

UTILITIES/AUTHORITIES	
<u>GAS SERVICE</u> ELIZABETHTOWN GAS COMPANY 520 GREEN LANE, UNION, NJ 7083 PHONE: (908) 662-8321 CONTACT: GREGORY J. BALINT	
<u>CABLE SERVICE</u> COMCAST CABLEVISION OF NJ 800 RAHWAY AVENUE, UNION, NJ 07083 PHONE: (908) 851-2258 CONTACT: GEORGE PALYCA	
<u>ELECTRIC SERVICE</u> PUBLIC SERVICE ELECTRIC AND GAS COMPANY 472 WESTON CANAL ROAD, SOMERSET, NJ 08873 PHONE: (732) 764-3067 CONTACT: JOHN GRABENSTEIN	
<u>WATER SERVICE</u> NEW JERSEY AMERICAN WATER COMPANY 1341 NORTH AVENUE, PLAINFIELD, NJ 07061 PHONE: (908) 791-3456 CONTACT: MICHAEL F. BANGE	
<u>TELEPHONE SERVICE</u> VERIZON COMMUNICATIONS 290 W. MT PLEASANT AVENUE, LIVINGSTON, NJ 07039 PHONE: (973) 422-5156 CONTACT: DARREN CRAY	
<u>SEWER SERVICES</u> TWP OF CRANFORD SEWER DEPARTMENT ROUND HOUSE, 364 NORTH AVENUE PHONE: (908) 709-7217 CONTACT: ERIK HASTRUP	
<u>RAHWAY VALLEY SEWERAGE AUTHORITY</u> 1050 EAST HAZELWOOD AVENUE, RAHWAY, NJ 07065 PHONE: (732) 388-0868 CONTACT: JOHN BUONOCORE	
TOWNSHIP OF CRANFORD	
KATHLEEN MILLER PRUNTY, MAYOR BRIAN ANDREWS, DEPUTY MAYOR/COMMISSIONER THOMAS H. HANNEN, JR., COMMISSIONER JASON GAREIS, COMMISSIONER MARY O'CONNOR, COMMISSIONER PATRICIA DONAHUE, TOWNSHIP CLERK JAMIE CRYAN, TOWNSHIP ADMINISTRATOR	
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NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION

1. EXISTING FEATURES SHOWN ON THIS PLAN WERE BASED ON INFORMATION FROM THE SURVEY ENTITLED, "RIGHT-OF-WAY AND TOPOGRAPHIC SURVEY FOR MAKATOMI DRIVE AREA ROADWAY IMPROVEMENTS" DATED 7/8/2020, FOR THE TOWNSHIP OF CRANFORD, PREPARED BY MASER CONSULTING.
2. THE HORIZONTAL POSITION OF THIS SURVEY IS BASED ON GPS OBSERVATIONS TIED TO THE KEYNET VIRTUAL REFERENCE STATION SYSTEM RELATIVE TO THE NEW JERSEY STATE PLANE COORDINATE SYSTEM, NAD 83. THE VERTICAL POSITION OF THE HEREON SURVEY IS BASED ON GPS OBSERVATIONS TIED TO THE KEYNET VIRTUAL REFERENCE STATION SYSTEM, ADJUSTED AND RELATIVE TO THE NORTH AMERICAN DATUM (NAVD 88).
3. PROPERTY LINES ALONG THE PUBLIC RIGHT-OF-WAY WERE ESTABLISHED. ALL OTHER, PROPERTY LINES, AND EASEMENTS ARE APPROXIMATE AND BASED UPON TAX MAPS.
4. THE LOCATION OF ALL UNDERGROUND UTILITIES AS SHOWN HEREON ARE APPROXIMATE AND ARE BASED ON VISIBLE ABOVE GROUND STRUCTURES AND UTILITY MARK OUTS. NO EXCAVATIONS WERE MADE DURING THE PROGRESS OF THIS SURVEY TO LOCATE BURIED UTILITY STRUCTURES. ADDITIONAL BURIED UTILITY STRUCTURES MAY BE ENCOUNTERED. THE CONTRACTOR SHALL HAVE ALL UNDERGROUND UTILITIES FIELD VERIFIED BY THE PROPER UTILITY COMPANIES BEFORE ANY CONSTRUCTION BEGINS.

3. ALL MATERIALS, WORKMANSHIP, AND CONSTRUCTION RELATED TO THE PROPOSED IMPROVEMENTS SHOWN HEREIN SHALL BE IN ACCORDANCE WITH THE FOLLOWING, UNLESS SPECIFICALLY AMENDED OR SUPPLEMENTED BY CONTRACT DOCUMENTS:
 - A. NJ DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2019"; AS CURRENTLY AMENDED;
 - B. NJ DEPARTMENT OF TRANSPORTATION "STANDARD ROADWAY CONSTRUCTION - TRAFFIC CONTROL - BRIDGE CONSTRUCTION DETAILS, 2016"; AS CURRENTLY AMENDED;
 - C. "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES"; AS CURRENTLY AMENDED;
 - D. CURRENT PREVAILING MUNICIPAL, COUNTY AND/OR STATE AGENCY SPECIFICATIONS, STANDARDS, CONDITIONS AND REQUIREMENTS;
 - E. CURRENT PREVAILING UTILITY COMPANY/AUTHORITY SPECIFICATIONS, STANDARDS, AND REQUIREMENTS;
 - F. CURRENT MANUFACTURER'S SPECIFICATIONS, STANDARDS AND REQUIREMENTS;
2. THE CONTRACTOR IS RESPONSIBLE FOR PROJECT SAFETY INCLUDING PROVISION OF ALL SAFETY DEVICES AND TRAINING REQUIRED.
3. THE CONTRACTOR IS RESPONSIBLE FOR THOROUGHLY EXAMINING THE PROJECT PLANS, SPECIFICATIONS, DETAILS, AND SITE. THE CONTRACTOR SHALL NOTIFY THE UNDERSIGNED PROFESSIONAL IMMEDIATELY IF ANY SITE CONDITIONS DIFFER MATERIALLY FROM THOSE REPRESENTED HEREIN.
4. THE CONTRACTOR SHALL OBTAIN PERMITS REQUIRED FOR THE PROPOSED IMPROVEMENTS.
5. ALL MATERIALS MUST BE AMERICAN MADE. THE CONTRACTOR MUST PROVIDE THE ENGINEER WITH SHIPPING AND DELIVERY TICKETS/RECEIPTS FOR ALL MATERIALS TO USED FOR CONSTRUCTION OF THE PROPOSED IMPROVEMENTS.
6. THE CONTRACTOR SHALL OBTAIN SHOP DRAWING APPROVAL PRIOR TO THE INSTALLATION OF EACH ITEM. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR REVIEW AND APPROVAL AT LEAST TWO (2) WEEKS PRIOR TO ORDERING MATERIALS.
7. THE CONTRACTOR IS RESPONSIBLE FOR ALL STAKEOUT AND LAYOUT, AS NECESSARY, TO CONSTRUCT THE PROPOSED IMPROVEMENTS IN STRICT CONFORMANCE WITH THE PROJECT PLANS, SPECIFICATIONS AND DETAILS. THESE DESIGN DRAWINGS HAVE NOT BEEN DRAFTED OVER A SURVEY BASE MAP.
8. THE CONTRACTOR MUST REVIEW AND AGREE TO AS-BUILT QUANTITIES WITH THE ENGINEER ON A WEEKLY BASIS.
9. THE ENGINEER MUST BE CONTACTED IMMEDIATELY UPON THE CONTRACTOR RECEIVING A COMPLAINT FROM ANY PERSON WITHIN THE PROJECT AREA OR MUNICIPAL OFFICIAL.

1. UNDERGROUND UTILITIES AND FEATURES WITHIN MAKATON DRIVE, MORNINGSIDE PLACE, INDIAN SPRING ROAD, & ORCHARD STREET WERE NOT MAPPED USING RADIO FREQUENCY PIPE AND CABLE LOCATORS (RFL) AND GROUND PENETRATING RADAR(GPR). OTHER BURIED UTILITIES MAY BE PRESENT BUT WERE NOT DETECTED DUE TO LIMITATIONS OF THE RFL AND GPR SYSTEMS, UNFAVORABLE SOIL CONDITIONS, SITE ACCESS, AND/OR DENSE UTILITY INFRASTRUCTURE. THEREFORE, 100% DETECTION IS NOT GUARANTEED. CAUTION SHOULD BE USED WHEN EXCAVATING IN THE VICINITY OF MAPPED FEATURES.
2. POSITION OF GEOPHYSICAL FEATURES CANNOT BE GUARANTEED WITHOUT EXPOSURE.
3. TARGETS WITH LATERAL EXTENTS OF LESS THAN 3 FEET AS OBSERVED IN GEOPHYSICAL DATA WERE NOT MAPPED.
4. PLOTTED UTILITY POSITIONS AND DEPTHS REPRESENT LOCATION OF MOST APPROPRIATE INTERPRETED GEOPHYSICAL RESPONSE. THIS RESPONSE IS GENERALLY PRESENT OVER THE TOP CENTER OF THE TARGET BUT MAY BE LOCATED OFF-CENTER DEPENDING ON SIGNAL QUALITY AND THE EFFECTS OF LOCAL INTERFERENCE. FEATURE MAY BE WIDER THAN PLOTTED LINE (E.G. DUCT BANKS, LARGE CONDUIT).
5. UTILITIES MAY BE INSTALLED WITHIN A DUCT BANK. DUE TO THE LIMITATIONS OF GEOPHYSICAL EQUIPMENT AND THE LOCATION OF FEATURES WITHIN THE DUCT BANK, THE ACTUAL HORIZONTAL AND VERTICAL DIMENSIONS OF THE DUCT BANK SYSTEM (AS OBSERVED IN GEOPHYSICAL DATA) MAY VARY.
6. DUE TO LIMITATIONS OF GEOPHYSICAL METHODS, IT IS NOT ALWAYS POSSIBLE TO DISCRIMINATE BETWEEN UTILITIES AND OTHER BURIED FEATURES. THEREFORE IT IS POSSIBLE THAT SOME PLOTTED FEATURES MAY REPRESENT OBJECTS OTHER THAN UTILITIES.
7. DUE TO VARYING SOIL CONDITIONS, POSSIBLE CHANGES IN UTILITY MATERIAL, AND OTHER FACTORS, SOME UNDERGROUND UTILITIES COULD NOT BE TRACED ENTIRELY WITHIN THE PROJECT LIMITS. THE UTILITY MAY CONTINUE, BUT SINCE IT WAS NOT OBSERVED IN THE GEOPHYSICAL DATA BEYOND THESE POINTS, IT COULD NOT BE MAPPED.
8. DEPTHS SHOWN FOR UTILITIES ARE IN FEET BELOW EXISTING GROUND SURFACE AT TIME OF SURVEY. AS RFLS CANNOT PROVIDE RELIABLE DEPTH INFORMATION, DEPTHS ARE NOT PROVIDED FOR UTILITIES LOCATED WITH RFLS, BUT NOT DETECTED IN THE GPR DATA.
9. DUE TO THE SITE SPECIFIC CONDITIONS, GPR SIGNAL PENETRATION DEPTH IS APPROXIMATELY 6 FEET. UTILITIES BELOW THIS DEPTH WERE NOT CONSISTENTLY DETECTED WITH GPR. THERE MAY BE OTHER UTILITIES PRESENT AT THE SITE BELOW THIS DEPTH THAT WERE NOT DETECTED AND THEREFORE ARE NOT PLOTTED ON THESE MAPS.
10. ONLY THOSE AREAS DENOTED WITHIN THE PROJECT SITE LIMITS WERE INVESTIGATED WITH GEOPHYSICAL METHODS. NO CLAIMS TO UTILITY POSITION ARE MADE OUTSIDE OF THESE BOUNDARIES.
11. SURFACE OBSTRUCTIONS SUCH AS UTILITY POLES AND HEAVY VEGETATION MAY HAVE LIMITED THE DATA COLLECTION AREA.
12. CONTRACTOR IS RESPONSIBLE FOR CONTACTING ONE-CALL SERVICES AS REQUIRED BY STATE AND/OR LOCAL ORDINANCES PRIOR TO ANY EXCAVATION ACTIVITIES.
13. NOT ALL UTILITY POLES, UTILITY VALVES AND UTILITY LINES ARE SHOWN ON THE PLAN. THE CONTRACTOR SHALL FIELD VERIFY ALL UTILITIES PRIOR TO THE START OF CONSTRUCTION.
14. THE CONTRACTOR SHALL CALL FOR A UTILITY MARK-OUT PRIOR TO THE START OF CONSTRUCTION (CALL 1-800-272-1000).
15. UTILITY RELOCATIONS SHOWN ON THE PLAN, IF ANY, ARE FOR INFORMATIONAL PURPOSES ONLY AND MAY NOT REPRESENT ALL REQUIRED WORK. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH ALL UTILITY COMPANIES/AUTHORITIES IMPACTED BY THE PROPOSED WORK AND PERFORMING UTILITY RELOCATIONS IN ACCORDANCE WITH THE REQUIREMENTS OF THE PERTINENT UTILITY COMPANIES/AUTHORITIES. NO SEPARATE PAYMENT SHALL BE MADE FOR COORDINATING AND PERFORMING UTILITY RELOCATIONS.
16. ALL UTILITY MANHOLES, VALVE BOXES, CLEANOUTS, METERS, ETC. SHALL BE RESET BY THE CONTRACTOR TO MEET PROPOSED ROAD, SIDEWALK AND DRIVEWAY GRADATIONS. THE CONTRACTOR SHALL COORDINATE WITH IMPACTED UTILITY COMPANIES/AUTHORITIES AS NECESSARY.
17. THE CONTRACTOR SHALL TAKE PRECAUTION WHEN WORKING ADJACENT TO UTILITIES AND TEMPORARILY SUPPORT UTILITY POLES, IF REQUIRED, DURING THE PROGRESS OF WORK.
18. THE CONTRACTOR SHALL CLEAN AND MAINTAIN ALL STORM SEWER STRUCTURES, AS NECESSARY, FOR THE DURATION OF THE PROJECT.

1. THE CONTRACTOR SHALL COORDINATE ALL TRAFFIC CONTROL MEASURES WITH THE LOCAL POLICE DEPARTMENT AND OWNER. TRAFFIC CONTROL DETAILS PROVIDED HEREIN ARE TYPICAL AND SUBJECT TO MODIFICATION BY THE LOCAL POLICE DEPARTMENT AND OWNER.
2. THE CONTRACTOR SHALL MAKE PROVISIONS FOR MATERIAL AND EQUIPMENT STORAGE. NO EQUIPMENT OR MATERIALS SHALL BE STORED WITHIN THE R.O.W. WITHOUT EXPRESS WRITTEN CONSENT FROM THE LOCAL POLICE DEPARTMENT AND OWNER.
3. THE CONTRACTOR SHALL PREPARE AND SUBMIT A TRAFFIC CONTROL SCHEDULE AND STAGING PLAN TO THE LOCAL POLICE DEPARTMENT AND OWNER FOR REVIEW AND APPROVAL. THE PLAN MUST BE APPROVED BY THE LOCAL POLICE DEPARTMENT AND OWNER PRIOR TO THE START OF CONSTRUCTION.
4. THE CONTRACTOR SHALL NOTIFY THE OWNER AND LOCAL POLICE DEPARTMENT SEVENTY-TWO (72) HOURS PRIOR TO THE START OF ANY WORK.
5. THE CONTRACTOR SHALL COORDINATE WITH THE LOCAL POLICE DEPARTMENT TO DETERMINE THE NEED FOR POLICE TRAFFIC DIRECTORS. THE CONTRACTOR SHALL PROVIDE THE LOCAL POLICE DEPARTMENT WITHIN AT LEAST ONE (1) WEEK NOTICE PRIOR TO REQUESTING POLICE TRAFFIC DIRECTORS.
6. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND PLACING TEMPORARY NO PARKING SIGNS. SIGNS MUST BE OBTAINED FROM THE LOCAL POLICE DEPARTMENT, IF APPLICABLE. TEMPORARY NO PARKING SIGNS MUST BE POSTED AT LEAST FORTY-EIGHT (48) HOURS IN ADVANCE OF CONSTRUCTION.

1. THE CONTRACTOR SHALL INSTALL AND MAINTAIN SOIL EROSION AND SEDIMENT CONTROL MEASURES FOR THE DURATION OF THE PROJECT IN ACCORDANCE WITH THE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL MEASURES IN NEW JERSEY.
2. INLET FILTERS ARE TO BE INSTALLED ON ALL EXISTING AND NEW INLETS WITHIN THE PROJECT LIMITS AND IMMEDIATELY ADJACENT TO PROJECT LIMITS.
3. SILT FENCE SHALL BE INSTALLED AS DIRECTED IN THE FIELD BY THE ENGINEER, AS NECESSARY.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING DUST CONTROL MEASURES, AS NECESSARY. ALL VEHICLES SHALL BE CLEAN AND ALL ROADWAYS SHALL BE MAINTAINED TO AVOID DUST POLLUTION.
5. THE CONTRACTOR SHALL PROTECT ALL TREES SCHEDULED TO REMAIN DURING CONSTRUCTION. DAMAGE TO EXISTING TREES WILL BE EVALUATED BY THE OWNER AND ENGINEER. DAMAGED TREES WILL BE REPLACED AS REQUIRED AT NO ADDITIONAL COST TO THE OWNER.
6. WHERE EXISTING TREES AND ROOT SYSTEMS MAY CONFLICT WITH THE PROPOSED IMPROVEMENTS, THE CONTRACTOR MUST RETAIN A CERTIFIED TREE EXPERT TO EVALUATE TREES IN QUESTION. ALL EVALUATIONS SHALL BE IN WRITING AND SHALL ACCURATELY IDENTIFY THE TREE IN QUESTION BY STATION AND OFFSET (LEFT OR RIGHT). ALL EVALUATIONS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.

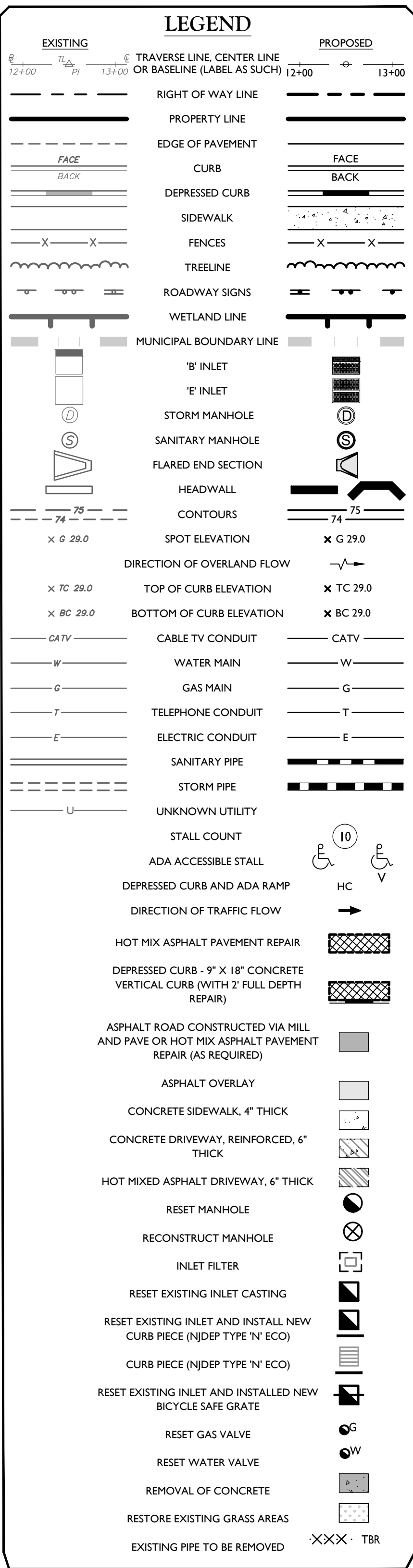
1. ALL EXCAVATED MATERIALS ARE TO BE DISPOSED OF IN ACCORDANCE WITH APPROVED NIDOT AND NJDEP METHODS AND MEANS. THE CONTRACTOR MUST NOT DEPOSIT EXCESS MATERIALS WITHIN THE MUNICIPAL LIMITS WITHOUT EXPRESS PERMISSION OF THE OWNER.
2. ALL EXCAVATED AND DEMOLISHED MATERIALS, DEBRIS, AND EQUIPMENT, INCLUDING STONE, TOPSOIL, TREES, BLOCK AND CONCRETE FORMS, MUST BE REMOVED FROM THE PROJECT AREA AT THE CONCLUSION OF EACH DAY, UNLESS OTHERWISE APPROVED BY THE ENGINEER AND LOCAL POLICE DEPARTMENT.
3. THE CONTRACTOR SHALL NOTE THAT ROADWAY BASE MATERIAL MAY CONSIST OF COBBLESTONES, CONCRETE AND/OR ASPHALT. NO ADDITIONAL PAYMENTS WILL BE MADE TO CONTRACTOR FOR DAMAGES TO EQUIPMENT OR ADDITIONAL LABOR REQUIRED TO MAKE IMPROVEMENTS AS DESCRIBED ON PLANS DUE TO VARIATIONS IN ROADWAY BASE MATERIALS.
4. ALL EXISTING GRATES AND CASTINGS ARE THE PROPERTY OF THE MUNICIPALITY OR RESPECTIVE UTILITY AUTHORITY. ALL EXISTING GRATES AND CASTINGS THAT ARE TO BE REPLACED AS A PART OF THE PROPOSED IMPROVEMENTS SHALL BE RETURNED TO THE MUNICIPALITY OR RESPECTIVE UTILITY AUTHORITY.
5. THE CONTRACTOR MUST PROTECT CONCRETE UNTIL CONCRETE IS CURED. DAMAGED AND VANDALIZED CONCRETE SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
6. THE CONTRACTOR SHALL RESET ALL RAILINGS, GATES AND FENCES AS REQUIRED TO COMPLETE THE PROPOSED IMPROVEMENTS.
7. THE CONTRACTOR IS RESPONSIBLE TO REPLACE/RESET ANY SPRINKLERS DAMAGED/DISTURBED DURING CONSTRUCTION AT NO ADDITIONAL COST TO THE OWNER.

