FOR DOWEL/TIE BARS

(1/16" min. thick)

TABLE A			
Transverse Joint Spacing	Number of Tie Bars per Slab	Max. spacing between Tie Bars	Minimum Offset to Transverse Joint
15'	6	30"	15"
21'	8	30"	21"

SECTION A-A

TIE BAR OR HOOK BOLT SPACING

EDGING: Edge butt joints with a thin metal edger having a radius of 1/8". Finish the free edges of the pavement with a thin metal edger having a radius of 1/2". Any impression left in the surface of the pavement by the flat part of the edging tool shall be eliminated.

HOOK BOLTS: Threaded hook bolts and alternates shall be turned to a tight fit when installed in couplings. Ensure the coupling is located on the same side of the joint as the shorter (6" +/-1/4" hook bolt.

METAL STRENGTH: Tie bars, hook bolts assemblies, and the hook bolt alternate shall have a minimum yield strength of 40,000 psi.

SPACING: Tie bars shall not be located within 15" of any transverse joint.

THIS DRAWING REPLACES BP-2.1 DATED 7-19-13.

REVISION DATE 7-17-2015

STATE OF OHIO DEPARTMENT OF TRANSPORTATION ADMINISTRATOR David J. Humphrey

STDS. ENGINEER D. Miller

OFFICE OF PAVEMENT ENGINEERING

STANDARD ROADWAY CONSTRUCTION DRAWING

LONGITUDINAL PAVEMENT JOINTS

SCD NUMBER BP-2.1

ITEM 451, 452 & 305

SECTION THROUGH EXP. JOINT

LEGEND

1 Where T > 10", the sawcut depth shall be T/3. If using early entry saws, cut joints 2¼" to 2½" deep and ⅛" wide.

ITEM 452 and 305

(for shoulders, alleys, driveways, etc.)

CONTRACTION JOINTS SECTIONS

SIDE ELEVATION OF EXP. JOINT

(through Concrete Pavement or Base)

EXPANSION JOINTS

NOTES

GENERAL: Notes and details shown on this drawing shall be considered in conjunction with and supplemental to the pertinent specifications for portland cement concrete pavement and bases, and related incidentals.

JOINT COMPONENTS: This drawing is intended for use with a uniform depth pavement. When the project involves the placing of variable depth pavement, the joint components shall be held in place in accordance with the method shown in the plans or as approved by the Engineer.

CONTRACTION JOINTS: Contraction joints in Items 452 and 305 shall not be dowelled in alleys, private drives, or commercial drives.

Contraction joints of the type specified shall be spaced in accordance with the CONTRACTION JOINT SPACING Table.

SECTION THROUGH CONSTRUCTION JOINT

CONSTRUCTION JOINT

CONTRACTION JOINT SPACING	
Types of Pavement or Base	Maximum Spacing Between Joints
Item 451 Reinforced Concrete Pavement	21'
Item 452 Non-Reinforced Concrete Pavement	15'
Item 305 Concrete Base	15'

THIS SHEET REPLACES BP-2.2 DATED 7-16-04.

REVISION DATE 7-18-2008

STATE OF OHIO DEPARTMENT OF TRANSPORTATION ADMINISTRATOR David J. Humphrey

STDS. ENGINEER D. Miller

OFFICE OF PAVEMENT ENGINEERING

STANDARD ROADWAY CONSTRUCTION DRAWING

TRANSVERSE PAVEMENT JOINTS

SCD NUMBER BP-2.2

SECTION A-A

SECTION B-B

PLAN VIEW

J-LEG DETAIL
(ALTERNATE)

U-LEG DETAIL

NOTES

Refer to CMS 451.08 B and 709.13 for dowel specifications.

1) Wire sizes shown are minimum required.

2) All wire intersections are to be welded.

3) Stakes typically applied at working ends of dowel.

4) TOLERANCES:

5) A) ±1/4" per foot unless otherwise specified.

B) Centerline of individual dowels shall be parallel to each other, the surface and the centerline of the slab.

C) On centers should be ±1/2".

D) Dowels should be placed at mid-depth of slab.

6) J-Leg or U-Leg to be installed on inside or outside of subframe.

THIS SHEET REPLACES BP-2.2 DATED 7-16-04.

REVISION DATE	7-18-2008
STATE OF OHIO DEPARTMENT OF TRANSPORTATION ADMINISTRATOR	David J. Humphrey
STDS. ENGINEER	D. Miller
OFFICE OF PAVEMENT ENGINEERING	
STANDARD ROADWAY CONSTRUCTION DRAWING	TRANSVERSE PAVEMENT JOINTS
SCD NUMBER	BP-2.2

TYPE 1

TYPE 2

TYPE 2-A

TYPE 2-B

TYPE 3

TYPE 3-A

TYPE 3-B

TYPE 4

TYPE 4-A

TYPE 4-B

TYPE 4-C

TYPE 6

TYPE 7

TYPE 8

NOTES

GENERAL: This drawing shows alternate types of curb that may be used on various types of pavement. The typical section of the project shows the type to be used, also the thickness of the edge of the pavement or the edge of the curb and gutter section.

JOINTS: 1" expansion joints shall extend up to the top of the curb and shall be constructed in the curb and gutter section in such a manner that the joint seal will extend the full width of the gutter and into the curb face a sufficient distance to seal the joint to an elevation of a least 2" above the flow line of the gutter. Dowel bars shall be used in the curb and gutter section at expansion joints and to the surface of the pavement.

Transverse expansion joint material shall meet the requirements of Item 705.03.

GUTTER PLATE THICKNESS: Thickness of gutter plate "T" shall be 9" unless otherwise shown on the plans.

TOLERANCES: Dimensional tolerances are as follows:

Curbs: $^{-1}/_{32}$" to +¼".
Gutters: 0 to +½".

LEGEND

1 Expansion joint material and joint sealer are not required for the portion of the curb that is adjacent to a flexible pavement type. Both materials are required, as detailed, for the full height of rigid pavement and concrete bases.

2 Butt joints shall be provided between combined curb-and-gutter and new or existing rigid pavements, with tie bars or hook bolts provided at intervals of 5'. See SCD BP-2.1 for details of tie bars and hook bolts.

If the combined curb-and-gutter adjoins a new rigid base or an existing rigid base or pavement that is to be surfaced with asphalt concrete, a butt joint shall also be provided. However, tie bars or hook bolts shall be omitted when the vertical overlap ("V" in detail below) between the curb-and-gutter and rigid pavement is less than 7".

TYPE 9

THIS DRAWING REPLACES BP-5.1 DATED 7-20-18.

REVISION DATE	STATE OF OHIO DEPARTMENT OF TRANSPORTATION ADMINISTRATOR	STDS. ENGINEER	OFFICE OF ROADWAY ENGINEERING	STANDARD ROADWAY CONSTRUCTION DRAWING CONCRETE CURBS AND COMBINED CURB AND GUTTER	SCD NUMBER BP-5.1	1/1
1-18-2019	David L. Holstein	D. Fisher				

Use curb ramps with flared sides at locations with wide sidewalks.

Use curb ramps with returned curbs where buffer is wide enough to accommodate ramp slope.

