#### UTILITIES/AUTHORITIES

GAS SERVICE
ELIZABETHTOWN GAS COMPANY
520 GREEN LANE, UNION, NJ 7083
PHONE: (908) 662-8321
CONTACT: GREGORY J. BALINT

**CABLE SERVICE** 

COMCAST CABLEVISION OF NJ 800 RAHWAY AVENUE, UNION, NJ 07083 PHONE: (908) 851-2258 CONTACT: GEORGE PALYCA

**ELECTRIC SERVICE** 

PUBLIC SERVICE ELECTRIC AND GAS COMPANY 472 WESTON CANAL ROAD, SOMERSET, NJ 08873 PHONE: (732) 764-3067 CONTACT: JOHN GRABENSTEIN

WATER SERVICE

NEW JERSEY AMERICAN WATER COMPANY 1341 NORTH AVENUE, PLAINFIELD, NJ 07061 PHONE: (908) 791-3456 CONTACT: MICHAEL F. BANGE

TELEPHONE SERVICE

VERIZON COMMUNICATIONS
290 W. MT PLEASANT AVENUE, LIVINGSTON, NJ 07039
PHONE: (973) 422-5156
CONTACT: DARREN CRAY

**SEWER SERVICES** 

TWP OF CRANFORD SEWER DEPARTMENT ROUND HOUSE, 364 NORTH AVENUE PHONE: (908) 709-7217 CONTACT: ERIK HASTRUP

RAHWAY VALLEY SEWERAGE AUTHORITY
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

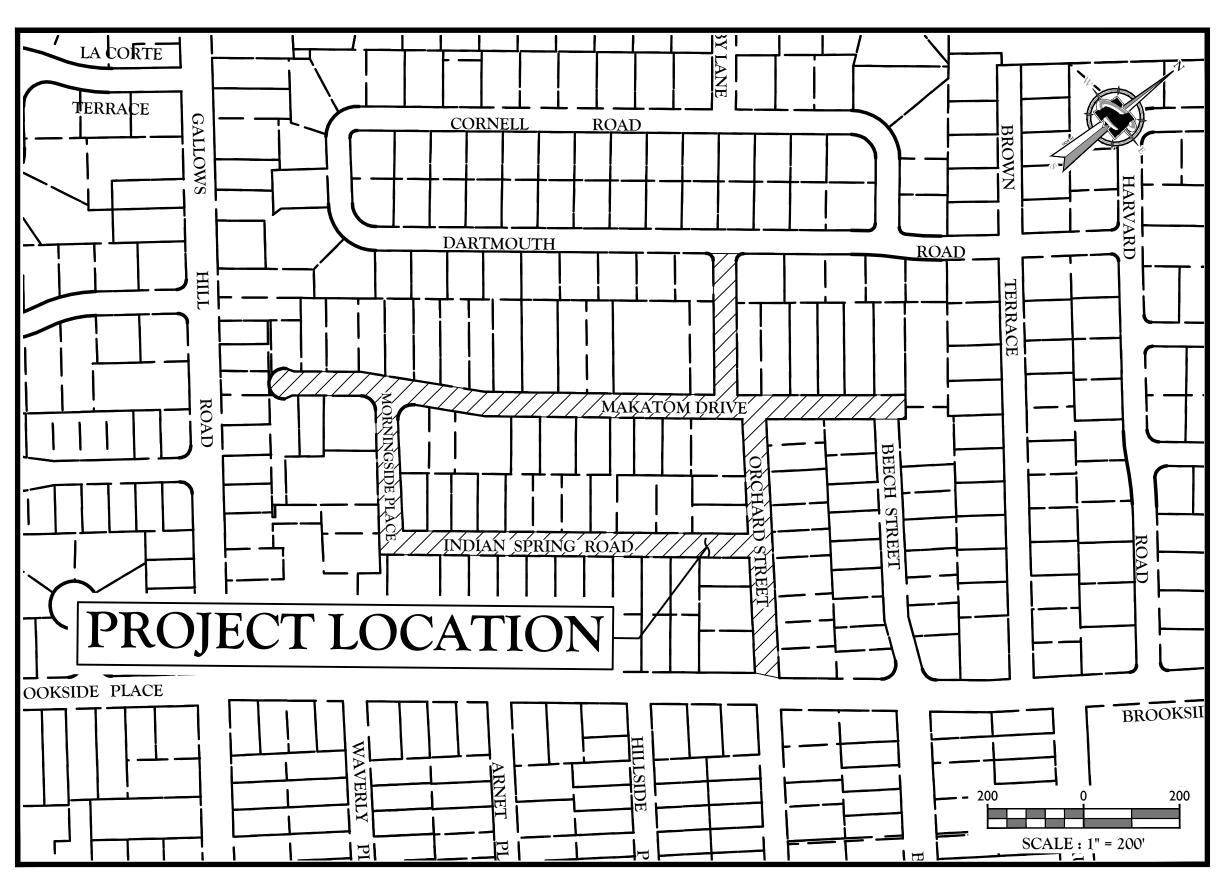
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# CONSTRUCTION PLANS

**FOR** 

# 2020 VARIOUS ROADWAY IMPROVEMENTS MAKATOM DRIVE, MORNINGSIDE PLACE, INDIAN SPRING ROAD, & ORCHARD STREET

TOWNSHIP OF CRANFORD UNION COUNTY, NEW JERSEY



**KEY MAP** 

NEW JERSEY DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS 2019 WITH AMENDMENTS THERE TO SHALL GOVERN

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Carl P. O'Brien  NEW JERSEY LICENSED PROFESSIONAL ENGINEER LICENSE NUMBER: GE45154  COLLIERS ENGINEERING & DESIGN, INC.  N.J. C.O.A. #: 24GA27986500	
CONSTRUCTION PLANS  FOR  2020 VARIOUS  ROADWAY  IMPROVEMENTS  MAKATOM DRIVE,  MORNINGSIDE PLACE,  INDIAN SPRING ROAD, &  ORCHARD STREET	
TOWNSHIP OF CRANFORD UNION COUNTY NEW JERSEY  MT. ARLINGTON 400 Valley Road, Suite 304 Mt. Arlington, NJ 07856 Engineering Phone: 973.398.3110 COLLIERS ENGINEERING & DESIGN,	

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

COVER

of

#### **SURVEY NOTES:**

- EXISTING FEATURES SHOWN ON THIS PLAN WERE BASED ON INFORMATION FROM THE SURVEY ENTITLED, "RIGHT-OF-WAY AND TOPOGRAPHIC SURVEY FOR MAKATOM DRIVE AREA ROADWAY IMPROVEMENTS" DATED 7/8/2020, FOR THE TOWNSHIP OF CRANFORD, PREPARED BY MASER CONSULTING.
- 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).
- PROPERTY LINES ALONG THE PUBLIC RIGHT-OF-WAY WERE ESTABLISHED, ALL OTHER, PROPERTY LINES, AND EASEMENTS ARE APPROXIMATE AND
- 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 UTILITIES/STRUCTURES. ADDITIONAL BURIED UTILITIES/STRUCTURES MAY BE ENCOUNTERED. THE CONTRACTOR SHALL HAVE ALL UNDERGROUND UTILITIES FIELD VERIFIED BY THE PROPER UTILITY COMPANIES BEFORE ANY CONSTRUCTION BEGINS.

#### **GENERAL NOTES:**

- 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. N.J. DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2019", AS CURRENTLY AMENDED; B. N.J. 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;
- THE CONTRACTOR IS RESPONSIBLE FOR PROJECT SAFETY INCLUDING PROVISION OF ALL SAFETY DEVICES AND TRAINING REQUIRED.
- 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.
- 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
- 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

#### **UTILITY NOTES:**

- UNDERGROUND UTILITIES AND FEATURES WITHIN MAKATOM DRIVE, MORNINGSIDE PLACE, INDIAN SPRING ROAD, & ORCHARD STREET WERE 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.
- 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).
- 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
- 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.
- DEPTHS SHOWN FOR UTILITIES ARE IN FEET BELOW EXISTING GROUND SURFACE AT TIME OF SURVEY. AS RFLS CANNOT PROVIDE RELIABLE DETPH 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
- 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 GRADES. 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.

#### MAINTENANCE AND PROTECTION OF TRAFFIC NOTES:

THE R.O.W. WITHOUT EXPRESS WRITTEN CONSENT FROM THE LOCAL POLICE DEPARTMENT AND OWNER.

- I. 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.
- 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

2. THE CONTRACTOR SHALL MAKE PROVISIONS FOR MATERIAL AND EQUIPMENT STORAGE. NO EQUIPMENT OR MATERIALS SHALL BE STORED WITHIN

- 4. THE CONTRACTOR SHALL NOTIFY THE OWNER AND LOCAL POLICE DEPARTMENT SEVENTY-TWO (72) HOURS PRIOR TO THE START OF ANY WORK.
- 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 (I) WEEK NOTICE PRIOR TO REQUESTING POLICE TRAFFIC DIRECTORS.
- 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 CONSTRUCTION.

#### SOIL EROSION AND TREE PROTECTION NOTES:

- I. 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
- 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.

#### **DEMOLITION AND CONSTRUCTION NOTES:**

- I. ALL EXCAVATED MATERIALS ARE TO BE DISPOSED OF IN ACCORDANCE WITH APPROVED NJDOT 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
- 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
- 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

## ACCESS TO RESIDENCES AND BUSINESSES:

TO THE OWNER.

- I. THE CONTRACTOR SHALL MAINTAIN SAFE PEDESTRIAN AND VEHICULAR ACCESS TO ALL RESIDENCES AND BUSINESSES FOR THE DURATION OF THE
- 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.
- 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.

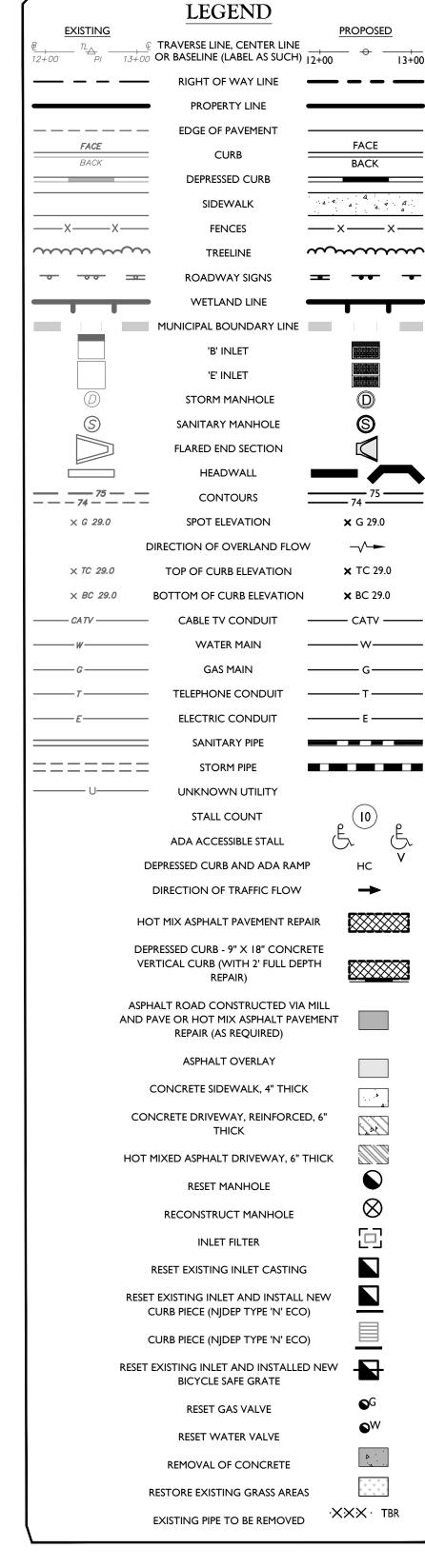
#### MILLING AND PAVING NOTES:

- I. 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.

## FINAL CLEAN UP AND PROJECT ACCEPTANCE

- I. 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
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



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NEW IERSEY LICENSED PROFESSIONAL ENGINEER LICENSE NUMBER: GE45154 COLLIERS ENGINEERING & DESIGN, INC.