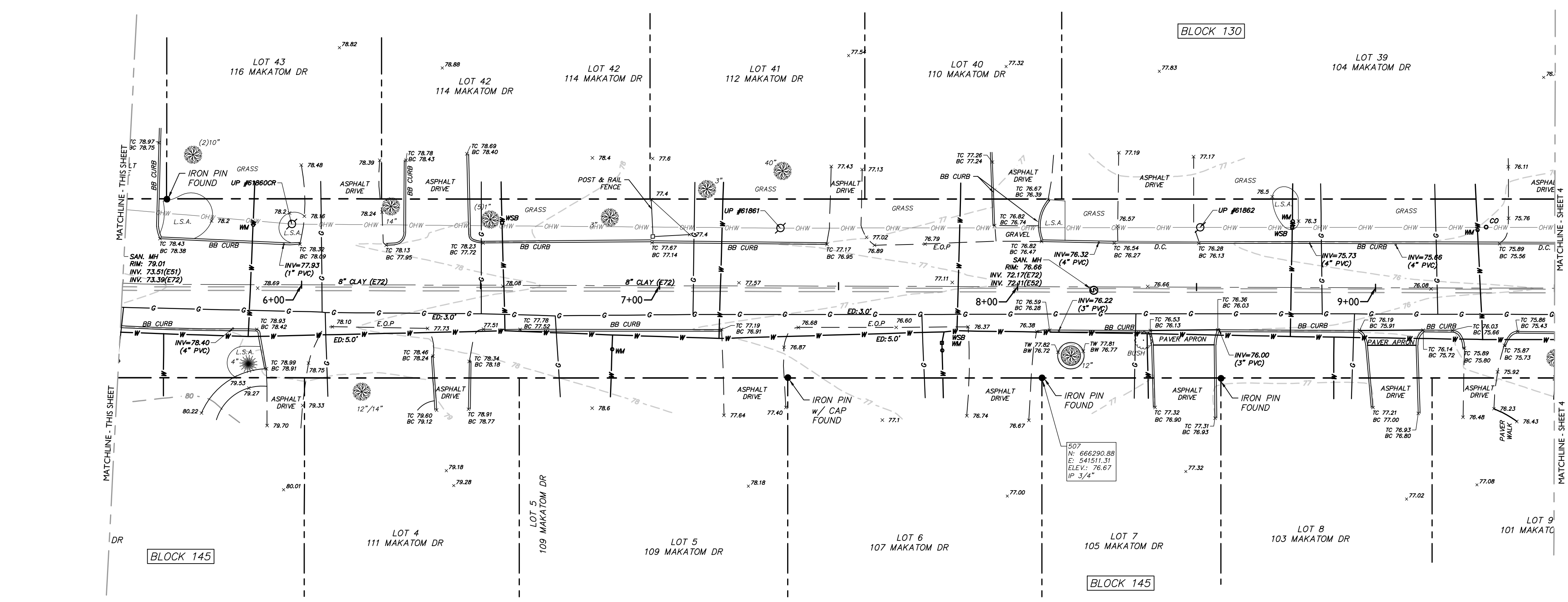
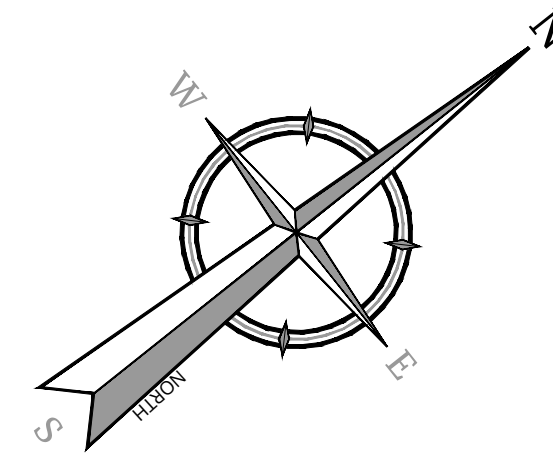
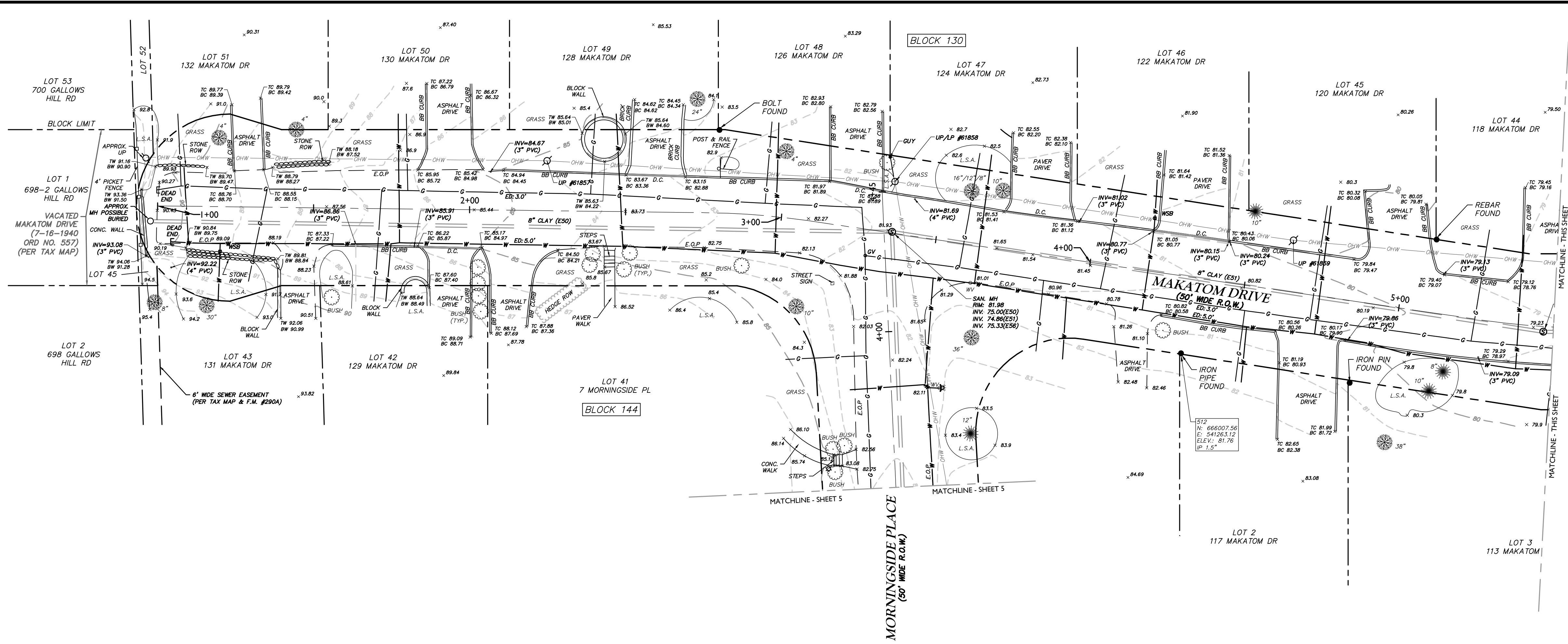
1. THE CONTRACTOR SHALL MAINTAIN SAFE PEDESTRIAN AND VEHICULAR ACCESS TO ALL RESIDENCES AND BUSINESSES FOR THE DURATION OF THE PROJECT.
2. DURING DEMOLITION AND IMMEDIATELY AFTER POURING CONCRETE, THE CONTRACTOR MUST PLACE WOOD PLANKS, AT LEAST TWO (2) FT. WIDE, AT EACH ADJACENT BUILDING ENTRANCE TO ALLOW FOR SAFE ACCESS. PEDESTRIANS CANNOT BE EXPECTED TO CROSS OVER STONE, DIRT OR OTHER DEMOLISHED MATERIAL WITHOUT PLANKS. THE CONTRACTOR WILL NOT BE PERMITTED TO LEAVE THE SITE WITHOUT PLACING WOODEN ACCESS PLANKS TO PROVIDE SAFE ACCESS TO RESIDENCES AND BUSINESSES.
3. THE CONTRACTOR SHALL MAINTAIN VEHICULAR ACCESS TO ALL DRIVEWAYS DURING CONSTRUCTION. THE CONTRACTOR SHALL TEMPORARILY INSTALL AND MAINTAIN DENSE GRADED AGGREGATE OR HOT MIX ASPHALT TO PROVIDE A RIDING SURFACE FOR VEHICLE ACCESS TO EACH PROPERTY DURING CONSTRUCTION.
4. THE CONTRACTOR MUST ASSURE ACCESS FOR EMERGENCY VEHICLES AND GARBAGE COLLECTION VENDORS FOR THE DURATION OF THE PROJECT.
5. THE CONTRACTOR SHALL PROVIDE TEMPORARY ACCESSIBLE CURB RAMPS WITH HAND RAILS WHEN EXISTING ACCESSIBLE ACCESS IS REMOVED OR LIMITED DUE TO CONSTRUCTION.
6. NO SEPARATE PAYMENT SHALL BE MADE FOR THE PROVISION OF SAFE PEDESTRIAN AND VEHICULAR ACCESS AS DESCRIBED ABOVE AND AS DIRECTED IN THE FIELD BY THE ENGINEER.

1. THE CONTRACTOR MUST PROVIDE A SMOOTH SAWCUT EDGE WHERE PROPOSED PAVEMENT ABUTS EXISTING PAVEMENT.
2. THE CONTRACTOR SHALL MARK ALL RAISED UTILITY MANHOLES, INLETS AND VALVE BOXES THAT ARE EXPOSED AS A RESULT OF MILLING. IN ADDITION, THE CONTRACTOR SHALL INSTALL TEMPORARY PAVEMENT RAMPS AROUND RAISED UTILITIES AS DIRECTED BY THE ENGINEER WHERE SUCH UTILITIES MAY BE IN CONFLICT WITH VEHICULAR AND PEDESTRIAN TRAFFIC.

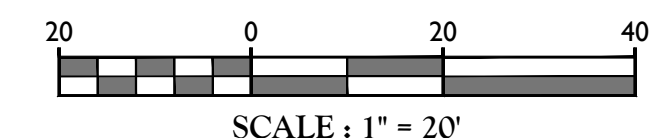
1. PRIOR TO FINAL ACCEPTANCE, ALL PROPERTY CORNERS OR MONUMENTS REMOVED OR DAMAGED DURING CONSTRUCTION SHALL BE REPLACED BY A NEW JERSEY LICENSED LAND SURVEYOR AT NO ADDITIONAL COST TO THE OWNER.
2. THE CONTRACTOR MUST REPLACE ANY DAMAGED CONCRETE CURB AND SIDEWALK BEFORE ACCEPTANCE OF THE PROJECT BY THE OWNER.
3. ALL AREAS OUTSIDE OF THE PROJECT LIMITS THAT ARE DISTURBED AS RESULT OF CONSTRUCTION ACTIVITIES SHALL BE RESTORED AT NO ADDITIONAL COST TO THE OWNER PRIOR TO PROJECT ACCEPTANCE.
4. ALL GRASSED AREAS DISTURBED BY CONSTRUCTION ACTIVITIES SHALL BE RESTORED BY TOPSOILING, SEEDING, FERTILIZING AND MULCHING.

PAY ITEM NO.	BASE BID - 2020 VARIOUS ROADWAY IMPROVEMENTS	UNIT	TOTAL BASE BID QUANTITY
1	SOIL EROSION AND SEDIMENT CONTROL	LS	1
2	POLICE TRAFFIC DIRECTORS	MAN HOUR	960
3	TRAFFIC CONTROL MEASURES AND DEVICES	LS	1
4	FUEL PRICE ADJUSTMENT	DOLLAR	1,200
5	ASPHALT PRICE ADJUSTMENT	DOLLAR	3,300
6	CLEARING SITE	LS	1
7	EXCAVATION, TEST PIT	CY	35
8	EXCAVATION, BORROW EXCAVATION AND GRADING, UNCLASSIFIED	LS	1
9	HMA MILLING, 3" OR LESS	SY	9,289
10	HOT MIX ASPHALT PAVEMENT REPAIR	SY	1,704
11	TACK COAT	GALLON	1,401
12	HOT MIX ASPHALT 9.5M64 SURFACE COURSE, 2" THICK	TON	1,401
13	8" HIGH DENSITY POLYETHYLENE PIPE	LF	670
14	12" REINFORCED CONCRETE PIPE, CLASS V	LF	26
15	12" DUCTILE IRON PIPE, CLASS 52	LF	46
16	12" POLYPROPYLENE PIPE	LF	381
17	15" POLYPROPYLENE PIPE	LF	810
18	ROOF LEADER CONNECTION WITH 4" POP-UP EMITTER	UNIT	11
19	INLET, TYPE B	UNIT	3
20	DOGHOUSE INLET, TYPE B	UNIT	1
21	INLET, TYPE D-1	UNIT	8
22	MANHOLE, 4' DIAMETER	UNIT	6
23	4' X 4' MANHOLE BOX	UNIT	1
24	RESET EXISTING CASTING	UNIT	3
25	BICYCLE SAFE GRATE (PHASE II STORMWATER COMPLIANT GRATE)	UNIT	2
26	CURB PIECE (NJDEP TYPE 'N' ECO)	UNIT	2
27	8" RISER FRAME, COVER AND CONCRETE RING	UNIT	3
28	REPAIR INTERIOR OF DRAINAGE STRUCTURE	UNIT	3
29	CONCRETE SIDEWALK, 4" THICK	SY	11
30	HOT MIX ASPHALT DRIVEWAY, 6" THICK	SY	133
31	DETECTABLE WARNING SURFACE	SY	2
32	RESET PAVER SIDEWALK	SY	1
33	9" X 18" CONCRETE VERTICAL CURB	LF	27
34	GRANITE CURB	LF	590
35	TRAFFIC STRIPES, 4"	LF	150
36	TRAFFIC MARKING LINES, 6"	LF	92
37	TRAFFIC MARKING LINES, 12"	LF	137
38	REGULATORY AND WARNING SIGN	SF	13
39	SANITARY SEWER MAIN AND LATERAL REPAIR	UNIT	5
40	TOPSOILING, 4" THICK	SY	234
41	FERTILIZING AND SEEDING, TYPE ERNMX-106	SY	234
42	STRAW MULCHING	SY	234
43	LANDSCAPING ALLOWANCE	ALLOWANCE	1

[illegible]



POINT PNEZD DATA				
POINT NUMBER	NORTHING	EASTING	ELEVATION	RAW DESCRIPTION
507	666290.88	541511.31	76.67	IP 3/4"
512	666007.56	541263.12	81.76	IP 1.5"



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Carl P. O'Brien

NEW JERSEY LICENSED PROFESSIONAL ENGINEER

LICENSE NUMBER: 664154

COLLIERS ENGINEERING & DESIGN, INC.

N.J. C.O.A. #: 24GA27986500

CONSTRUCTION PLANS

FOR

2020 VARIOUS ROADWAY IMPROVEMENTS

MAKATOM DRIVE, MORNINGSIDES PLACE, INDIAN SPRING ROAD, & ORCHARD STREET

TOWNSHIP OF CRANFORD UNION COUNTY NEW JERSEY

Engineering & Design

MT. ARLINGTON

400 Valley Road,

Suite 304

Mt. Arlington, NJ 07856

Phone: 973.398.3110

COLLIERS ENGINEERING & DESIGN, INC. DOING BUSINESS AS MASER CONSULTING.

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	1/8/21	PPC	BRP
PROJECT NUMBER:	DRAWING NAME:		
CDT027	C-DEMO		

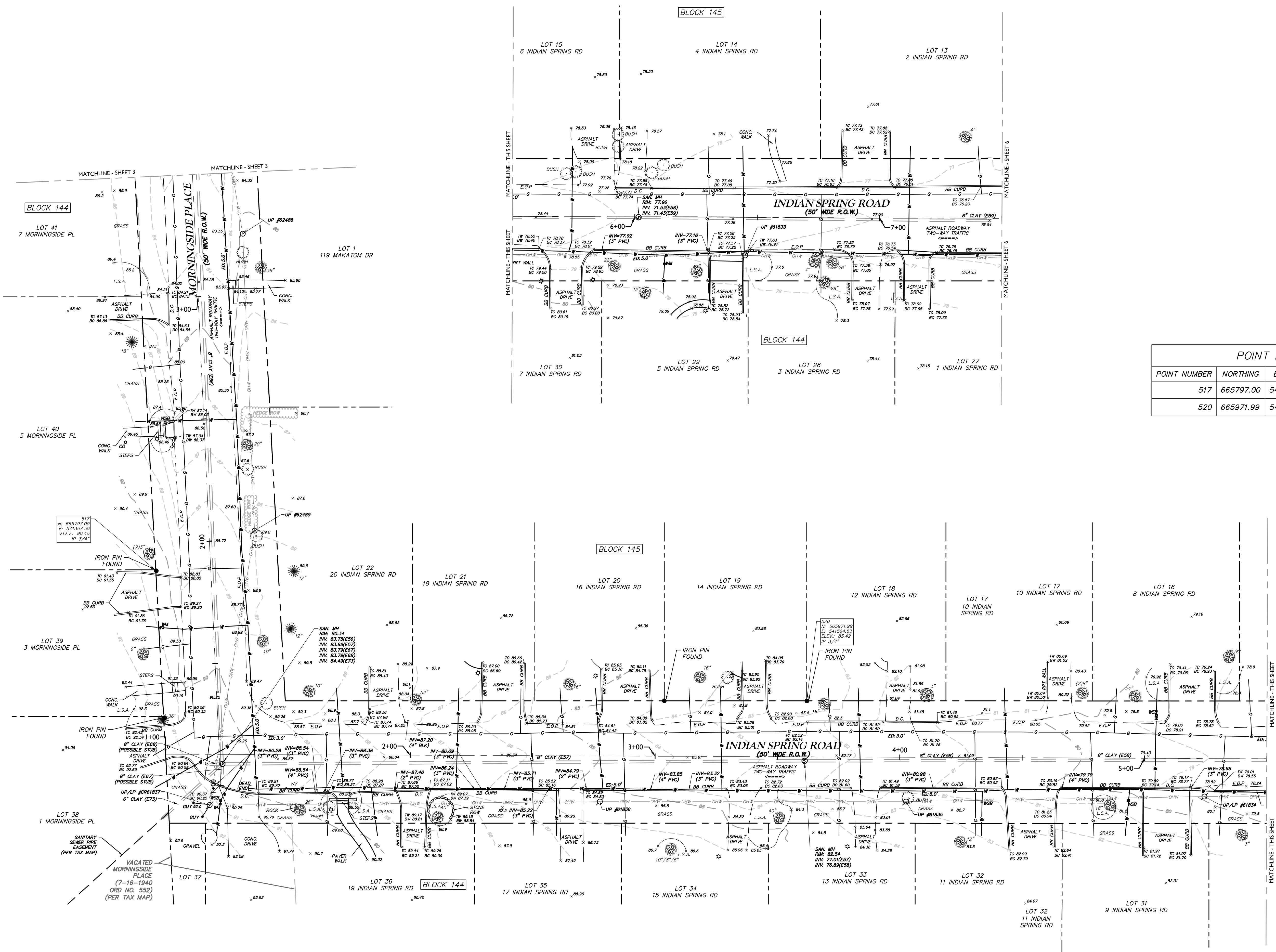
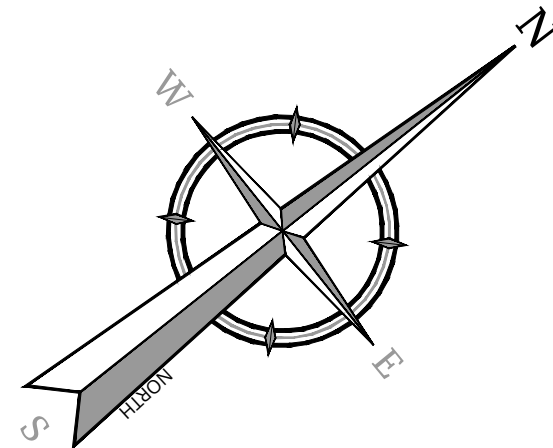
SHEET TITLE:

EXISTING CONDITIONS PLAN

SHEET NUMBER:

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DATE
DRAWN BY
DESCRIPTION
REV

Carl P. O'Brien
Carl P. O'Brien
NEW JERSEY LICENSED PROFESSIONAL ENGINEER
LICENSE NUMBER: 664154
COLLIERS ENGINEERING & DESIGN, INC.
N.J. C.O.A. #: 24GA2786500

CONSTRUCTION PLANS

FOR
2020 VARIOUS
ROADWAY
IMPROVEMENTS

MAKATOM DRIVE,
MORNINGSIDE PLACE,
INDIAN SPRING ROAD, &
ORCHARD STREET
TOWNSHIP OF CRANFORD
UNION COUNTY
NEW JERSEY

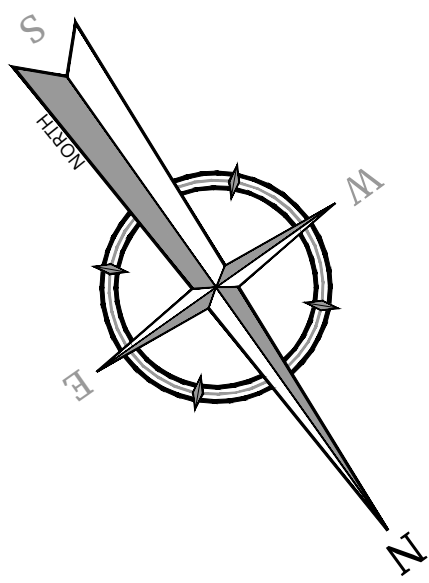
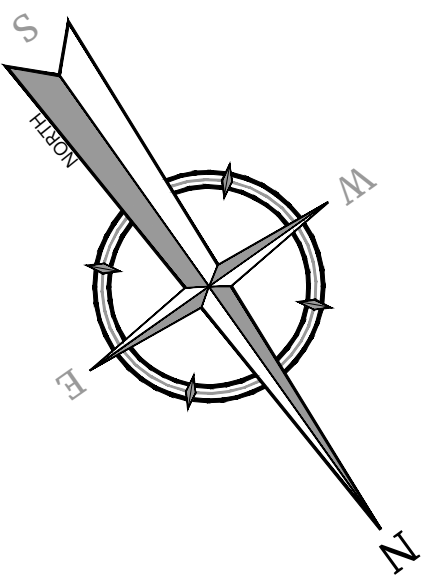
EXISTING
CONDITIONS PLAN

SHEET NUMBER:
5 of 26

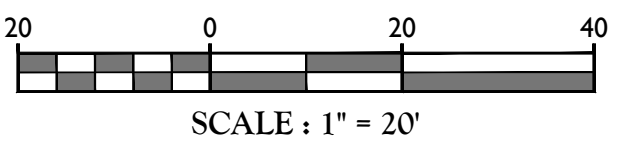
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NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

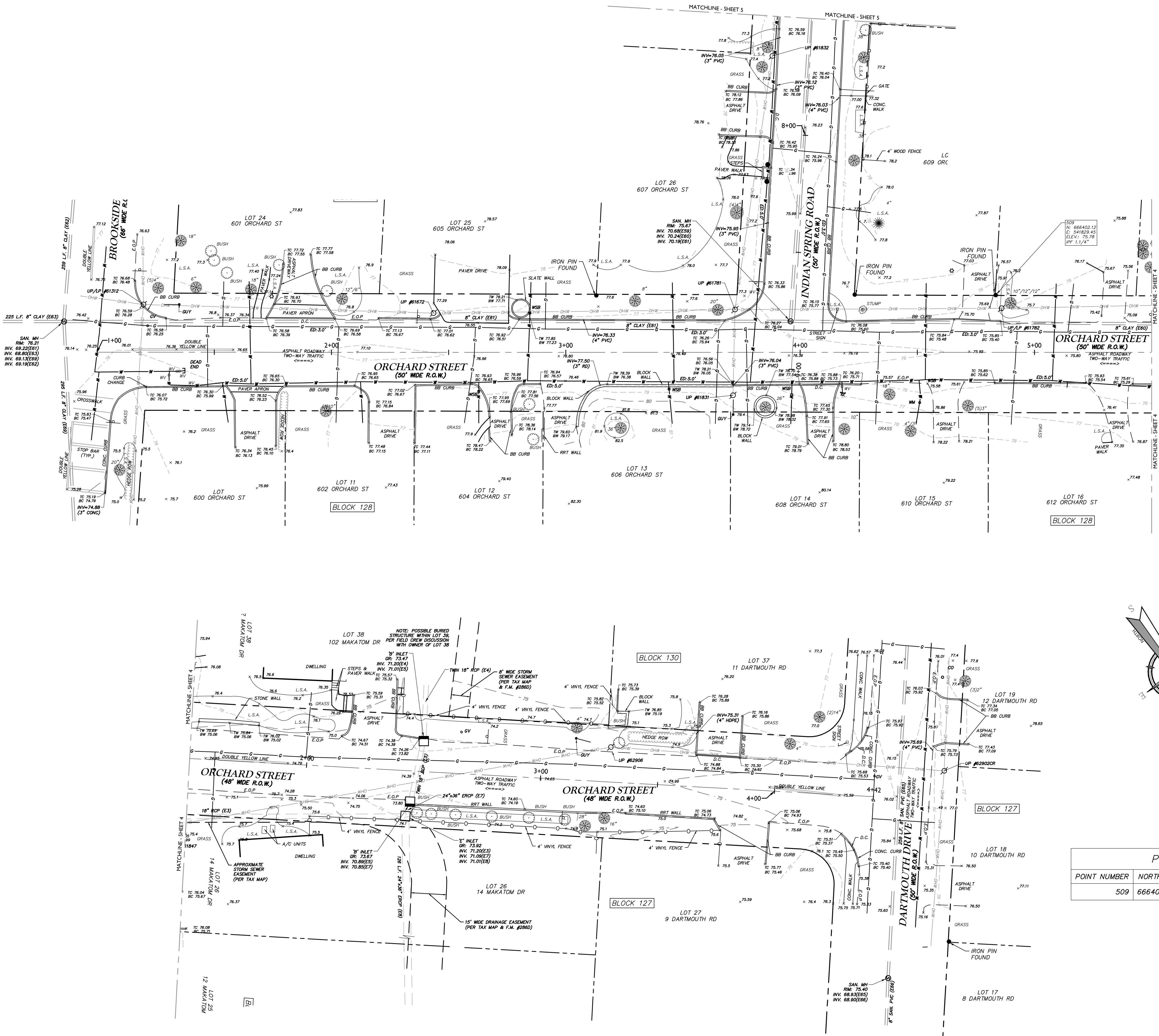
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6 of 26

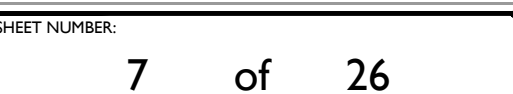


POINT PNEZD DATA				
POINT NUMBER	NORTHING	EASTING	ELEVATION	RAW DESCRIPTION
509	666402.12	541829.45	75.78	IPF 1.1/4"



NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.





SHEET NUMBER:
7 of 26



C:\CDT027\Engineering\Site Plans\C-LAYT.dwg | C-7 LAYOUT By: PCOLCHIE

[illegible]

Carl P. O'Brien
NEW JERSEY LICENSED PROFESSIONAL ENGINEER
LICENSE NUMBER: GE45154
COLLIERS ENGINEERING & DESIGN, INC.
N.J. C.O.A. #: 24GA27986500

TOWNSHIP OF CRANFORD
UNION COUNTY
NEW JERSEY

SCALE: AS SHOWN	DATE: 1/8/21	DRAWN BY: PPC	CHECKED BY: BKP
PROJECT NUMBER: CDT027		DRAWING NAME: C-LAYT	

SHEET NUMBER: 10 of 26

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& Design

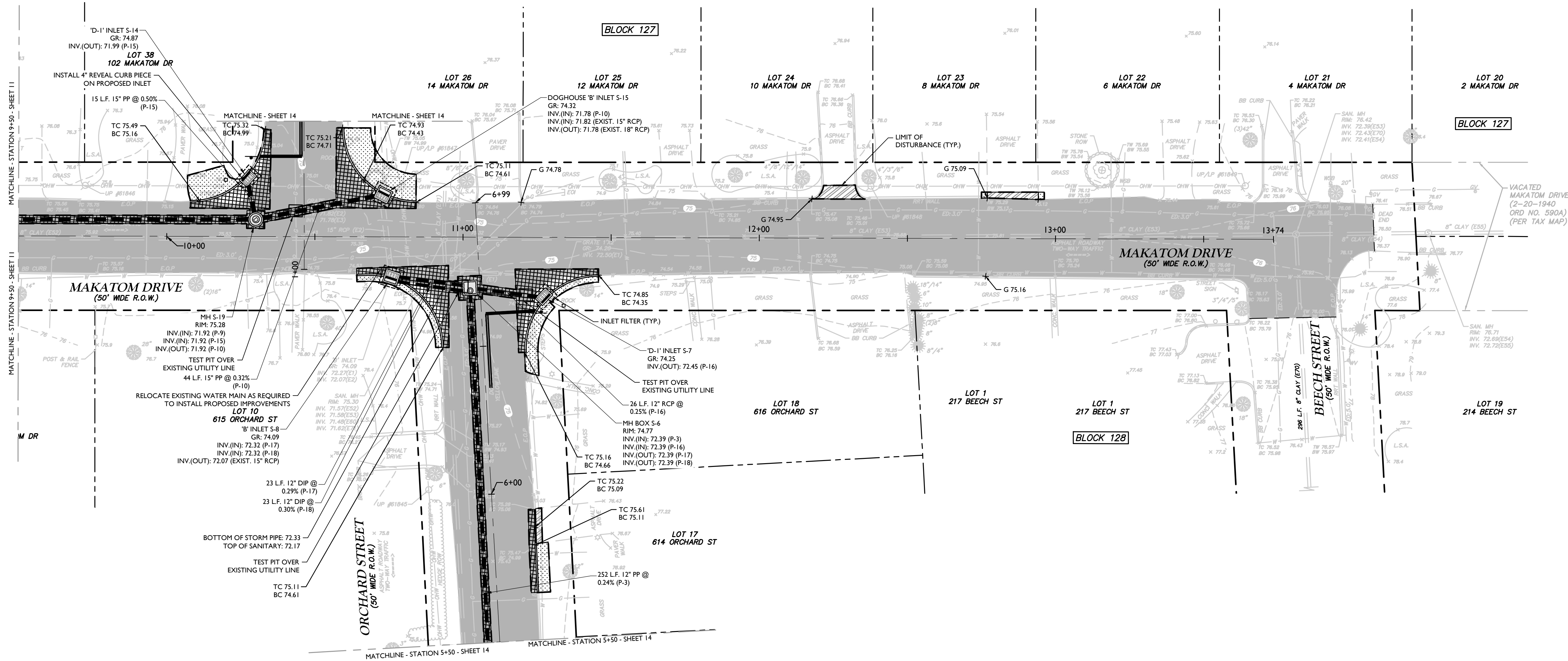
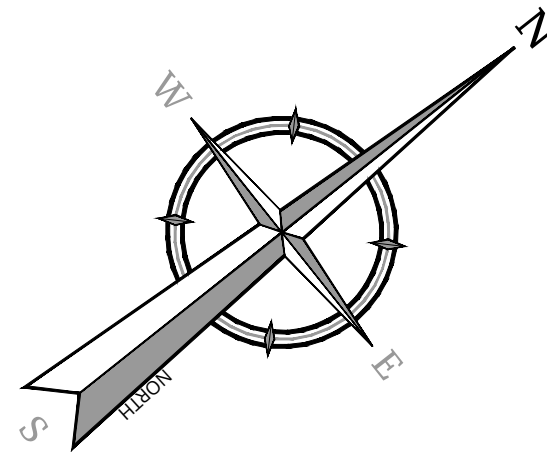
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THIS PROJECT IS EXEMPT FROM SOIL COMPACTION TESTING AND REMEDIATION AS IT IS LOCATED IN AN URBAN REDEVELOPMENT AREA

SOIL EROSION & SEDIMENT CONTROL PLAN



CONSTRUCTION PLANS

FOR
2020 VARIOUS
ROADWAY
IMPROVEMENTS

MAKATOM DRIVE,
MORNINGSIDE PLACE,
INDIAN SPRING ROAD, &
ORCHARD STREET

TOWNSHIP OF CRANFORD
UNION COUNTY
NEW JERSEY



Engineering
& Design

MT. ARLINGTON
400 Valley Road,
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Mt. Arlington, NJ 07856
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COLLIERS ENGINEERING & DESIGN,
INC. DOING BUSINESS AS MASER
CONSULTING

SCALE: AS SHOWN	DATE: 1/8/21	DRAWN BY: PPC	CHECKED BY: BRP
PROJECT NUMBER: CDT027	DRAWING NAME: C-GRAD		

SHEET TITLE:
GRADING & DRAINAGE PLAN

SHEET NUMBER:
12 of 26

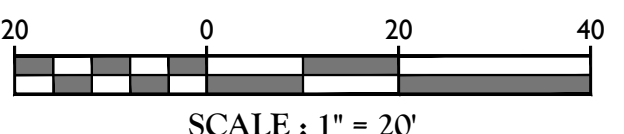
NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.