Place on streets having wide turning radius and where sidewalks are narrow.

Curb ramp placement where streets have wide turning radius, and sufficient sidewalks width.

PERPENDICULAR CURB RAMPS

PARALLEL CURB RAMPS

COMBINATION CURB RAMPS

PREFERRED CONSTRUCTION PLACEMENT

Acceptable design on corners with wide turning radius where user is able to maneuver within crosswalk limits so as not to encroach into adjacent traveled lanes.

Use this design only for existing walks, and when site constraints prohibit other designs. The diagonal Type D ramp may be constructed as either a Perpendicular, Parallel or Combination curb ramp type. Avoid using where curb radii are less than 20'-0".

PERPENDICULAR RAMPS

DIAGONAL RAMP (Type D)

ACCEPTABLE CONSTRUCTION PLACEMENT

NOTES

GENERAL: This drawing shows curb ramp types details and placement examples for curb ramp construction, including the installation of detectable warnings.

Curb ramp types are shown on Sheet 2 and include Perpendicular, Parallel, and Combined types as specified to be constructed in the locations shown on the project plans.

Curb ramps added to an existing intersection or walk should be individually detailed on the project plans to assure that the design is appropriate for site constraints and all items can be constructed to ADA standards. The contractor may adjust the placement of curb ramps if existing field conditions warrant with the approval of the Engineer.

PAYMENT: Measure and pay for the ramp area within the shaded limits of this drawing as Item 608 Curb Ramp, Square Foot. This includes the cost of any curb or curb and gutter, detectable warnings, landing areas and any additional materials, installation, grading, forming, and finishing required within the shaded area.

Work beyond the shaded ramp/landing area is paid for as curb (609) and walk (608). Removal of existing curb, walk (or existing curb ramps) are paid under Item 202.

For at-grade crossing locations where only detectable warnings are required in order to acheive ADA compliance, measure and pay for the strip of detectable warnings as Item 608 Detectable Warning, Square Foot. The work to cast the tiles in place will also require removal of existing pavement (Item 202) to the nearest joint, or if no joint exists, a minimum of 4 feet.

THIS DRAWING REPLACES BP-7.1 DATED 7-18-14.

REVISION DATE 7-20-2018

STATE OF OHIO DEPARTMENT OF TRANSPORTATION ADMINISTRATOR David L. Holstein

STDS. ENGINEER D. Fisher

OFFICE OF ROADWAY ENGINEERING

STANDARD ROADWAY CONSTRUCTION DRAWING
NEW CURB RAMPS
(with Detectable Warnings)

SCD NUMBER BP-7.1

Type A1 (Perpendicular with flared sides)

Type A2 (Perpendicular with returned curb)

PERPENDICULAR CURB RAMP DETAILS

Type C1 (Combined with flared sides)

Type C2 (Combined with returned curb)

COMBINED CURB RAMP DETAILS

Type B1 (Single sided Parallel)

Type B2 (Double sided Parallel)

See Sheet 3 for Sections.

Type B3 (Single sided Parallel)

PARALLEL CURB RAMP DETAILS

NOTES CONTINUED

The running slope of the curb ramp shall be a 12:1 maximum or flatter. In existing sidewalks, where the maximum ramp slope is not feasible due to site constraints (e.g. utility poles or vaults, right-of-way limits) it may be reduced as follows:

A) 10:1 for a max. rise of 6",
B) 8:1 for a max. rise of 3",
C) 6:1 over a max. run of 2'-0" for historic areas where a flatter slope is not feasible.

To prevent chasing the grade indefinately, the transition from exisiting sidewalk to the shaded curb ramp area is not required to exceed 15 feet in length.

While ramps may be skewed to the crosswalk, the entire lower landing area must fall within the cross walk that the ramp serves and cannot be located in the traveled lane of opposing traffic.

The counter slope of the gutter or street at the foot of a curb ramp, landing, or blended transitions shall be 20:1 ot flatter.

The bottom edge of the ramp shall change planes perpendicular to the landing.

The edge of the curb shall be flush with the edge of the adjacent pavement and gutter and surface slopes that meet grade breaks shall also be flush.

Ramp landings shall be 4' min. x 4' min. with a 50:1 or flatter cross slope and running slope.

DETECTABLE WARNINGS: Install Detectable Warnings on each curb ramp with approved materials, as shown on Sheet 3. Install these proprietary products as per manufacturer's written instructions.

DRAINAGE: Contractor is to ensure the base of each constructed curb ramp allows for proper drainage, without exceeding allowable cross slope or ramp slopes. Vertical change in level exceeding 1/8" between the 1) pavement and gutter, and 2) gutter and ramp, are not allowed.

SURFACE TEXTURE: Texture concrete surfaces by coarse brooming transverse to the ramp slopes to be rougher than the adjacent walk.

JOINTS: Provide expansion joints in the curb ramp as extensions of walk joints and consistent with Item 608.03 requirements for a new concrete walk. Provide a 1/2" Item 705.03 expansion joint filler around the edge of ramps built in existing concrete walks. Lines shown on this drawing indicate the ramp edges and slope changes, and do not necessarily indicate joint lines.

THIS DRAWING REPLACES BP-7.1 DATED 7-18-14.

REVISION DATE 7-20-2018

STATE OF OHIO DEPARTMENT OF TRANSPORTATION ADMINISTRATOR David L. Holstein

STDS. ENGINEER D. Fisher

OFFICE OF ROADWAY ENGINEERING

STANDARD ROADWAY CONSTRUCTION DRAWING
NEW CURB RAMPS
(with Detectable Warnings)

SCD NUMBER BP-7.1

New gutter shown.

SECTION A-A NORMAL DETAIL

See Sheet 2.

SECTION A-A EXISTING WALK DETAIL

See Sheet 2.

SECTION B-B

See Sheet 2.

SECTION C-C

See Sheet 2.

SECTION D-D

See Sheet 2.

*Where possible, pour ramp area integral with the curb, otherwise use 6" thick walk.

DETAIL A

DETECTABLE WARNING ALIGNMENT

DETECTABLE WARNINGS NOTES

GENERAL: Detectable Warnings are a distinctive surface pattern of truncated domes which are detectable by cane or underfoot to alert people with vision impairments of their approach to streets and hazardous drop-offs.

PLACEMENT: Detectable warnings are to be installed at any location where pedestrians might cross paths with vehicular traffic lanes, such as the base of curb ramps or at blended curbs. A 24" strip of domes is to be installed for the full width of the ramp or walk. Typical street corner placement locations are shown on Sheet 1.

The depth of concrete underneath detectable warning products shall be a minimum of 4". See DETAIL A.

ALIGNMENT: Truncated domes should be aligned with the primary direction of the ramp as shown on the DETECTABLE WARNING ALIGNMENT Detail. Normally the detectable warnings should be flush with the back of the curb, but for skewed conditions see DETECTABLE WARNING ALIGNMENT Detail. For non-standard layouts, detectable warning materials may have to be mitered and placed segmentally.

PRODUCTS & COLORS: Color of the detectable warnings should contrast with surrounding concrete walk and ramp. Black is not an acceptable color. Approved products and guidance on color may be found on the Office of Roadway Engineering Service's Detectable Warnings Approved List. Install products as per manufacturer's printed instructions.