2020 VARIOUS **ROADWAY** 

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

UNION COUNTY **NEW JERSEY** 

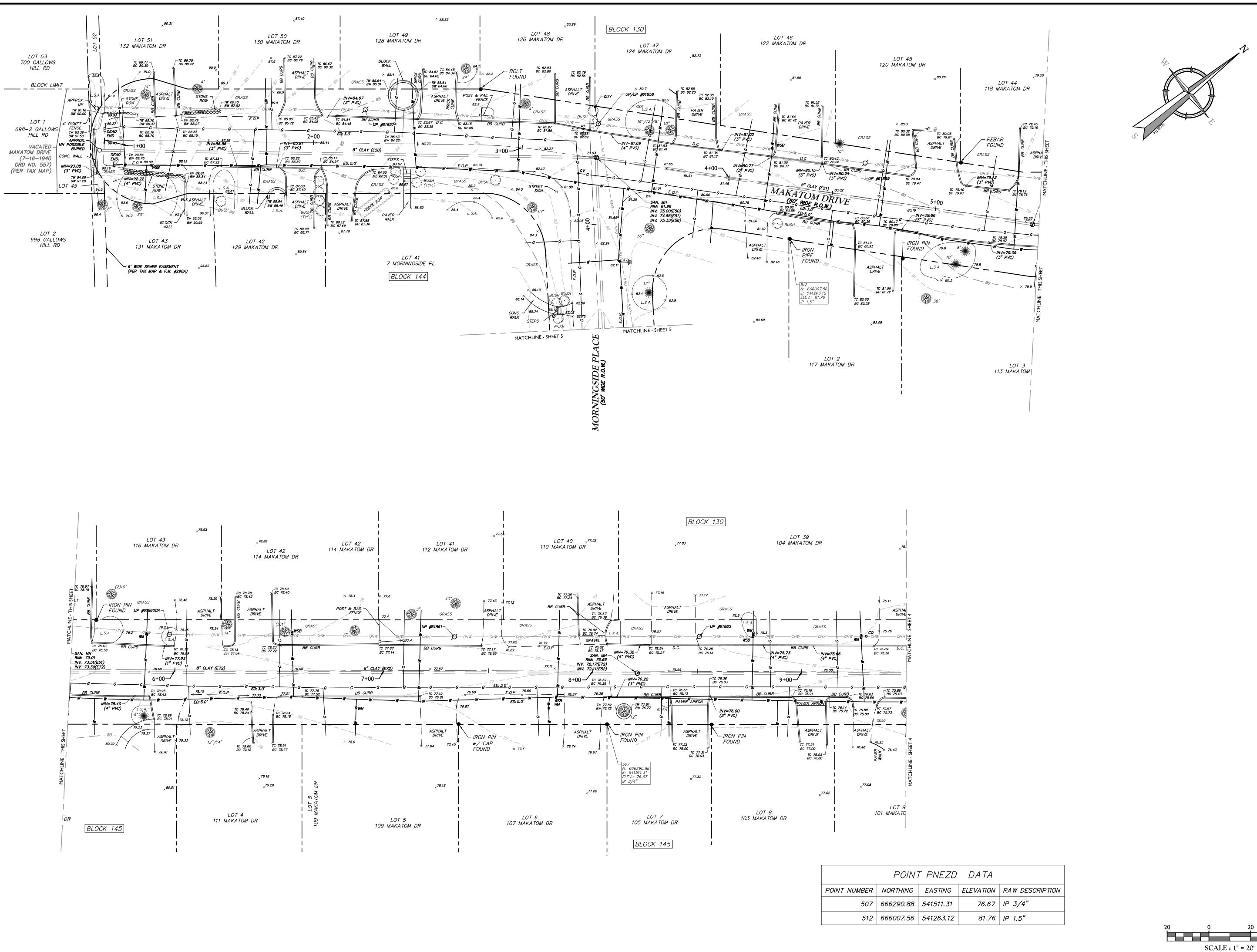
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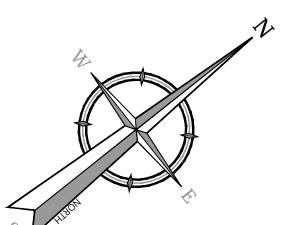
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**GENERAL NOTES &** QUANTITIES

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CONSTRUCTION PLANS

**FOR** 

2020 VARIOUS ROADWAY **IMPROVEMENTS** 

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

TOWNSHIP OF CRANFORD UNION COUNTY **NEW JERSEY** 

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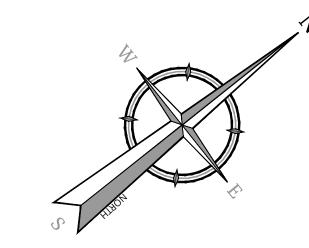
Phone: 973.398.3110 COLLIERS ENGINEERING & DESIGN, INC. DOING BUSINESS AS MASER CONSULTING

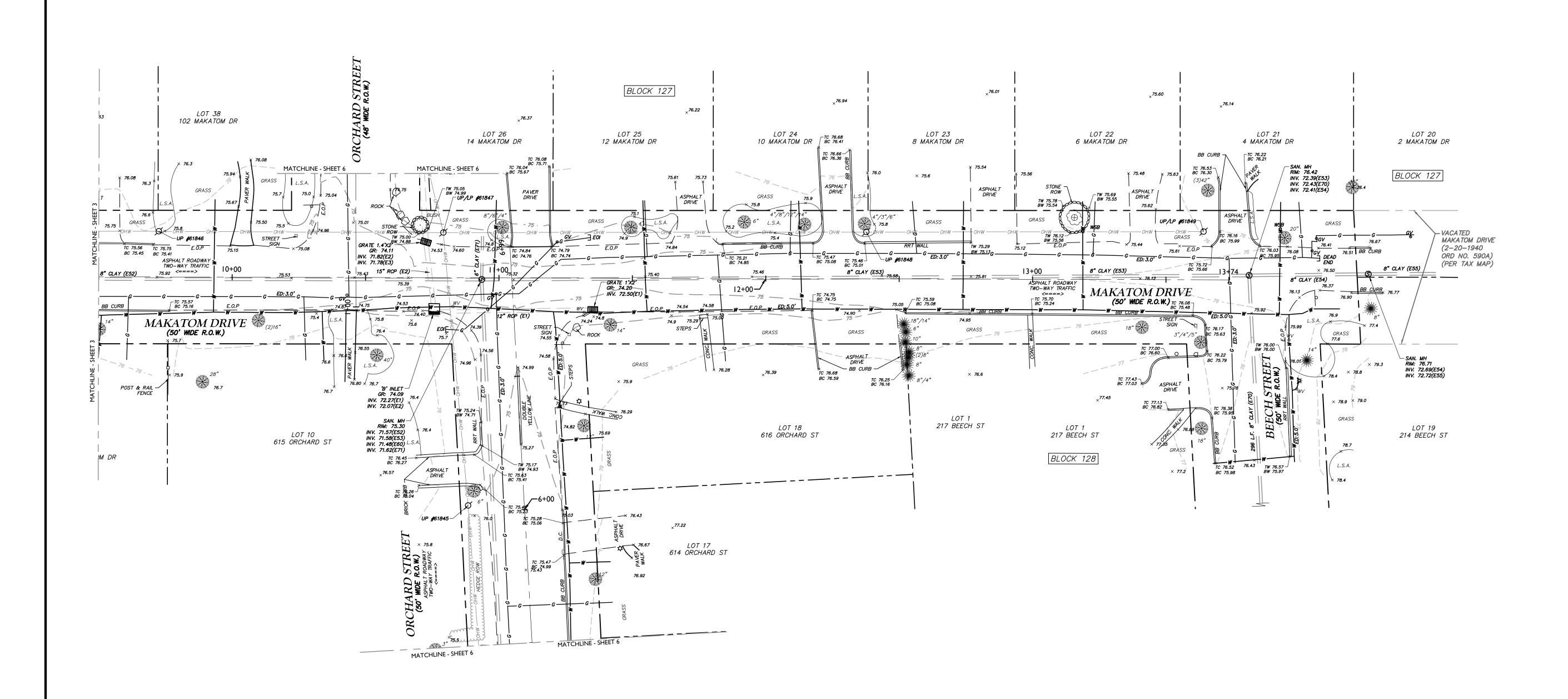
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EXISTING CONDITIONS PLAN

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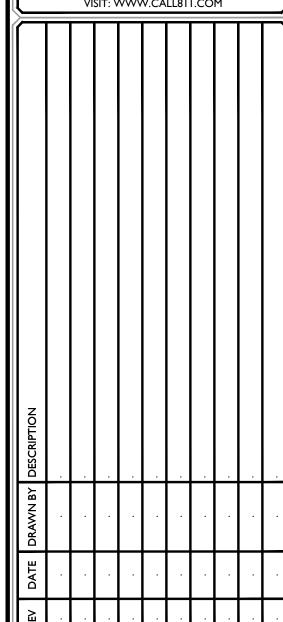
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CONSTRUCTION PLANS