Carl P. O'Brien
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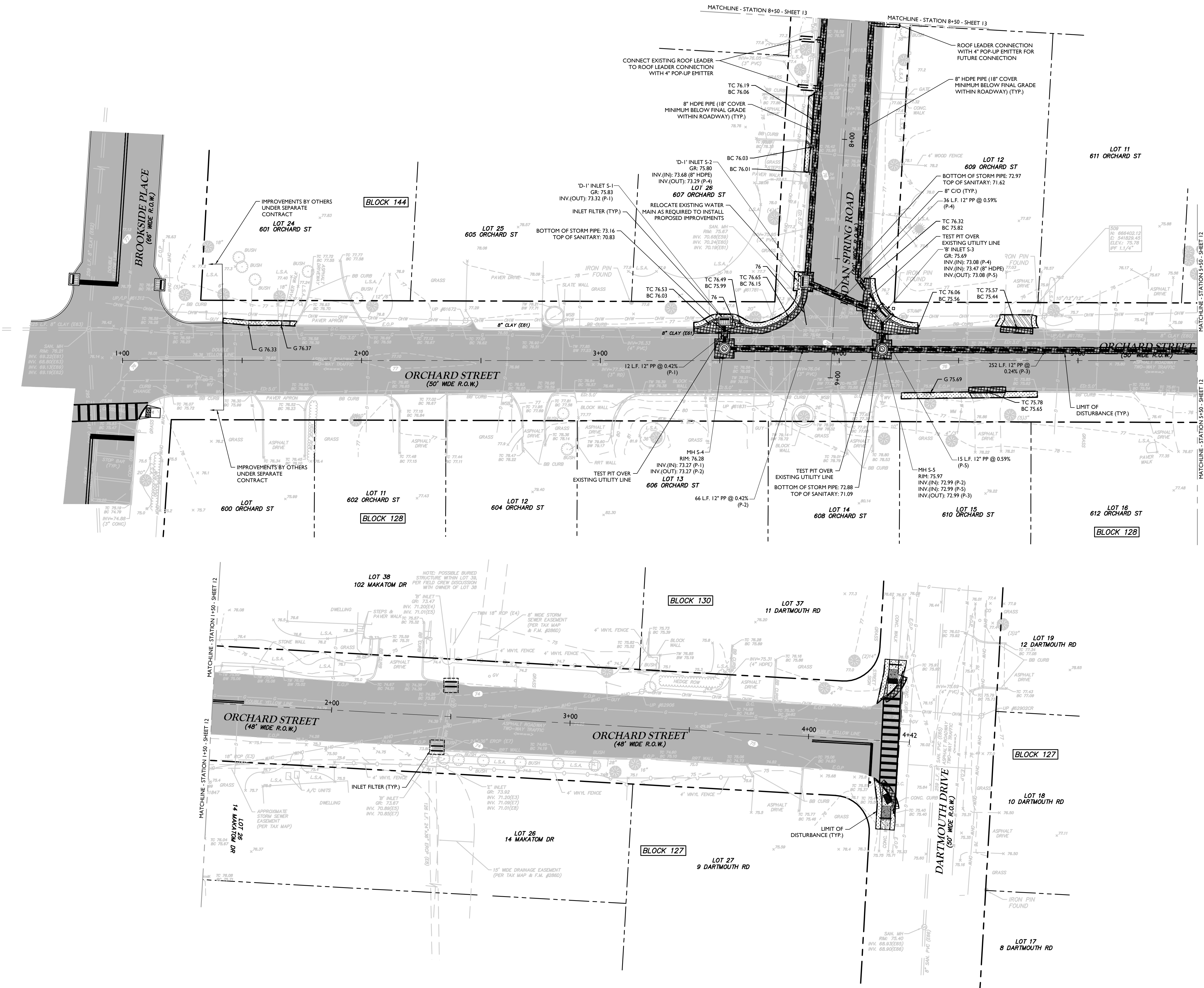
TOWNSHIP OF CRANFORD
UNION COUNTY
NEW JERSEY

SHEET NUMBER: 14 of 26

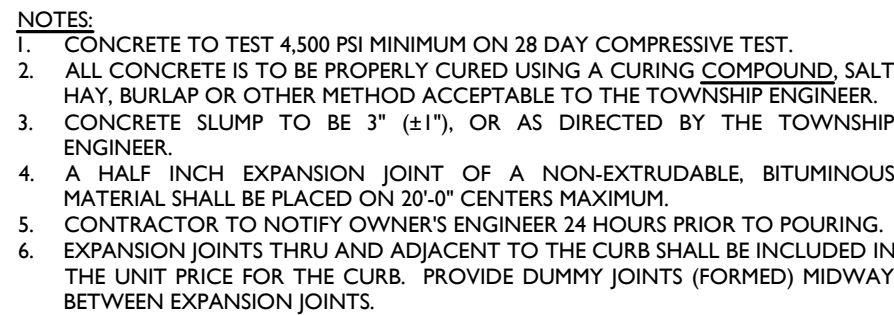


THIS PROJECT IS EXEMPT FROM SOIL COMPACTION TESTING AND REMEDIATION AS IT IS LOCATED IN AN URBAN REDEVELOPMENT AREA

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.



SOIL EROSION & SEDIMENT CONTROL PLAN



25' (TYP.)

4" DOUBLE YELLOW

CURB

AS SHOWN ON PLANS

HMA SURFACE COURSE 9.5M64, 2" THICK

DENSE-GRADED AGGREGATE BASE COURSE, 4" THICK

COMPACTED SUBGRADE

- NOTES:**
I. THE CONTRACTOR SHALL REPAIR HOT MIX ASPHALT DRIVEWAYS AS DIRECTED BY THE ENGINEER. LIMITS OF DRIVEWAY REPAIR SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.

Diagram illustrating the limit of milling operation and existing pavement. The diagram shows a cross-section of a road surface. A horizontal line represents the 'LIMIT OF MILLING OPERATION'. Below this line, the area is labeled 'MILLED AREA'. To the right of the limit, the surface is labeled 'EXISTING PAVEMENT'. A curved line indicates the transition between the milled area and the existing pavement. A note 'SEE NOTE' points to this transition area.

NOTE: REMOVE THE HMA MATERIAL LEFT BY THE DRUM RADIUS AT THE LIMITS OF THE MILLING OPERATION. ENSURE THAT THE FACE IS CLEAN AND VERTICAL BY SAWCUTTING OR TRANSVERSE MILLING. THIS END TREATMENT IS NOT APPLICABLE TO TEMPORARY LIMITS OF MILLING (I.E. END OF WORKDAY). IT IS APPLICABLE TO ALL AREAS WHERE THE COMPLETED MILLING OPERATION MATCHES ANY EXISTING PAVEMENT INCLUDING BRIDGES.

PAVEMENT SURFACE

DRIVEWAY OPENING VARIES 18" MAX

4"

8" (TYP.)

14" (TYP.)

18"

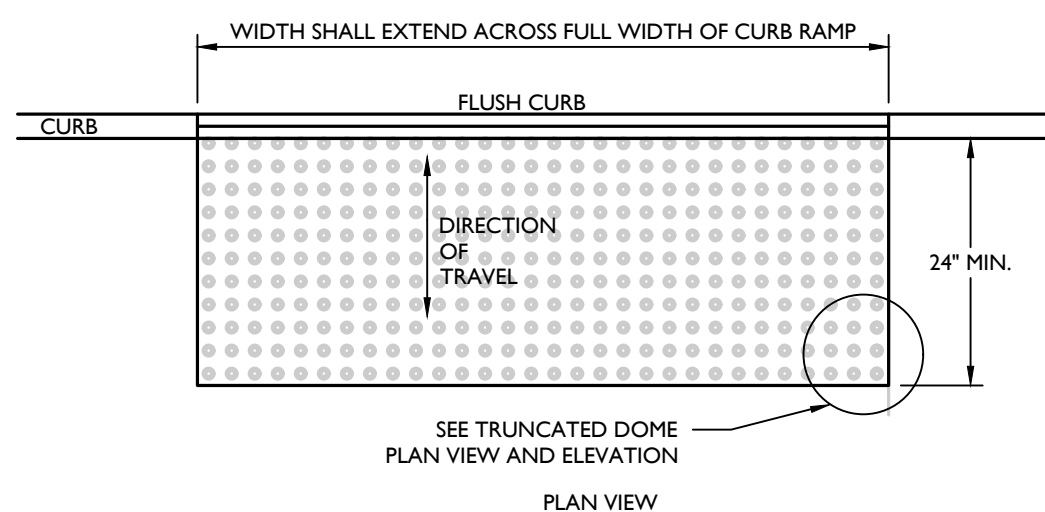
MAINTAIN FULL DEPTH (18") AT DRIVEWAY

DEPRESSED GRANITE BLOCK CURB AT DRIVEWAY

N.T.S.



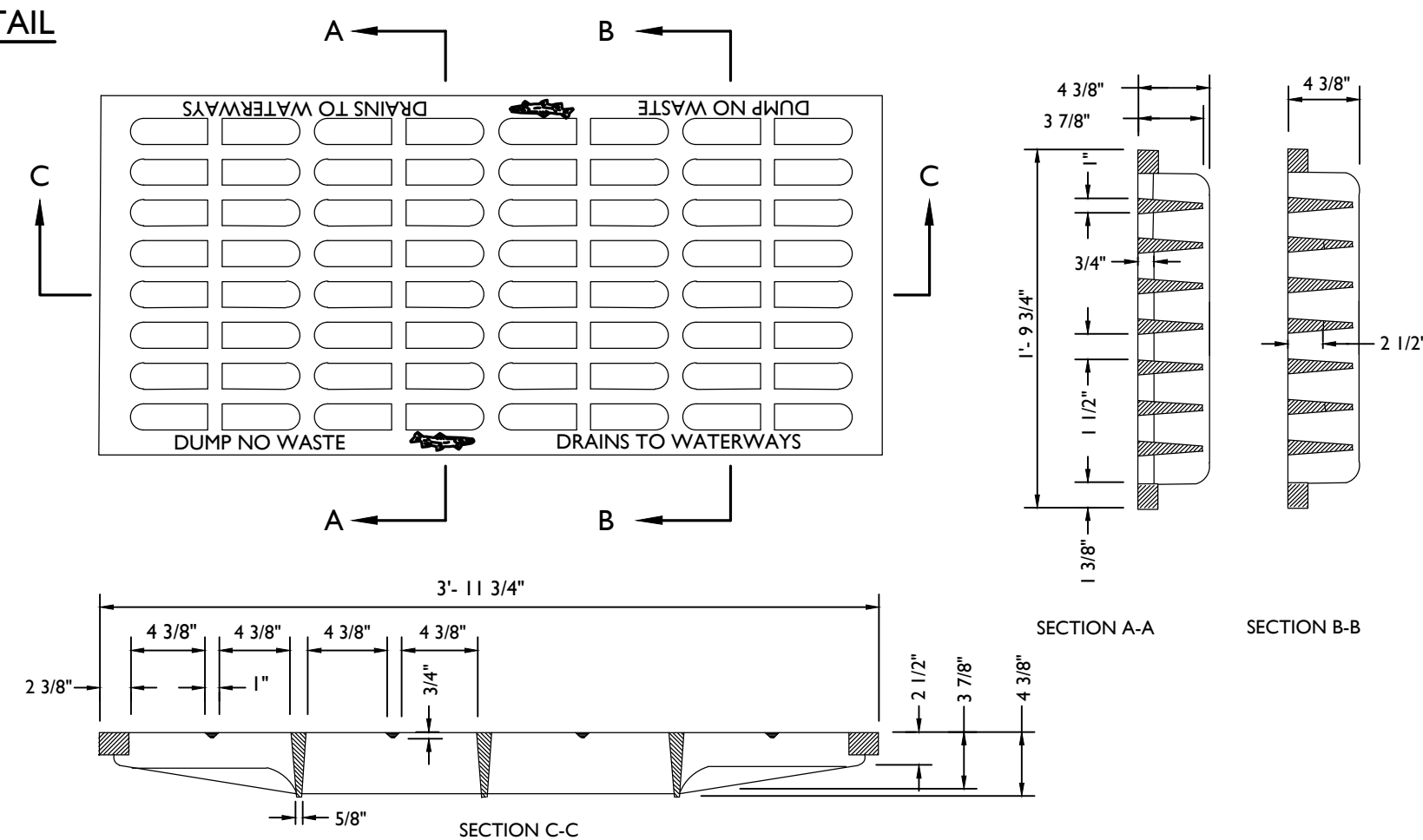
TRUNCATED DOME ELEVATION



- ## NOTES

1. THE DETECTABLE WARNING SURFACE SHALL BE MANUFACTURED MATS THAT ARE EMBEDDED AND CAST-IN-PLACE IN THE CONCRETE.
2. IN LIEU OF A CAST IN PLACE DETECTABLE WARNING SURFACE, THE CONTRACTOR MAY UTILIZE A SURFACE APPLIED DETECTABLE WARNING SURFACE WITH PRIOR APPROVAL OF THE ARCHITECT AND THE ENGINEER AND PRIOR TO POURING OF THE CONCRETE RAMP.
3. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER A SHOP DRAWING OF THE DETECTABLE WARNING SURFACE PRIOR TO CONSTRUCTION FOR APPROVAL.
4. THE CONTRACTOR SHALL PROVIDE A MANUFACTURER CERTIFICATION THAT THE DETECTABLE WARNING SURFACE COMPLIES WITH THE CURRENT ADA STANDARDS FOR THE DETECTABLE WARNING SURFACES. THE DEPARTMENT OF JUSTICE AND THE ADA STANDARDS AS SUPPORTED BY THE UNITED STATES ACCESS BOARD, AND THE STATE AND/OR LOCAL ADA STANDARDS.
5. **SAFETY RED** SHALL BE APPROVED BY THE LOCAL JURISDICTION PRIOR TO INSTALLATION. DETECTABLE WARNING SURFACES SHALL CONTRAST VISUALLY WITH ADJACENT WALKING SURFACES EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT. ALTERNATIVE COLOR MAY BE PROVIDED IF THE COLOR COMPLIES WITH CURRENT ADA STANDARDS.
6. DETECTABLE WARNINGS SHALL CONSIST OF A SURFACE OF TRUNCATED DOMES.
7. TRUNCATED DOMES IN A DETECTABLE WARNING SURFACE SHALL HAVE A BASE DIAMETER OF 0.9 INCH (23 mm) MINIMUM AND 1.4 INCHES (36 mm) MAXIMUM, A TOP DIAMETER OF 50 PERCENT OF THE BASE DIAMETER MINIMUM TO 45 PERCENT OF THE BASE DIAMETER MAXIMUM, AND A HEIGHT OF 0.2 INCH (5.1 mm).
8. TRUNCATED DOMES IN DETECTABLE WARNING SURFACE SHALL HAVE A CENTER-TO-CENTER SPACING OF 1.6 INCHES (41 mm) MINIMUM AND 2.4 INCHES (61 mm) MAXIMUM, AND A BASE-TO-BASE SPACING OF 0.65 INCH MINIMUM TO 0.8 INCH MAXIMUM BETWEEN THE MOST ADJACENT DOMES ON A SQUARE GRID.

9. SOME DETECTABLE WARNING PRODUCTS REQUIRE A CONCRETE BORDER FOR PROPER INSTALLATION. WHEN REQUIRED BY THE MANUFACTURER, THE CONCRETE BORDER SHALL NOT EXCEED 2 INCHES (51 mm).
10. DETECTABLE WARNING SURFACES SHOULD NOT BE PLACED OVER JOINTS OR EXPANSION JOINTS AT CURB RAMP. THE ROWS OF TRUNCATED DOMES IN DETECTABLE WARNING SURFACES SHOULD BE ALIGNED WITH THE ROWS OF TRUNCATED DOMES IN THE RAMP RUN AND THE STREET SO PEDESTRIANS WHO USE WHEELCHAIRS CAN "TRACK" BETWEEN THE DOMES.
11. ON PERPENDICULAR CURB RAMP, DETECTABLE WARNING SURFACES SHALL BE PLACED AS FOLLOWS:
 - a. WHERE THE ENDS OF THE BOTTOM GRADE BREAK ARE IN FRONT OF THE BACK OF CURB, DETECTABLE WARNING SURFACES SHALL BE PLACED AT THE BACK OF CURB.
 - b. WHERE THE ENDS OF THE BOTTOM GRADE BREAK ARE BEHIND THE BACK OF CURB AND THE DISTANCE FROM EITHER END OF THE BOTTOM GRADE BREAK TO THE BACK OF CURB IS MORE OR LESS, DETECTABLE WARNING SURFACES SHALL BE PLACED ON THE RAMP RUN WITHIN ONE COME SPACING OF THE BOTTOM GRADE BREAK.
12. ON PARALLEL CURB RAMP, DETECTABLE WARNING SURFACES SHALL BE PLACED ON THE TURNING SPACE AT THE TRANSITION BETWEEN THE STREET AND SIDEWALKS.
13. ON BLENDED TRANSITIONS, DETECTABLE WARNING SURFACES SHALL BE PLACED AT THE BACK OF CURB.



N.T.S



1. THE CONTRACTOR SHALL PROVIDE MAX. CROSS SLOPE "B" PER FOOT TOWARDS ROADWAY.
2. CURB AND SIDEWALK CONCRETE TO BE N.J.D.O.T. CLASS "B" AIR-ENTRAINED.
3. PROVIDE PERFORMED BITUMINOUS FIBER EXPANSION JOINTS 1/2" THICK AT 12'-0" INTERVALS. PROVIDE DUMMYS (JOINTS FORMED) MIDWAY BETWEEN EXPANSION JOINTS.
4. NO SEPARATE PAYMENT WILL BE MADE FOR TOPSOIL, SEED OR STRAW MULCH. ALL COSTS TO BE INCLUDED IN VARIOUS PROPOSAL ITEMS.
5. UNDERSTREET CATCH BASIN SHALL BE INSTALLED ON PLANS. CONCRETE SIDEWALK SHALL BE INSTALLED WITHOUT DISTURBING EXISTING CURB.
6. ANY EXCAVATION BELOW DESIRED GRADE DUE TO OVER EXCAVATION OR WET SOIL. CONDITIONS SHALL BE BACKFILLED WITH 3/4" CLEAN CRUSHED STONE. ALL SUBGRADES SHALL BE REVIEWED AND APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.

[illegible]

GENERAL SANITARY SEWER MAIN TRENCH NOTES:

1. BACKFILL SHALL BE TAMPED MECHANICALLY IN 6" MAXIMUM LIFTS TO 95% DENSITY TO 12" ABOVE THE PIPE; FROM 12" ABOVE PIPE TO PAVENTER OR GRADE LIFTS SHALL NOT EXCEED 18". ALL BACKFILL SHALL BE COMPACTED TO 95% DENSITY (UNPAVED AREAS) OR 98% DENSITY (PAVED AREAS). AT A MINIMUM, THE CONTRACTOR SHALL UTILIZE A WALK BEHIND VIBRATORY COMPACTOR OR OTHER MECHANICAL MEANS TO ACHIEVE THE REQUIRED COMPACTION DENSITY. THE USE OF "JUMPING JACK" COMPACTORS AS THE SOLE MEANS OF COMPACTION WILL NOT BE ACCEPTED.
2. ALL TRENCHES IN EXISTING PAVEMENT MUST BE SAWCUT.
3. SELECT EXCAVATED MATERIAL SHALL CONSIST OF MATERIALS WHICH ARE FREE FROM VEGETATIVE MATTER SUCH AS ROOTS, MULCH, TOPSOIL, ORGANIC MATTER AND CONTAINS NO STONES LARGER THAN 6 INCHES IN THEIR LARGEST DIMENSION. THE MATERIAL MUST BE COMPACTABLE TO 98% DENSITY BENEATH ROADS AND 95% DENSITY BENEATH UNPAVED AREAS.
4. WHERE NECESSARY, PARTICULARLY FOR SAFETY OR TO PREVENT DISTURBANCE, DAMAGE OR SETTLEMENT OF ADJACENT STRUCTURES, PIPELINES, UTILITIES, IMPROVEMENTS OR PAVING, EXCAVATION SHALL BE ADEQUATELY SHEETED AND BRACED.
5. SHEETING AND BRACING OF ALL EXCAVATION SHALL COMPLY WITH NEW JERSEY CONSTRUCTION AND SAFETY CODES AND THE FEDERAL OCCUPATIONAL SAFETY AND HEALTH ACT.
6. WHERE SHEETING IS USED, IT MUST BE DESIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW JERSEY. SAID ENGINEER SHALL PROVIDE THE CONTRACTOR WITH A SIGNED AND SEALED CERTIFICATE STATING THAT THE DESIGN OF THE SHEETING AND BRACING CONFORMS TO ALL APPLICABLE REQUIREMENTS OF THE NEW JERSEY CONSTRUCTION SAFETY CODE AND THE OCCUPATIONAL HEALTH AND SAFETY ACT. COPIES OF THIS CERTIFICATE SHALL BE SUBMITTED TO THE ENGINEER.
7. THE CONTRACTOR SHALL COMPLY WITH OSHA STANDARDS FOR EXCAVATIONS (29 CFR PART 1926) AS SUCH. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A "COMPETENT PERSON" AS DEFINED IN THE OSHA STANDARDS AND AS REQUIRED BY THE STANDARDS. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE SELECTION, DESIGN, INSTALLATION, AND IMPLEMENTATION OF ALL "PROTECTIVE SYSTEMS" AS DEFINED IN THE OSHA STANDARDS. THE PIPELINE DESIGN BY THE OWNER OR THE ENGINEER DOES NOT INCLUDE THE DESIGN OF "PROTECTIVE SYSTEMS" SINCE THE DESIGN OF THE "PROTECTIVE SYSTEMS" IS THE RESPONSIBILITY OF THE CONTRACTOR.
8. THE CONTRACTOR MUST FOLLOW PROPOSED SHEETING PLANS SUBMITTED. NO DEVIATIONS MAY BE MADE FROM THE FILED PROCEDURE FOR SHEETING. THE CONTRACTOR MUST SUBMIT A SIGNED AND SEALED CERTIFICATE AS REQUIRED FOR THE ORIGINAL SUBMISSION BY THE SAME LICENSED PROFESSIONAL ENGINEER WHO PREPARED THE ORIGINAL SUBMISSION.
9. ANY DAMAGE TO NEW OR EXISTING STRUCTURES OCCURRING THROUGH SETTLEMENT, WATER OR EARTH PRESSURE OR OTHER CAUSES DUE TO INADEQUATE BRACING OR THROUGH NEGLIGENCE OR FAULT OF THE CONTRACTOR IN ANY OTHER MANNER, SHALL BE REPAIRED BY THE CONTRACTOR AT HIS OWN EXPENSE.
10. SEPARATE PAYMENT WILL NOT BE MADE FOR SAW CUTTING, EXCAVATION AND BACKFILL, REMOVAL OF EXISTING SANITARY SEWER, ABANDONED UTILITIES, PIPE BEDDING, CONCRETE ENCASEMENT, DETERIORATING, ABANDONMENT OF EXISTING SEWER UTILITIES OR REMOVAL IF REQUIRED, TRENCH PROTECTION, TEMPORARY SURFACE RESTORATION INCLUDING TIEBACKS, PAVING, TRAFFIC STRIPES, CURB, DRIVEWAY, SIDEWALK, FENCE, LANDSCAPING, EROSION CONTROL, FURNISHING OF SERVICE SADDLES, DETECTABLE WARNING TAP OR TESTING, ALL COSTS TO BE INCLUDED IN THE VARIOUS ITEMS SCHEDULED IN THE PROPOSAL.