HEIGHT AND DIAMETER

SQUARE PATTERN, PARALLEL ALIGNMENT

RADIAL ALIGNMENT

TRUNCATED DOMES DETAILS

DOME ALIGNMENT ON RADIUSED CURB

THIS DRAWING REPLACES BP-7.1 DATED 7-18-14.

REVISION DATE 7-20-2018

STATE OF OHIO DEPARTMENT OF TRANSPORTATION ADMINISTRATOR David L. Holstein

STDS. ENGINEER D. Fisher

OFFICE OF ROADWAY ENGINEERING

STANDARD ROADWAY CONSTRUCTION DRAWING

NEW CURB RAMPS (with Detectable Warnings)

SCD NUMBER BP-7.1

See Sht. 2/2 for Sections

PLAN OF CATCH BASINS AND PAVEMENT JOINTS

FRAME

GRATE

NOTES

GRATE AND FRAME: Provide a design essentially the same and equally as strong as the one shown (see construction information table), or meet the requirements of CMS 711.14. Provide grate openings and dimensions as shown here unless otherwise shown in the plans.

Cast the following text into the top of the grate:

"DUMP NO WASTE" and **"DRAINS TO WATERWAY"**

Print text in bold, capital letters at least ½" high. "WATERWAY" may be substituted with "STREAM", "RIVER", "LAKE", etc. Actual placement and logo may vary per manufacturer.

BEARING AREAS: Fit and finish frame and grate to provide a firm and even seat for all portions of the grate in the frame. No projections are permitted on bearing areas of either casting, and the grate must seat in its frame without rocking. Fit, match and mark frame and grate before delivery to the project.

WALLS: Construct brick or cast-in-place walls with a nominal thickness of 8". Provide precast walls at least 6" thick with sufficient reinforcing to permit shipping and handling without damage.

CONCRETE: Use 4000 psi for cast-in-place concrete. Meet the requirements of CMS 706.13 for precast concrete and mark with the catch basin number. Reduce the wall thickness from the outside.

MINIMUM DEPTH: The minimum depth is the outside diameter (O.D.) of the outlet pipe plus 15".

OPENINGS: Ensure pipe openings are the O.D. of the pipe being supplied plus 2" when fabricated or field cut. Fill any voids per C&MS 611.

DOWELS: Furnish four 1"x18" dowels for pavement and curb. See **SCD BP-2.2** for dowel detail.

BLOCKOUT APRONS: Use 4000 psi compressive strength concrete. Cost of apron is not included in catch basin price when located in PCC pavement, and no deduction in normal pavement quantities is made because of blockout. When adjacent paving is asphalt, omit the dowels, and the cost of the concrete apron is included in the catch basin bid price. Cost of curb, if any, is included in CMS 609. For basins without curb, the grate elevation is 1" below the normal pavement slope measured at the center of the grate.

PAYMENT: All materials and labor, including excavation and backfilling, are paid for under **Item 611 - Catch Basin, No. 6.**

CONSTRUCTION INFORMATION
Minimum weight of grate, 210 lbs.
Minimum weight of frame, 265 lbs.

STATE OF OHIO DEPARTMENT OF TRANSPORTATION HYDRAULIC ENGINEER
Jeffery E. Syar

REVISIONS
7-20-01
7-19-02
7-15-05
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1-15-16

ROADWAY HYDRAULIC ENGINEER
M. Cozzoli

OFFICE OF HYDRAULICS ENGINEERING

STANDARD HYDRAULIC CONSTRUCTION DRAWING
CATCH BASIN No. 6

SCD NUMBER
CB-2.3

SECTION A-A

(See Sht. 1/2.)

1 Unless otherwise shown on plans

SHOWN WITH BRICK WALLS

SECTION B-B

(See Sht. 1/2.)

CATCH BASIN No. 6

STATE OF OHIO DEPARTMENT OF TRANSPORTATION HYDRAULIC ENGINEER
Jeffery E. Syar

REVISIONS
7-20-01
7-19-02
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ROADWAY HYDRAULIC ENGINEER
M. Cozzoli

OFFICE OF HYDRAULICS ENGINEERING

STANDARD HYDRAULIC CONSTRUCTION DRAWING
CATCH BASIN No. 6

SCD NUMBER
CB-2.3

CONSTRUCTION METHODS

PRECAST REINFORCED CONCRETE OUTLET

NOTES

EROSION CONTROL PAD: Provide erosion control at the outlet of all farm drains except where they outlet into a drainage structure.

PAYMENT: Erosion control pads are included in the unit price bid for Item 611 - __ Inch Conduit, Type __ .

PRECAST REINFORCED CONCRETE OUTLET: Provide a concrete outlet that meets CMS 611 requirements.

PAYMENT: The precast reinforced concrete outlet are paid at the contract unit price bid for Item 611 - Precast Reinforced Concrete Outlet.

Tied Concrete Block Mat, Type 1 is paid at the contract unit price bid for Item 601 - Tied Concrete Block Mat, Type 1.

SPRING DRAIN: Aggregates, tarred paper, tarred burlap, or geotextile fabric backfill and necessary excavation for spring drains are included for payment in the unit price bid per Foot for Item 605 - Aggregate Drains for Springs.

PAYMENT: The pipe is included in the unit price bid per Foot for Item 605 - 6" Unclassified Pipe Underdrains for Springs.

MASONRY COLLARS: Provide a masonry collar where plans require that a pipe extension be joined to the end of an existing pipe with a butt joint. The cost is included in the unit price bid for the new conduit.

RIPRAP CUTOFF WALL: The cost of the cutoff wall is included in the unit price bid for Item 601, Type D - Construct a 6" Reinforced Concrete Slab.

EROSION CONTROL PAD FOR OUTLET PIPE

MASONRY COLLAR

CONCRETE CRADLE

RIPRAP CUTOFF WALL

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

STATE HYDRAULIC ENGINEER

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ROADWAY HYDRAULIC ENGINEER
Matt Cozzoli

OFFICE OF HYDRAULIC ENGINEERING

STANDARD HYDRAULIC CONSTRUCTION DRAWING

OUTLETS, DRAINS AND SEWERS

SCD NUMBER
DM-1.1

SPRING DRAIN DETAIL

PLAN

SECTION A-A

STATE OF OHIO DEPARTMENT OF TRANSPORTATION

STATE HYDRAULIC ENGINEER

REVISIONS
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ROADWAY HYDRAULIC ENGINEER
Matt Cozzoli

OFFICE OF HYDRAULIC ENGINEERING

STANDARD HYDRAULIC CONSTRUCTION DRAWING

OUTLETS, DRAINS AND SEWERS

SCD NUMBER
DM-1.1

PLAN VIEW

DETAIL "A"

SECTION A-A

DETAIL "B"

PORTLAND CEMENT CONCRETE PULL BOX (725.08)

NOTES:

1. Pull boxes shall conform with C&MS 625.11 and 725.07 or 725.08 or 725.06.
2. Conduit openings shall be sealed after conduit installation.
3. Aggregate used for pull boxes shall be No. 7 or 8, at least 6" deep. Cost for aggregate shall be included with the unit price bid for each pull box.
4. Install pull box drains in accordance with C&MS Item 611 as specified in the plans unless otherwise directed by the Engineer.
5. A durable label reminding of the need to lubricate the threads of the cover hold down screws with grease or anti-seize compound shall be on the inside of the frame or upper wall.
6. See C&MS Item 625.11 for cover marking requirements.
7. Portland cement concrete pull box covers shall be cast iron with reinforcing ribs and matching frames by Neenah, Josam or Zurn foundries, or approved equal, or covers may be 1/2" minimum galvanized plate steel.
8. Tapered thickness portland cement concrete pull box walls may be used; however, minimum wall thickness shall be as indicated.
9. Lifting rings or wire pulling rings may be incorporated into precast portland cement concrete pull box walls.
10. Conduit entries for cast-in-place portland cement concrete pull boxes shall be cast as required. Precast portland cement concrete pull boxes may have field core drilled or sawed openings, or may have precast openings or knockouts. Knockouts shall be arranged to avoid compromising the structural integrity of the box.
11. Grounding braid, with lugs, shall be tinned copper, equivalent to #4 AWG. Do not use wire for the lid grounding conductor. Braid shall be bonded to the circuit grounding conductor by an approved (UL-listed) means. Braid length shall allow for complete removal of cover and placement on ground adjacent to the pull box, 48" minimum. Also, ground the pull box body using the braid or #4 AWG green wire. Pull box body ground attachment may be made on the corner angle U-nuts or on a body-mounted grounding stud (if provided).
12. Provide polymer concrete, fiberglass and plastic pull boxes (725.06, 725.07, and 725.12) in the following nominal sizes based on volume. Linear dimensions shall match to +/- 10% and volume by +/- 10%.

SIZE (nominal)	LENGTH (in.)	WIDTH (in.)	DEPTH (in.)
1.5	11	18	12
4	13	24	24
7	17	30	24
18	24	36	36
30	30	48	36

INSTALLATION WITH INDEPENDENT DRAIN

INSTALLATION WITH CONNECTION TO ROADWAY UNDERDRAIN

OFFICE OF ROADWAY ENGINEERING

REVISIONS
07-17-2020
04-17-2020
07-19-2019
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01-19-2018
07-21-2017
01-20-2017...

STDS ENGINEER
Duemmel

STATE OF OHIO DEPARTMENT OF TRANSPORTATION ADMINISTRATOR
Brenton Bogard

PULL BOX DETAILS

DESIGN AGENCY

SCD NUMBER
HL-30.11

SHEET 1 TOTAL 1

ON TRANSFORMER BASE

(See Note 8)

STEEL ANCHOR BASES

ON CONCRETE FOUNDATION

(Varmint Guard Required, See Note 7)

ON MEDIAN BARRIER

(Varmint Guard Required, See Note 7)
(Note 1)

NOTES:

1. For median-mounted poles, Pole Base Plate and Anchor Bolt dimensions will be modified as indicated on Standard Construction Drawing (SCD) HL-20.13.
2. For pole grounding details see SCD HL-60.11.
3. Breakaway bases shall not be used under pole in excess of manufacturer's rated limits for base.
4. Cast aluminum transformer bases shall not be used where overhead wiring is required.
5. For poles mounted on pilasters on bridge parapets, the anchor bolt shape and length will be modified as indicated in the structure plans.
6. Anchor bolts shall be headed or nutted per SCD HL-20.13. L-bends shall not be used.
7. Attach varmint guard with stainless steel band and minimum 2" overlap. Tie overlapping screen with stainless steel wire ties. Guard shall be solid sheet, welded wire mesh or expanded metal sheet, stainless steel or galvanized, with openings no larger than ⅜".
8. Aluminum cast transformer bases qualify as breakaway supports. Steel transformer bases do not.
9. Per NCHRP-350.
10. Use shims of aluminum for plumbing, or other material if approved by the pole manufacturer. Plumbing tolerance: +/- 1/2 degree. Only aluminum anchor bases may be mounted flush to the concrete without leveling nuts.
11. Coordinate with pole manufacturer to determine required bolt circle, bolt diameter, and bolt length. Bolt circle and diameter should match one of the combinations given in the Connector Bolts column of the table below. Minimum anchor bolt length is given in the Anchor Bolts column of the tables.

ALUMINUM ANCHOR BASES

(Note 10)

BOTTOM OF TRANSFORMER BASE

ON CONCRETE FOUNDATION

ON MEDIAN BARRIER

(Note 1)

ALUMINUM TRANSFORMER BASES (See Note 8)

TYPE	S	CONNECTOR BOLTS		W	ANCHOR BOLTS (Note 1) (Note 6)	
		BOLT CIRCLE	BOLTS		BOLT CIRCLE	BOLTS
AT-A	13"	13"	1"	15"	15"	1" x 40"
AT-C	15"	15"	1 ¼"	17"	17"	1 ¼" x 49"

STEEL TRANSFORMER BASES (See Note 8)

TYPE	S	CONNECTOR BOLTS		W	ANCHOR BOLTS (Note 1) (Note 6)	
		BOLT CIRCLE	BOLTS		BOLT CIRCLE	BOLTS
ST-A	13"	13"	1"	16"	15"	1" x 40"
ST-C	15"	15"	1 ¼"	18"	17"	1 ¼" x 49"
ST-B	17"	17"	1 ½"	25"	22"	1 ½" x 60"

OFFICE OF ROADWAY ENGINEERING

REVISIONS
04-17-2020
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01-16-2015

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STATE OF OHIO DEPARTMENT OF TRANSPORTATION ADMINISTRATOR
David L. Holstein

POLE BASE DETAILS

DESIGN AGENCY

SCD NUMBER
HL-10.13

SHEET 1 TOTAL 1

FRONT ELEVATION

SECTION A-A

NOTES:

1. Unless otherwise noted, dimensions and instructions apply to both the standard and alternate designs.
2. For sign attachment assemblies to be furnished with this support, construction details, and location of handholes, see Standard Construction Drawings (SCDs) TC-22.10 and TC-22.20.
3. For foundation details, see SCD TC-21.10.
4. The truss shall be cambered a minimum of 1" for a span of 50' or less. The camber shall be increased 1/4" for each 5' of span over 50'.
5. Use the alternate joint configuration shown for the end frame (Detail "B") for assembling the aluminum truss members.
6. Prevent contact between aluminum and galvanized parts with a minimum 1/16" thick chloroprene gasket or approved equal.
7. Flanges may be produced by machining (fabricated flange) or forging (forged flange). Cast flanges shall not be used. Flanges shall be round.