FOR

2020 VARIOUS ROADWAY **IMPROVEMENTS** 

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

TOWNSHIP OF CRANFORD **UNION COUNTY NEW JERSEY** 

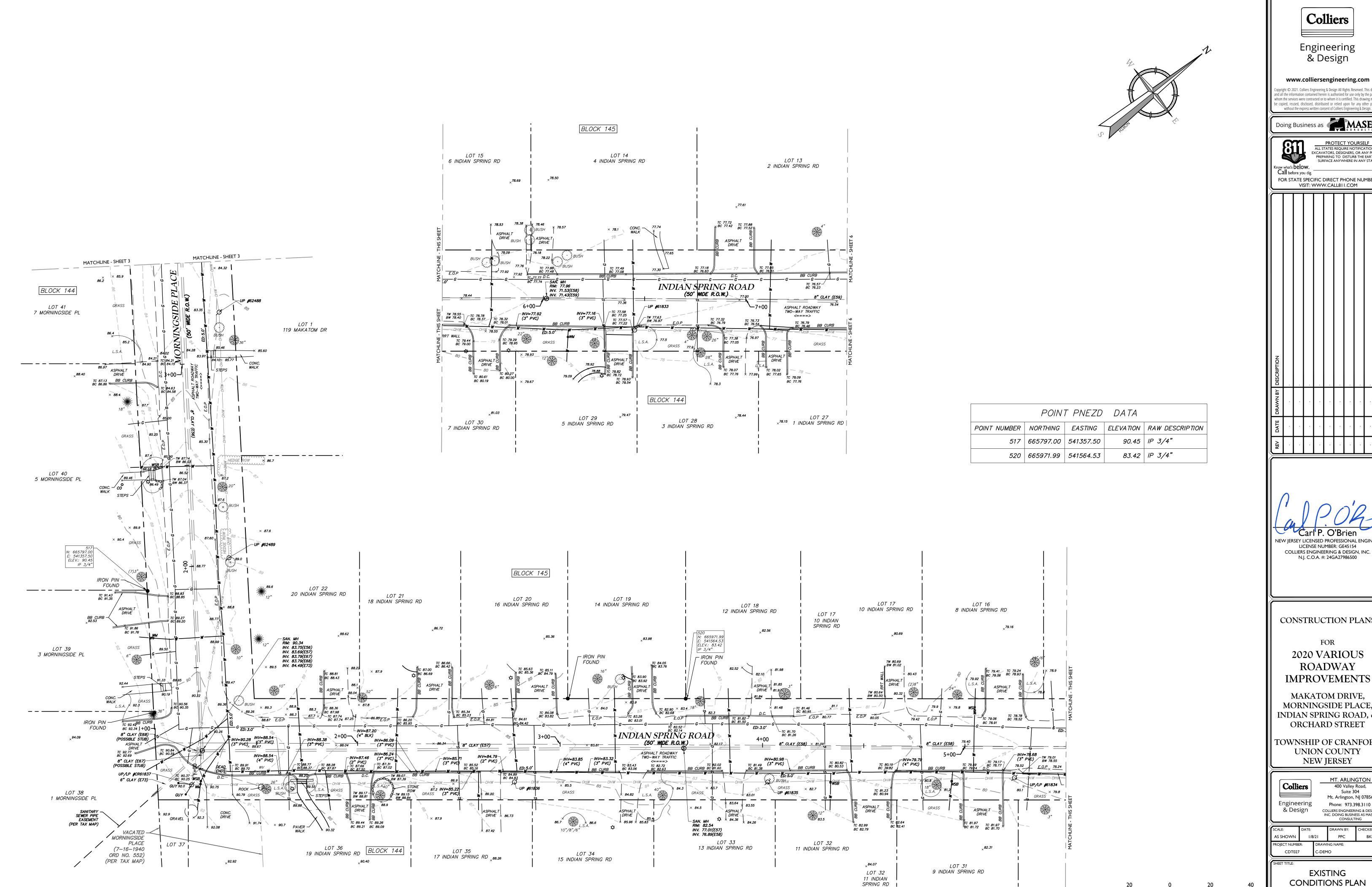
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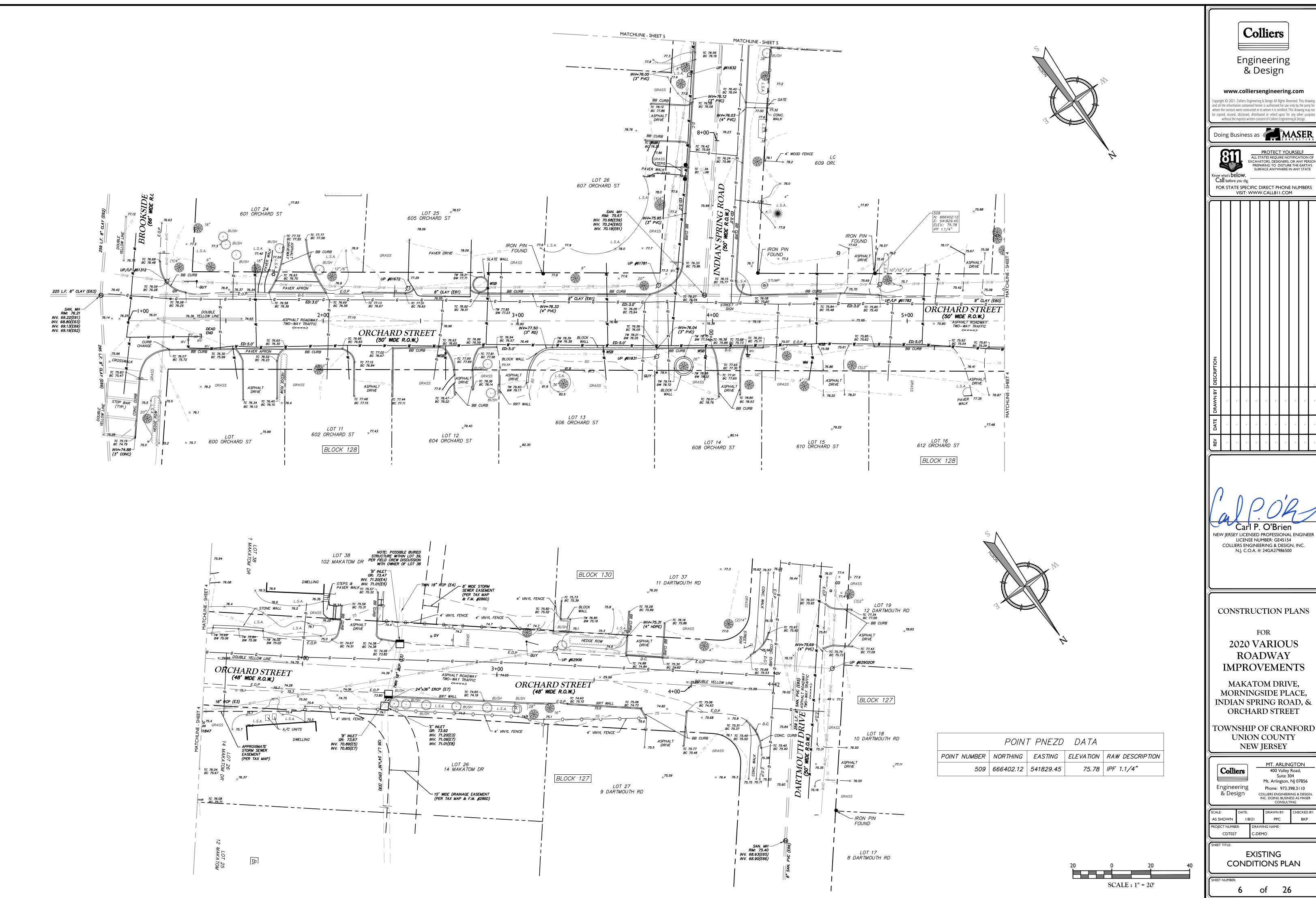
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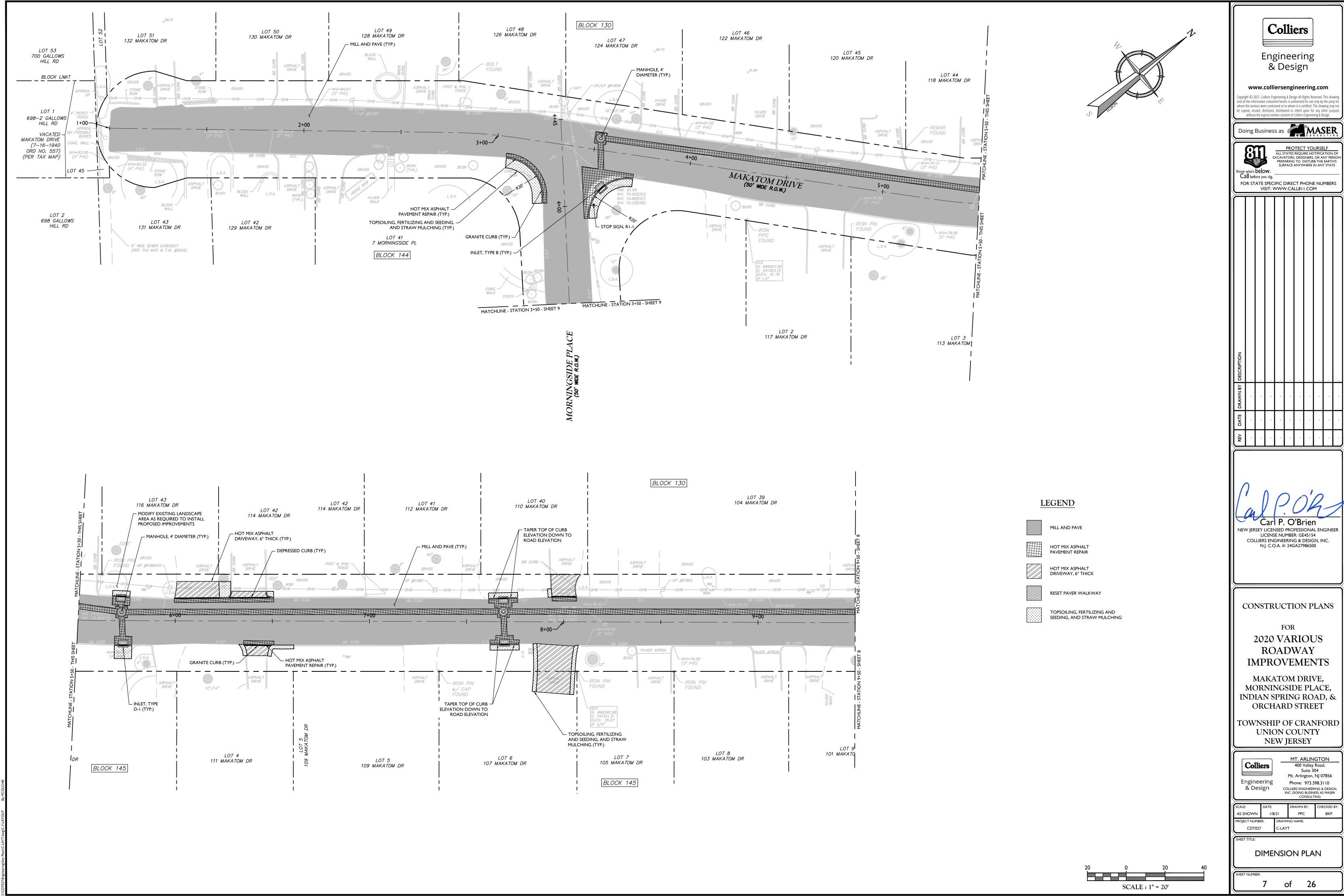
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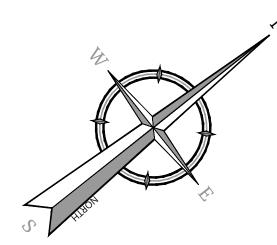
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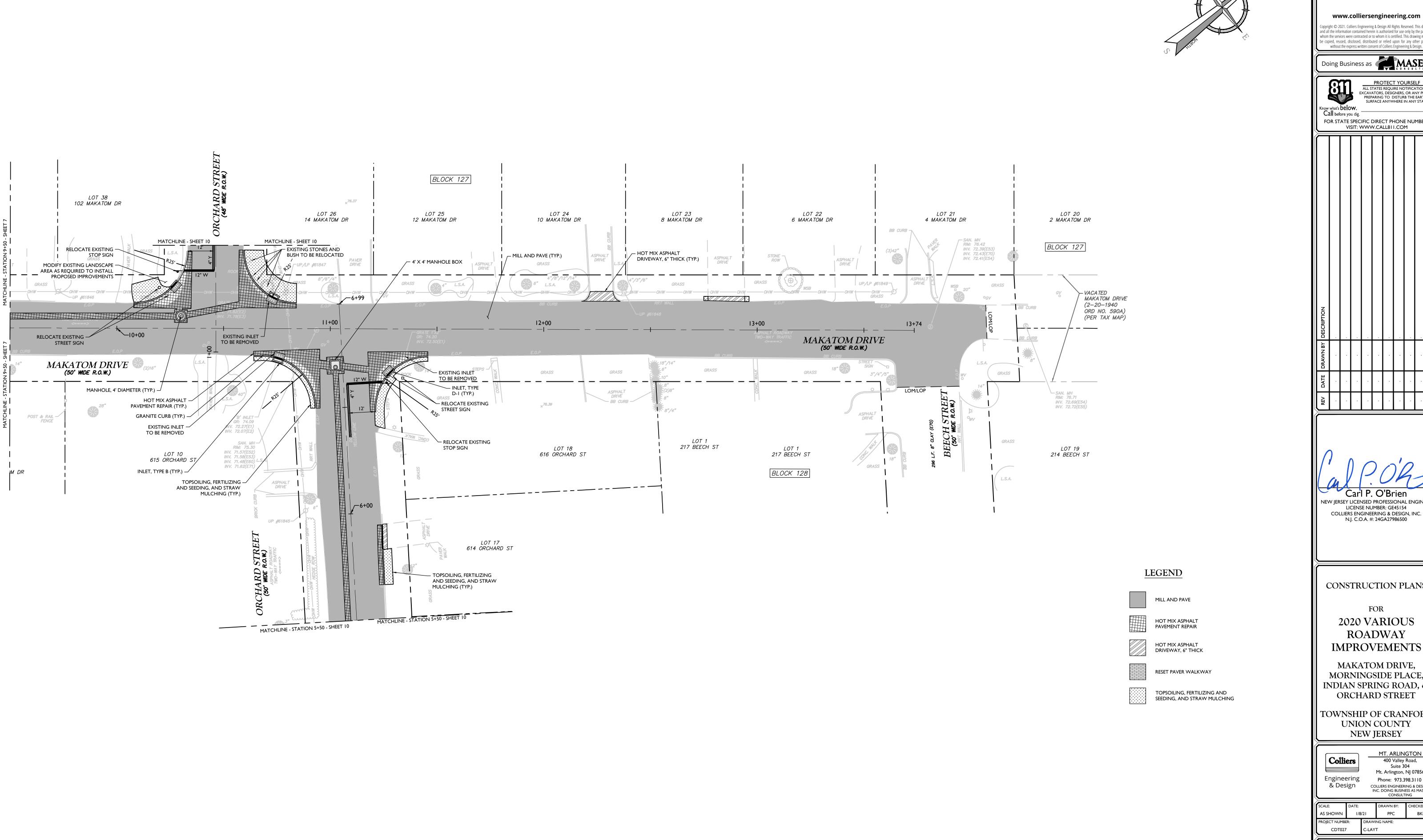
NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