PVC PIPE, SDR 26

EXISTING PIPE

FLEXIBLE COUPLING WITH STAINLESS STEEL SHEAR RING AS MANUFACTURED BY FERNCO, OR APPROVED EQUAL

PIPE BEDDING AS PER SANITARY SEWER TRENCH DETAIL

10'

SECTION

SANITARY SEWER MAIN AND LATERAL REPAIR

N.T.S.

47-3/4"

21-3/4"

4" OR 6" AS REQ'D BY ENGINEER

5-1/2"

NI TYPE D

4" OR 6" AS REQ'D BY ENGINEER

8-1/2"

NI TYPE B

1"

1/2" R. TYP

2"

4" OR 6" AS REQ'D BY ENGINEER

1-1/4"

48"

54"

7-1/2"

3D BROOK TROUT DESIGN

20"

3/8"

1-3/8"

DRAINS TO BAY

DRAINS TO RIVER

DRAINS TO LAKE

DRAINS TO OCEAN

DRAINS TO WATERWAYS

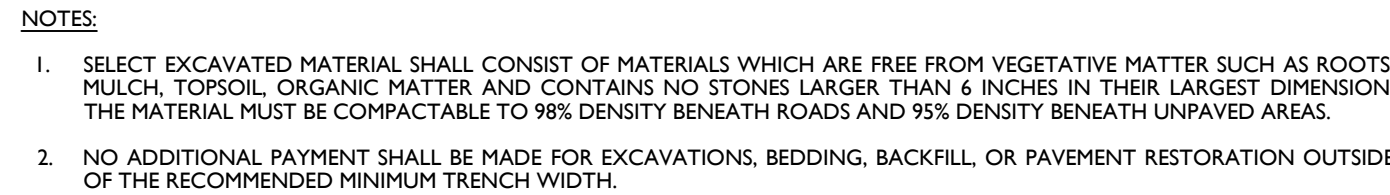
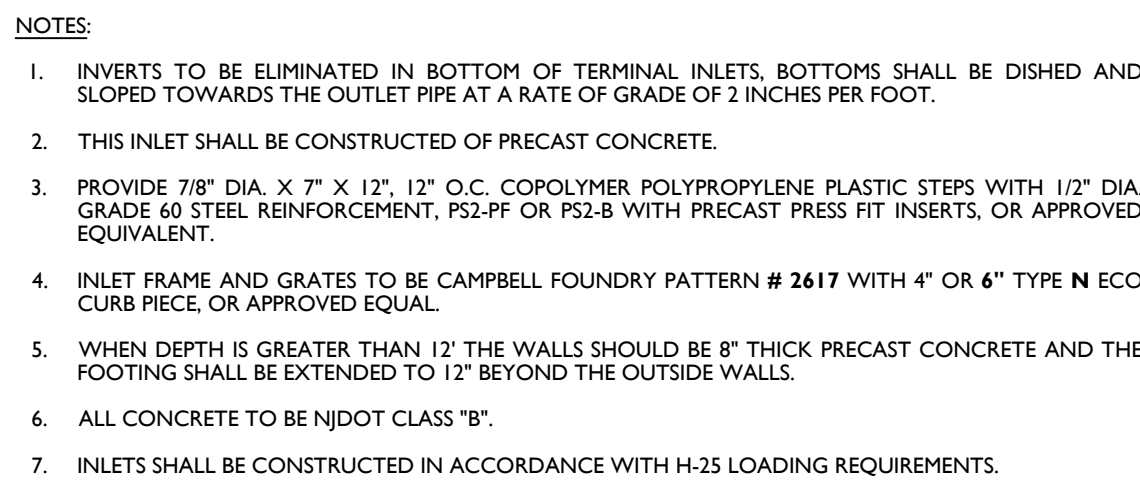
NAME PLATE OPTIONS

NOTES:

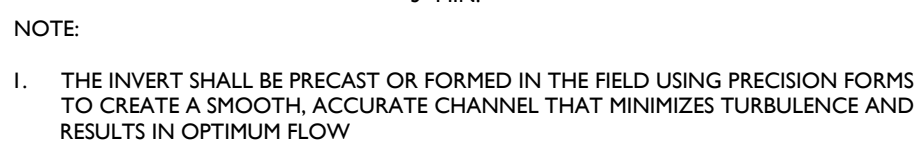
1. MATERIAL: GRAY CAST IRON ASTM A48-83, CLASS 30B
2. AASHTO H520-44 HIGHWAY LOADING
3. SUPPLIED WITHOUT SURFACE COATING

- ## NOTES

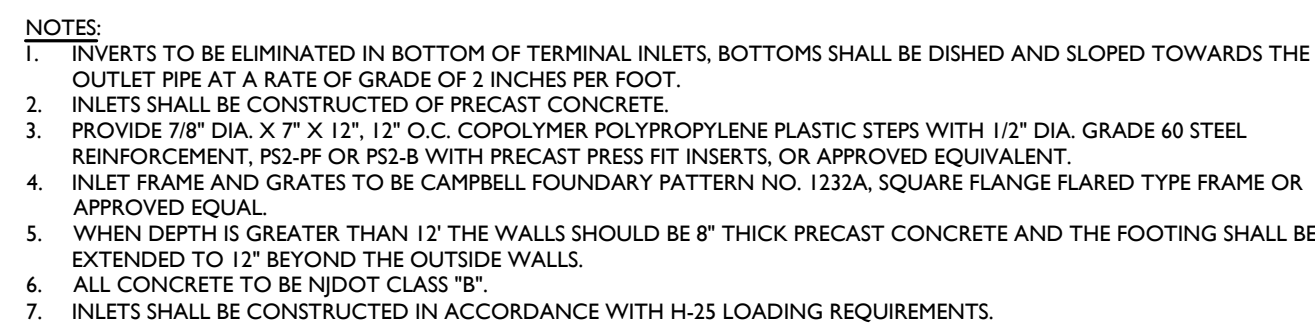
NAME PLATE OPTIONS



HDPE, PP, RCP, & DIP PIPE BEDDING DETAIL
N.T.S.



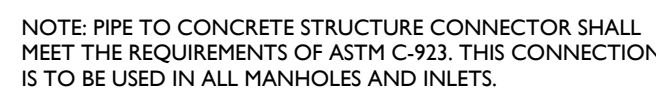
TYPICAL BENCHING CROSS SECTIONS
N.T.S.



MANHOLE BOX (4' X 4')
N.T.S.



ROOF LEADER CONNECTION WITH 4" POP-UP EMITTER DETAIL
N.T.S.

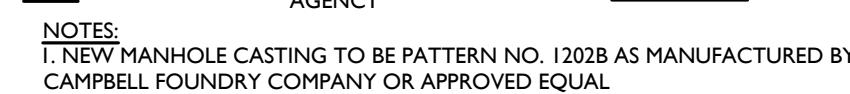


PIPE TO CONCRETE
STRUCTURE CONNECTOR
N.T.S.

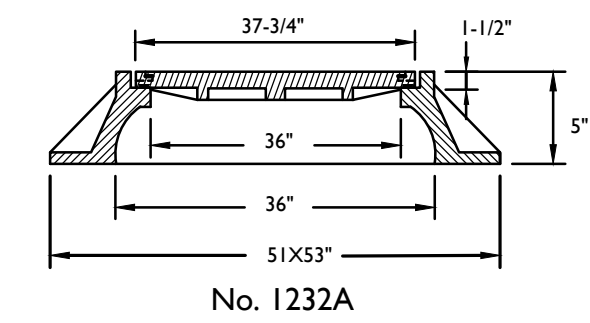


1. MANHOLES SHALL BE CONSTRUCTED OF PRECAST CONCRETE.
2. CASTINGS OF PRECAST MANHOLES SHALL BE ADJUSTED TO GRADE WITH PRECAST CONCRETE GRADE RINGS, AS REQUIRED, 12 INCHES MAXIMUM.
3. PRECAST MANHOLES SHALL MEET THE REQUIREMENTS OF ASTM C-478, "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS."
4. REINFORCED CONCRETE STRUCTURES SHALL WITHSTAND AASHTO H5-20 LIVE LOAD CONDITIONS.
5. PROVIDE PRECAST MANHOLE SLAB IN LIEU OF STANDARD PRECAST TOP SECTION FOR MANHOLES HAVING 6'-9" DEPTH OR LESS.

STORM MANHOLE
N.T.S.



STANDARD MANHOLE FRAME AND COVER
N.T.S.

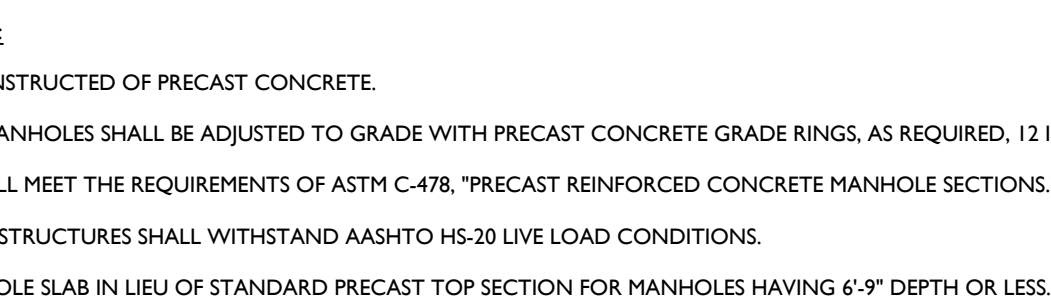


SQUARE MANHOLE COVER/FRAMES
N.T.S.

NOTE: PRODUCT SHALL BE CAMPBELL FOUNDRY MODEL NO. 1232A, OR APPROVED EQUAL




LADDER RUNG
N.T.S.





DOGHOUSE STRUCTURE
N.T.S.





LEGEND


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
BREAKAWAY BARRICADES
- 


BREAKAWAY BARRICADES WITH SIGN
- 


CONSTRUCTION SIGNS
- 


DRUMS
- 


CONE
- 


PRECAST CONCRETE CURB CONSTRUCTION BARRIER (TYPE SPECIFIED)
- 


DIRECTION OF TRAFFIC FLOW
- 


TRAFFIC DIRECTOR, FLAGGER
- 


TRAILER MOUNTED MOUNTED ARROW BOARD SHOWING CAUTION MODE
- 


ILLUMINATED FLASHING ARROW MOUNTED ON TOWING VEHICLE
SHOWING ARROW PATTERN (Left, Right, Both)
- 


TRAFFIC CONTROL TRUCK WITH MOUNTED CRASH CUSHION AND
ARROW BOARD SHOWING CAUTION MODE
- 

TRAFFIC CONTROL TRUCK WITH MOUNTED CRASH CUSHION AND
ARROW BOARD SHOWING ARROW PATTERN (Left, Right, Both)
- 

TEMPORARY CRASH CUSHION, INERTIAL BARRIER SYSTEM
- 

TEMPORARY CRASH CUSHION, (all other approved)
- 

BUFFER ZONE
- 

WORK AREA
- 

PAINT STRIPING TRUCK OR OTHER OPERATING VEHICLE

GENERAL NOTES:

- ADVANCE WARNING SIGNS DISTANCES, AND TAPER LENGTHS MAY BE EXTENDED, AT DIRECTION OF THE DEPARTMENT, TO ADJUST FOR REDUCED VISIBILITY DUE TO HORIZONTAL AND VERTICAL CURVATURE OF THE ROADWAY.
- THE APPROXIMATE LOCATIONS OF THE ILLUMINATED FLASHING ARROW BOARDS ARE SHOWN ON THE TRAFFIC CONTROL PLANS. THESE LOCATIONS MAY BE MODIFIED AS APPROVED BY RE TO ADJUST FOR VISIBILITY DUE TO HORIZONTAL OR VERTICAL CURVATURE OF THE ROADWAY OR TO POSITION AT A SAFER LOCATION. ILLUMINATED FLASHING ARROW BOARDS ARE TO BE USED FOR TEMPORARY LANE CLOSINGS AND AT LOCATIONS SHOWN ON THE TRAFFIC CONTROL PLANS.
- PRIOR TO ANY ROAD CONSTRUCTION, TRAFFIC CONTROL SIGNS AND DEVICES SHALL BE IN PLACE.
- RAMPS AND/OR SIDE STREETS ENTERING THE ROADWAY AFTER THE FIRST ADVANCE WARNING SIGN SHALL BE PROVIDED WITH AT LEAST ONE W20-IF SIGN (ROAD WORK AHEAD) AS A MINIMUM.
- ALL EXISTING ROAD SIGNS, PAVEMENT MARKINGS AND/OR PLOWABLE PAVEMENT REFLECTORS WHICH CONFLICT WITH THE PROPOSED TRAFFIC CONTROL PLAN SHALL BE COVERED, REMOVED OR RELOCATED AS DIRECTED BY THE RE.
- CONFLICTING OR NON-OPERATING SIGNAL INDICATIONS ON EITHER THE EXISTING, TEMPORARY,OR PROPOSED TRAFFIC SIGNAL SYSTEMS SHALL BE BAGGED OR COVERED.
- MAINTENANCE AND PROTECTION OF TRAFFIC SHALL BE IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES - PART VI "STANDARDS AND GUIDES FOR TRAFFIC CONTROL FOR STREET AND HIGHWAY CONSTRUCTION, MAINTENANCE, UTILITY, AND INCIDENT MANAGEMENT OPERATIONS", UNLESS OTHERWISE NOTED IN THE PLANS AND SPECIFICATIONS.
- CONSTRUCTION SIGN W99-2 (GIVE US A BRAKE) SHALL BE LOCATED 200 FEET IN ADVANCE OF PROJECT LIMITS.
- A W1-6 (ARROW) SIGN MOUNTED ON A BREAKAWAY BARRICADE AND CENTERED ON THE CLOSED WIDTH SHALL BE LOCATED 100 FEET BEYOND EACH INTERSECTION OR MAIN ACCESS POINT WITHIN THE AREA OF A LANE OR SHOULDER CLOSURE.
- CONSTRUCTION SIGNS R11-4 (ROAD CLOSED TO THRU TRAFFIC) SHALL BE PLACED AT THE INTERSECTING STREETS WHICH ARE CLOSED TO TRAFFIC BECAUSE OF CONSTRUCTION.
- CONSTRUCTION SIGNS W8-9A (SYMBOL FOR UNEVEN PAVEMENT) AND W8-14A (GROOVED PAVEMENT) SHALL BE USED WHEN SUCH PAVEMENT CONDITIONS EXIST. THE PLACEMENT OF THESE SIGNS SHALL BE AS DIRECTED BY THE RE.
- MOVING WORK AREAS IN A LANE CLOSURE REQUIRE A TRAILER MOUNTED ILLUMINATED FLASHING ARROW TO REMAIN AT THE END OF THE TAPER, THE TRAFFIC CONTROL TRUCK WITH MOUNTED CRASH CUSHION THAT SHALL MOVE WITH THE WORK AREAS TO KEEP A 70 FEET MIN. AND 150 FEET MAX. BUFFER IN ADVANCE OF EACH WORK AREA.
- THE CONTRACTOR SHALL SUBMIT A PLAN FOR THE SAFE ACCESS OF CONSTRUCTION VEHICLES THROUGHOUT THE WORK SITE WHERE SPACE CONSTRAINTS PREVENT THE USE OF LANE CLOSURES. THE PLAN SHALL BE SUBMITTED TO THE RE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
- TRAFFIC SAFETY SERVICES SHALL BE USED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR TRAFFIC CONTROL.
- ALL EXCAVATED AREAS WITHIN OR ADJACENT TO THE ROADWAY SHALL BE BACKFILLED AND PLACED ON AT LEAST 6H : 1V SLOPE BEFORE THE END OF EACH WORK DAY. OTHER EXCAVATED AREA WITHIN THE CLEAR ZONE SHALL BE BACKFILLED.
- WHERE REQUIRED, THE CONTRACTOR SHALL MAKE PROVISIONS FOR MAINTAINING PEDESTRIAN CROSSING LOCATIONS AND TYPE AS DIRECTED BY THE RE.
- BITUMINOUS CONCRETE PLACED DURING THE VARIOUS CONSTRUCTION STAGES SHALL BE TRANSITIONED ON A MINIMUM 20H : 1V SLOPE TO MEET THE ADJACENT EXISTING GRADE AT THE LONGITUDINAL AND TRANSVERSE LIMITS OF THE STAGE CONSTRUCTION AREAS UNLESS OTHERWISE NOTED ON THE STAGE CONSTRUCTION PLANS.
- THE PLACEMENT AND OR RELOCATION OF PRECAST CONCRETE CURB, CONSTRUCTION BARRIER SHALL BE DONE DURING APPROVED OFF-PEAK HOURS WHEN TRAFFIC MAY BE REDUCED TO ONE LANE IN EACH DIRECTION.
- CONSTRUCTION ZONE SPEED LIMIT WILL BE DETERMINED BY THE TRAFFIC SIGNAL & SAFETY ENGINEERING, REGIONAL TRAFFIC ENGINEER - WORK ZONE, AT THE TIME OF OR DURING CONSTRUCTION, AS REQUESTED BY THE R.E..
- THE SPEED LIMIT, R2-1 (BLACK ON WHITE) WITH ADDED WORK ZONE PLATE (BLACK ON ORANGE) SIGNS SHALL BE LOCATED THROUGH WORK AREAS AS DIRECTED BY THE TRAFFIC SIGNAL & SAFETY ENGINEERING REGIONAL TRAFFIC ENGINEER - WORK ZONE.
- THE REDUCED SPEED AHEAD SIGN, W3-5(S) (BLACK ON ORANGE) SHALL BE LOCATED IN ADVANCE OF SPEED LIMIT R2-1 SIGNS WHICH REDUCE THE NORMAL POSTED SPEED LIMIT THROUGH THE CONSTRUCTION ZONE.
- TRAFFIC FINES DOUBLED IN WORK AREA R(NJ)5-17(S) , 4 FEET BY 2.5 FEET SIGN SHALL BE LOCATED 500 FEET AFTER THE FIRST ADVANCE WARNING SIGN, (W20 SERIES) AT EACH WORK AREA LOCATED WITHIN URBAN AREAS. THIS SIGN SHALL ALSO BE USED ON PROJECTS REQUIRING MOVING OPERATIONS IN WHICH CASE THE SIGN SHALL BE MOUNTED ON A SLOW MOVING CONSTRUCTION VEHICLE.
- THE FINAL HMA SURFACE PAVEMENT SHALL NOT BE CONSTRUCTED UNTIL THE FINAL STAGE OF THE PROJECT UNLESS OTHERWISE DIRECTED BY THE RE OR INDICATED ON THE PLANS. MANHOLES AND INLETS SHALL BE SET TO FINISHED GRADE AND TEMPORARY PAVEMENT RAMPS ARE TO BE CONSTRUCTED AROUND THEM WITH A MINIMUM 20H : 1V SLOPE IN ALL DIRECTIONS USING HOT MIX ASPHALT PAVEMENT. THIS TEMPORARY MATERIAL WILL BE REMOVED IMMEDIATELY PRIOR TO PLACING THE SURFACE COURSE.

- TRAFFIC CONTROL DEVICES FOR LANE CLOSURES INCLUDING SIGNS, CONES, BARRICADES, ETC. SHALL BE PLACED AS SHOWN ON PLANS. SIGNS SHALL NOT BE PLACED WITHOUT ACTUAL LANE CLOSURES AND SHALL BE IMMEDIATELY REMOVED UPON REMOVAL OF THE CLOSURES.
- CONES MAY BE SUBSTITUTED FOR DRUMS AND INSTALLED UPON THE APPROVAL OF THE RE.
- TRAFFIC IMPACT NOTICES AND CHANGES
 - TERMS:
WHEN THE FOLLOWING TERMS ARE USED, THE INTENT AND MEANING SHALL BE AS FOLLOWS:
 - IMPACTS TO NORMAL TRAFFIC FLOW - WORK THAT REQUIRES A PORTION OF THE PAVED ROADWAY BEING BLOCKED OR CLOSED WITH SAFETY DEVICES OR VEHICLES, INCLUDING, BUT NOT LIMITED TO, FULL OR PARTIAL LANE CLOSURES, FULL OR PARTIAL RAMP CLOSURES, SHOULDER CLOSURES, MOVING OPERATIONS SUCH AS TRAFFIC STRIPING OR SWEEPING, LANE SHIFTS, OR ALTERNATING TRAFFIC. THIS APPLIES EVEN WHEN DETOURS ARE PROVIDED.
 - TEMPORARY LANE CLOSURES - WORK DESCRIBED UNDER "IMPACTS TO NORMAL TRAFFIC FLOW" WHICH IS ROUTINELY SET UP AND REMOVED ON A DAILY BASIS.
 - PERMANENT LANE CLOSURES - WORK DESCRIBED UNDER "IMPACTS TO NORMAL TRAFFIC FLOW" WHICH REMAINS IN PLACE CONTINUOUSLY FOR 24 HOURS OR MORE.
 - ADVANCE NOTICES
FOR THE INITIAL START OF WORK THAT REQUIRES "IMPACTS TO NORMAL TRAFFIC FLOW". THE CONTRACTOR SHALL NOTIFY THE RE IN WRITING, ON THE ADVANCE FORM TO-103 PROVIDED BY THE DEPARTMENT, OF THE PROPOSED DATE. THE NOTICE SHALL BE SUBMITTED AT LEAST TWENTY-EIGHT CALENDAR DAYS, BUT NOT MORE THAN SIXTY CALENDAR DAYS, BEFORE THE PROPOSED DATE. START OF WORK THAT IMPACTS NORMAL TRAFFIC FLOW WILL NOT BE PERMITTED PRIOR TO THE DATE STATED IN THE NOTICE. THE CONTRACTOR SHALL CONFIRM, IN WRITING TO THE RE, THE PROPOSED DATE SEVEN (AND/OR FOURTEEN) CALENDAR DAYS BEFORE STARTING THE ESTABLISHMENT OF THE TRAFFIC CONTROL MEASURES FOR THE TRAFFIC IMPACT. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE RE IF THE PROPOSED ESTABLISHMENT CAN NOT BE COMPLETED ON THE PROPOSED DATE.

FOR A "PERMANENT LANE CLOSURE", THE CONTRACTOR SHALL NOTIFY THE RE IN WRITING, ON ADVANCE FORM TO-103, OF THE PROPOSED DATE A NEW TRAFFIC PATTERN WILL BE ESTABLISHED. THE NOTICE SHALL BE SUBMITTED AT LEAST TWENTY-EIGHT CALENDAR DAYS, BUT NOT MORE THAN SIXTY CALENDAR DAYS, IN ADVANCE OF THE PROPOSED DATE. START OF A NEW TRAFFIC PATTERN WILL NOT BE PERMITTED PRIOR TO THE DATE STATED IN THE NOTICE. THE CONTRACTOR SHALL CONFIRM, IN WRITING TO THE RE, THE PROPOSED DATE OF THE NEW TRAFFIC PATTERN SEVEN (AND/OR FOURTEEN) DAYS BEFORE STARTING TRAFFIC CONTROL MEASURES FOR THE ESTABLISHMENT OF THE NEW PATTERN. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE RE IF THE PROPOSED ESTABLISHMENT CAN NOT BE COMPLETED ON THE PROPOSED DATE.

STARTING THE ESTABLISHMENT OF A NEW PERMANENT TRAFFIC PATTERN SHALL BEGIN NO EARLIER THAN 11:00 PM FRIDAY AND SHALL BE COMPLETED AND READY FOR OPERATIONS BY 6:00 PM THE FOLLOWING SUNDAY. THE ESTABLISHMENT SHALL BE COMPLETED IN ACCORDANCE WITH THE LANE CLOSURE HOURS SPECIFIED IN THE CONTRACT.

ADVANCE NOTICES SENT PRIOR TO THE PRE-CONSTRUCTION MEETING SHALL BE ADDRESSED TO THE CONTACT PERSON AS SPECIFIED IN SUBSECTION 101.04 OF THE SPECIAL PROVISIONS.
 - PROGRESS NOTICES

ALL "IMPACTS TO NORMAL TRAFFIC FLOW" SCHEDULED FOR THE SEVEN DAY PERIOD STARTING ON THE FOLLOWING MONDAY SHALL BE SUBMITTED TO THE RE BY 9:00 AM OF EACH FRIDAY ON WEEKLY FORM TO-101 PROVIDED BY THE DEPARTMENT.

EACH DAY OF "TEMPORARY LANE CLOSURES" SHALL BE SUBMITTED TO THE RE BY 9:00 AM THE DAY IN ADVANCE OF THE START OF THOSE OPERATIONS ON DAILY FORM TO-102 PROVIDED BY THE DEPARTMENT.

"TEMPORARY LANE CLOSURES" FOR WEEKENDS SHALL BE SUBMITTED TO THE RE BY 9:00 AM ON THE IMMEDIATELY PRECEDING FRIDAY ON THE DAILY FORM TO-102 PROVIDED BY THE DEPARTMENT.
 - CHANGES TO THE SCHEDULED CLOSURES

REQUEST FOR A CHANGE TO THE TRAFFIC CONTROL REQUIREMENTS IN THE CONTRACT DOCUMENTS SHALL BE SUBMITTED IN WRITING TO THE RE AS FOLLOWS:

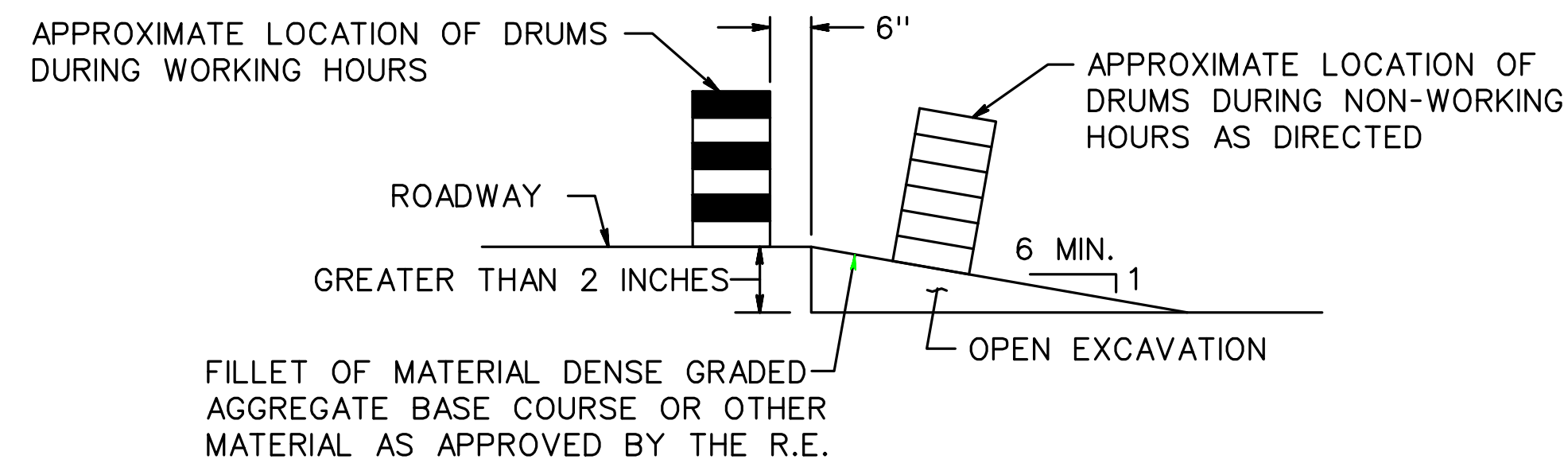
CHANGES TO THE SCHEDULED HOURS FOR "TEMPORARY LANE CLOSURES" SHALL BE SUBMITTED TO THE R.E. AT LEAST EIGHT CALENDAR DAYS IN ADVANCE OF WHEN THE CHANGE IS PROPOSED TO START.