ALTERNATE JOINT

DETAIL "B"

END FRAME AND TRUSS END JOINT DETAILS

(See Note 5)

VIEW B-B

(ALTERNATE)

DETAIL "D"

(REVERSED VIEW)

UPPER SPAN SUPPORT

DETAIL "A"

LOWER SPAN SUPPORT

STANDARD FLANGE

SECTION C-C

ALTERNATE FLANGE

SECTION E-E

FLANGE DETAILS (See Note 7)

ALL DIMENSIONS IN INCHES, UNLESS OTHERWISE NOTED

DESIGN & ALT. NO.	A	END FRAME		TRUSS					STAINLESS STEEL FLANGE BOLTS	
		D	POLE SIZES	CHORD SIZES	DIAGONALS	FLANGE				
						E	F	G	NUMBER	DIAMETER
DESIGN 6	3' 0"	4' 5"	26' 0" x 8" x 4.36" x .239"	4 3/4 x .188	2 x .188	9.25	7 7/16	1 3/8	6	3/4
ALT DES. 6	3' 0"	4' 5"	26' 0"x 6 5/8" x .432"	4 1/2 x .237	1.9 x .200	9	7 1/2	-	8	5/8
DESIGN 8	5' 0"	6' 7"	27' 6" x 8" x 4.15" x .239"	5 1/2 x .250	2 1/2 x .188	11	8 1/2	1 1/2	6	3/4
ALT DES. 8	5' 0"	6' 7"	27' 6" x 6 5/8" x .432"	5 9/16 x .258	2 3/8 x .218	10	8 1/2	-	8	3/4

POLE BASE DETAIL

ANGLE SPAN SUPPORT

(ALTERNATE)

STRAIGHT TEE SPAN SUPPORT

SECTION D-D

THIS DRAWING REPLACES TC-7.65 DATED 01-15-2016.

STANDARD ROADWAY CONSTRUCTION DRAWING

ALUMINUM TRUSS OVERHEAD SIGN SUPPORT

SCD NUMBER **TC-7.65**

1 / 1

STATE OF OHIO DEPARTMENT OF TRANSPORTATION ADMINISTRATOR David L. Holstein

STDS. ENGINEER Duemmel

OFFICE OF ROADWAY ENGINEERING

REVISION DATE 07-20-2018

ARM ATTACHMENT

NOTES:

1. Arm plate hole diameter to be bolt diameter plus 1/8". Pole plate tapped hole to have threads with 75% min. full profile height. Threads may be retapped after galvanizing.
2. Prevent contact between aluminum and galvanized parts with a minimum 1/16" thick chloroprene gasket or approved equal.
3. For foundation details, see Standard Construction Drawing (SCD) TC-21.20.
4. The arm attachment plate shall be welded using a full penetration weld. The pole attachment to the base plate shall be welded using a full penetration weld.
5. For modification of pole to support roadway lighting, see SCD HL-10.12.
6. For location of handholes, see SCD TC-22.10.
7. The design loads were calculated as the equivalent amount of sign area that could be carried at the end of the arm.
8. The design loads were developed without applying galloping fatigue loads. Also, the stress requirements of note b. Table 11-2 in the AASHTO Code were not applied.
9. These structures should be inspected for excessive wind induced deflection in the vertical direction. If found, a damping plate should be placed on the arm.

POLE BASE DETAIL

SIGN BRACKET

THIS DRAWING REPLACES TC-16.21 DATED 01-19-2018.

REVISION DATE	STATE OF OHIO DEPARTMENT OF TRANSPORTATION ADMINISTRATOR	STDS. ENGINEER	OFFICE OF ROADWAY ENGINEERING
07-20-2018	David L. Holstein	Duemmel	

STANDARD ROADWAY CONSTRUCTION DRAWING

SINGLE ARM OVERHEAD SIGN SUPPORT

SCD NUMBER **TC-16.21**

THESE DESIGNS USE FULL PENETRATION WELDS AT THE ARM AND BASE PLATE CONNECTIONS

ALL DIMENSIONS IN INCHES, UNLESS OTHERWISE NOTED

DESIGN NO.	POLE ARM				TWO PIECE ARM				ARM ATTACHMENT								ANCHOR BASE				
	WALL THK.	SIZE	WALL THK.	SIZE	WALL THK.	SIZE	OVERLAP	ARM LENGTH	A	B	C	D	E	F	G	P	BOLT CIRCLE	S	J	T	H
5	.239	11″ x 8.06″ x 21′	.239	8″ x 4.64″ x 24′					14.5	12	10.5	8	1.25	1.50	1.25	0.25	15	15.63	10.63	2	2.13
6	.239	11″ x 8.06″ x 21′	.239	8″ x 4.22″ x 27′					14.5	12	10.5	8	1.25	1.50	1.25	0.25	15	15.63	10.63	2	2.13
7	.239	11″ x 8.06″ x 21′	.239	8″ x 3.80″ x 30′					14.5	12	10.5	8	1.25	1.50	1.25	0.25	15	15.63	10.63	2	2.13
8	.239	12″ x 9.06″ x 21′	.239	9″ x 4.38″ x 33′					14.5	12	10.5	8	1.25	1.50	1.25	0.25	16	17	11.31	2	2.13
9	.239	13″ x 10.06″ x 21′	.239	10″ x 4.96″ x 36′					16.5	14.5	12.5	9.5	1.25	2	1.25	0.25	18	18.5	12.73	2	2.13
10	.239	14″ x 11.06″ x 21′	.239	11″ x 5.54″ x 39′					16.5	14.5	12.5	9.5	1.25	2	1.25	0.25	20	20.5	14.13	2	2.13
11	.239	14″ x 11.06″ x 21′	.239	11″ x 5.12″ x 42′	.239 .179	11″ x 8.62″ x 17′ + 9.19″ x 5.52″ x 26′-3″	15	42′	16.5	14.5	12.5	9.5	1.25	2	1.25	0.25	20	20.5	14.13	2	2.13
12	.299	14″ x 11.06″ x 21′			.299 .179	11″ x 8.62″ x 17′ + 9.19″ x 5.10″ x 29′-3″	15	45′	16.5	14.5	12.5	9.5	1.25	2	1.375	0.25	20	20.5	14.13	2	2.38
13	.250	16″ x 13.06″ x 21′			.250 .179	13″ x 8.80″ x 30′ + 9.43″ x 5.02″ x 31′-6″	18	60′	17.5	22	13.5	18	1.50	2	1.375	0.375	22	23	15.56	2	2.38
14	.250	16″ x 13.06″ x 21′			.250 .179	13″ x 7.82″ x 37′ + 8.45″ x 3.34″ x 36′-6″	18	72′	17.5	22	13.5	18	1.50	2	1.375	0.375	22	23	15.56	2	2.38

THIS DRAWING REPLACES TC-16.21 DATED 01-19-2018.

REVISION DATE 07-20-2018

STATE OF OHIO DEPARTMENT OF TRANSPORTATION ADMINISTRATOR David L. Holstein

STDS. ENGINEER Duemmel

OFFICE OF ROADWAY ENGINEERING

STANDARD ROADWAY CONSTRUCTION DRAWING

SINGLE ARM OVERHEAD SIGN SUPPORT

SCD NUMBER TC-16.21

NOTE:

Reinforcing schedule details are typical, except for vertical steel. See "Vertical Rebar" diagrams on SCD TC-21.20.