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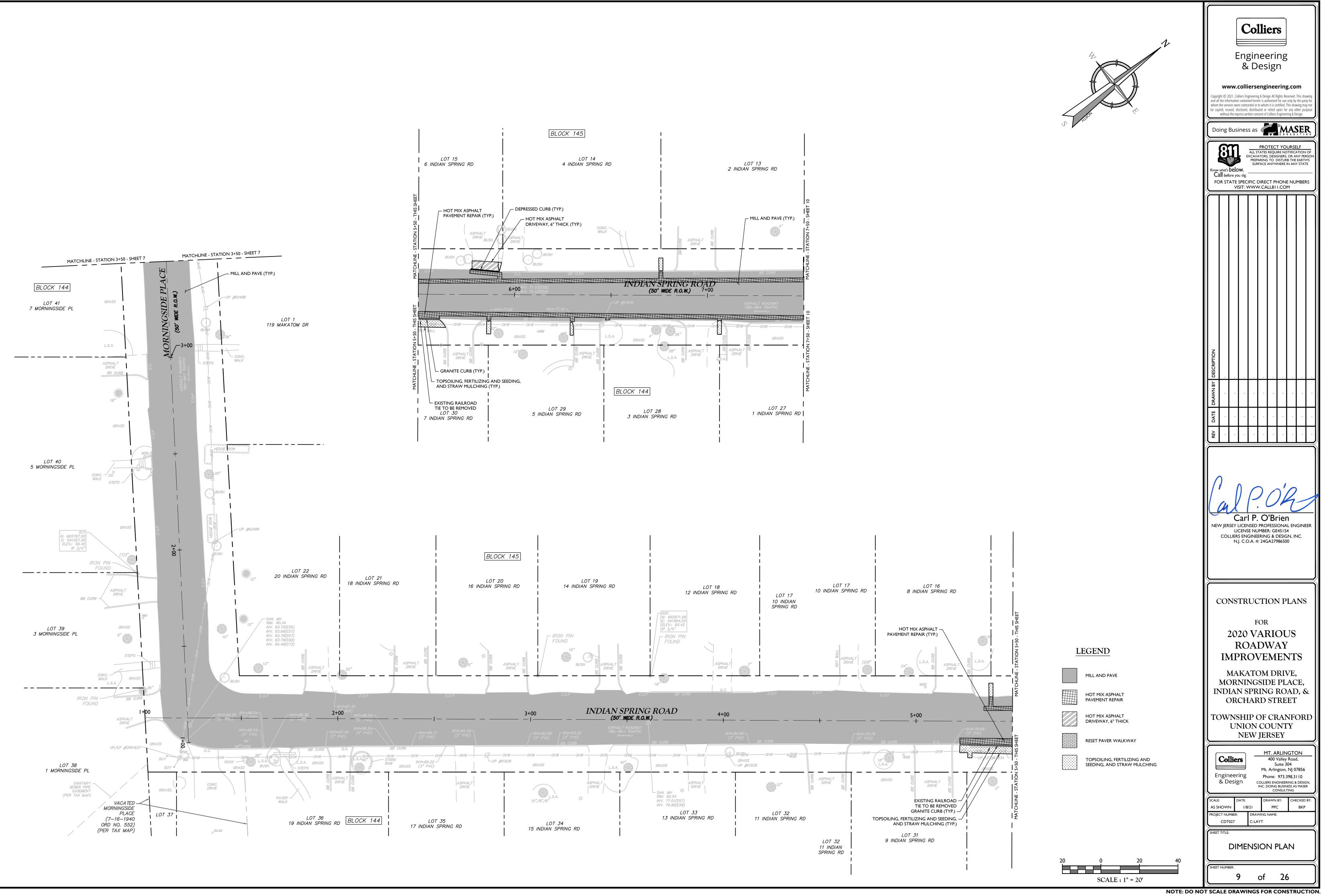
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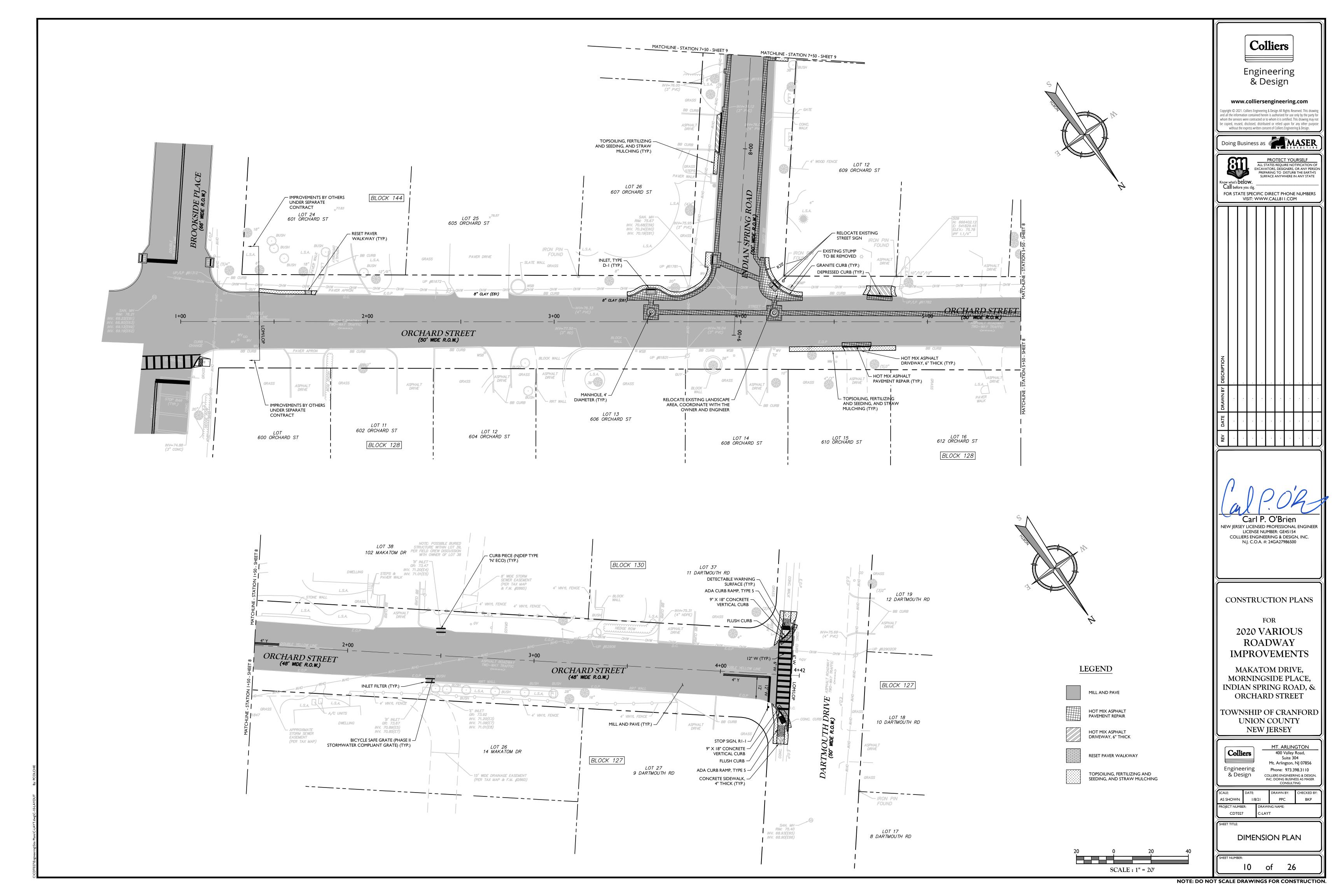
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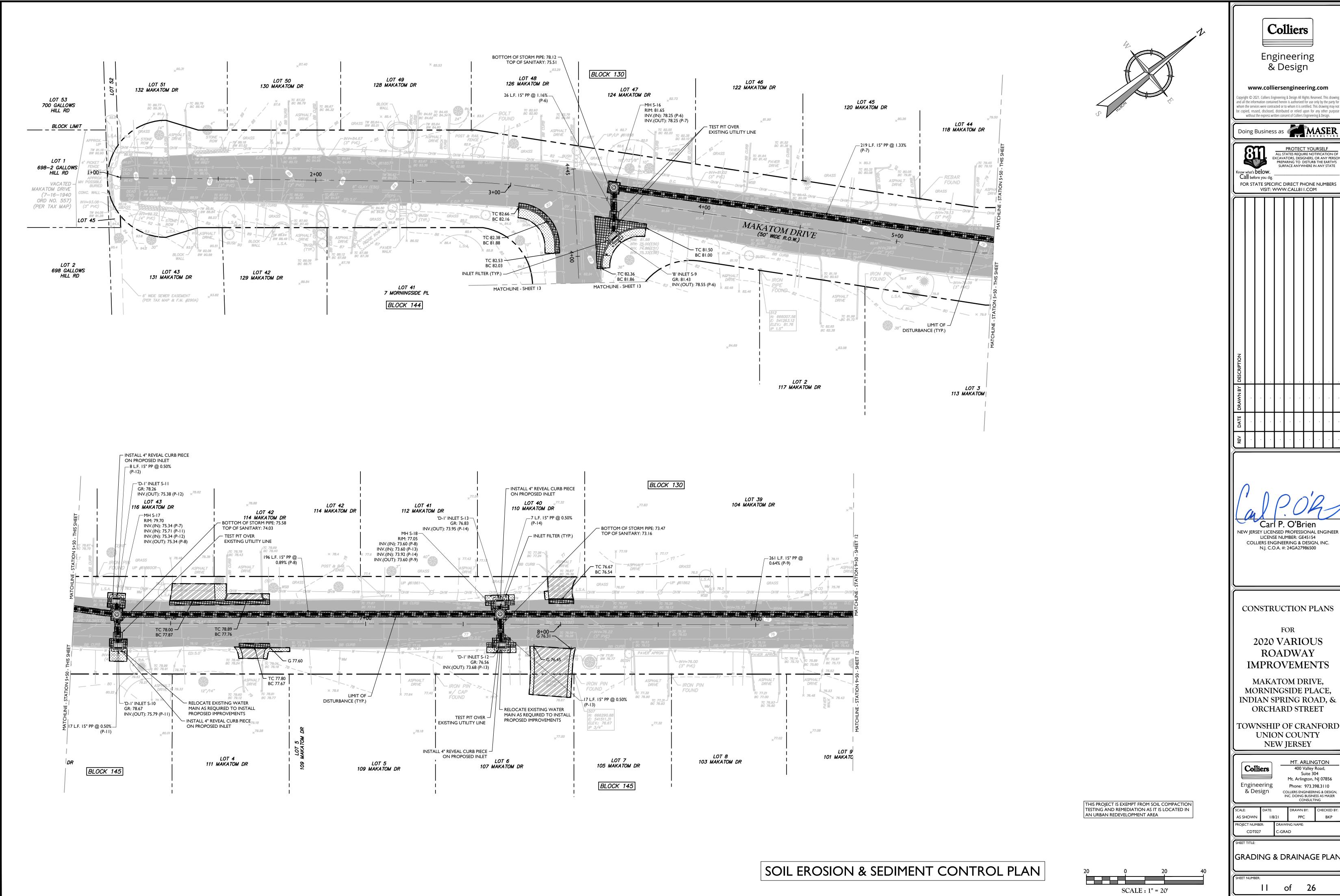
DIMENSION PLAN

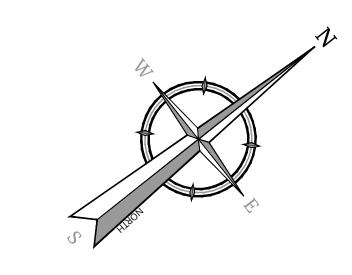
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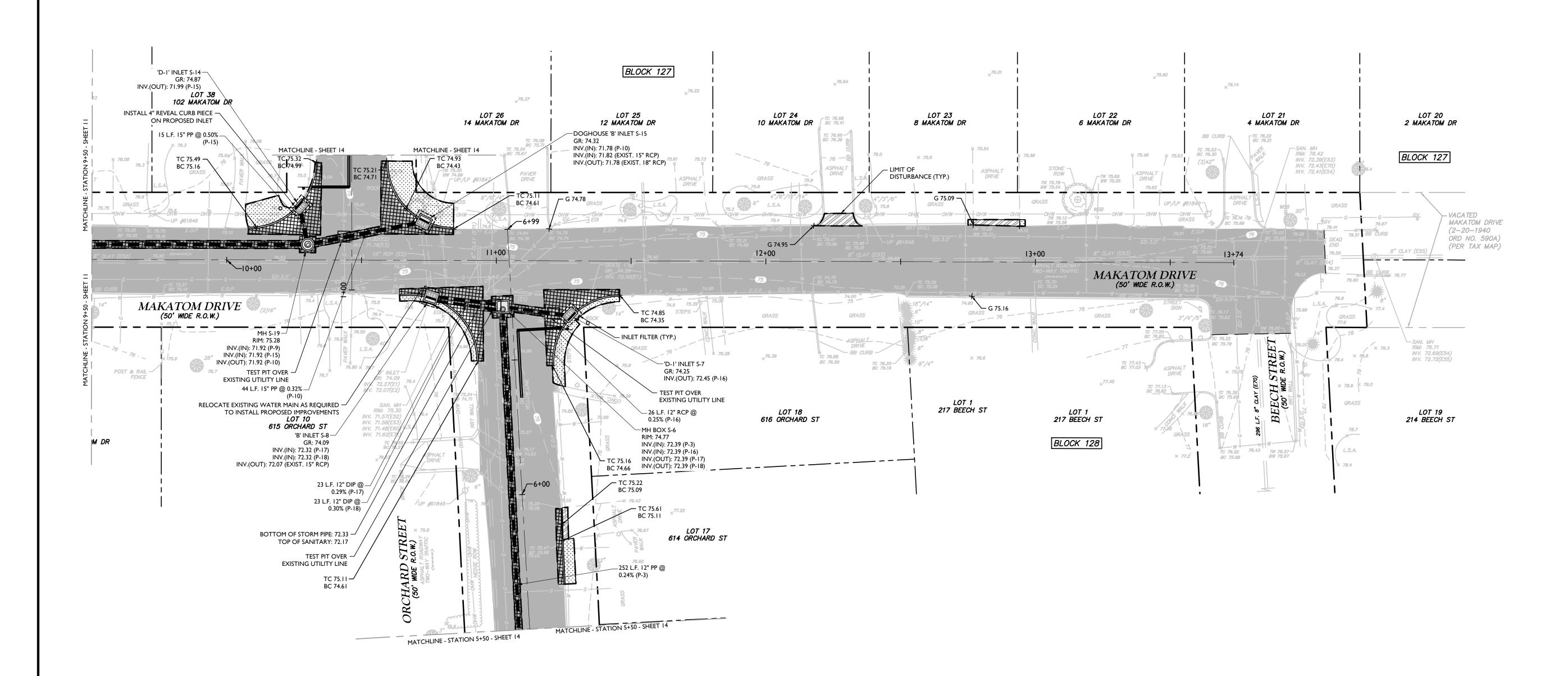
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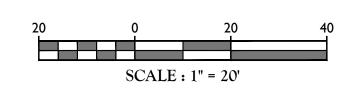