OTHER PROPOSED CHANGES TO "TEMPORARY LANE CLOSURES" AND ALL CHANGES TO "PERMANENT LANE CLOSURES" SHALL BE SUBMITTED TO THE RE AS SPECIFIED IN THE SPECIFICATIONS.

TCD-1

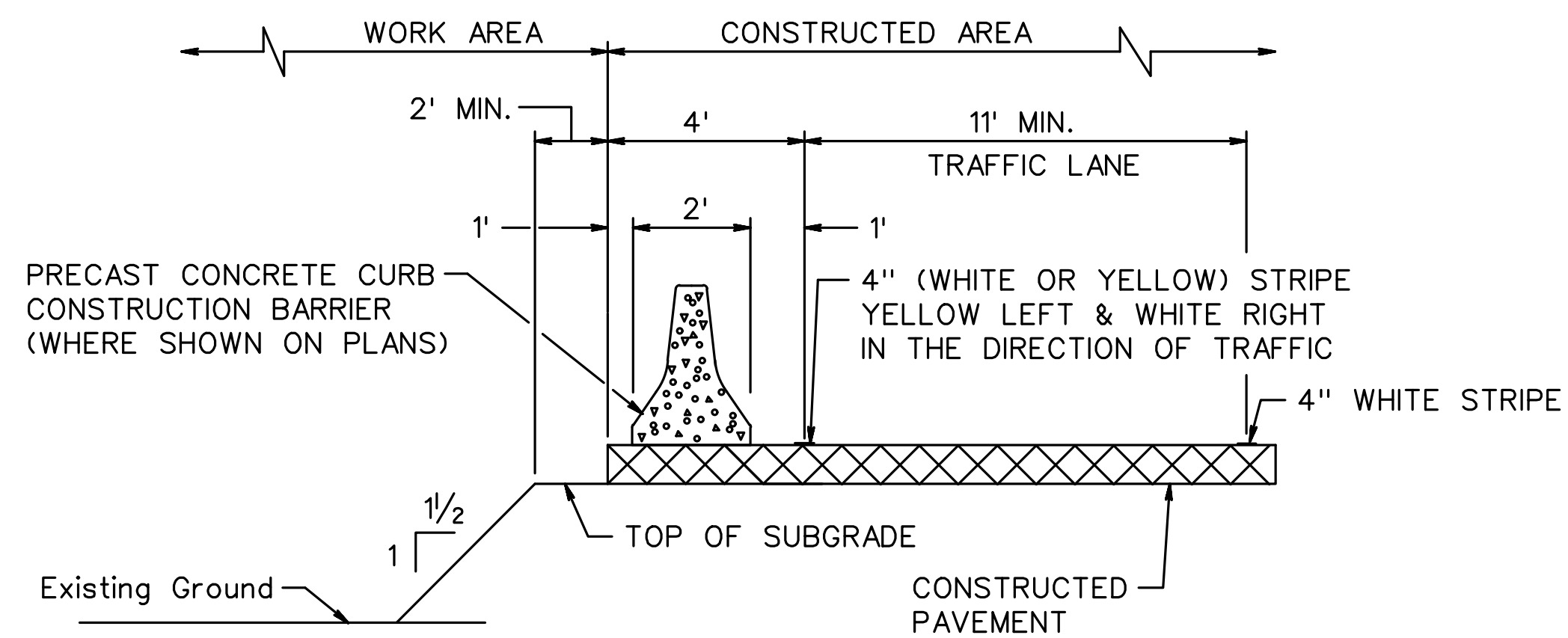
NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS



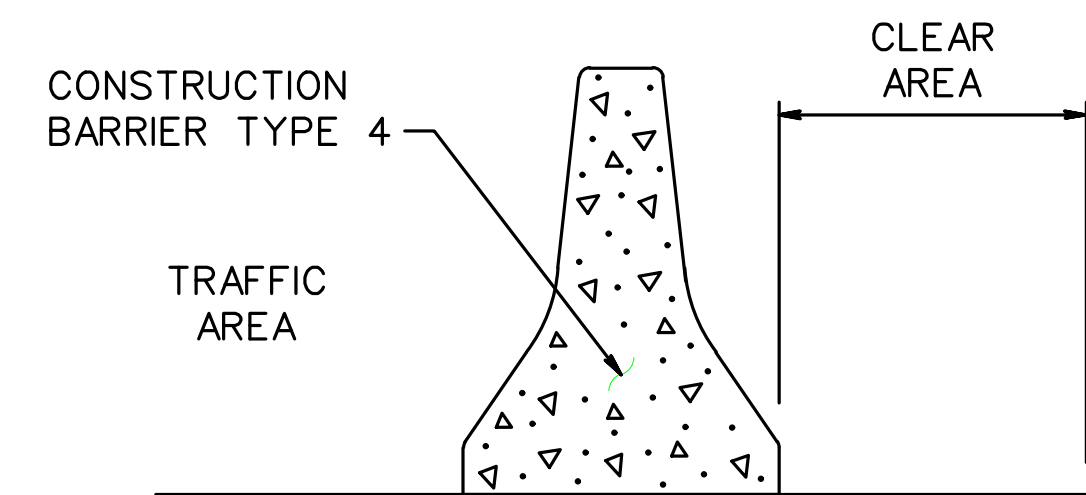
NOTE:
ESCAPE RAMPS MUST BE CONSTRUCTED AND MAINTAINED DURING NON-WORKING HOURS WHERE A VERTICAL DROP GREATER THAN 2 INCHES EXISTS ADJACENT TO TRAVELED LANE.

ESCAPE RAMP DETAIL



TYPICAL SECTION

PLACEMENT OF PRECAST CONCRETE CONSTRUCTION BARRIER



- NOTES:
- CHANGES TO THE PROPOSED JOINT CLASS AT ANY LOCATION MUST BE APPROVED BY THE DEPT.
 - NO ROADWAY DROP OFFS, OBSTRUCTIONS, STORAGE OF MATERIALS OR WORK WILL BE PERMITTED IN THE CLEAR AREA UNLESS APPROVED BY THE R.E.

STAGE	LOCATION		JOINT CLASS
	RTE.	STA. TO	
		STA.	

JOINT CLASS	CLEAR AREA
A	20 INCHES
B	16 INCHES
C	11 INCHES

CONSTRUCTION BARRIER, TYPE 4
JOINT CLASS AND CLEAR AREA

REGULATORY APPROACH SPEED OF TRAFFIC MILES/HOUR	RECOMMENDED SIGHT DISTANCE TO BEGINNING OF CHANNELIZING TAPERS		
	DESIRABLE		MINIMUM
	RURAL FEET	URBAN FEET	RURAL AND URBAN FEET
25	375	525	150
30	450	625	200
35	525	725	250
40	600	825	325
45	675	925	400
50	750	1025	475
55	875	1150	550
60	1000	1275	650
65	1050		725

- NOTES:
- AVOIDANCE MANEUVER IS FOR A SPEED, PATH, AND/OR DIRECTION CHANGE PRIOR TO THE BEGINNING OF CHANNELIZING TAPERS.
 - RECOMMENDED DISTANCES BETWEEN TWO SEPARATE LANE CLOSURES SHALL BE DOUBLE THE VALUES SHOWN ABOVE.
 - RURAL AND URBAN ROAD DESIGNATIONS SHALL BE AS DEFINED IN THE NJDOT STATE HIGHWAY STRAIGHT LINE DIAGRAMS.
 - DESIRABLE VALUES SHALL BE PROVIDED WHEREVER POSSIBLE. IF IT IS NOT FEASIBLE OR PRACTICAL TO PROVIDE DESIRABLE VALUES BECAUSE OF HORIZONTAL OR VERTICAL CURVATURE OR IF RELOCATION OF THE TAPER IS NOT POSSIBLE, THEN MINIMUM VALUES CAN BE APPLIED. WHEN MINIMUM VALUES ARE USED, SPECIAL ATTENTION SHOULD BE GIVEN TO THE USE OF SUITABLE TRAFFIC CONTROL DEVICES FOR PROVIDING ADVANCED WARNING OF THE CONDITIONS THAT ARE LIKELY TO BE ENCOUNTERED.
 - TAPERS SHALL BE LOCATED TO MAXIMIZE THE VISIBILITY OF THEIR TOTAL LENGTH.

RECOMMENDED TAPER LENGTH AND SPACING FOR CHANNELIZING TAPERS					RECOMMENDED SPACING ALONG TANGENTS	
REGULATORY APPROACH SPEED OF TRAFFIC MILES/HOUR	MINIMUM TAPER RATIO IN LENGTH PER FOOT OF WIDTH	MINIMUM TAPER LENGTH L - FOR LANE WIDTHS			MAXIMUM DEVICE (B) SPACING ALONG TAPERS IN FEET	MAXIMUM DEVICE (D) SPACING ALONG TANGENTS IN FEET
		10'	11'	12'		
25	10.5:1	105	115	125	25	50
30	15:1	150	165	180	30	60
35	20.5:1	205	225	245	35	70
40	27:1	270	300	325	40	80
45	45:1	450	495	540	45	90
50	50:1	500	550	600	50	100
55	55:1	550	605	660	55	110
60	60:1	600	660	720	60	120
65	65:1	650	715	780	65	130

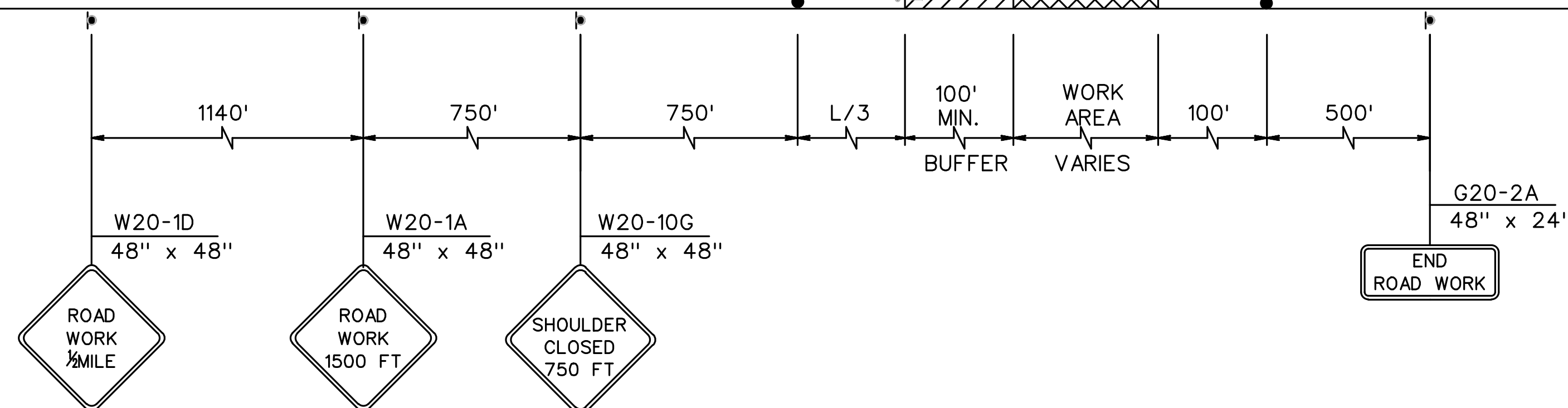
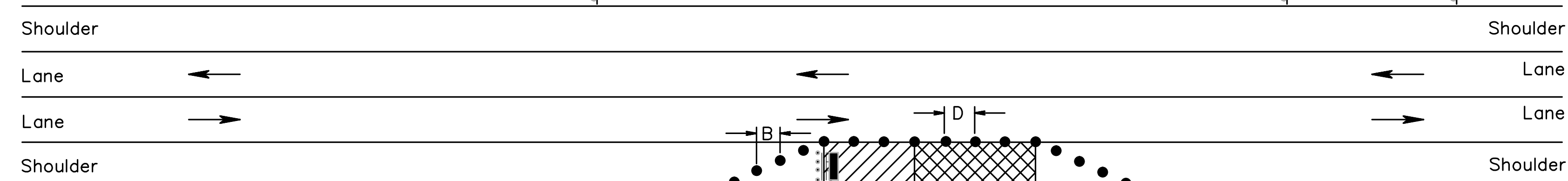
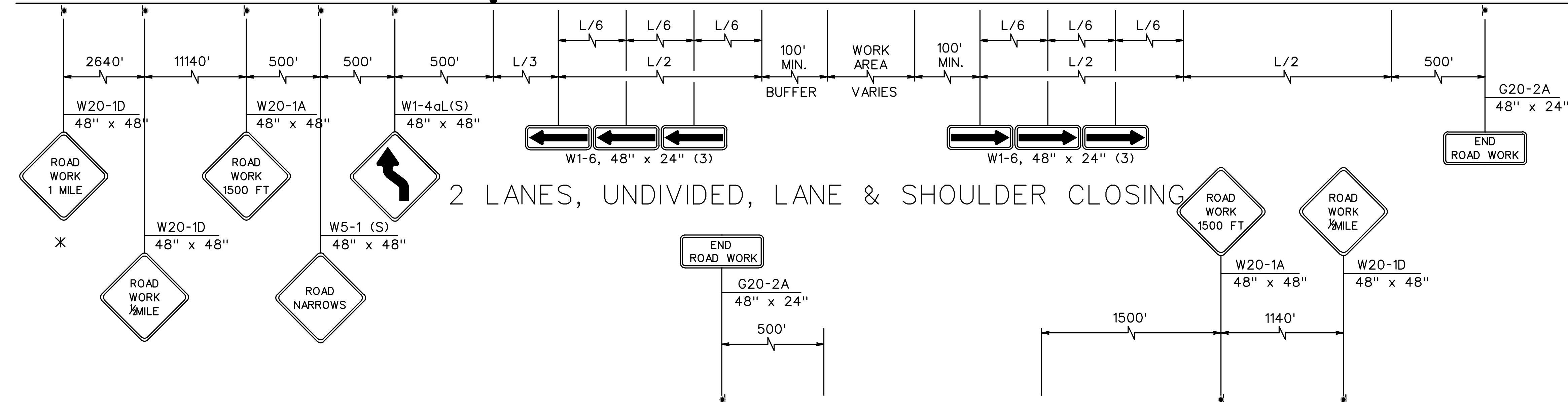
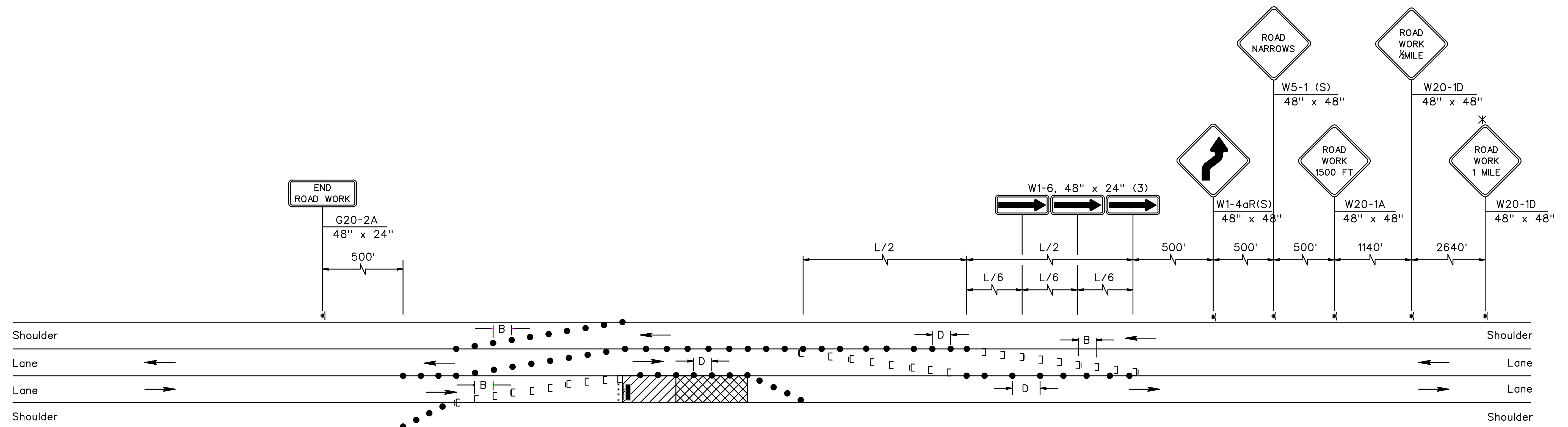
NOTE:
THE MAXIMUM DEVICE SPACING ALONG CURVES SHALL BE AS DEFINED FOR TAPERS (B) IN THE ABOVE TABLE.

N.T.S.

TCD-2

NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS



* THIS SIGN SHALL BE INSTALLED FOR ROADS WITH A SPEED LIMIT OF 45 M.P.H. OR GREATER UNLESS OTHERWISE DIRECTED BY THE RE.

NOTE:
SEE RECOMMENDED TAPER LENGTH AND SPACING TABLE ON SHEET TCD-2 FOR VALUES OF L, B AND D.

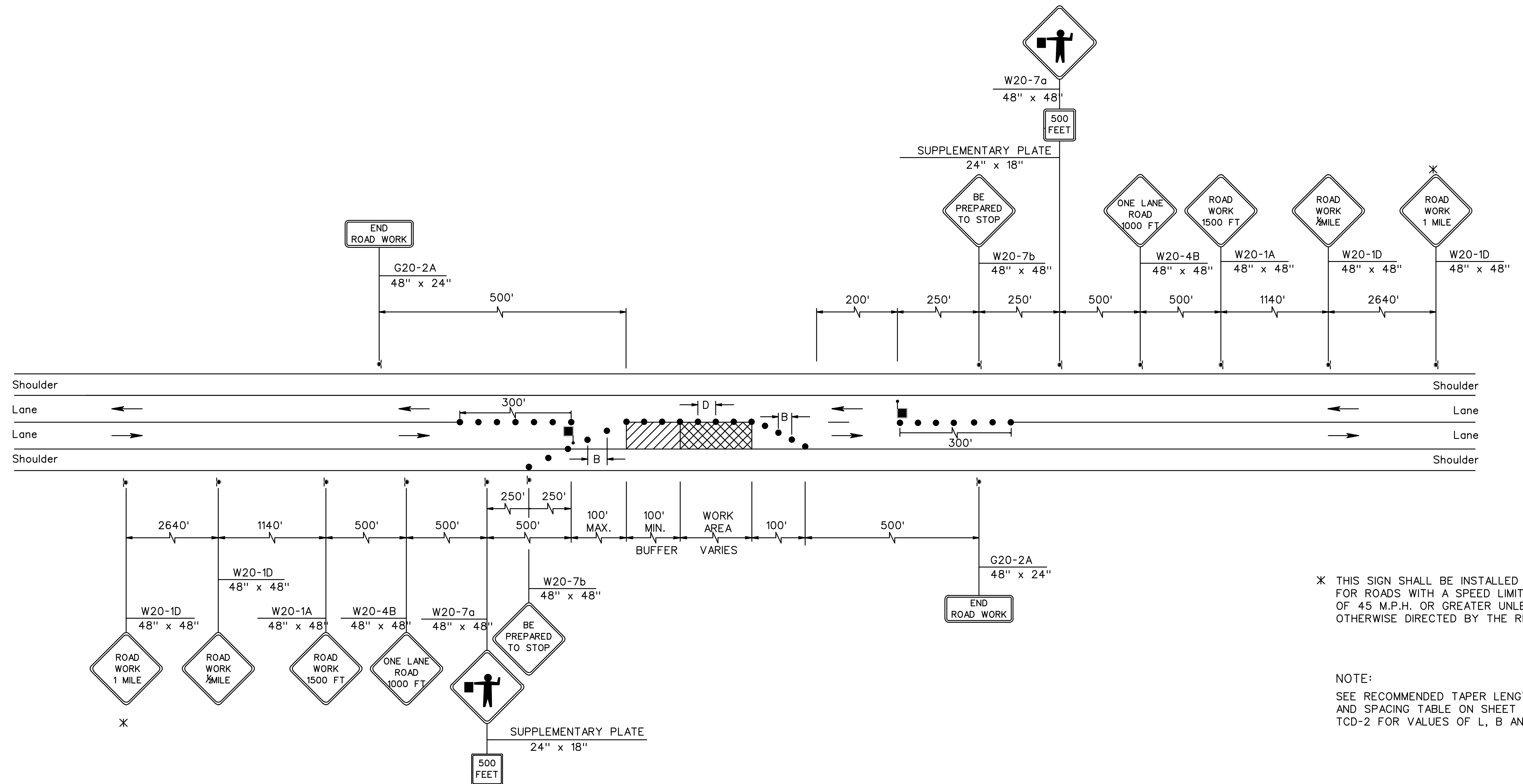
N.T.S.

TCD-3

NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS

2 LANES, UNDIVIDED, SHOULDER CLOSING



* THIS SIGN SHALL BE INSTALLED FOR ROADS WITH A SPEED LIMIT OF 45 M.P.H. OR GREATER UNLESS OTHERWISE DIRECTED BY THE RE.

NOTE:
SEE RECOMMENDED TAPER LENGTH AND SPACING TABLE ON SHEET TCD-2 FOR VALUES OF L, B AND D.