PLAN

ELEVATION

ALL DIMENSIONS IN INCHES, UNLESS OTHERWISE NOTED

SUPPORT TYPE	TRUSS BOX SIZE	D	$D_{min.}$	ANCHOR BOLTS					
				CIRCLE	DIA.	LENGTH	TOP THREAD LENGTH	P	THREADS PER INCH
7.65 and 7.2-7.6 (Al. Truss)	3'-0"	4'-5"	11'-0"	11	1 ¼	54	8	5	7
	4'-0"	5'-7"							
	5'-0"	6'-7"							
15.115 and 15.8 (St. Truss)	3'-4" ±	5'-3"	12'-0"	12 ½	1 ½	55	9	6	6
	5'-0"	6'-7"							

*** Reinforcement Schedule for TC-21.10 Tie Beam and TC-21.50 - 42" Wall**
(For Each Foundation)

MARK	No.	LENGTH	TYPE
401	12" c/c + 1	7'-6"	BT.
402	12" c/c	10'-6"	BT.
601	8	2'-0"	STR.
602	3	D + 4'-0"	BT.
603	6	D + 2'-0"	BT.

*** Reinforcement Schedule for TC-21.50 - 57" Wall**
(For Each Foundation)

MARK	No.	LENGTH	TYPE
401	12" c/c + 1	7'-6"	BT.
402	12" c/c	13'-2"	BT.
601	8	2'-0"	STR.
602	4	D + 4'-0"	BT.
603	8	D + 2'-0"	BT.

* Length of Vertical Steel = D_{min}-5" (all bar sizes)

** 401 for 36" dia. drilled shaft: dia. = 2'-6"
bar length = 9'-1"
401 for 48" dia. drilled shaft: dia. = 3'-6"
bar length = 12'-3"

NOTES:

1. Tie anchor bolts to rebar cage near the top and bottom of the anchor bolts. All rebar shall be epoxy coated.
2. D_{min} may be deeper as required in the plans.
3. When required by local conditions and approved by the Engineer, alternate foundation designs are acceptable.
4. Anchor bolts shall be ASTM F1554, Grade 105. Threads shall be UNC-2A, and may be either rolled or cut, and coarse threaded. The embedded end of the anchor bolt shall be headed or threaded with a heavy hex nut. Anchor bolt material may be smooth steel rod that is threaded at the ends or threaded over its entire length. Hex nuts shall be ASTM A563, American Standard heavy hex, Grade DH, with UNC-2B threads. Plate washers shall be A709 Grade 36 or Grade 50. Anchor bolts shall be hot-dip galvanized over their entire length, as per C&MS 711.02, after fabrication and threading. All nuts and plate washers shall be galvanized per C&MS 711.02.
5. At locations where the existing slope is 6:1 or greater, the buried depth of foundation shall apply to the low side of the slope. Set the top of the foundation 2" above the existing surface on the high side of the slope. The additional depth of foundation necessary to meet these requirements shall be added to the formed top.
6. The 601 bars are used to tie the anchor bolts to the 603 bars.

NUTTED ANCHOR BOLT OPTION

HEADED ANCHOR BOLT OPTION

THIS DRAWING REPLACES TC-21.10 DATED 07-21-2017.

REVISION DATE 07-19-2019

STATE OF OHIO DEPARTMENT OF TRANSPORTATION ADMINISTRATOR David L. Holstein

STDS. ENGINEER Roth

OFFICE OF ROADWAY ENGINEERING

STANDARD ROADWAY CONSTRUCTION DRAWING

SIGN SUPPORT FOUNDATIONS

SCD NUMBER TC-21.10

ANCHOR BASE

NUTTED ANCHOR BOLT OPTION

HEADED ANCHOR BOLT OPTION

ALL DIMENSIONS IN INCHES

DIA.	TOP THREAD LENGTH	THREADS PER INCH	PLATE WASHER DIAMETER
1 ¼	8	7	3
1 ½	9	6	3
1 ¾	9	5	4
2	9	4 ½	4
2 ¼	10	4 ½	5
2 ½	10	4	5
3	12	4	6

ANCHOR BOLTS

NOTES:

1. A special foundation design will be required when cohesive soil with undrained shear strength of less than 2000 lb/ft² or granular soil with an angle of internal friction less than 30° and a wet density less than 120 lb/ft³ is encountered.
2. Provide all anchor bolts with standard steel hex nuts, leveling nuts, and plain washers. The nuts shall be capable of developing the full strength of the anchor bolts. Anchor bolts shall be Grade 105. Threads shall be UNC-2A, and may be either rolled or cut, and coarse threaded. The embedded end of the anchor bolt shall be headed or threaded with a heavy hex nut. Anchor bolt material may be smooth steel rod that is threaded at the ends or threaded over its entire length. Hex nuts shall be ASTM A563, American Standard heavy hex, Grade DH, with UNC-2B threads. Plate washers shall be A709 Grade 36 or Grade 50. Anchor bolts shall be hot-dip galvanized over their entire length, as per C&MS 711.02, after fabrication and threading. All nuts and plate washers shall be galvanized per C&MS 711.02.
3. Provide a minimum of one capped 2" conduit ell in Standard Construction Drawings (SCDs) TC-81.10 and TC-81.21 foundations for future use. This ell is in addition to any other conduits specified in the plans.
4. Tie spacing, starting from the top of the drilled shaft, shall be 3" between the first two ties and 12" spacing thereafter.
5. All reinforcing steel shall be epoxy coated and comply with and be placed in accordance with CMS 509. Lap all rebar, including the bars, per the Lap Length table in 509. Rebar end hooks not required. Rebar cage shall extend to within 3 ½" ± ½" of top and bottom of foundation.
6. Use ½" preformed joint filler as per C&MS 705.03 between foundations and adjacent paved areas.
7. At locations where the existing slope is 6:1 or greater, the buried depth of foundation shall apply to the low side of the slope. Set the top of the foundation 2" above the existing surface on the high side of the slope. The additional depth of foundation necessary to meet these requirements shall be added to the formed top.
8. In paved areas only, and only with permission of the Engineer, a construction joint may be placed to allow matching of the square, formed top to the finished pavement elevation. The location of this construction joint shall be at the top of the cylindrical portion of the drilled shaft. An ODOT inspector must be present during construction of each permitted joint, to assure adequate construction joint bonding by compliance with C&MS 511.
9. When two foundation diameters (W) are specified, the Contractor may choose between them interchangeably.