THIS PROJECT IS EXEMPT FROM SOIL COMPACTION TESTING AND REMEDIATION AS IT IS LOCATED IN AN URBAN REDEVELOPMENT AREA

SOIL EROSION & SEDIMENT CONTROL PLAN



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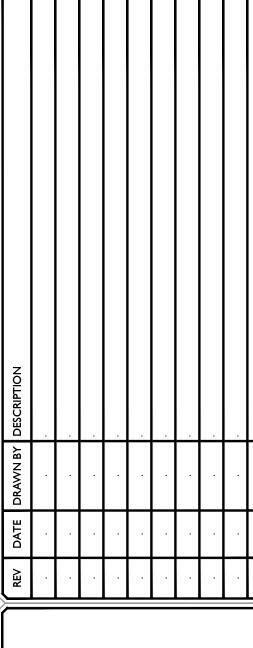
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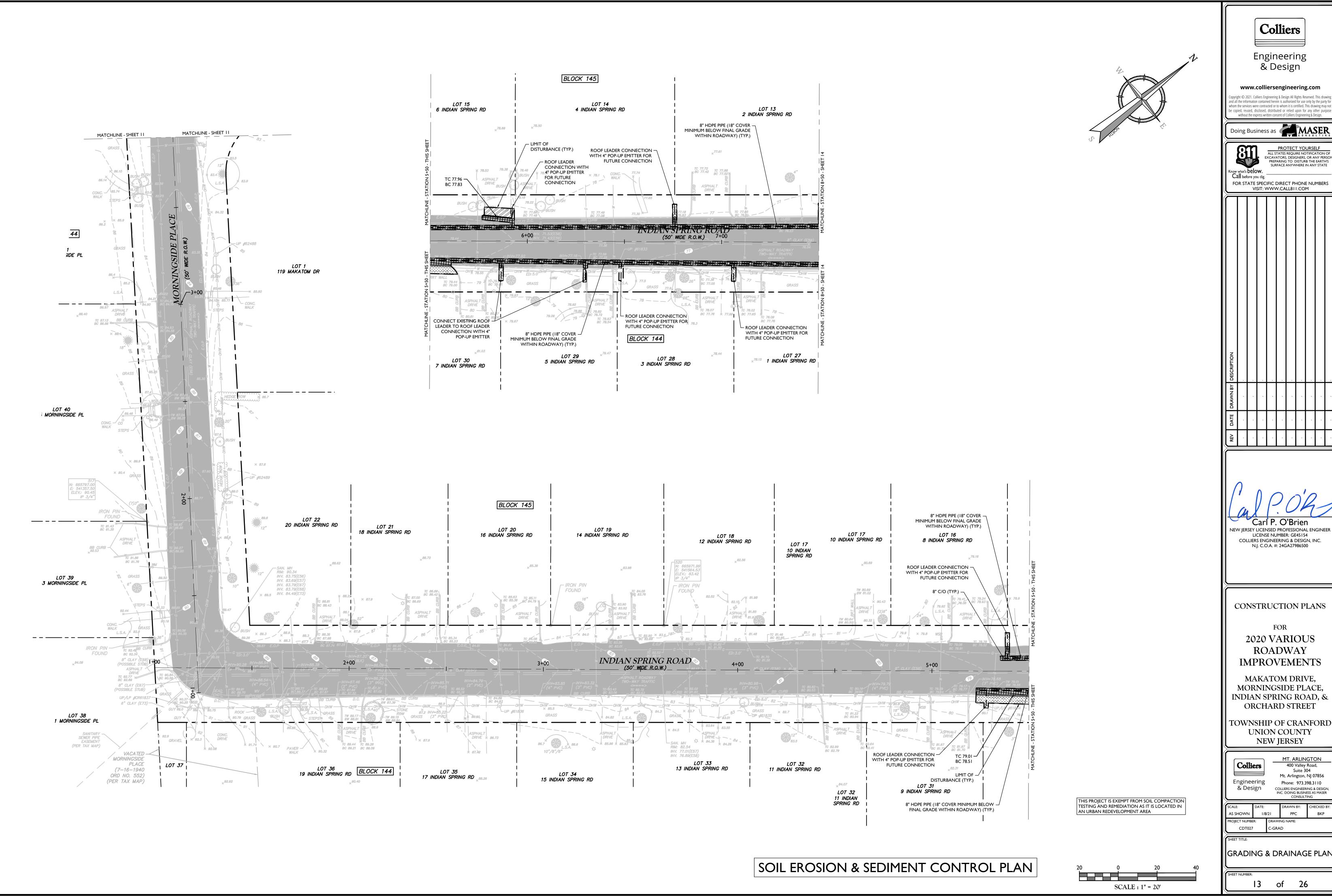
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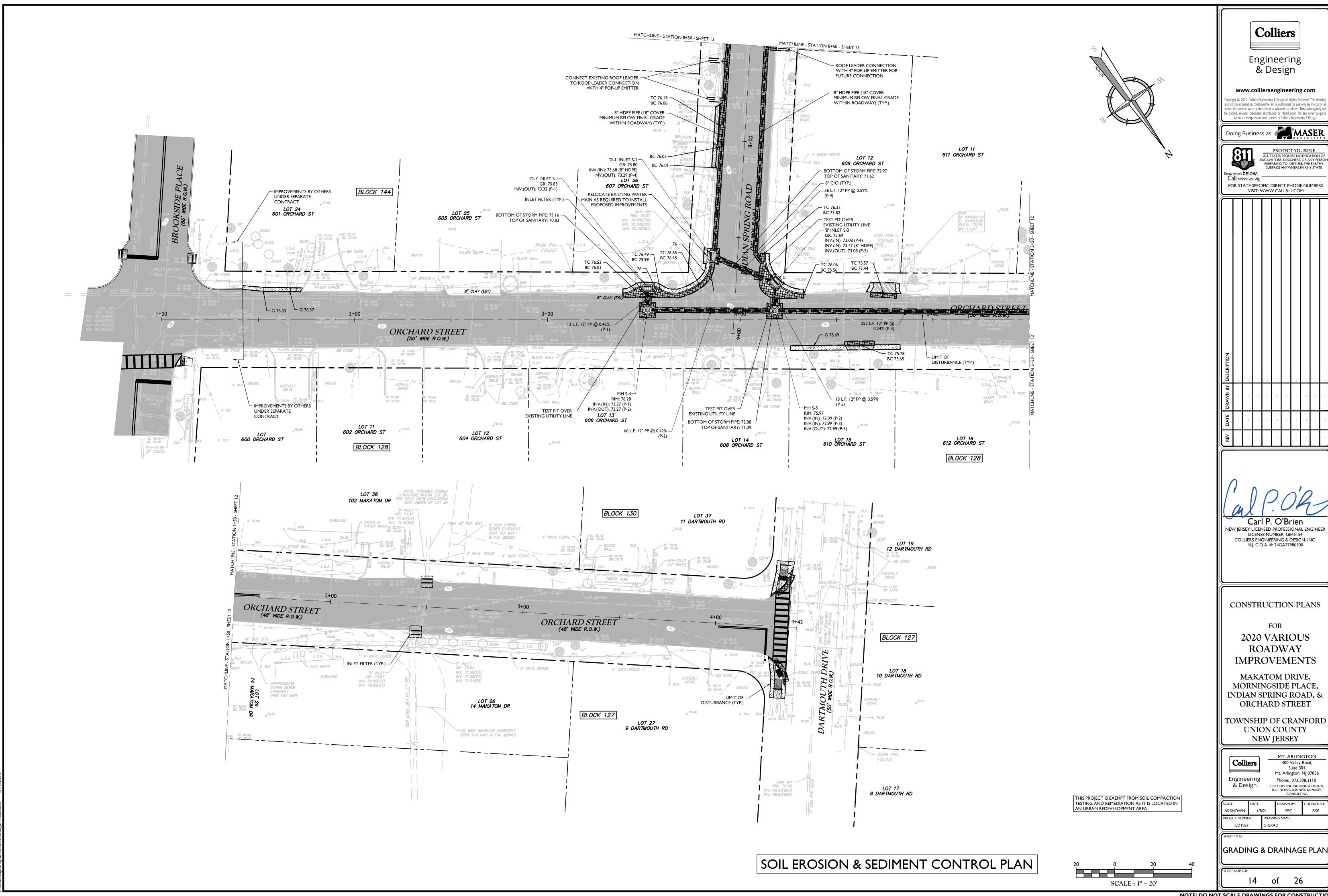
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#### SOMERSET-UNION SOIL CONSERVATION DISTRICT NOTES

MCNJ-SOIL-NOTE-1013

- THE SOMERSET-UNION SOIL CONSERVATION DISTRICT SHALL BE NOTIFIED IN WRITING 48 HOURS IN ADVANCE OF ANY LAND DISTURBING ACTIVITY.
- ALL SOIL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE INSTALLED PRIOR TO ANY MAJOR SOIL DISTURBANCES, OR IN THEIR PROPER SEQUENCE AND MAINTAINED UNTIL PERMANENT PROTECTION IS ESTABLISHED.
- ANY STOCKPILE OR DISTURBED AREAS THAT WILL BE LEFT EXPOSED MORE THAN 14 DAYS AND NOT SUBJECT TO CONSTRUCTION TRAFFIC, WILL IMMEDIATELY RECEIVE A TEMPORARY SEEDING. IF THE SEASON PREVENTS THE ESTABLISHMENT OF A TEMPORARY COVER, THE DISTURBED AREAS WILL BE MULCHED WITH STRAW, OR EQUIVALENT MATERIAL, AT A RATE OF TWO (2) TONS PER ACRE, ACCORDING TO NJ STATE STANDARDS
- PERMANENT VEGETATION SHALL BE SEEDED OR SODDED ON ALL EXPOSED AREAS WITHIN TEN (10) DAYS AFTER FINAL GRADING. MULCH WILL BE USED FOR PROTECTION UNTIL SEEDING IS ESTABLISHED
- ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE NJ STATE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY.
- A SUB-BASE COURSE WILL BE APPLIED IMMEDIATELY FOLLOWING ROUGH GRADING AND INSTALLATION OF IMPROVEMENTS IN ORDER TO STABILIZE STREETS, ROADS, DRIVEWAYS AND PARKING AREAS. IN AREAS WHERE NO UTILITIES ARE PRESENT. THE SUB-BASE SHALL BE INSTALLED WITHIN 15 DAYS OR PRELIMINARY GRADING.
- IMMEDIATELY FOLLOWING INITIAL DISTURBANCE OR ROUGH GRADING ALL CRITICAL AREAS SUBJECT TO EROSION (I.E.: STEEP SLOPES, ROADWAY EMBANKMENTS) WILL RECEIVE A TEMPORARY SEEDING IN COMBINATION WITH STRAW MULCH OR A SUITABLE EQUIVALENT, AT A RATE OF TWO (2) TONS PER ACRE, ACCORDING TO THE NJ STATE STANDARDS.
- ANY STEEP SLOPES RECEIVING PIPELINE INSTALLATION WILL BE BACKFILLED AND STABILIZED DAILY, AS THE INSTALLATION PROCEEDS (I.E.: SLOPES GREATER THAT 3:1)
- TRAFFIC CONTROL STANDARDS REQUIRE THE INSTALLATION OF A 50'X30'X6"PAD OF I 1/2" OR 2" STONE, AT ALL CONSTRUCTION DRIVEWAYS, IMMEDIATELY AFTER INITIAL SITE DISTURBANCE.
- ). AT THE TIME WHEN THE SITE PREPARATION FOR PERMANENT VEGETATIVE STABILIZATION IS GOING TO BE ACCOMPLISHED, ANY SOIL THAT WILL NOT PROVIDE A SLIITABLE ENVIRONMENT TO SLIPPORT ADEQUATE VEGETATIVE GROUND COVER SHALL BE REMOVED OR TREATED IN SUCH A WAY THAT WILL PERMANENTLY ADJUST THE SOIL CONDITIONS AND RENDER IT SUITABLE FOR VEGETATIVE GROUND COVER. IF THE REMOVAL OR TREATMENT OF THE SOIL WILL NOT PROVIDE SUITABLE CONDITIONS, NON-VEGETATIVE MEANS OF PERMANENT GROUND STABILIZATION WILL HAVE TO BE
- IN THAT NJSA 4:24-39 ET SEQ., REQUIRES THAT NO CERTIFICATE OF OCCUPANCY BE ISSUED BEFORE THE PROVISIONS OF THE CERTIFIED PLAN FOR SOIL FROSION AND SEDIMENT CONTROL HAVE BEEN COMPLIED WITH FOR PERMANENT MEASURES, ALL SITE WORK FOR SITE PLANS AND ALL WORK AROUND INDIVIDUAL LOTS IN SUBDIVISIONS, WILL HAVE TO BE COMPLETED PRIOR TO THE DISTRICT ISSUING A REPORT OF COMPLIANCE FOR THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY BY THE MUNICIPALITY.
- CONDUIT OUTLET PROTECTION MUST BE INSTALLED AT ALL REQUIRED OUTFALLS PRIOR TO THE DRAINAGE SYSTEM BECOMING OPERATIONAL.
- ANY CHANGES TO THE CERTIFIED SOIL EROSION AND SEDIMENT CONTROL PLAN WILL REQUIRE THE SUBMISSION OF REVISED SOIL EROSION AND SEDIMENT CONTROL PLANS TO THE DISTRICT FOR RECERTIFICATION. THE REVISED PLANS MUST MEET ALL CURRENT NJ STATE SOIL EROSION & SEDIMENT CONTROL STANDARDS.
- THE SOMERSET-UNION SOIL CONSERVATION DISTRICT SHALL BE NOTIFIED OF ANY CHANGES IN OWNERSHIP

MULCHING TO THE NI STANDARDS IS REQUIRED FOR OBTAINING A CONDITIONAL

- REPORT OF COMPLIANCE. CONDITIONALS ARE ONLY ISSUED WHEN THE SEASON PROHIBITS SEEDING.
- CONTRACTOR IS RESPONSIBLE FOR KEEPING ALL ADJACENT ROADS CLEAN DURING LIFE
- THE DEVELOPER SHALL BE RESPONSIBLE FOR REMEDIATING ANY EROSION OR SEDIMENT PROBLEMS THAT ARISE AS A RESULT OF ONGOING CONSTRUCTION AT THE REQUEST OF THE SOMERSET-UNION SOIL CONSERVATION DISTRICT.
- HYDRO SEEDING IS A TWO- STEP PROCESS. THE FIRST STEP INCLUDES SEED, FERTILIZER, LIME, ETC., ALONG WITH MINIMAL AMOUNTS OF MULCH TO PROMOTE CONSISTENCY, GOOD SEED TO SOIL CONTACT, AND GIVE A VISUAL INDICATION OF COVERAGE. UPON COMPLETION OF SEEDING OPERATION, HYDROMULCH SHOULD BE APPLIED AT A RATE OF 1500 LBS. PER ACRE IN SECOND STEP. THE USE OF HYDROMULCH, AS OPPOSED TO STRAW, IS LIMITED TO OPTIMUM SEEDING DATES AS LISTED IN THE NJ STANDARDS.
- UNFILTERED DEWATERING IS NOT PERMITTED. NECESSARY PRECAUTIONS MUST BE TAKEN DURING ALL DEWATERING OPERATIONS TO MINIMIZE SOIL TRANSFER, ANY DEWATERING METHODS USED MUST BE IN ACCORDANCE WITH THE STANDARD FOR

#### ). TOPSOIL STOCKPILE PROTECTION

20.b. APPLY FERTILIZER (10-20-10) AT A RATE II LBS. PER 1000 SQ. FT. 20.c. APPLY PERENNIAL RYEGRASS SEED AT 1 LB. PER 1000 SQ. FT. AND ANNUAL RYEGRASS

20.a. APPLY GROUND LIMESTONE AT A RATE OF 90 LBS. PER 1000 SQ. FT.

- SEED AT I LB. PER 1000 SQ. FT. 20.d. MULCH STOCKPILE WITH STRAW OR HAY AT A RATE OF 90 LBS. PER 1000 SQ. FT.
- 20.e. APPLY A LIQUID MULCH BINDER OR TACK TO STRAW OR HAY MULCH. 20.f. PROPERLY ENTRENCH A SILT FENCE AT THE BOTTOM OF THE STOCKPILE.
- I. TEMPORARY STABILIZATION SPECIFICATIONS
- 21.a. APPLY GROUND LIMESTONE AT A RATE OF 90 LBS. PER 1000 SO. FT.
- 21.b. APPLY FERTILIZER (10-20-10) AT A RATE 11 LBS. PER 1000 SQ. FT.
- SEED AT I LB. PER 1000 SQ. FT. 21.d. MULCH STOCKPILE WITH STRAW OR HAY AT A RATE OF 90 LBS. PER 1000 SQ. FT.