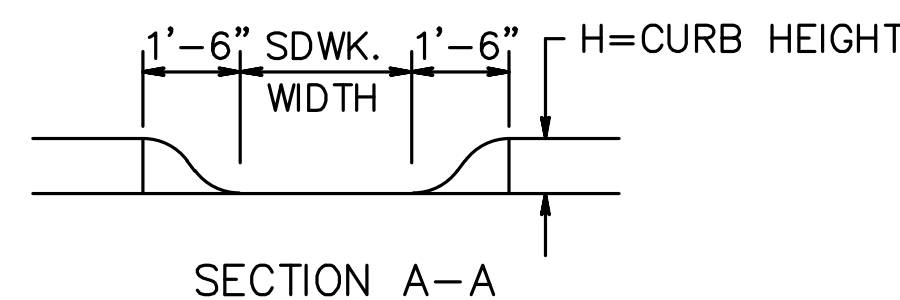
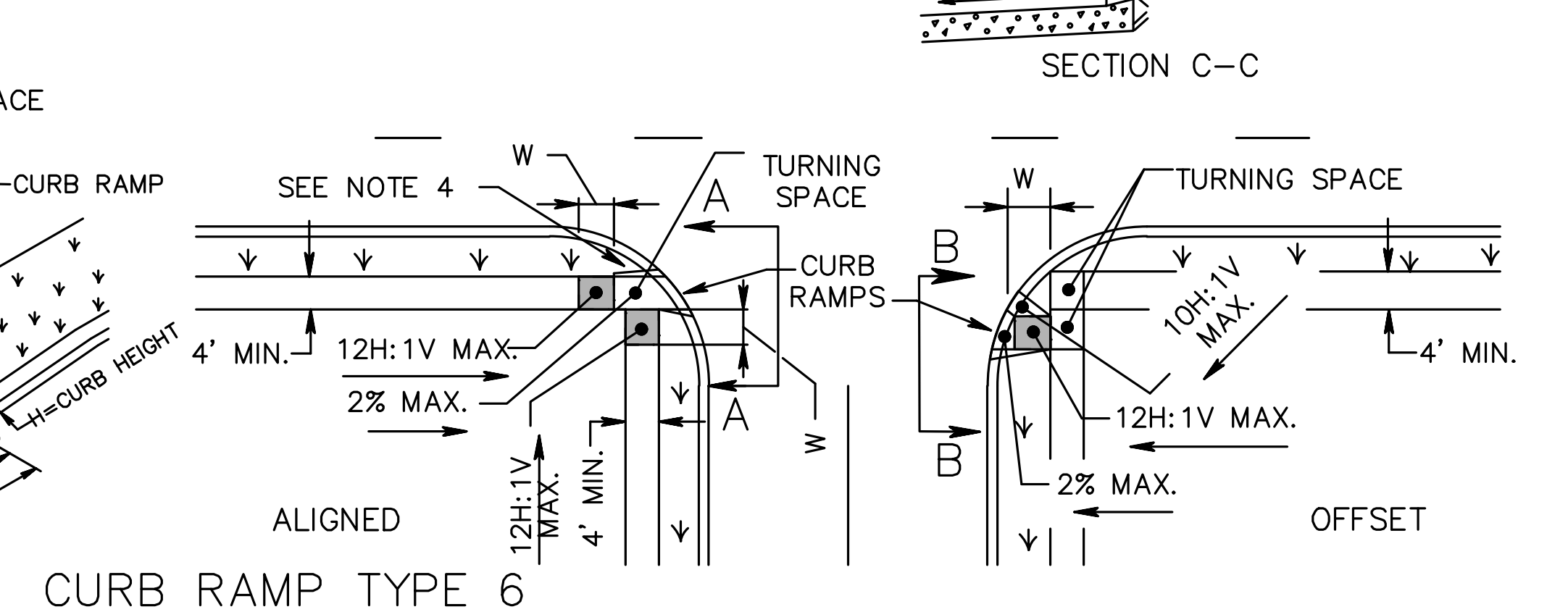
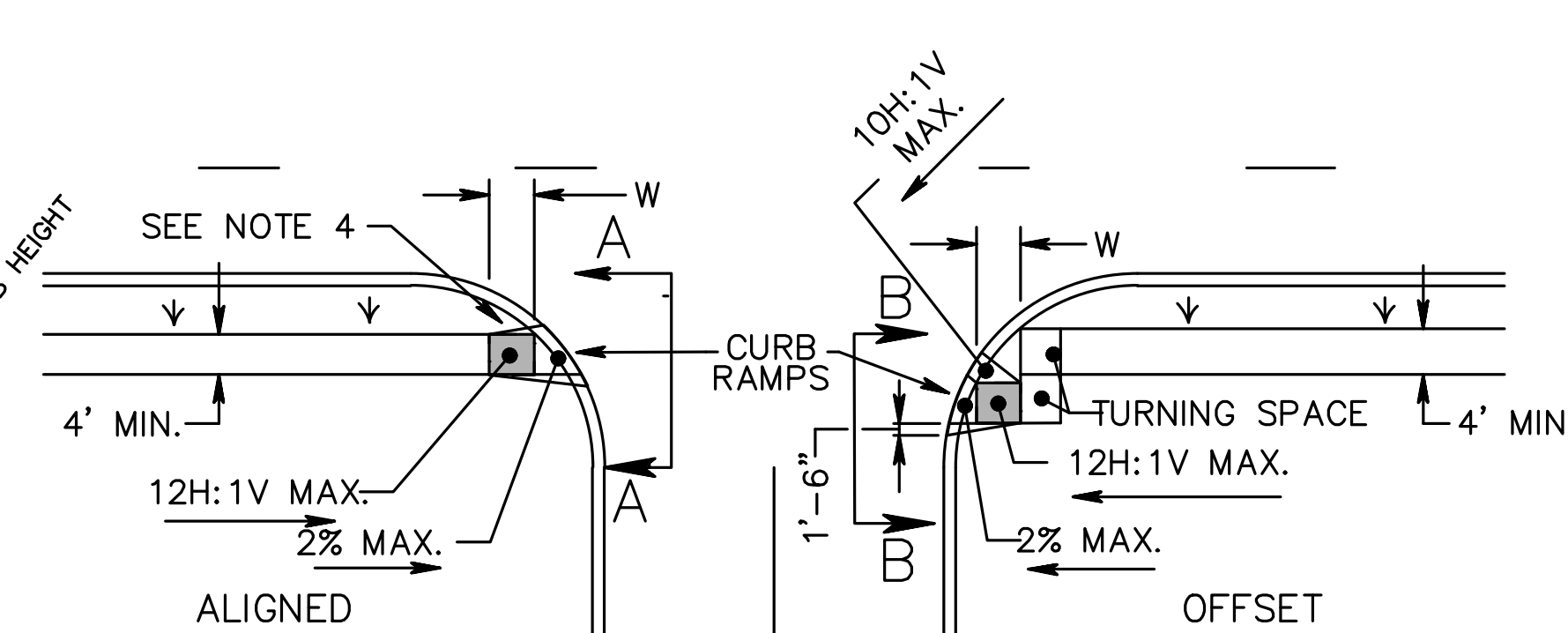
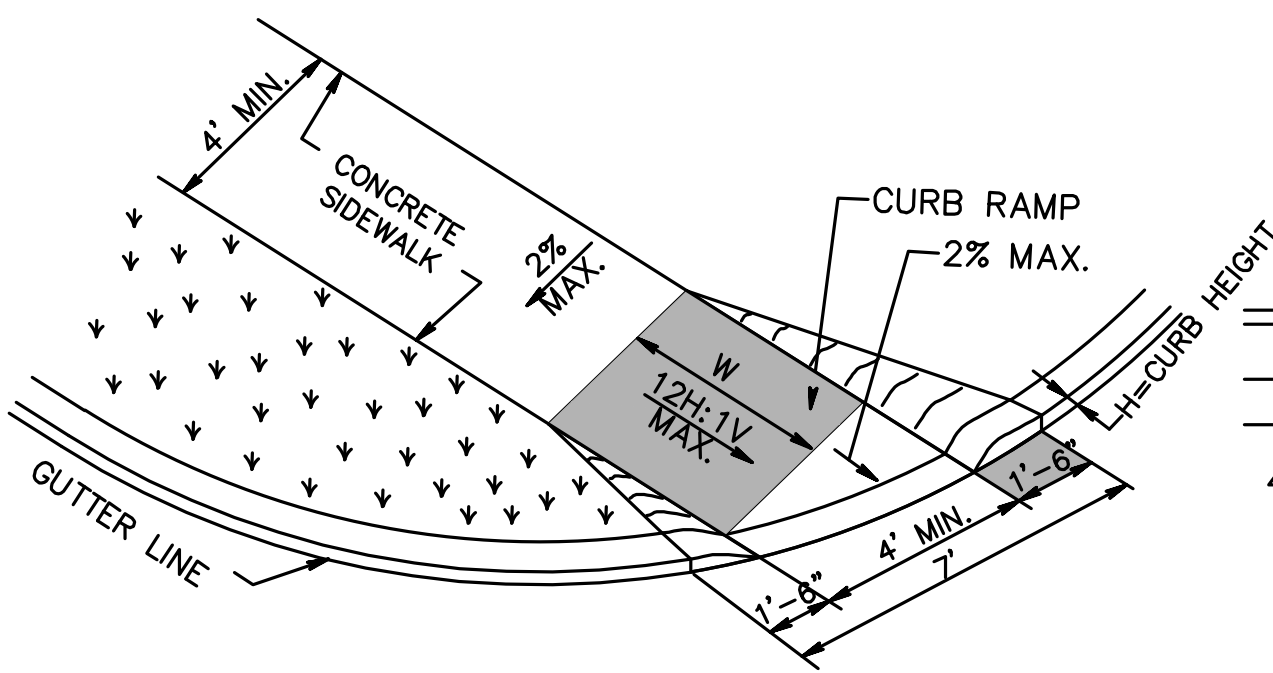
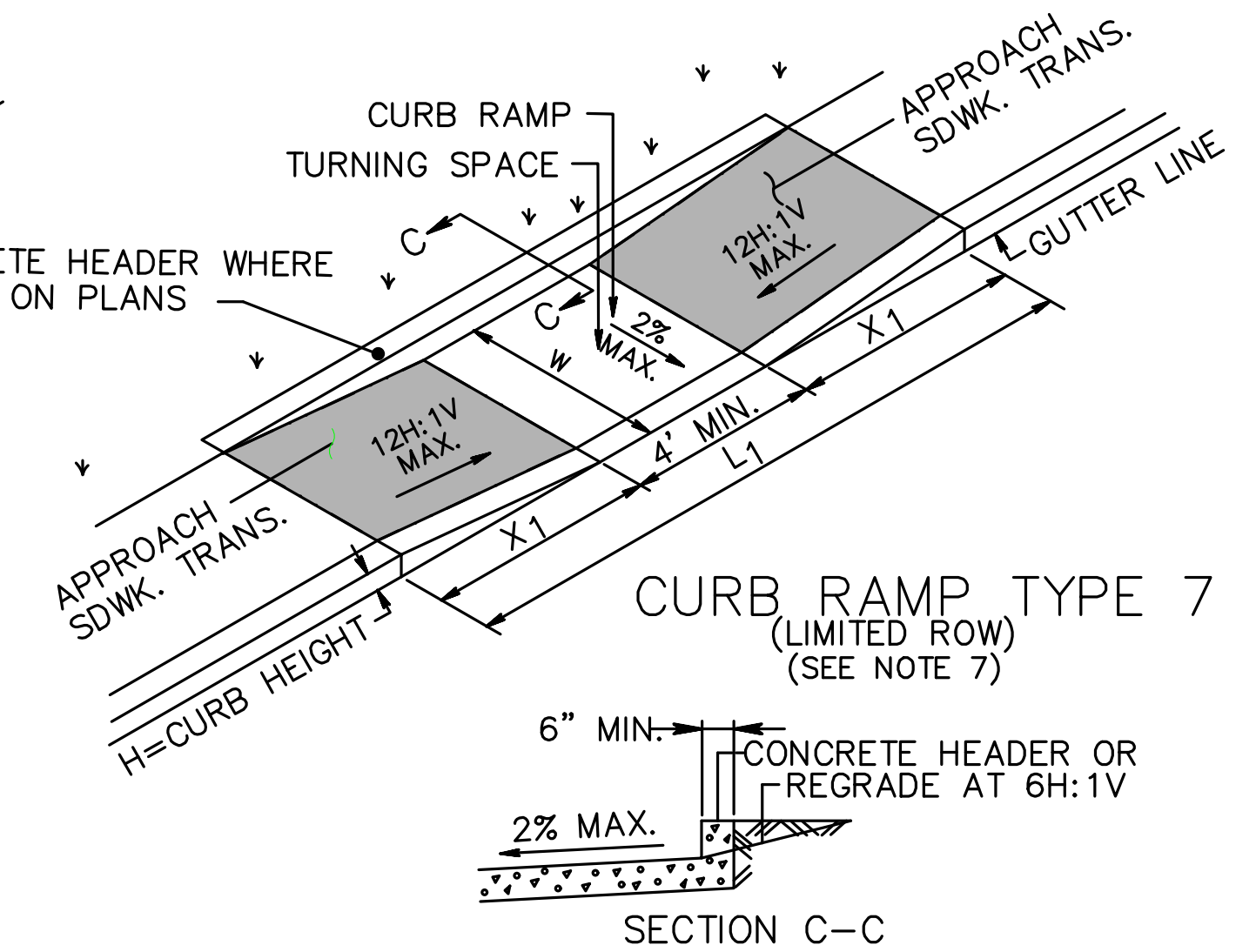
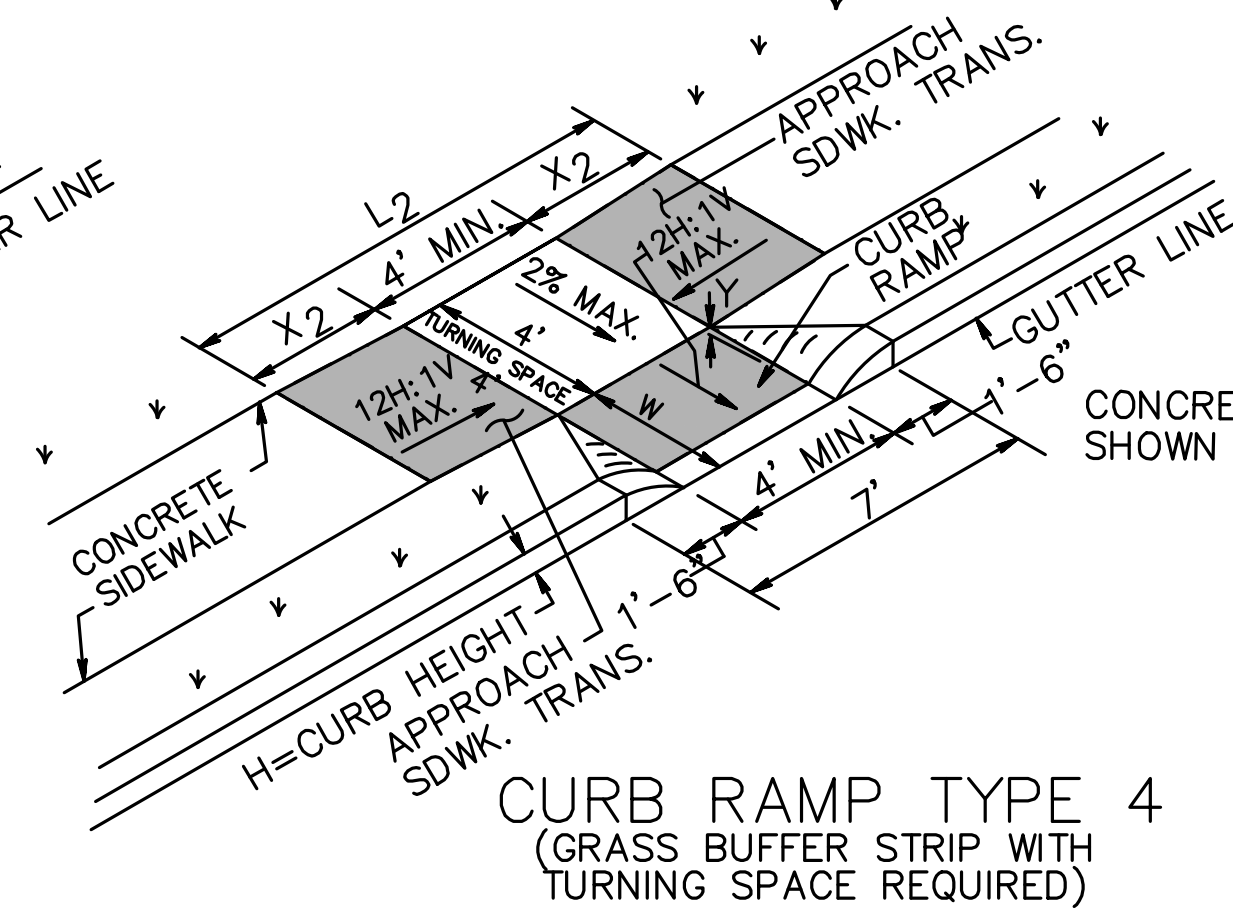
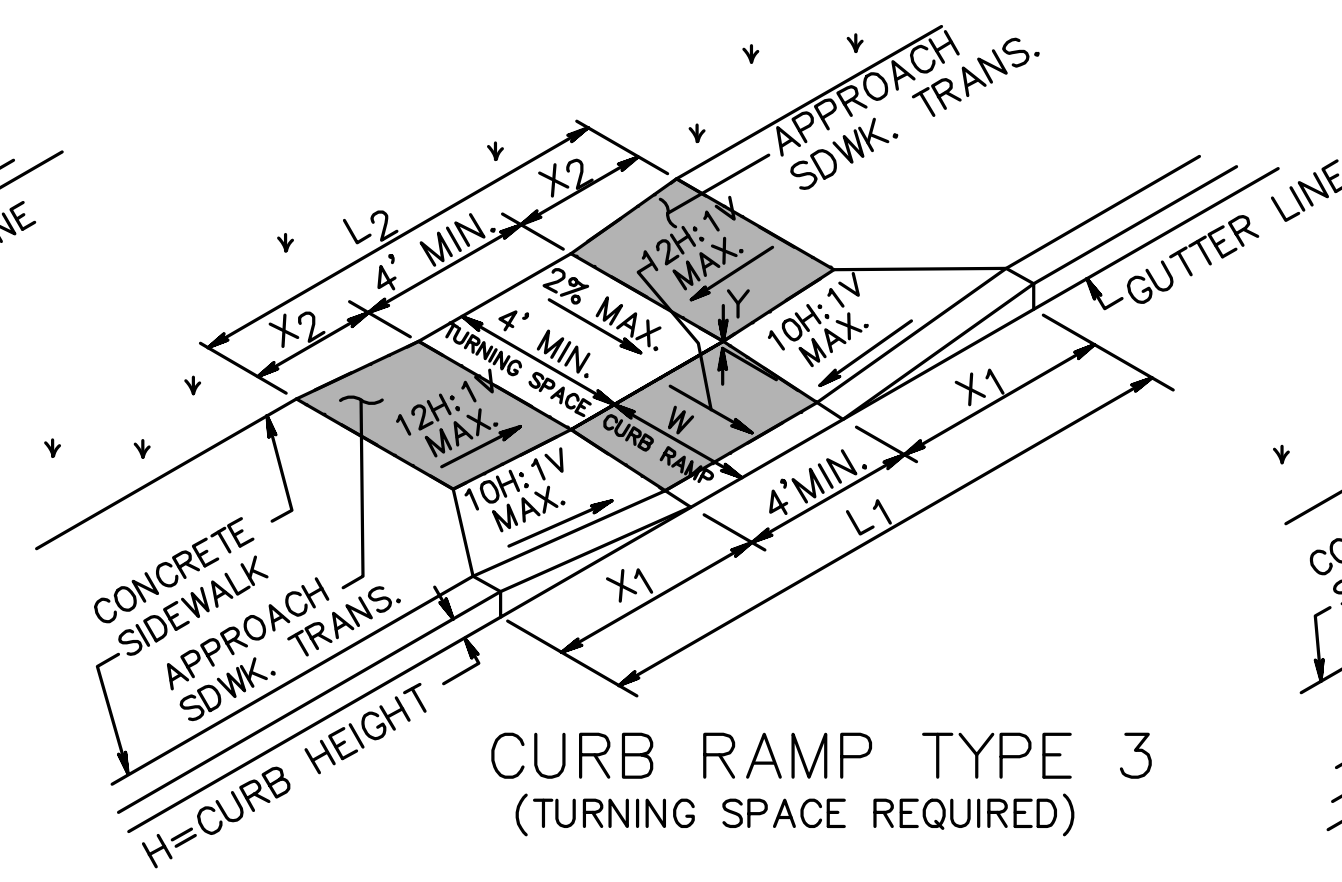
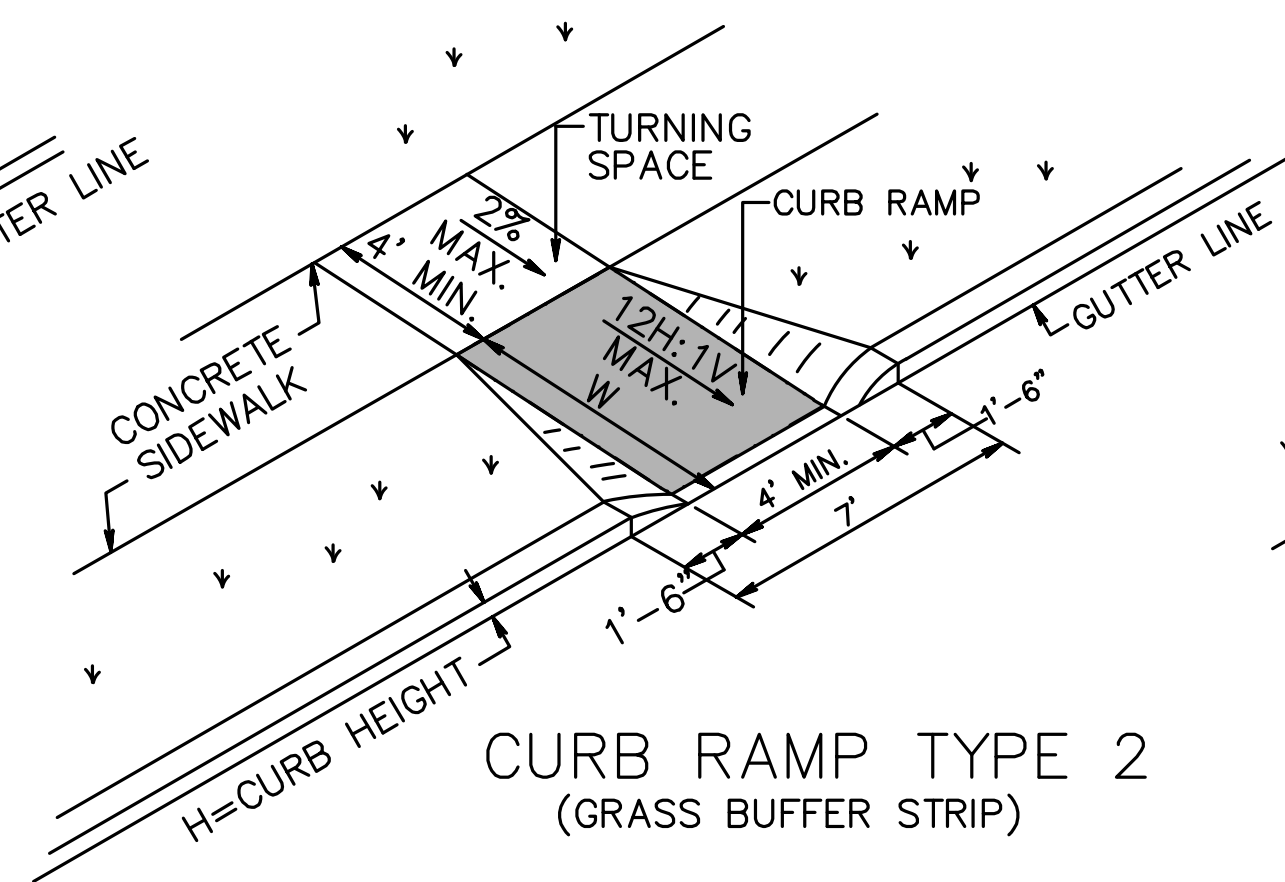
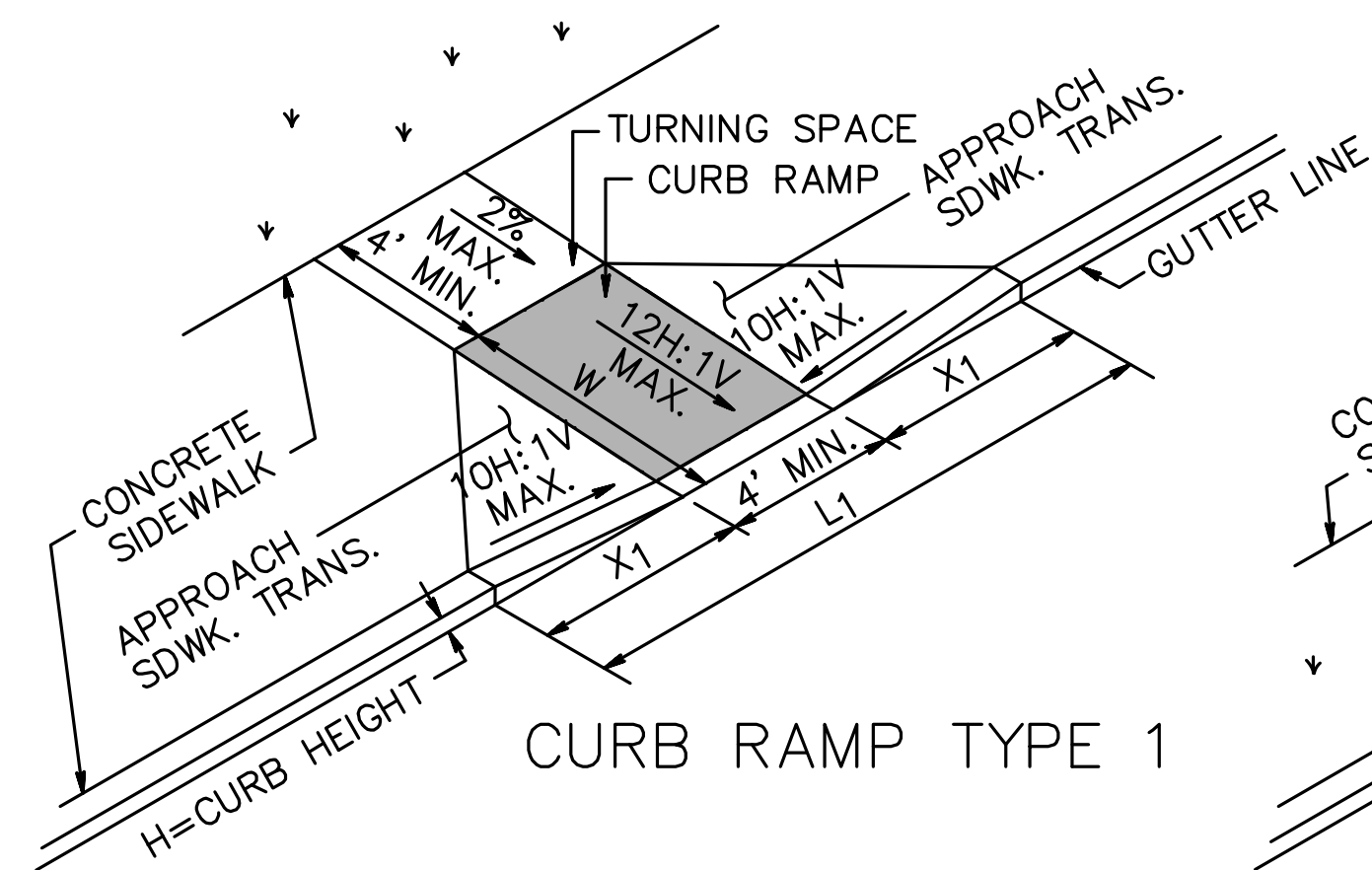
2 LANES, UNDIVIDED, LANE & SHOULDER CLOSING W/FLAGGING

N.T.S.

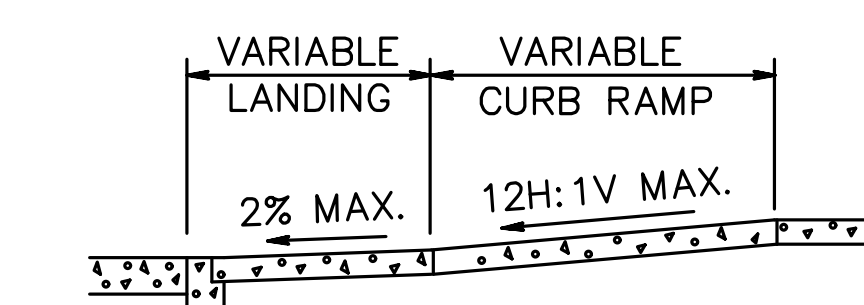
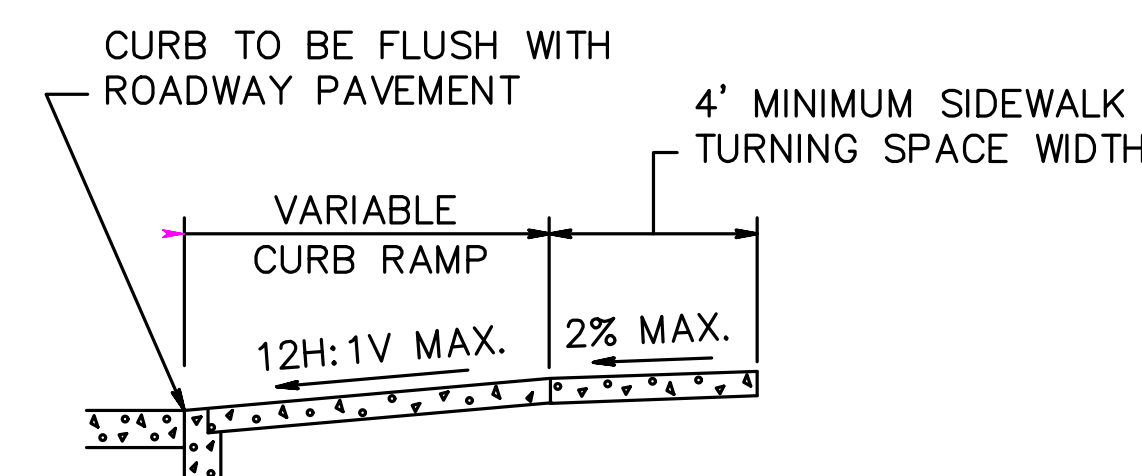
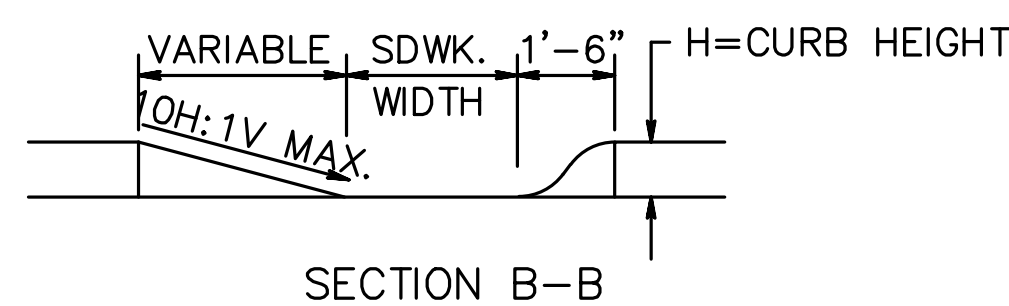
TCD-4

NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS



NOTE:
CURB RAMP OPENING TO BE FLUSH WITH ROADWAY
PAVEMENT (CURB RAMP TYPES 5 & 6).