ALL DIMENSIONS IN INCHES, UNLESS OTHERWISE NOTED

TC-9.10 TYPE SUPPORTS					
DESIGN NO.	D (feet)	W	ANCHOR BOLTS		
			SIZE	CIRCLE	P
1	8	30	1 ½ x 56	13 ½	6 ¾
2	8	30	1 ½ x 56	13 ½	6 ¾
3	9	36	1 ¾ x 57	16	7 ¾
TC-9.30 TYPE SUPPORTS					
1	8	30	1 ½ x 56	13 ½	6 ¾
2	9	36	1 ¾ x 57	15	7 ¾
3	10	36	2 x 58	20	8 ½
4	11	36	2 ¼ x 58	22	9
5	11	36	2 ¼ x 58	22	9

TC-16.21 & TC-81.21 TYPE SUPPORTS					
DESIGN NO.	D (feet)	W	ANCHOR BOLTS		
			SIZE	CIRCLE	P
1	8	30	1 ½ x 56	13 ½	6 ¾
2	8	30	1 ½ x 56	15	6 ¾
3	9	30	1 ½ x 56	16	6 ¾
4	10	36	1 ¾ x 57	18	7 ¾
5	9	36	1 ¾ x 57	15	7 ¾
6	9	36	1 ¾ x 57	15	7 ¾
7	9	36	1 ¾ x 57	15	7¾
8	9	36	1 ¾ x 57	16	7 ¾
9	10	36	1 ¾ x 57	18	7 ¾
10	10	36	1 ¾ x 57	20	7 ¾
11	10	36	1 ¾ x 57	20	7 ¾
12	11	36	2 x 58	20	8 ½
13	15	36	2 x 58	22	8 ½
14	15	36	2 x 58	22	8 ½

TC-17.10 & 81.10 TYPE SUPPORTS					
DESIGN NO.	D (feet)	W	ANCHOR BOLTS		
			SIZE	CIRCLE	P
1	7	30	1 ¼ x 55	10	5 ¾
2	7	30	1 ½ x 56	12 ½	6 ¾
3	8	30	1 ½ x 56	13 ½	6 ¾
4	8	36	1 ¾ x 57	15	7 ¾
5	9	36	1 ¾ x 57	16	7 ¾
6	9	36	1 ¾ x 57	16	7 ¾
7	10	36	2 x 58	18	8 ½
8	10	36	2 x 58	20	8 ½
9	10	36	2 x 58	22	8 ½
10	11	36	2 ¼ x 58	22	9
11	11	36	2 ¼ x 58	22	9
12	12	36	2 ½ x 59	23 ½	9 ¾
13	16	42 or 48	3 x 61	26	11 ¾
14	16	48	3 x 61	34	11 ¾

TC-12.30 TYPE SUPPORTS					
DESIGN NO.	D (feet)	W	ANCHOR BOLTS		
			SIZE	CIRCLE	P
1	9	36	1 ¾ x 57	15	7 ¾
2	9	36	1 ¾ x 57	15	7 ¾
3	11	36	2 x 58	18	8 ½
4	11	36	2 x 58	18	8 ½
5	11	36	2 x 58	22	8 ½
6	11	36	2 x 58	22	8 ½
7	15	36	2 ½ x 59	23 ½	9 ¾
8	15	36	2 ½ x 59	23 ½	9 ¾
9	15	36	2 ½ x 59	23 ½	9 ¾
10	17	42 or 48	2 ½ x 59	25 ½	9 ¾
11	17	42 or 48	2 ½ x 59	25 ½	9 ¾
12	18	42 or 48	3 x 61	25 ½	11 ¼

VERTICAL REBAR

THIS DRAWING REPLACES TC-21.20 DATED 01-19-2018.

STANDARD ROADWAY CONSTRUCTION DRAWING

FOUNDATIONS

SCD NUMBER **TC-21.20**

1 / 1

OFFICE OF ROADWAY ENGINEERING

STDS. ENGINEER Duemmel

STATE OF OHIO DEPARTMENT OF TRANSPORTATION ADMINISTRATOR David L. Holstein

REVISION DATE 07-20-2018

SWITCH ENCLOSURE BRACKET

4" x 8" HANDHOLE

NOTES:

1. U-bolts, nuts and washers shall be stainless steel for use with aluminum truss chords. When used with galvanized chords, the U-bolt only may be galvanized steel.
2. Prevent contact between aluminum and galvanized parts with a minimum 1/16" thick cholorprene gasket or approved equal. No gasket is required between stainless steel and aluminum.
3. When any sidewalk is within 5' of the pole base, increase the 54 3/4" dimension to 80".

POLE EXTENSION
FOR
LIGHTING LUMINAIRE

SWITCH ENCLOSURE AND
HANDHOLE ORIENTATION

ALTERNATE HANDHOLE
COVER ATTACHMENT

THIS DRAWING REPLACES TC-22.10 DATED 01-19-2001.

REVISION DATE	10-18-2013
STATE OF OHIO DEPARTMENT OF TRANSPORTATION ADMINISTRATOR	James Young
STDS. ENGINEER	H. Suter
OFFICE OF ROADWAY ENGINEERING	
STANDARD ROADWAY CONSTRUCTION DRAWING	MISCELLANEOUS OVERHEAD SIGN SUPPORT DETAILS
SCD NUMBER	TC-22.10

DOUBLE CHORDS

SINGLE ARM

ALTERNATE CLAMP

NOTES:

1. Sign brackets shall be a 4" x 3" x 1/4" aluminum zee at 2.85 lb/ft.
2. Provide intermediate sign brackets if the sign extends more than 4' above or below an attachment point.
3. U-bolts, other bolts, nuts and washers shall be stainless steel for use with aluminum chords. When used with galvanized sign structures the U-bolts only may be galvanized steel.

   The inside diameter of U-bolts used to attach the sign attachment assembly aluminum zee brackets to the overhead sign support horizontal member shall have a tolerance of +0.5, -0.0" relative to the outside diameter of the overhead sign support horizontal member at the attachment point.
4. The outer flange of the sign attachment assembly aluminum zee brackets may be oriented in either direction. However, at least one zee bracket per each individual sign shall be oriented with the outer flange in the opposite direction of the others.
5. Prevent contact between aluminum and galvanized parts with a minimum 1/16" thick chloroprene gasket or approved equal.
6. Type A shall be for supports where the sign height is less than 1' greater than the attachment point spacing.
7. Type B shall be for back-to-back mounted signs.
8. Detail "C" - fixture support arm mounting for lighted signs complying with Plan Insert Sheet 203121.
9. Attach gusset plates by bolting or welding.

ATTACHMENT POINT SPACING

SUPPORT TYPE	DESIGN	S
7.2	1	2'-4"
	2	3'
	3	4'
7.3	1 & 2	3'
	3 & 4	4'
7.4 7.5 7.6	1	3'
	2 & 3	4'
	4	5'
7.65	6 & 6 Alt.	3'
	8 & 8 Alt.	5'
9.12	Single Arm	
9.24	1 Thru 4	4'
10.48	1 Thru 5	4'
	6 Thru 8	6'
11.08	Single Arm	
12.24	1 Thru 4	4'
	5 Thru 8	6'
12.30	1 - 4 Alt.	4'
	5 - 12 Alt.	6'
15.8	All	3'
15.115	All	5'
16.10	Single Arm	

DETAIL "C"
(See Note 8)

THIS DRAWING REPLACES TC-22.20 DATED 10-18-2013.