21.c. APPLY PERENNIAL RYEGRASS SEED AT 1 LB. PER 1000 SQ. FT. AND ANNUAL RYEGRASS

- 21.e. APPLY A LIQUID MULCH BINDER OR TACK TO STRAW OR HAY MULCH.
- 2. PERMANENT STABILIZATION SPECIFICATIONS
- 22.a. APPLY TOPSOIL TO A DEPTH OF 5 INCHES (UNSETTLED) 22.b. APPLY GROUND LIMESTONE AT A RATE OF 90 LBS. PER 1000 SQ. FT.
- 22.c. APPLY FERTILIZER (10-20-10) AT A RATE 11 LBS. PER 1000 SQ. FT. 22.d. APPLY PERENNIAL RYEGRASS SEED AT I LB. PER 1000 SQ. FT. AND ANNUAL RYEGRASS SEED AT I LB. PER 1000 SQ. FT.
- 22.e. MULCH STOCKPILE WITH STRAW OR HAY AT A RATE OF 90 LBS. PER 1000 SQ. FT. 22.f. APPLY A LIQUID MULCH BINDER OR TACK TO STRAW OR HAY MULCH.
- NOTE: 72 HOURS PRIOR TO ANY SOIL DISTURBANCE, NOTICE IN WRITING, SHALL BE GIVEN

TO THE UNION COUNTY SOIL CONSERVATION DISTRICT AND A PRE-CONSTRUCTION MEETING HELD.

#### **CONSTRUCTION SEQUENCE**

IMPLEMENTATION OF SOIL EROSION & SEDIMENT CONTROL MEASURES INCLUDING: - INLET FILTERS

CONSTRUCT IMPROVEMENTS: - SITE CLEARING

- COMPLETE MILLING OPERATIONS 3 WEEKS - INSTALL CURBING AND DRAINAGE IMPROVEMENTS 4 WEEKS - PAVEMENT IMPROVEMENTS 3 WEEKS - UNIFORMLY APPLY TOPSOIL TO AN AVERAGE DEPTH OF 5", MINIMUM OF 4", FIRMED IN PLACE FERTILIZING, SEEDING AND STRAW MULCHING

2 DAYS REMOVAL OF SOIL EROSION & SEDIMENT CONTROL I DAY MEASURES

#### NOTE: TOTAL ESTIMATED PROJECT DURATION: 12 WEEKS

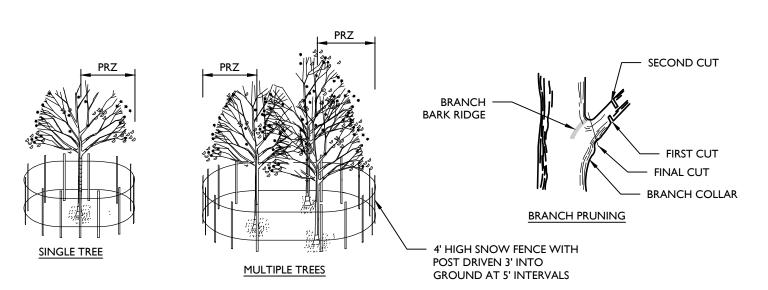
THIS SCHEDULE IS FOR SOIL EROSION AND SEDIMENT CONTROL PURPOSES ONLY.

#### STOCKPILE

ALL EXCAVATED MATERIAL EXCEPT TOPSOIL SHALL BE DISPOSED OF OFF-SITE. NO EXCAVATED MATERIAL EXCEPT TOPSOIL SHALL BE

STOCKPILED AND STORED WITHIN THE PROJECT LIMITS. TOTAL PROJECT AREA OF DISTURBANCE = 10,671 SF OR 0.25 ACRES

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PROTECTIVE FENCING IS TO BE ERECTED PRIOR TO CONSTRUCTION AND MAINTAINED DURING CONSTRUCTION AS DIRECTED BY THE LANDSCAPE ARCHITECT, SOIL CONSERVATION DISTRICT AND/OR MUNICIPAL ENGINEER

- NO CONSTRUCTION ACTIVITY IS PERMITTED WITHIN THE PROTECTIVE FENCING.
- AS CONSTRUCTION NEARS COMPLETION THE FENCING WILL BE REMOVED AS DIRECTED.
- AT THE COMPLETION OF CONSTRUCTION, ALL TREES WILL BE PRUNED AS NECESSARY TO CORRECT ANY DAMAGE RESULTING FROM CONSTRUCTION ACTIVITY.
- GENERAL MECHANICAL DAMAGE SEE CRITICAL ROOT ZONE CALCULATION (CRZ) FOR CORRECT PLACEMENT OF TREE PROTECTION.
- BOX TREES WITHIN 25 FEET OF A BUILDING SITE TO PREVENT MECHANICAL INJURY. FENCING OR OTHER BARRIER SHOULD BE INSTALLED BEYOND THE CRITICAL ROOT ZONE. BOARDS WILL NOT BE NAILED TO TREES DURING BUILDING OPERATIONS.
- FEEDER ROOTS SHOULD NOT BE CUT IN AN AREA INSIDE THE PROTECTED ROOT ZONE (PRZ) OR CRITICAL ROOT ZONE (CRZ). TREE ROOT SYSTEM COMMONLY EXTEND BEYOND THE DAMAGED TRUNKS OR EXPOSED ROOTS SHOULD HAVE DAMAGED BARK REMOVED IMMEDIATELY AND NO PAINT SHALL BE APPLIED. EXPOSED ROOTS SHOULD BE COVERED WITH
- WEATHER SHOULD BE IRRIGATED TO PREVENT PERMANENT TREE INJURY. CARE FOR SERIOUS INJURY SHOULD BE PRESCRIBED BY A PROFESSIONAL FORESTER OR CERTIFIED TREE EXPERT tree limb removal where necessary, will be done as natural target pruning to remove the desired branch collar. There should be no flush cuts, flush cuts DESTROY A MAJOR DEFENSE SYSTEM OF THE TREE. NO TREE PAINT SHALL BE APPLIED. ALL CUTS SHALL BE MADE AT THE OUTSIDE EDGE OF THE BRANCH COLLAR. CUTS MADE TOO FAR BEYOND THE BRANCH COLLAR MAY LEAD TO EXCESS SPROUTING, CRACKS AND ROT. REMOVAL OF A "V" CROTCH SHOULD BE CONSIDERED FOR FREE STANDING SPECIMEN TREES TO AVOID FUTURE SPLITTING DAMAGE

TOPSOIL IMMEDIATELY AFTER EXCAVATION IS COMPLETE. ROOTS SHALL BE PRUNED TO GIVE A CLEAN, SHARP SURFACE AMENABLE TO HEALING. ROOTS EXPOSED DURING HOT

CRITICAL ROOT ZONE (CRZ) OR PROTECTED ROOT ZONE (PRZ) CALCULATION: MEASURE DHB OF THE TREE (DIAMETER OF TREE IN BREAST HEIGHT OR 4.5' ABOVE GROUND ON THE UPHILL SIDE) IN INCHES. CRZ OR PRZ = DHB TIMES 1.5 (FOR OLD/UNHEALTHY/SENSITIVE TREES) OR DHB X 1.0 (FOR YOUNG/HEALTH/TOLEŔANT TREES), EXPRESS IN FEET

#### TEMPORARY TREE PROTECTION DETAIL

MCNI-SOIL-EROS-2100

#### PERMANENT SEEDING SPECIFICATIONS

SITE PREPARATION

NOT TO SCALL

- A. INSTALL EROSION CONTROL MEASURES AND FACILITIES SUCH AS SILT FENCE, DIVERSIONS, SEDIMENT BASINS, CHANNEL STABILIZATION, ETC. SEE STANDARDS 11
- B. GRADE AS NEEDED AND FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, MULCH ANCHORING AND MAINTENANCE. ALL GRADING SHOULD BE DONE IN ACCORDANCE WITH THE STANDARD FOR LAND GRADING.
- SEEDBED PREPARATION
- A, APPLY A UNIFORM 5 INCHES (UNSETTLED) OF TOPSOIL IN ACCORDANCE WITH THE STANDARD FOR TOPSOILING OVER ALL DISTURBED AREAS, SOILS WITH A PH OF 4.0 OR LESS OR CONTAINING IRON SULFIDE SHALL BE COVERED WITH A MINIMUM DEPTH OF 12 INCHES OF SOIL HAVING PH OF 5.0 OR MORE IN ACCORDANCE WITH THE STANDARD FOR MANAGEMENT OF HIGH ACID PRODUCING SOIL.
- B. TOPSOIL SHOULD BE HANDLED ONLY WHEN DRY ENOUGH TO WORK WITHOUT DAMAGING SOIL STRUCTURE.

C. APPLY GROUND LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST RECOMMENDATIONS SUCH AS OFFERED BY RUTGERS CO-OPERATIVE EXTENSION. SOIL SAMPLE MAILERS ARE AVAILABLE FROM THE LOCAL RUTGERS COOPERATIVE EXTENSION OFFICES. FERTILIZER SHALL BE APPLIED AT THE RATE OF 500 POUNDS PER ACRE OR 11 POUNDS PER 1,000 SQUARE FEET OF 10-20-10 OR EQUIVALENT WITH 50% WATER INSOLUBLE NITROGEN UNLESS A SOIL TEST INDICATES OTHERWISE. APPLY LIMESTONE IN ACCORDANCE WITH THE TABLE BELOW AND THE RESULTS OF SOIL TESTING. CALCIUM CARBONATE IS THE EQUIVALENT AND STANDARD FOR MEASURING THE ABILITY OF LIMING MATERIALS TO NEUTRALIZE SOIL ACIDITY AND SUPPLY CALCIUM AND MAGNESIUM TO GRASSES AND LEGUMES. THE TABLE BELOW IS A GENERAL GUIDELINE FOR LIMESTONE APPLICATION RATES.

LIMESTONE APPLICATION RATE BY SOIL TEXTURE SOIL TEXTURE

TONS/ACRE LBS/1,000 SQ. FT. CLAY, CLAY LOAM, AND HIGH ORGANIC SOIL SANDY LOAM, LOAM, SILT LOAM LOAMY SAND, SAND

CONTOUR. CONTINUE TILLAGE UNTIL A REASONABLY UNIFORM SEEDBED IS PREPARED.

D. IMMEDIATELY PRIOR TO SEEDING AND TOPSOIL APPLICATION, THE SURFACE SHOULD BE SCARIFIED 6" TO 12" WHERE THERE HAS BEEN SOIL COMPACTION. THIS PRACTICE IS PERMISSIBLE ONLY WHERE THERE IS NO DANGER TO UNDERGROUND UTILITIES (CABLES, IRRIGATION SYSTEMS, ETC.)

E. WORK LIME AND FERTILIZER INTO THE SOIL TO A DEPTH OF APPROXIMATELY 4 INCHES. THE FINAL HARROWING OR DISC OPERATION SHOULD BE ON THE GENERAL

F. REMOVE FROM THE SURFACE ALL STONES 2 INCHES OR LARGER IN ANY DIMENSION AND OTHER DEBRIS SUCH AS WIRE, TREE ROOTS, PIECES OF CONCRETE, CLODS

LUMPS OR OTHER UNSUITABLE MATERIAL.

- - A. SELECT THE SEED MIXTURE AS SPECIFIED ON THIS SHEET AND APPLY AS NOTED WITHIN THE DATES SPECIFIED IN THE STANDARD.
  - B. CONVENTIONAL SEEDING IS PERFORMED BY APPLYING SEED UNIFORMLY BY HAND, CYCLONE (CENTRIFUGAL) SEEDER, DROP SEEDER, DRILL OR CULTIPACKER SEEDER. EXCEPT FOR DRILLED, HYDROSEEDED OR CULTIPACKED SEEDINGS, SEED SHALL BE INCORPORATED INTO THE SOIL WITHIN 24 HOURS OF SEEDBED PREPARATION TO A DEPTH OF 1/4 TO 1/2 INCH, BY RAKING OR DRAGGING. DEPTH OF SEED PLACEMENT MAY BE 1/4 INCH DEEPER ON COARSE TEXTURED SOIL.

C. HYDROSEEDING IS A BROADCAST SEEDING METHOD USUALLY INVOLVING A TRUCK OR TRAILER MOUNTED TANK, WITH AN AGITATION SYSTEM AND MOUNTED TANK, WITH AN AGITATION SYSTEM AND HYDRAULIC PUMP FOR MIXING SEED, WATER AND FERTILIZER AND SPRAYING THE MIX ONTO THE PREPARED SEEDBED. MULCH SHALL NOT BE INCLUDED IN THE TANK WITH SEED. SHORT FIBERED MULCH MAY BE APPLIED WITH A HYDROSEEDER FOLLOWING SEEDING. (ALSO SEE SECTION 4 MULCHING BELOW) HYDROSEEDING IS NOT A PREFERRED SEEDING METHOD BECAUSE SEED AND FERTILIZER ARE APPLIED TO THE SURFACE AND NOT INCORPORATED INTO THE SOIL POOR SEED TO SOIL CONTACT OCCURS REDUCING SEED GERMINATION AND GROWTH, HYDROSEEDING MAY BE USED FOR AREAS TOO STEEP FOR CONVENTIONAL EQUIPMENT TO TRAVERSE OR TOO OBSTRUCTED WITH ROCKS, STUMPS, ETC.