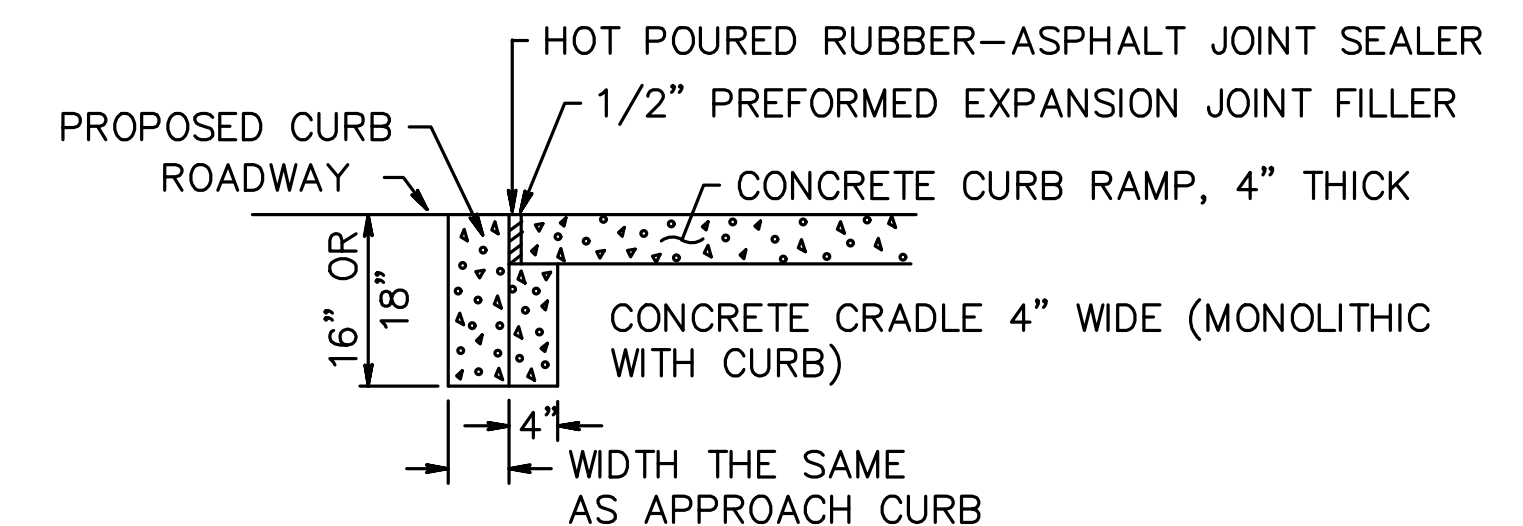


NOTES:

1. KEEP TURNING SPACE, APPROACH SIDEWALK TRANSITIONS, AND CURB RAMP CLEAR OF OBSTRUCTIONS THAT PROTRUDE ABOVE THE SIDEWALK.
2. FOR DIMENSIONS SEE CD-606-1B AND CD-606-1C.
3. CURB (DROPPED CURB) GUTTERLINE TO BE FLUSH WITH ROADWAY PAVEMENT A MINIMUM OF 4 FEET AT ALL CURB RAMPS.
4. FOR CURB RAMP TYPES 5 AND 6, IF A GRASS BUFFER DOES NOT EXIST, SLOPE CURB TO EQUAL SLOPE OF ADJACENT CURB RAMP.
5. SIDEWALK AND CURB RAMP WITHIN AREA ENCLOSED BY HEAVY LINES INDICATES THE PAY LIMIT FOR CONCRETE SIDEWALK OF THE APPROPRIATE ADJACENT THICKNESS.
6. CURB AND HEADER WITHIN AREA ENCLOSED BY HEAVY LINES INDICATES THE PAY LIMIT FOR VERTICAL CURB OR SLOPING CURB OF THE APPROPRIATE ADJACENT SIZE AND KIND.
7. WHERE THE DISTANCE FROM THE GUTTER LINE TO THE OUTSIDE EDGE OF SIDEWALK IS 6 FEET OR LESS, USE CURB RAMP TYPE 7, INSTEAD OF CURB RAMP TYPE 1 THROUGH 4.
8. CROSSWALKS AND STOP LINES MAY BE MARKED OR UNMARKED. SEE PLANS.
9. DIMENSIONS SHOWN IN TABLES ARE FOR 3 INCH TO 9 INCH CURB HEIGHTS. WHERE THE CURB HEIGHTS ARE OTHER THAN WHAT IS PROVIDED IN THE TABLES, THE DIMENSIONS OF THE RAMPS WILL HAVE TO BE CALCULATED BASED ON CROSS SLOPES SHOWN.
10. THE 12H:1V MAX SLOPE IS THE RUNNING SLOPE FOR CURB RAMPS, BUT ONLY THE 12H:1V SLOPE MEASURED AS X2 IS THE RUNNING SLOPE FOR TYPE 3 AND TYPE 4 CURB RAMPS. ENSURE THE RUNNING SLOPE OF CURB RAMPS DOES NOT REQUIRE ITS LENGTH TO EXCEED 15 FEET. THE RUNNING SLOPE MAY EXCEED THE 12H:1V MAX SLOPE SO AS NOT TO EXCEED THE 15 FEET MAXIMUM LENGTH.

CURB RAMP NOTES:

1. THE MAXIMUM CROSS SLOPE OF SIDEWALKS SHALL BE 2%.
2. THE MAXIMUM LONGITUDINAL TRANSITION SLOPE OF SIDEWALKS SHALL BE 5%.
3. THE MAXIMUM LONGITUDINAL SLOPE OF CURB RAMPS SHALL BE 8%.
4. THE CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE ALONG ALL SIDEWALKS, CURB RAMPS AS WELL ADJACENT TO ALL SIDEWALKS. STORMWATER RUNOFF SHALL NOT BE BLOCKED BY SIDEWALKS OR CURBS.
5. FOR TYPE 5 & TYPE 6 RAMPS, LEADING EDGE OF DETECTABLE WARNING SURFACE MUST BE LOCATED A MAXIMUM OF 5 FEET FROM EDGE OF TRAVELWAY - THIS REQUIREMENT MAY WARRANT MULTIPLE DETECTABLE WARNING SURFACES FOR A SINGLE RAMP.
6. THERE MUST BE A MINIMUM OF 24 INCH OF DETECTABLE WARNING SURFACE IN THE DIRECTION OF PEDESTRIAN TRAVEL, THE FULL WIDTH OF THE SIDEWALK - THIS REQUIREMENT MAY WARRANT MULTIPLE DETECTABLE WARNING SURFACES FOR A SINGLE RAMP.
7. A MINIMUM 4' X 4' LANDING AREA, GRADED AT A MAXIMUM SLOPE OF 2% IN ALL DIRECTIONS, MUST BE PROVIDED AT THE TOP OF EVERY RAMP.



CONCRETE SIDEWALK
(PUBLIC SIDEWALK CURB RAMP)
N.T.S.

CD-606-1

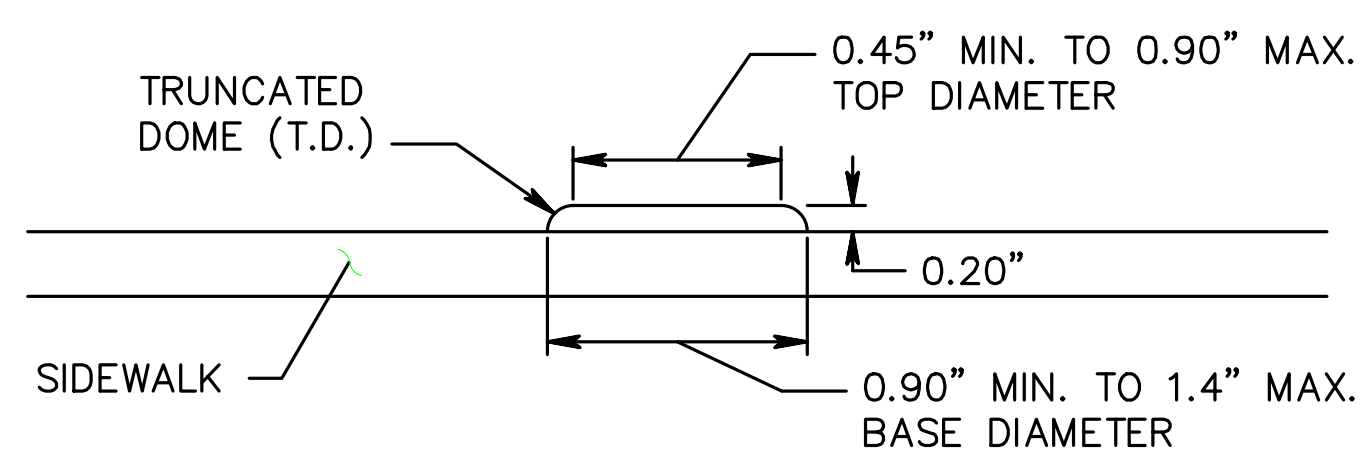
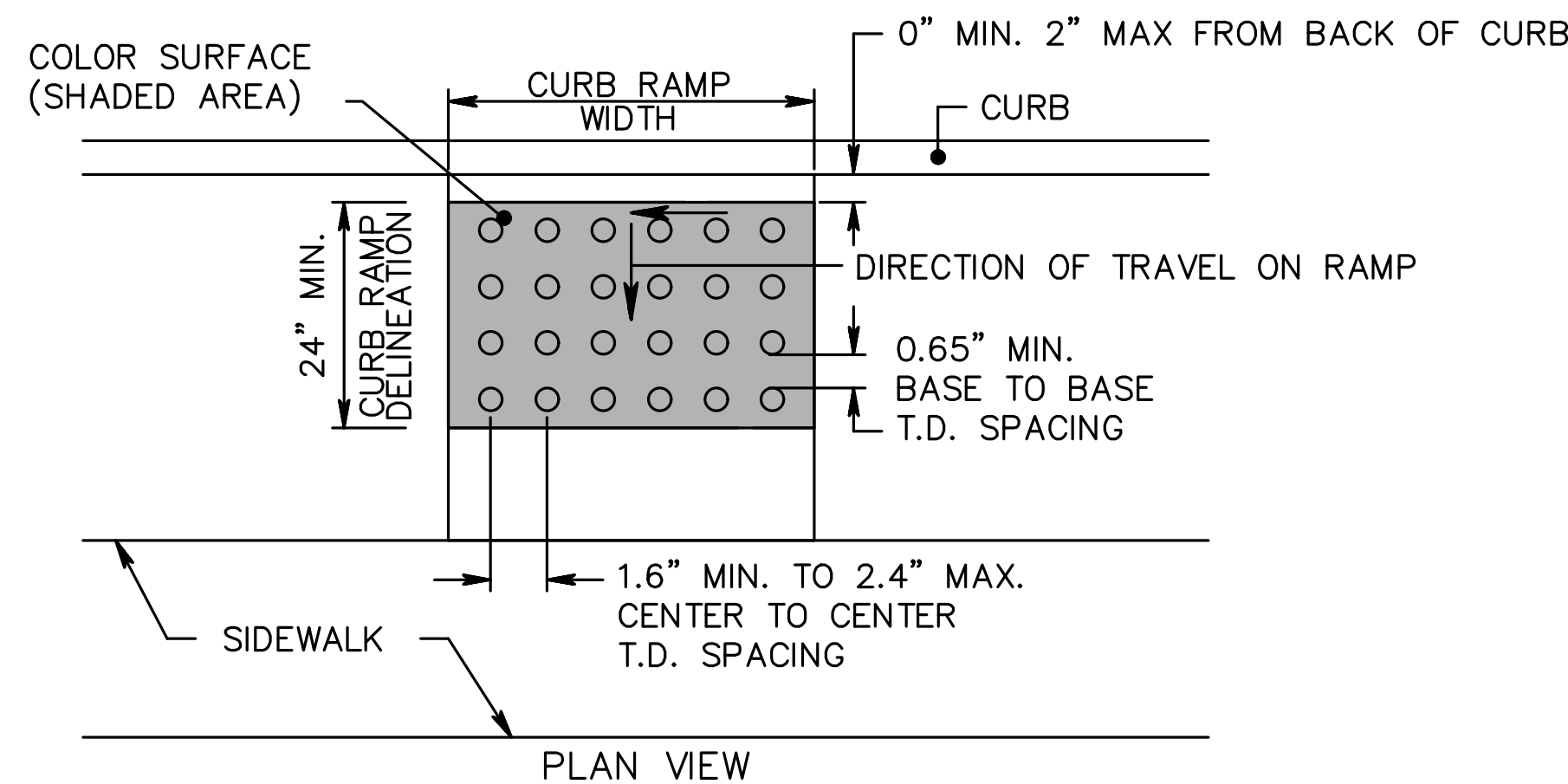
NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

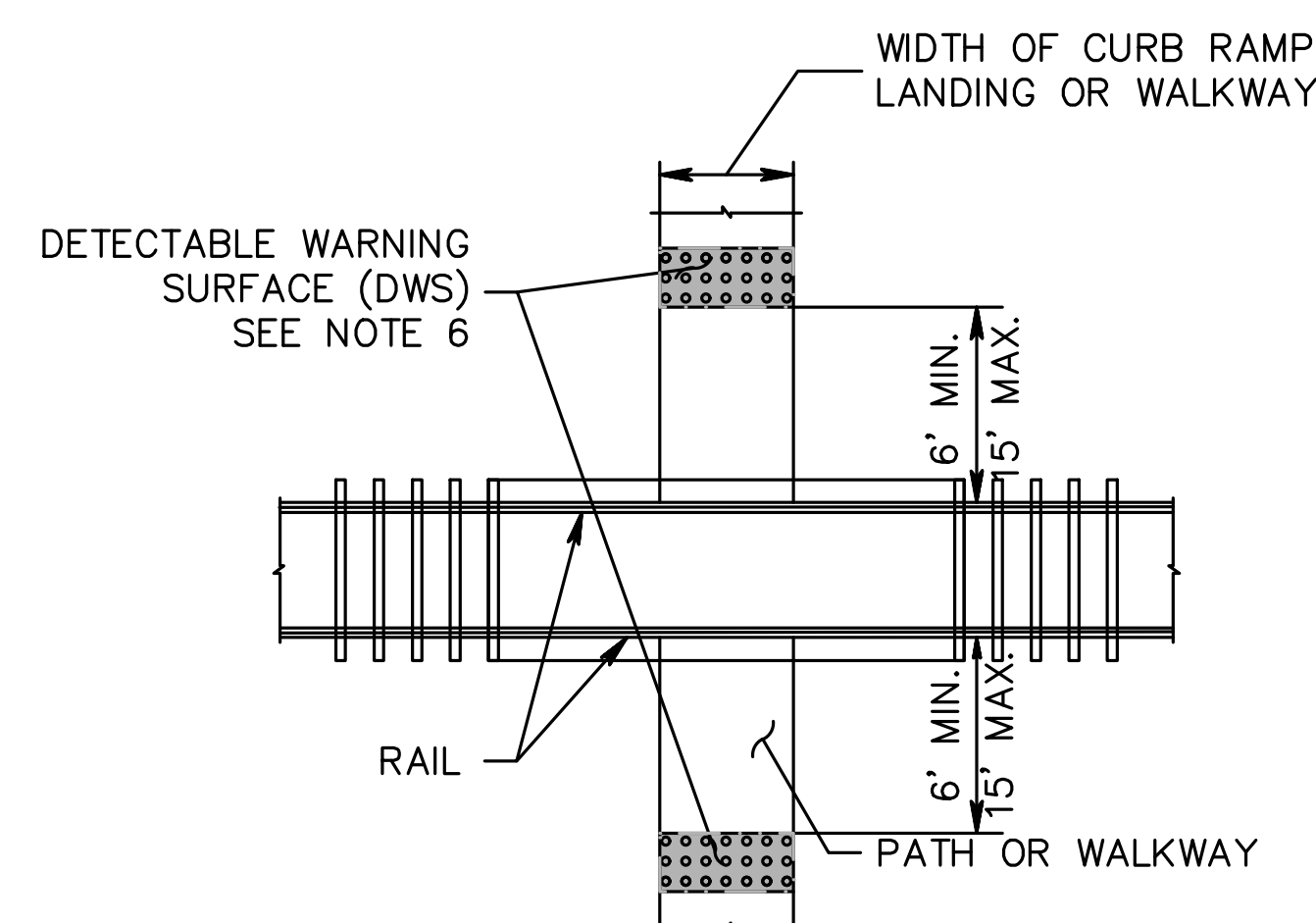
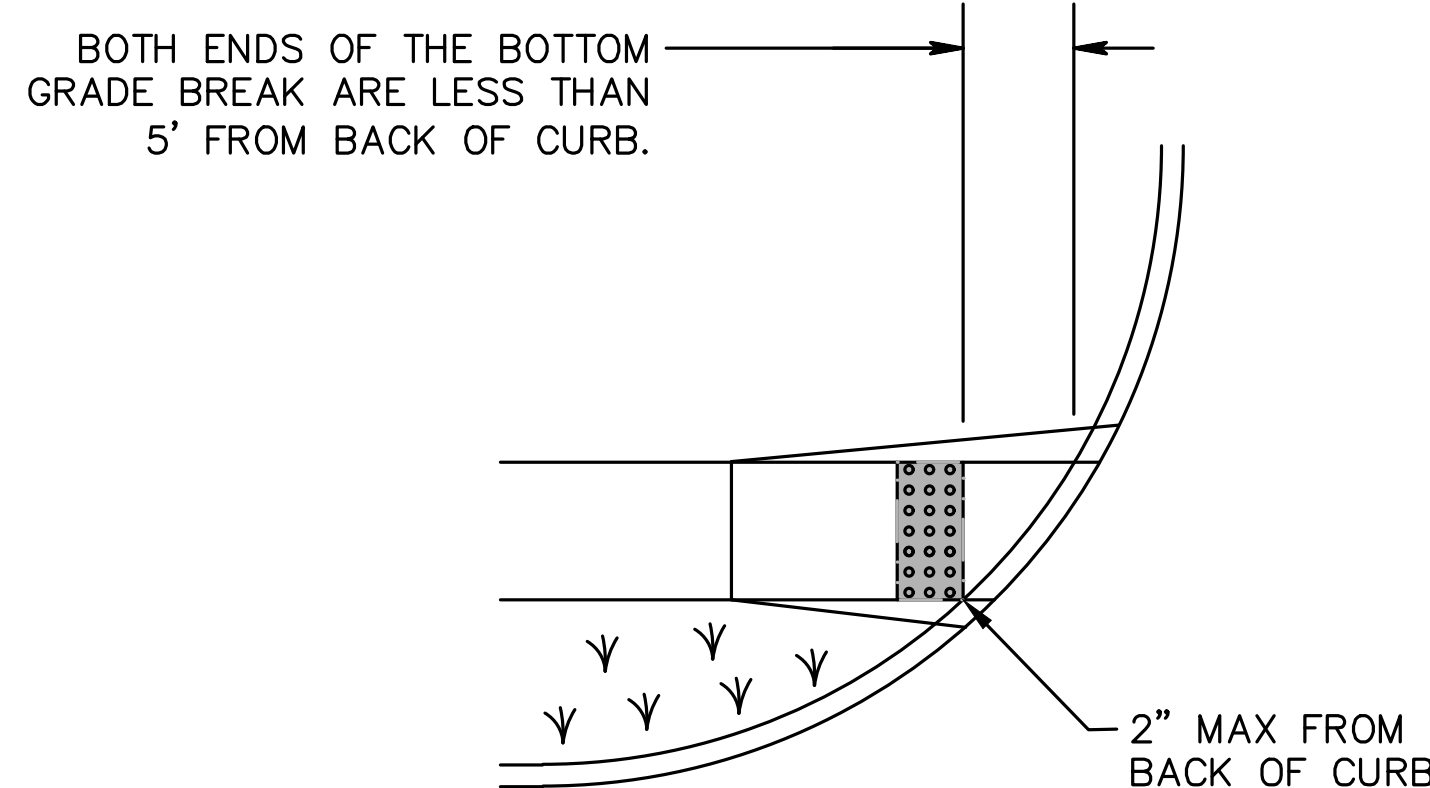
CURB RAMPS