REVISION DATE	STATE OF OHIO DEPARTMENT OF TRANSPORTATION ADMINISTRATOR	STDS. ENGINEER	OFFICE OF ROADWAY ENGINEERING
01-17-2014	Reynaldo Stargell	H. Suter	

STANDARD ROADWAY CONSTRUCTION DRAWING

SIGN ATTACHMENT ASSEMBLIES

SCD NUMBER **TC-22.20**

TYPE A
(See Note 6)

SIGN BRACKET

L (FEET)	NUMBER OF BRACKETS	BRACKET SPACING (INCHES)								
4	2	6	36	6						
5		6	48	6						
6		6	60	6						
7		6	72	6						
8		12	72	12						
9		12	84	12						
10		12	96	12						
11		18	96	18						
12	3	6	66	66	6					
13		6	72	72	6					
14		12	72	72	12					
15		18	72	72	18					
16		12	84	84	12					
17		18	84	84	18					
18		12	96	96	12					
19		18	96	96	18					
20	4	12	72	72	72	12				
21		18	72	72	72	18				
22		6	84	84	84	6				
23		12	84	84	84	12				
24		18	84	84	84	18				
25		6	96	96	96	6				
26		12	96	96	96	12				
27		18	96	96	96	18				
28	5	12	78	78	78	78	12			
29		6	84	84	84	84	6			
30		12	84	84	84	84	12			
31		18	84	84	84	84	18			
32		12	90	90	90	90	12			
33		18	90	90	90	90	18			
34		12	96	96	96	96	12			
35		18	96	96	96	96	18			
36	6	6	84	84	84	84	84	6		
37		12	84	84	84	84	84	12		
38		18	84	84	84	84	84	18		
39		9	90	90	90	90	90	9		
40		15	90	90	90	90	90	15		
41		6	96	96	96	96	96	6		
42		12	96	96	96	96	96	12		
43		18	96	96	96	96	96	18		
44	7	12	84	84	84	84	84	84	12	
45		18	84	84	84	84	84	84	18	
46		6	90	90	90	90	90	90	6	
47		12	90	90	90	90	90	90	12	
48		18	90	90	90	90	90	90	18	
49		6	96	96	96	96	96	96	6	
50		12	96	96	96	96	96	96	12	
51		18	96	96	96	96	96	96	18	
52	8	18	84	84	84	84	84	84	84	18
53		24	84	84	84	84	84	84	84	24
54		9	90	90	90	90	90	90	90	9
55		15	90	90	90	90	90	90	90	15
56		21	90	90	90	90	90	90	90	21
57		6	96	96	96	96	96	96	96	6
58		12	96	96	96	96	96	96	96	12
59		18	96	96	96	96	96	96	96	18

TYPE B
(See Note 7)

GUSSET PLATE

THIS DRAWING REPLACES TC-22.20 DATED 10-18-2013.

REVISION DATE	STATE OF OHIO DEPARTMENT OF TRANSPORTATION ADMINISTRATOR	STDS. ENGINEER	OFFICE OF ROADWAY ENGINEERING
01-17-2014	Reynaldo Stargell	H. Suter	

STANDARD ROADWAY CONSTRUCTION DRAWING

SIGN ATTACHMENT ASSEMBLIES

SCD NUMBER **TC-22.20**

TAPERED TUBE

COMBINATION POLE

BASE PLATE

NOTES:

1. Signal cable entrance shall be a 3" blind half coupling provided in each pole.
2. Service wire entrance shall be a 1 ½" blind half coupling, when required by the plans. Orientation and height shall be as required by the plans.
3. Span wire clamp shall be galvanized steel, capable of resisting a load of 12,500 pounds minimum without permanent distortion.
4. For foundation details, including anchor bolt details, see Standard Construction Drawing (SCD) TC-21.20.
5. The base plate shall be welded to two ply poles with AWS prequalified welds in conformance with CMS 730.04.
6. Alternate messenger wire assembly (wrapping) as shown on SCD TC-17.10 or TC-84.20 may be used in lieu of the span wire clamp if specified in the construction plans.
7. A minimum of one full bolt thread shall remain above the anchor nut.
8. All unused couplings shall be provided with a removable galvanized cast iron plug.
9. For construction details and location of handholes, see SCD TC-22.10.
10. For pole and plate dimensions, see sheet 2.

POLE DETAILS

ANCHOR TYPE SHACKLE

SPAN WIRE CLAMP (TYP.)

THIS DRAWING REPLACES TC-81.10 DATED 01-15-2016.

REVISION DATE	STATE OF OHIO DEPARTMENT OF TRANSPORTATION ADMINISTRATOR	STDS. ENGINEER	OFFICE OF ROADWAY ENGINEERING	STANDARD ROADWAY CONSTRUCTION DRAWING	SCD NUMBER
07-15-2016	David L. Holstein	Duemmel		STRAIN POLE DETAILS	TC-81.10

ALL DIMENSIONS IN INCHES, UNLESS OTHERWISE NOTED

DESIGN NO.	POLE HEIGHT (FT)	BASE MOMENT AT YIELD (FT KIPS)	MAX DESIGN BASE MOMENT (FT KIPS) (NOTE 3)	TAPERED (NOTE 1)		TAPERED (NOTE 2)			ANCHOR BASE				
				BASE DIA.	MIN. WALL THICKNESS	BASE DIA.	MIN. WALL THICKNESS	NO. OF SIDES	BOLT CIRCLE	F	S	T	H
1	20	39.5	——	7	.239	7	.239	N/A	10	7.0625	10.50	1.25	1.625
2	24	67.0	——	9	.239	9	.239	N/A	12.50	8.875	12.75	1.50	1.875
3	26	83.4	——	10	.239	10	.239	N/A	13.50	9.5625	14.125	1.50	1.875
4	26	101.0	——	11	.239	11	.239	N/A	15	10.625	15.625	2	2.125
5	30	121.0	——	12	.239	12	.239	N/A	16	11.3125	17	2	2.125
6	30	149.0	——	12	.299	12	.250	10	16	11.3125	17	2	2.125
7	30	176.0	——	13	.299	13	.250	12	18	12.75	18.50	2	2.375
8	30	206.0	——	14	.299	15	.219	14	20	14.125	20.50	2	2.375
9	30	228.0	——	12	.478 (2 PLY)	14.75	.250	14	22	15.50	23	2.50	2.375
10	32	270.0	——	13	.478 (2 PLY)	16	.250	16	22	15.50	23	2.50	2.625
11	32	316.0	——	14	.478 (2 PLY)	15.50	.313	14	22	15.50	23	2.50	2.625
12	32	385.0	——	14	.598 (2 PLY)	17.25	.313	16	23.50	16.625	24.50	2.50	2.875
13	32	——	590	18	.626	18	.500	14	26	18.38	30	3.50	3.375
14	32	——	900	23	.563	22	.500	16	34	24.04	36.5	3.50	3.375

NOTES:

1. Tapered tube shall be steel with a minimum of 55,000 PSI yield stress after galvanizing.
2. Designs 1 thru 5 tapered steel pole shall be ASTM A595M steel with a minimum of 55,000 PSI yield strength after galvanizing. Designs 6 thru 14 shall be ASTM A572M grade 55 or 65 steel with a minimum of 55,000 or 65,000 PSI yield strength after galvanizing, respectively.
3. Design 13 and 14 strain poles are AASHTO 1994 compliant.

THIS DRAWING REPLACES TC-81.10 DATED 01-15-2016.

REVISION DATE 07-15-2016

STATE OF OHIO DEPARTMENT OF TRANSPORTATION ADMINISTRATOR David L. Holstein

STDS. ENGINEER Duemmel

OFFICE OF ROADWAY ENGINEERING

STANDARD ROADWAY CONSTRUCTION DRAWING

STRAIN POLE DETAILS

SCD NUMBER TC-81.10