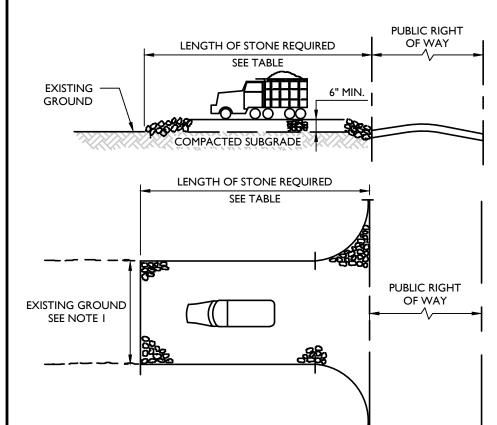
D. AFTER SEEDING, FIRMING THE SOIL WITH A CORRUGATED ROLLER WILL ASSURE GOOD SEED-TO-SOIL CONTACT, RESTORE CAPILLARITY AND IMPROVE SEEDLING EMERGENCE. THIS IS THE PREFERRED METHOD. WHEN PERFORMED ON THE CONTOUR, SHEET EROSION WILL BE MINIMIZED AND WATER CONSERVATION ON SITE WILL

#### 4. MULCHING

A. MULCHING IS REQUIRED ON ALL SEEDING.

B. STRAW OR HAY - UNROTTED SMALL GRAIN STRAW, HAY FREE OF SEEDS, OR OR SALT HAY TO BE APPLIED AT THE RATE OF 1-1/2 TO 2 TONS PER ACRE (70 TO 90 POUNDS PER 1,000 SQUARE FEET), EXCEPT THAT WHERE A CRIMPER IS USED INSTEAD OF A LIQUID MULCH-BINDER (TACKIFYING OR ADHESIVE AGENT), THE RATE OF APPLICATION IS 3 TONS PER ACRE. MULCH CHOPPER-BLOWERS MUST NOT GRIND THE MULCH. HAY MULCH IS NOT RECOMMENDED FOR ESTABLISHING FINE TURF OR LAWNS DUE TO THE PRESENCE OF WEED SEED. STRAW OR HAY MULCH MUST BE ANCHORED IMMEDIATELY AFTER PLACEMENT USING PEG AND TWINE, MULCH NETTING, MECHANICAL CRIMPER OR LIQUID MULCH BINDERS IN ACCORDANCE WITH THE STANDARD.

WOOD-FIBER OR PAPER-FIBER MULCH - SHALL BE MADE FROM WOOD, PLANT FIBERS OR PAPER CONTAINING NO GROWTH OR GERMINATION INHIBITING MATERIALS, USED AT THE RATE OF 1,500 POUNDS PER ACRE (OR AS RECOMMENDED BY THE PRODUCT MANUFACTURER) AND MAY BE APPLIED BY A HYDROSEEDER THIS MULCH SHALL NOT BE MIXED IN THE TANK WITH SEED. USE IS LIMITED TO FLATTER SLOPES AND DURING OPTIMUM SEEDING PERIODS IN SPRING AND FALL.



STABILIZED CONSTRUCTION

**ACCESS DETAIL** 

- 2"x2"x4'-6" OAK OR

SILT FENCE DETAIL

MCNJ-SOIL-EROS-1100

POSTS (TYP.)

OTHER HARDWOOD

- THE WIDTH OF CONSTRUCTION ENTRANCE SHALL NOT BE LESS THAN THE FULL WIDTH OF POINTS OF INGRESS OR EGRESS, OR AS SHOWN ON THE PLAN.
- THICKNESS SHOWN IS FOR STONE CONSTRUCTION ENTRANCE ONLY.
- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO ROADWAYS.
- THE ENTRANCE SHALL BE PERIODICALLY TOP DRESSED WITH ADDITIONAL STONE OR
- SPILLED, DROPPED, WASHED, OR TRACKED SEDIMENT ONTO ROADWAYS OR OTHER
- IMPERVIOUS SURFACES SHALL BE REMOVED IMMEDIATELY. WHERE ACCUMULATION OF DUST AND SEDIMENT IS INADEQUATELY CLEANED OR
- REMOVED BY CONVENTIONAL METHODS, A POWER BROOM OR STREET SWEEPER SHALL BE USED TO CLEAN PAVED AREAS.
- ALL OTHER ACCESS POINTS TO THE SITE WHICH DO NOT CONTAIN A CONSTRUCTION ACCESS PAD SHALL BE BLOCKED OFF.
- 8. STONE SIZE PER ASTM C-33. SIZE #2 (2  $\frac{1}{2}$ " TO  $\frac{1}{2}$ ") OR #3 (2" TO 1") STONE.
- INDIVIDUAL INTERIOR LOT INGRESS/EGRESS CONSTRUCTION ACCESS SHALL HAVE # 3 (I" TO 2") STONE, MINIMUM 10' (L) X 10' (W) AND 6" THICK.

	PERCENT SLOPE OF ROADWAY	LENGTH OF STONE REQUIRED			
		COARSE GRAINED SOILS	FINE GRAINED SOILS		
	0% TO 2%	50 FT	100 FT		
	2% TO 5%	100 FT	200 FT		
Ī	> 5%	ENTIRE SURFACE STABILIZED			

FENCE POST

(SPACING 8' ON CENTER)

10' (SEE NOTE 5)

DIG 6" WIDE & DEEP,

BURY BOTTOM I' OF

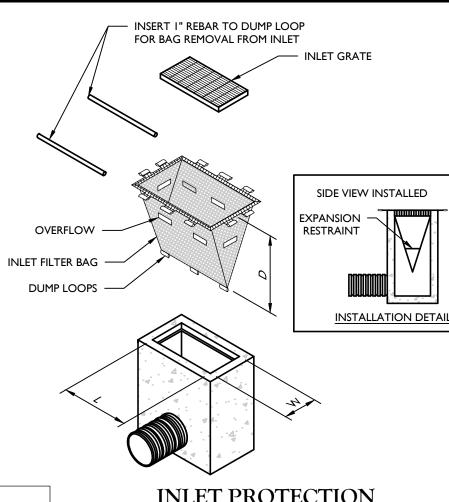
FABRIC. TAMP IN PLACE

FILTER FABRIC SECURED TO POST -

REINFORCEMENT BETWEEN FASTENER

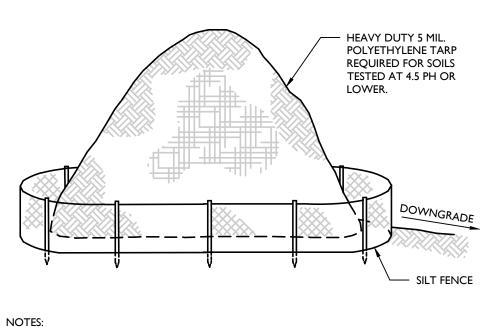
WITH METAL FASTENERS AND

AND FABRIC (3'-0" WIDE)



INLET PROTECTION (FILTER BAG) DETAIL

HEAVY DUTY 5 MIL



ALL STOCKPILES SHALL NOT TO BE LOCATED WITHIN 50 FEET OF A FLOODPLAIN, SLOPE ROADWAY OR DRAINAGE FACILITY

TOPSOIL STOCKPILE DETAIL

#### DUST CONTROL NOTES

STONE

NOT TO SCALI

NOT TO SCALE

THE FOLLOWING METHODS SHOULD BE CONSIDERED FOR CONTROLLING DUST

SPLICING OF INDIVIDUAL ROLLS SHALL NOT OCCUR AT LOW POINTS.

SEE STANDARD FOR STABILIZATION WITH MULCHES ONLY. (PAGE 5-1 OF "STANDARDS FOR SOIL <u>MULCHES</u>

VEGETATIVE COVER SEE STANDARD FOR TEMPORARY VEGETATIVE COVER (PAGE 7-1 OF "STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY", LATEST EDITION), PERMANENT VEGETATIVE COVER FOR SOIL STABILIZATION (PAGE 4-1 OF "STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY", LATEST EDITION), AND PERMANENT STABILIZATION WITH SOD (PAGE 6-I

OF "STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY", LATEST EDITION).

EROSION AND SEDIMENT CONTROL IN NEW JERSEY", LATEST EDITION)

DRAWSTRING RUNNING

TOP OF FENCE

FILTER FABRIC

EOUIVALENT

RAINFALL, REMOVE THE SILT ACCUMULATION WHEN IT REACHES 1/3 OF THE FENCE FABRIC HEIGHT.

5. IF SPACE PERMITTED, LOCATE SILT FENCE 10' AWAY FROM TOE OF SLOPE IF THE SLOPE IS STEEPER THAN 1:1

MIRAFI 100X OR

THROUGH FABRIC ALONG

GEOTEXTILE TO BE FASTENED SECURELY TO FENCE POST BY USING WIRE TIES OR HOG RINGS. USE 4 TO 6 FASTENERS PER POST.

FOR EVERY 100 FEET OF SILT FENCE, OR 1/4 ACRE OF DRAINAGE AREA, PROVIDE AN OVERFLOW POINT TO REDUCE PONDING IN

ALL SILT FENCE TO BE INSPECTED AND REMEDIAL MAINTENANCE PERFORMED BY THE CONTRACTOR WITHIN 24 HOURS AFTER EACH

SPRAY-ON ADHESIVES ON MINERAL SOILS (NOT EFFECTIVE ON MUCK SOILS). KEEP TRAFFIC OFF THESE AREAS.

TABLE 16-1: DUST CONTROL MATERIALS					
MATERIAL	WATER DILUTION	TYPE OF NOZZLE	APPLY GALLONS/ACRE		
ANIAONIC ASPHALT EMULSION	7:1	COARSE SPRAY	1200		
LATEX EMULSION	12.5:1	FINE SPRAY	235		
RESIN IN WATER	4:1	FINE SPRAY	300		
POLYACRYLAMIDE (PAM) - SPRAY ON POLYACRYLAMIDE (PAM) - DRY SPRAY	ALSO BE USED AS FLOCCULATE ANI SEDIMENT BASIN	APPLY ACCORDING TO MANUFACTURER'S INSTRUCTIONS. MAY ALSO BE USED AS AN ADDITIVE TO SEDIMENT BASINS TO FLOCCULATE AND PRECIPITATE SUSPENDED COLLOIDS. (SEE SEDIMENT BASIN STANDARD (PAGE 26-I OF "STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY", LATEST EDITION)			
ACIDULATED SOY BEAN SOAP STICK	NONE	COARSE SPRAY	1200		

TO ROUGHEN SURFACE AND BRING CLODS TO THE SURFACE. THIS IS A TEMPORARY EMERGENCY TILLAGE MEASURE WHICH SHOULD BE USED BEFORE SOIL BLOWING STARTS. BEGIN PLOWING ON WINDWARD SIDE OF SITE. CHISEL-TYPE PLOWS SPACED ABOUT 12 INCHES APART, AND SPRING-TOOTHED HARROWS

ARE EXAMPLES OF EQUIPMENT WHICH MAY PRODUCE THE DESIRED EFFECT.

SITE IS SPRINKLED UNTIL THE SURFACE IS WET. <u>SPRINKLING</u>

SOLID BOARD FENCES, SNOW FENCES, BURLAP FENCES, CRATE WALLS, BALES OF HAY, AND <u>BARRIERS</u> SIMILAR MATERIAL CAN BE USED TO CONTROL AIR CURRENTS AND SOIL BLOWING.

SHALL BE IN THE FORM OF LOOSE, DRY GRANULATES OF FLAKES FINE ENOUGH TO FEED THROUGH CALCIUM CHLORIDE COMMONLY USED SPREADERS AT A RATE THAT WILL KEEP SURFACE MOIST BUT NOT CAUSE POLLUTION OR PLANT DAMAGE. IF USED ON STEEPER SLOPES, THEN USE OTHER PRACTICES TO PREVENT WASHING INTO STREAMS OR ACCUMULATION AROUND PLANTS.

COVER SURFACE WITH CRUSHED STONE OR COARSE GRAVEL.

MCNJ-SOIL-EROS-2500

NEW JERSEY LICENSED PROFESSIONAL ENGINEER

LICENSE NUMBER: GE45154

COLLIERS ENGINEERING & DESIGN, INC.