CD-606-1.1

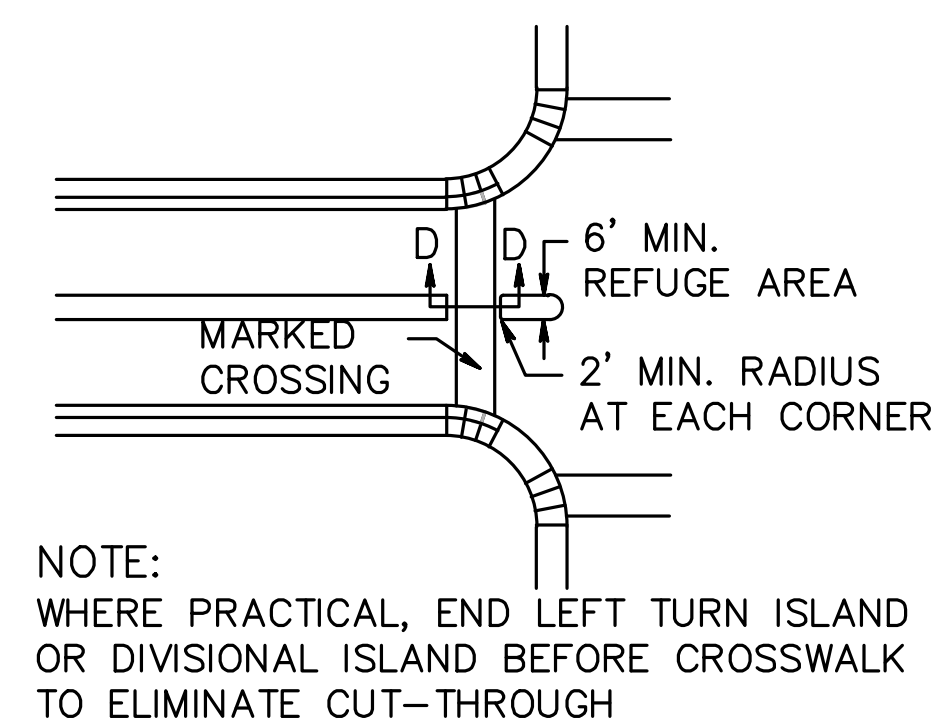
23
26



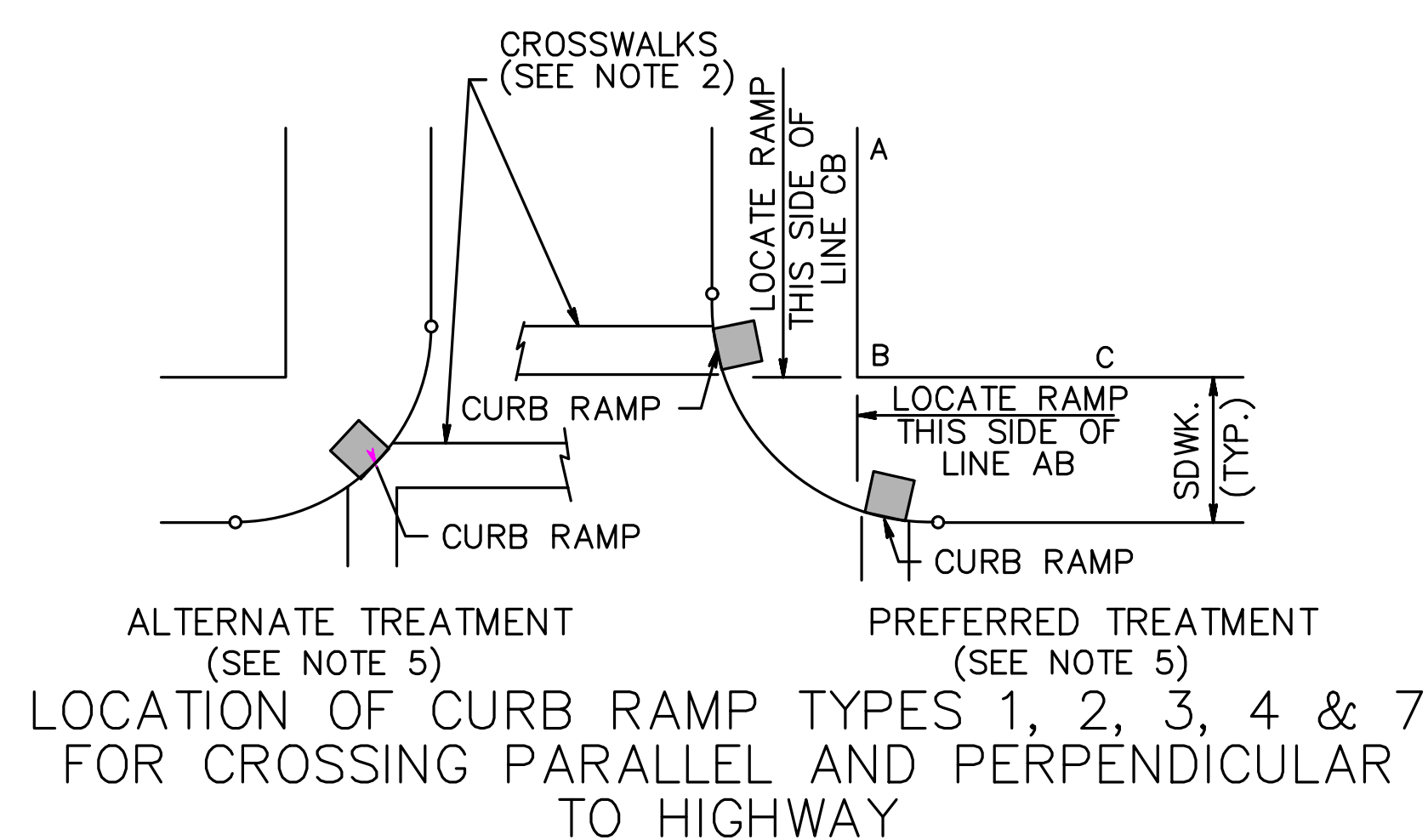
DETECTABLE WARNING SURFACE



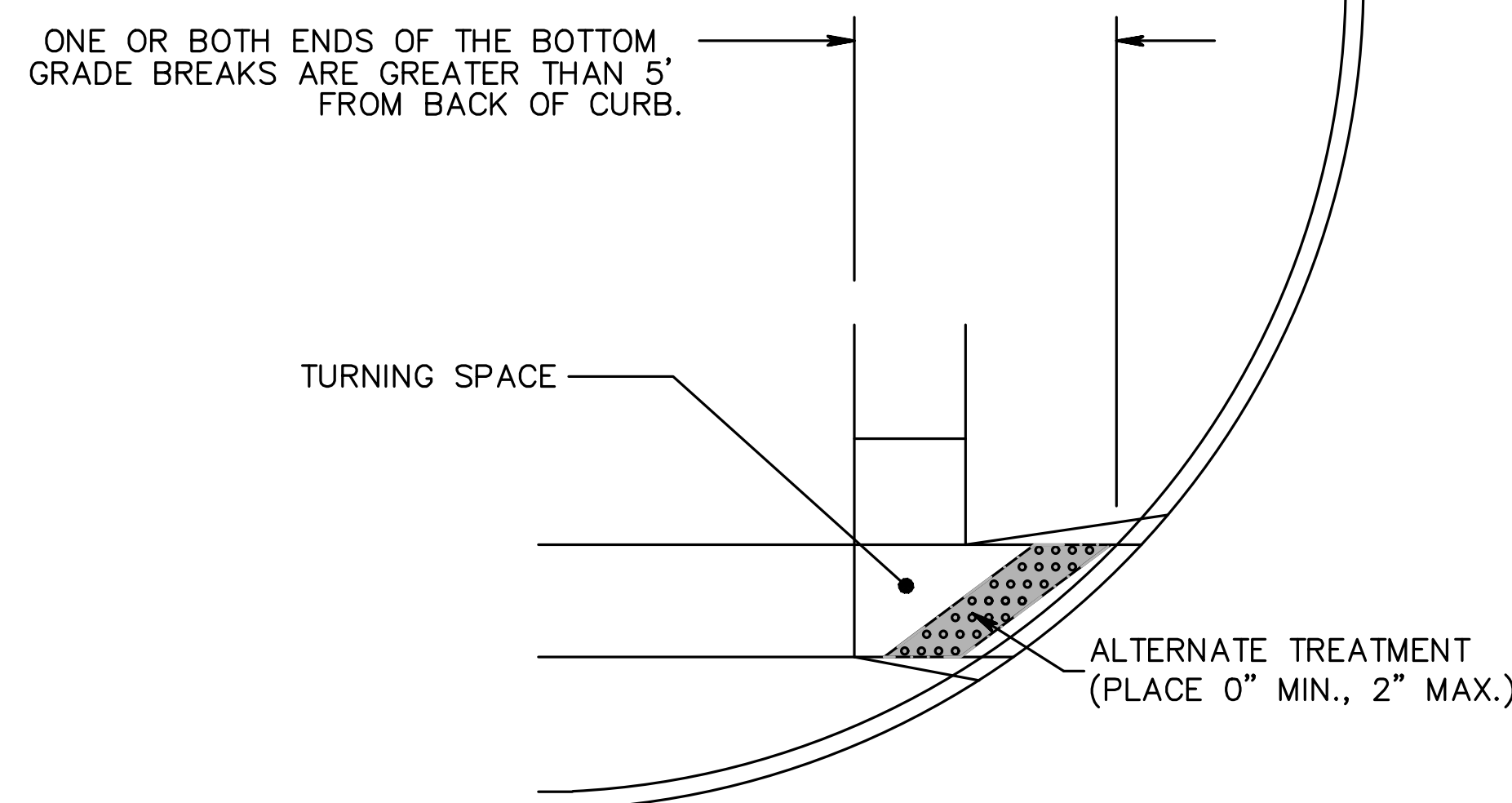
PEDESTRIAN RAILROAD CROSSING



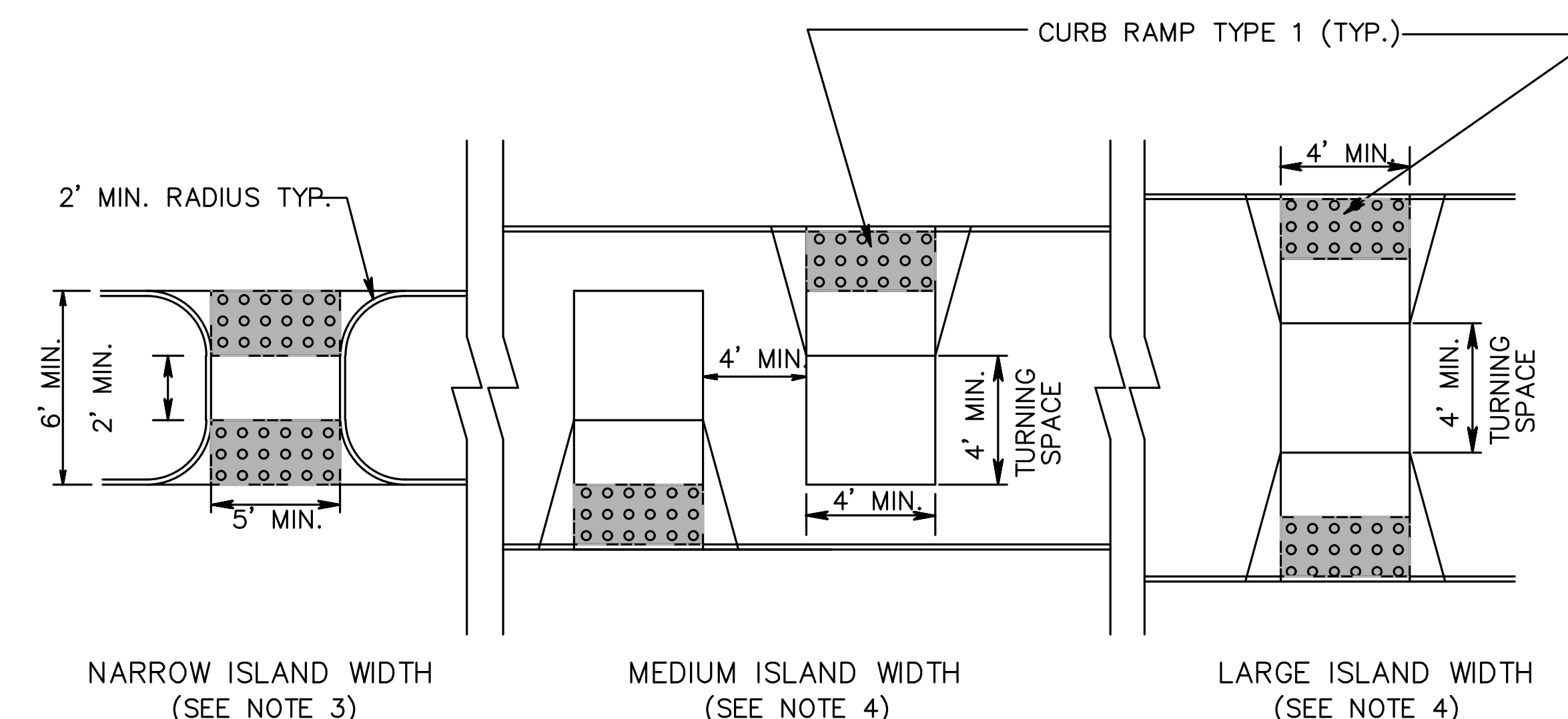
PEDESTRIAN REFUGE ISLAND WALKWAY
OPENING AT INTERSECTIONS



LOCATION OF CURB RAMP TYPES 1, 2, 3, 4 & 7
FOR CROSSING PARALLEL AND PERPENDICULAR
TO HIGHWAY



PLACEMENT OF DETECTABLE WARNING SURFACE
FOR CURB RAMP TYPE 5 AND 6



PEDESTRIAN REFUGE ISLAND

DETECTABLE WARNING SURFACE
N.T.S.

- NOTES:
1. KEEP TURNING SPACE, APPROACH SIDEWALK TRANSITIONS, AND CURB RAMP CLEAR OF OBSTRUCTIONS THAT PROTRUDE ABOVE THE SIDEWALK.
 2. CROSSWALKS AND STOP LINES MAY BE MARKED OR UNMARKED, SEE PLANS.
 3. FOR NARROW ISLAND WIDTH, SEE PEDESTRIAN REFUGE ISLAND WALKWAY OPENING AT INTERSECTIONS DETAIL.
 4. FOR MEDIUM AND LARGE ISLAND WIDTH, SEE CURB RAMP TYPE 1 ON CD-606-1.
 5. CONSTRUCT CURB RAMP TYPES 1, 2, 3, 4 & 7 PERPENDICULAR TO CURBLINE, AS SHOWN.
 6. IF A CURB RAMP IS REQUIRED, THE LOCATION OF THE DETECTABLE WARNING SURFACE MUST BE AT THE BOTTOM OF THE RAMP AND WITHIN THE REQUIRED DISTANCE FROM THE RAIL.

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-606-1.1A

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CURB RAMP TYPE 1

0.0% GUTTER LINE PROFILE				
H INCHES	W FEET	X1u FEET	X1L FEET	Lz FEET
3	3	2.50	2.50	9.00
4	4	3.33	3.33	10.67
5	5	4.17	4.17	12.33
6	6	5.00	5.00	14.00
7	7	5.83	5.83	15.67
8	8	6.67	6.67	17.33
9	9	7.50	7.50	19.00

1.0% GUTTER LINE PROFILE				
H INCHES	W FEET	X1u FEET	X1L FEET	Lz FEET
3	3	2.78	2.27	9.05
4	4	3.70	3.03	10.73
5	5	4.63	3.79	12.42
6	6	5.56	4.55	14.10
7	7	6.48	5.30	15.78
8	8	7.41	6.06	17.47
9	9	8.33	6.82	19.15

2.0% GUTTER LINE PROFILE				
H INCHES	W FEET	X1u FEET	X1L FEET	Lz FEET
3	3	3.13	2.08	9.21
4	4	4.17	2.78	10.94
5	5	5.21	3.47	12.68
6	6	6.25	4.17	14.42
7	7	7.29	4.86	16.15
8	8	8.33	5.56	17.89
9	9	9.38	6.25	19.63

3.0% GUTTER LINE PROFILE				
H INCHES	W FEET	X1u FEET	X1L FEET	Lz FEET
3	3	3.57	1.92	9.49
4	4	4.76	2.56	11.33
5	5	5.95	3.21	13.16
6	6	7.14	3.85	14.99
7	7	8.33	4.49	16.82
8	8	9.52	5.13	18.65
9	9	10.71	5.77	20.48

4.0% GUTTER LINE PROFILE				
H INCHES	W FEET	X1u FEET	X1L FEET	Lz FEET
3	3	4.17	1.79	9.95
4	4	5.56	2.38	11.94
5	5	6.94	2.98	13.92
6	6	8.33	3.57	15.90
7	7	9.72	4.17	17.89
8	8	11.11	4.76	19.87
9	9	12.50	5.36	21.86

5.0% GUTTER LINE PROFILE				
H INCHES	W FEET	X1u FEET	X1L FEET	Lz FEET
3	3	5.00	1.67	10.67
4	4	6.67	2.22	12.89
5	5	8.33	2.78	15.11
6	6	10.00	3.33	17.33
7	7	11.67	3.89	19.56
8	8	13.33	4.44	21.78
9	9	15.00	5.00	24.00

6.0% GUTTER LINE PROFILE				
H INCHES	W FEET	X1u FEET	X1L FEET	Lz FEET
3	3	6.25	1.56	11.81
4	4	8.33	2.08	14.42
5	5	10.42	2.60	17.02
6	6	12.50	3.13	19.63
7	7	14.58	3.65	22.23
8	8	15.00	4.17	23.17
9	9	15.00	4.69	23.69

0.0% GUTTER LINE PROFILE				
H INCHES	W FEET	X1u FEET	X1L FEET	Lz FEET
3	3	8.33	1.47	13.80
4	4	11.11	1.96	17.07
5	5	13.89	2.45	20.34
6	6	15.00	2.94	21.94
7	7	15.00	3.43	22.43
8	8	15.00	3.92	22.92
9	9	15.00	4.41	23.41

CURB RAMP TYPE 2

0.0% GUTTER LINE PROFILE								
H INCHES	W FEET	X1u FEET	X1L FEET	L1 FEET	Y INCHES	X2u FEET	X2L FEET	L2 FEET
3	2.5	2.50	2.50	9.00	2.5	1.10	1.10	6.20
4		3.33	3.33	10.67		2.10	2.10	8.20
5		4.17	4.17	12.33		3.10	3.10	10.20
6		5.00	5.00	14.00		4.10	4.10	12.20
7		5.83	5.83	15.67		5.10	5.10	14.21
8	3.0	6.67	6.67	17.33	3.0	6.10	6.10	16.21
9		7.50	7.50	19.00		7.10	7.10	18.21
3		*	*	*		*	*	*
4		3.33	3.33	10.67		1.72	1.72	7.44
5		4.17	4.17	12.33		2.72	2.72	9.44
6	3.5	5.00	5.00	14.00	3.5	3.72	3.72	11.45
7		5.83	5.83	15.67		4.72	4.72	13.45
8		6.67	6.67	17.33		5.72	5.72	15.45
9		7.50	7.50	19.00		6.72	6.72	17.45
3		*	*	*		*	*	*
4	4.0	3.33	3.33	10.67	4.0	1.34	1.34	6.68
5		4.17	4.17	12.33		2.34	2.34	8.68
6		5.00	5.00	14.00		3.34	3.34	10.69
7		5.83	5.83	15.67		4.34	4.34	12.69
8		6.67	6.67	17.33		5.34	5.34	14.69
9	4.0	7.50	7.50	19.00	4.0	6.34	6.34	16.69
3		*	*	*		*	*	*
4		*	*	*		*	*	*
5		4.17	4.17	12.33		1.96	1.96	7.92
6		5.00	5.00	14.00		2.96	2.96	9.93
7	4.0	5.83	5.83	15.67	4.0	3.96	3.96	11.93
8		6.67	6.67	17.33		4.96	4.96	13.93
9		7.50	7.50	19.00		5.96	5.96	15.93
3		*	*	*		*	*	*
4		*	*	*		*	*	*

4.0% GUTTER LINE PROFILE								
H INCHES	W FEET	X1u FEET	X1L FEET	L1 FEET	Y INCHES	X2u FEET	X2L FEET	L2 FEET
3	2.5	4.17	1.79	9.95	2.5	2.12	0.74	6.86
4		5.56	2.38	11.94		4.04	1.42	9.46
5		6.94	2.98	13.92		4.85	2.28	11.13
6		8.33	3.57	15.90		6.41	3.02	13.43
7		9.72	4.17	17.89		7.98	3.75	15.73
8	3.0	11.11	4.76	19.87	3.0	9.54	4.49	18.03
9		12.50	5.36	21.86		11.10	5.22	20.33
3		4.17	1.79	9.95		1.39	0.49	5.88
4		5.56	2.38	11.94		3.31	1.16	4.48
5		6.94	2.98	13.92		5.24	1.84	11.08
6	3.5	8.33	3.57	15.90	3.5	5.24	2.52	13.68
7		9.72	4.17	17.89		9.09	3.19	16.28
8		11.11	4.76	19.87		11.02	3.87	18.88
9		12.50	5.36	21.86		12.94	4.54	21.48
3		*	*	*		*	*	*
4	4.0	5.56	2.38	11.94	4.0	2.58	0.91	7.49
5		6.94	2.98	13.92		4.51	1.58	10.09
6		8.33	3.57	15.90		6.43	2.26	12.69
7		9.72	4.17	17.89		8.36	2.93	15.29
8		11.11	4.76	19.87		10.28	3.61	17.89
9	4.0	12.50	5.36	21.86	4.0	12.20	4.29	20.49
3		*	*	*		*	*	*
4		5.56	2.38	11.94		1.85	0.65	6.50
5		6.94	2.98	13.92		3.78	1.33	9.10
6		8.33	3.57	15.90		5.70	2.00	11.70
7	4.0	9.72	4.17	17.89	4.0	7.62	2.68	14.30
8		11.11	4.76	19.87		9.55	3.35	16.90
9		12.50	5.36	21.86		11.47	4.03	19.50
3		*	*	*		*	*	*
4		5.56	2.38	11.94		1.85	0.65	6.50

CURB RAMP TYPE 2

0.0% GUTTER LINE PROFILE				
H INCHES	W FEET	X1u FEET	X1L FEET	Lz FEET
3	3	1.50	1.50	7.00
4	4	1.50	1.50	7.00
5	5	1.50	1.50	7.00
6	6	1.50	1.50	7.00
7	7	1.50	1.50	7.00
8	8	1.50	1.50	7.00
9	9	1.50	1.50	7.00

1.0% GUTTER LINE PROFILE								
H INCHES	W FEET	X1u FEET	X1L FEET	L1 FEET	Y INCHES	X2u FEET	X2L FEET	L2 FEET
3	2.5	2.78	2.27	9.05	2.5	1.25	0.98	6.24
4		3.70	3.03	10.73		2.39	1.18	8.27
5		4.63	3.79	12.42		3.53	2.77	10.30
6		5.56	4.55	14.10		4.66	3.66	12.33
7		6.48	6.06	15.78		5.80	4.56	14.36
8	3.0	7.41	6.06	17.47	3.0	6.94	5.45	16.39
9		8.33	6.82	19.15		8.07	6.34	18.42
3		2.78	2.27	9.05		0.82	0.64	5.46
4		3.70	3.03	10.73		1.96	1.54	7.49
5		4.63	3.79	12.42		3.09	2.43	9.52
6	3.5	5.56	4.55	14.10	3.5	4.23	3.32	11.55
7		6.48	6.06	15.78		4.23	4.22	13.58
8		7.41	6.06	17.47		5.37	5.11	15.61
9		8.33	6.82	19.15		7.64	6.00	17.64
33		*	*	*		*	*	*
4	4.0	3.70	3.03	10.73	4.0	1.53	1.20	6.72
5		4.63	3.79	12.42		2.66	2.09	8.75
6		5.56	4.55	14.10		3.80	2.98	10.78
7		6.48	6.06	15.78		4.94	3.88	12.81
8		7.41	6.06	17.47		6.07	4.77	14.84
9	4.0	8.33	6.82	19.15	4.0	7.21	5.66	16.87
33		*	*	*		*	*	*
4		3.70	3.03	10.73		1.09	0.86	5.95
5		4.63	3.79	12.42		2.23	1.75	7.98
6		5.56	4.55	14.10		3.37	2.65	10.01
7	4.0	6.48	6.06	15.78	4.0	4.50	3.54	12.04
8		7.41	6.06	17.47		5.64	4.43	14.07
9		8.33	6.82	19.15		6.78	5.32	16.01
33		*	*	*		*	*	*
4		3.70	3.03	10.73		1.09	0.86	5.95

5.0% GUTTER LINE PROFILE								
H INCHES	W FEET	X1u FEET	X1t FEET	L1 FEET	Y INCHES	X2u FEET	X2t FEET	L2 FEET
3	2.5	5.00	1.67	10.67	2.5	2.76	0.69	7.44
4		6.67	2.22	12.89		5.26	1.31	10.57
5		8.33	2.78	15.11		7.76	1.94	13.57
6		10.00	3.33	17.33		10.26	2.56	16.83
7		11.67	3.89	19.56		12.77	3.19	19.95
8		13.33	4.44	21.78		15.00	3.81	22.81
9		15.00	5.00	24.00		15.00	4.44	23.44
3	3.0	5.00	1.67	10.67	3.0	1.80	0.45	6.26
4		6.67	2.22	12.89		4.31	1.08	9.38
5		8.33	2.78	15.11		6.81	1.70	12.51
6		10.00	3.33	17.33		9.31	2.33	15.64
7		11.67	3.89	19.56		11.81	2.95	18.77
8		13.33	4.44	21.78		14.32	3.58	21.89
9		15.00	5.00	24.00		15.00	4.20	23.20
3	3.5	*	*	*	3.5	*	*	*
4		6.67	2.22	12.89		3.36	0.84	8.20
5		8.33	2.78	15.11		5.86	1.46	11.32
6		10.00	3.33	17.33		8.36	2.09	14.45
7		11.67	3.89	19.56		10.86	2.71	17.58
8		13.33	4.44	21.78		13.37	3.34	20.71
9		15.00	5.00	24.00		15.00	3.96	22.96
3	4.0	*	*	*	4.0	*	*	*
4		6.67	2.22	12.89		2.41	0.60	7.01
5		8.33	2.78	15.11		4.91	1.23	10.14
6		10.00	3.33	17.33		7.41	1.85	13.26
7		11.67	3.89	19.56		9.91	2.48	16.39
8		13.33	4.44	21.78		12.42	3.10	19.52
9		15.00	5.00	24.00		11.92	3.73	22.65

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BDC12D-05-ORIGINAL SHEET

5.0% GUTTER LINE PROFILE						
H INCHES	W FEET	Y INCHES	X2u FEET	X2L FEET	Lz FEET	
3	2.5	2.5	2.76	0.69	7.44	
4			5.26	1.31	10.57	
5			7.76	1.94	13.70	
6			10.26	2.56	16.83	
7			12.77	3.19	19.95	
8			15.00	3.81	22.81	
9			15.00	4.44	23.44	
3	3.0	3.0	1.80	0.45	6.26	
4			4.31	1.08	9.38	
5			6.81	1.70	12.51	
6			9.31	2.33	15.64	
7			11.81	2.95	18.77	
8			14.32	3.58	21.89	
9			15.00	3.87	23.20	
3	3.5	3.5	0.85	0.21	5.07	
4			3.36	0.84	8.20	
5			5.86	1.46	11.32	
6			8.36	2.09	14.45	
7			10.86	2.71	17.58	
8			13.37	3.34	20.71	
9			15.00	3.96	22.96	
3	4.0	4.0	**	**	**	
4			2.41	0.60	7.01	
5			4.91	1.23	10.14	
6			7.41	1.85	13.26	
7			9.91	2.48	16.39	
8			12.42	3.10	19.52	
9			14.92	3.73	22.65	

6.0% GUTTER LINE PROFILE						
H INCHES	W FEET	Y INCHES	X2U FEET	X2L FEET	L2 FEET	
3	2.5	2.5	3.94	0.64	8.58	
4			7.51	1.22	12.74	
5			11.09	1.80	16.89	
6			14.67	2.38	21.05	
7			15.00	2.97	21.97	
8			15.00	3.55	22.55	
9			15.00	4.13	23.13	
3	3.0	3.0	2.58	0.42	7.0	
4			6.16	1.00	11.16	
5			9.73	1.58	15.31	
6			13.31	2.16	19.47	
7			15.00	2.75	21.75	
8			15.00	3.33	22.33	
9			15.00	3.91	22.91	
3	3.5	3.5	1.22	0.20	5.42	
4			4.80	0.78	9.58	
5			8.37	1.36	13.74	
6			11.95	1.94	17.89	
7			15.00	2.52	21.52	
8			15.00	3.11	22.11	
9			15.00	3.69	22.69	
3	4.0	4.0	**	**	**	
4			3.44	0.56	8.00	
5			7.02	1.14	12.16	
6			10.59	1.72	16.31	
7			14.17	2.30	20.47	
8			15.00	2.89	21.89	
9			15.00	3.47	22.47	

7.0% GUTTER LINE PROFILE					
H INCHES	W FEET	Y INCHES	X2U FEET	X2L FEET	LZ FEET
3	2.5	2.5	6.90	0.60	11.50
4			13.16	1.14	18.31
5			15.00	1.69	20.69
6			15.00	2.23	21.23
7			15.00	2.77	21.77
8			15.00	3.32	22.32
9			15.00	3.86	22.86
3			3.0	3.0	4.52
4	10.78	0.94			15.72
5	15.00	1.48			20.48
6	15.00	2.02			21.02
7	15.00	2.57			21.57
8	15.00	3.11			22.11
9	15.00	3.65			22.65
3	3.5	3.5			2.14
4			8.40	0.73	13.13
5			14.67	1.27	19.94
6			15.00	1.82	20.82
7			15.00	2.36	21.36
8			15.00	2.90	21.90
9			15.00	3.45	22.45
3			4.0	4.0	**
4	6.03	0.52			10.55
5	12.29	1.07			17.36
6	15.00	1.61			20.61
7	15.00	2.15			21.15
8	15.00	2.70			21.70
9	15.00	3.24			22.24

7.0% GUTTER LINE PROFILE				
H INCHES	W FEET	X1U FEET	X1L FEET	LZ FEET
3	3	15.00	1.63	20.63
4	4	15.00	2.17	20.17
5	5	15.00	2.72	21.72
6	6	15.00	3.26	22.26
7	7	15.00	3.81	22.81
8	8	15.00	4.35	23.35
9	9	15.00	4.89	23.89

CD-606-1C

CONSTRUCTION DETAILS

** TYPE 4 RAMP IS NOT APPLICABLE, USE TYPE 2