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

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CONSTRUCTION PLANS

2020 VARIOUS ROADWAY **IMPROVEMENTS** 

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

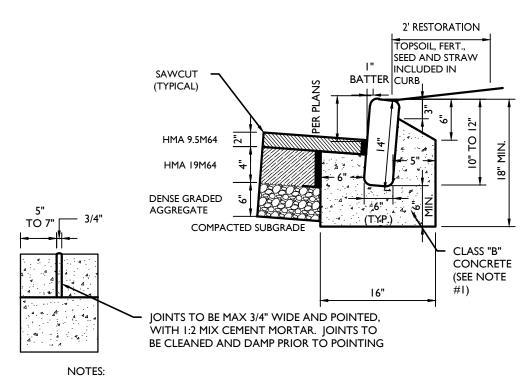
TOWNSHIP OF CRANFORD UNION COUNTY **NEW JERSEY** 

Colliers Engineering & Design

Suite 304 Mt. Arlington, NJ 07856 Phone: 973.398.3110 COLLIERS ENGINEERING & DESIGI INC. DOING BUSINESS AS MASER CONSULTING

AS SHOWN 1/8/21 RAWING NAME: CDT027 C-DTLS soil erosion & sediment

CONTROL DETAILS

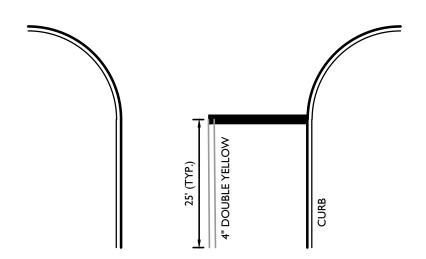


- NOTES:

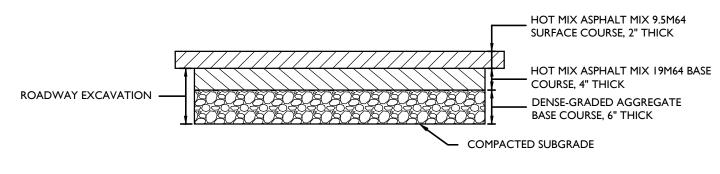
  I. CONCRETE TO TEST 4,500 PSI MINIMUM ON 28 DAY COMPRESSIVE TEST. 2. ALL CONCRETE IS TO BE PROPERLY CURED USING A CURING <u>COMPOUND</u>, SALT HAY, BURLAP OR OTHER METHOD ACCEPTABLE TO THE TOWNSHIP ENGINEER.
- 3. CONCRETE SLUMP TO BE 3" (±1"), OR AS DIRECTED BY THE TOWNSHIP ENGINEER.
- 4. A HALF INCH EXPANSION JOINT OF A NON-EXTRUDABLE, BITUMINOUS MATERIAL SHALL BE PLACED ON 20'-0" CENTERS MAXIMUM.
- 5. CONTRACTOR TO NOTIFY OWNER'S ENGINEER 24 HOURS PRIOR TO POURING. 6. EXPANSION JOINTS THRU AND ADJACENT TO THE CURB SHALL BE INCLUDED IN THE UNIT PRICE FOR THE CURB. PROVIDE DUMMY JOINTS (FORMED) MIDWAY

## GRANITE BLOCK CURB

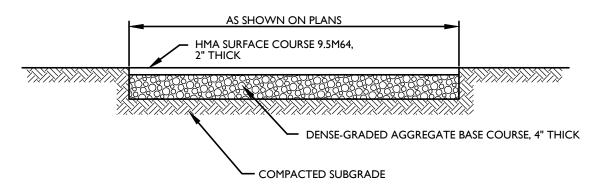
BETWEEN EXPANSION JOINTS.



#### STOP BAR LINE WITH "STOP" MARKING DETAIL



#### FULL DEPTH PAVEMENT REPAIR (IF & WHERE DIRECTED)



NOTES:

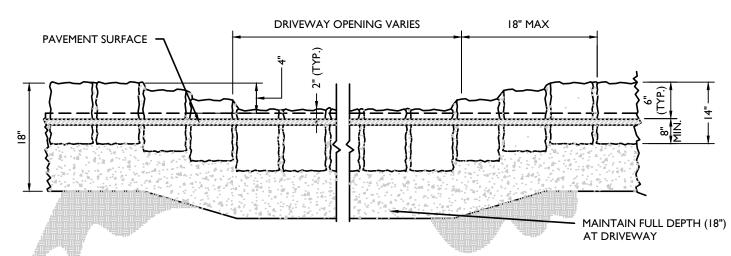
I. THE CONTRACTOR SHALL REPAIR HOT MIX ASPHALT DRIVEWAYS AS DIRECTED BY THE ENGINEER. LIMITS OF DRIVEWAY REPAIR SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.

#### HOT MIX ASPHALT DRIVEWAY, 2" THICK N.T.S.

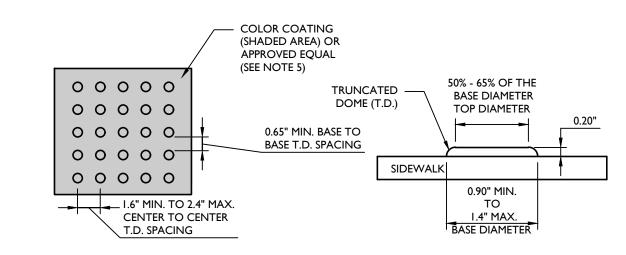
LIMIT OF MILLING OPERATION ———— EXISTING PAVEMENT MILLED AREA

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.

# END TREATMENT FOR MILLING OPERATIONS DETAIL

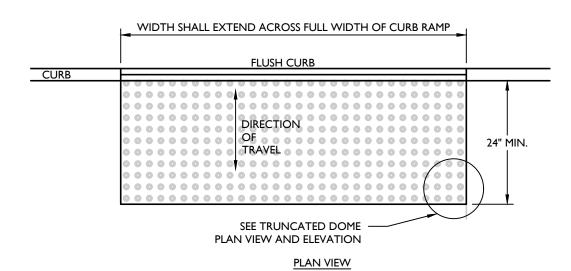


#### DEPRESSED GRANITE BLOCK CURB AT DRIVEWAY



TRUNCATED DOME PLAN VIEW ENLARGEMENT

TRUNCATED DOME ELEVATION



- I. 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 UNDERSIGNED ENGINEER AND PRIOR TO POURING OF THE CONCRETE RAMP.
- THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER A SHOP DRAWING OF THE DETECTABLE WARNING SURFACE PRIOR TO CONSTRUCTION FOR APPROVAL.
- CERTIFICATION THAT THE DETECTABLE WARNING SURFACE COMPLIES WITH THE CURRENT ADA STANDARDS FOR ACCESSIBLE DESIGN AS PUBLISHED BY 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 ADIACENT WALKING SURFACES EITHER LIGHT-ON-DARK. OR DARK-ON-LIGHT. ALTERNATIVE COLOR MAY BE USED PROVIDED SUCH COLOR COMPLIES WITH CURRENT ADA STANDARDS.
- 6. DETECTABLE WARNINGS SHALL CONSIST OF A SURFACE OF TRUNCATED DOMES.
- 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 65 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 (17 mm) MINIMUM, MEASURED BETWEEN THE MOST ADJACENT DOMES ON A SQUARE GRID.

- 9. SOME DETECTABLE WARNING PRODUCTS REQUIRE A CONCRETE BORDER FOR PROPER INSTALLATION. WHERE REQUIRED BY THE MANUFACTURER, THE CONCRETE BORDER SHALL NOT EXCEED 2 INCHES (51 mm).
- 10. DETECTABLE WARNING SURFACES SHOULD NOT BE PLACED ON PAVING OR EXPANSION JOINTS AT CURB RAMPS. THE ROWS OF TRUNCATED DOMES IN DETECTABLE WARNING SURFACES SHOULD BE ALIGNED PERPENDICULAR TO THE GRADE BREAK BETWEEN THE RAMP RUN AND THE STREET SO PEDESTRIANS WHO USE WHEELCHAIRS CAN "TRACK" BETWEEN THE DOMES.
- II. ON PERPENDICULAR CURB RAMPS, DETECTABLE WARNING SURFACES SHALL BE PLACED AS FOLLOWS:
- 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 5.0 FT OR LESS, DETECTABLE WARNING SURFACES SHALL BE PLACED ON THE RAMP RUN WITHIN ONE DOME

SPACING OF THE BOTTOM GRADE BREAK.

- 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 THAN 5.0 FT, DETECTABLE WARNING SURFACES SHALL BE PLACED ON THE LOWER LANDING AT THE BACK OF CURB.
- 12. ON PARALLEL CURB RAMPS, DETECTABLE WARNING SURFACES SHALL BE PLACED ON THE TURNING SPACE AT THE FLUSH TRANSITION BETWEEN THE STREET AND SIDEWALKS.
- 13. ON BLENDED TRANSITIONS, DETECTABLE WARNING SURFACES SHALL BE PLACED AT THE BACK OF CURB.

#### **EXPANSION JOINTS** PAVEMENT - REFER TO TRENCH WIDTH PAVEMENT REPAIR DETAIL-OD + 36" IF THE CONTRACTOR **EXCAVATES TO OR** I/2" DEPTH TYPICAL -CAUSES THE TRENCH CONCRETE SIDEWALK CONTRACTION JOINTS PLAN TO ASSUME A "V" SHAPE HE WILL SLOPE 2% MAX DO SO AT HIS FINISHED GRADE TO BE OWN EXPENSE FLUSH WITH WALKWAY (4' MIN.) 4" WIDE DETECTABLE WARNING TAPE IN COLOR GREEN OVER SEWER MAIN MARKED -"BURIED SANITARY SEWER LINE BELOW" CLASS 'B' CONCRETE -- 3/4" CLEAN CRUSHED STONE, 4" THICK DENSE GRADED AGGREGRATE — APPROVED SUBGRADE THE CONTRACTOR SHALL PROVIDE MAX. CROSS SLOPE 1/4" PER FOOT TOWARDS ROADWAY. CURB AND SIDEWALK CONCRETE TO BE N.I.D.O.T. CLASS "B" AIR-ENTRAINED. 6" ABOVE PIPE CROWN PROVIDE PERFORMED BITUMINOUS FIBER EXPANSION JOINTS 1/2" THICK, AT 12'-0" INTERVALS. PROVIDE DUMMY 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. UNLESS SPECIFICALLY SHOWN DIFFERENTLY ON PLANS, CONCRETE SIDEWALK SHALL BE INSTALLED WITHOUT DISTURBING EXISTING CURB. NJDOT COARSE AGGREGATE NO. 57 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.

CONCRETE SIDEWALK, 4" THICK

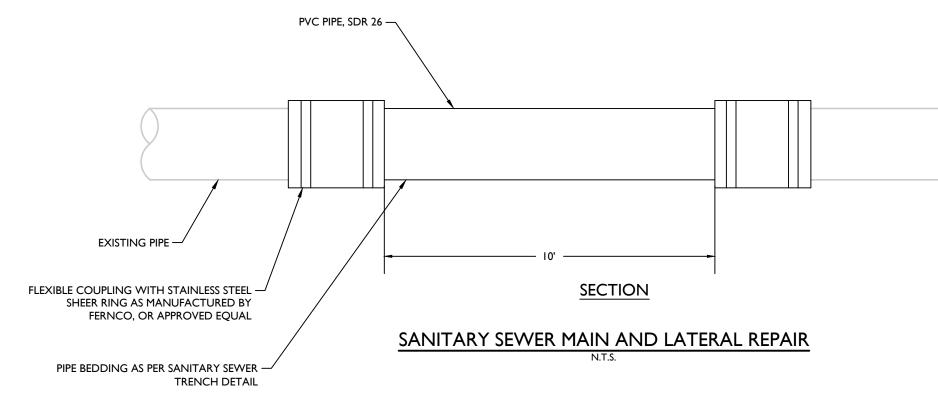
## PVC SANITARY SEWER TRENCH DETAIL

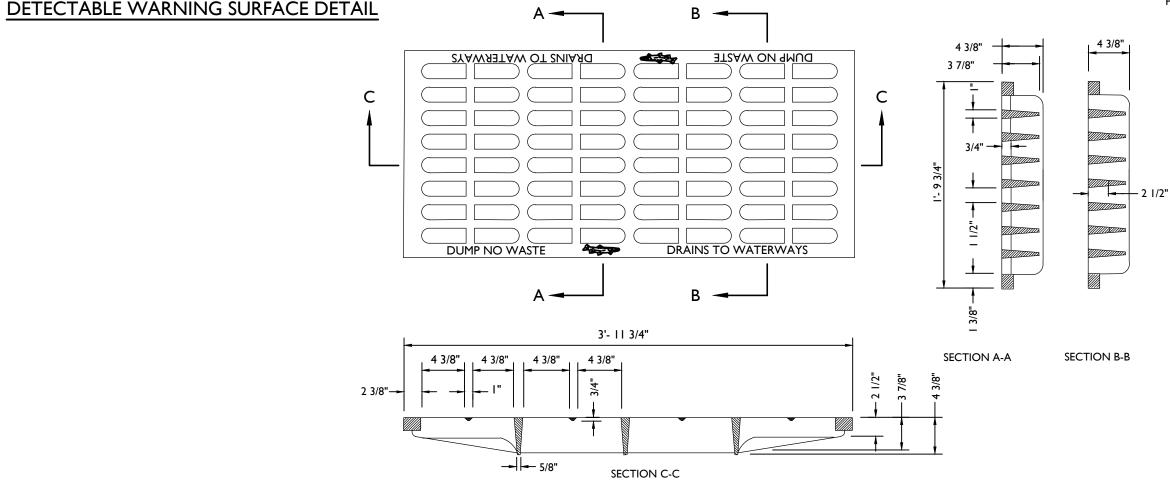
PIPE (REFER TO PLAN)

#### GENERAL SANITARY SEWER MAIN TRENCH NOTES:

- BACKFILL SHALL BE TAMPED MECHANICALLY IN 6" MAXIMUM LIFTS TO 95% DENSITY TO 12" ABOVE THE PIPE; FROM 12" ABOVE PIPE TO PAVEMENT OR GRADE LIFTS SHALL NOT EXCEED 18". ALL BACKFILL SHALL BE COMPACTED TO 95% DENSITY (UNPAVED AREAS) OR 98% DENSITY (PAVED ROADS), 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.
- 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.
- 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.
- SHEETING AND BRACING OF ALL EXCAVATION SHALL COMPLY WITH NEW JERSEY CONSTRUCTION AND SAFETY CODES AND THE FEDERAL OCCUPATIONAL SAFETY AND HEALTH ACT.
- 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.
- 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.
- THE CONTRACTOR MUST FOLLOW PROPOSED SHEETING PLANS SUBMITTED. NO DEVIATIONS MAY BE MADE FROM THE FILED PROCEDURE WITHOUT FIRST SUBMITTING A REVISED SHEETING AND BRACING PLAN, SIGNED AND CERTIFIED AS REQUIRED FOR THE ORIGINAL SUBMISSION, BY THE SAME LICENSED PROFESSIONAL ENGINEER WHO PREPARED THE ORIGINAL SUBMISSION.
- 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, DEWATERING, ABANDONMENT OF EXISTING SEWER UTILITIES OR REMOVAL IF REQUIRED, TRENCH PROTECTION, TEMPORARY SURFACE RESTORATION INCLUDING TEMPORARY PAVING, TRAFFIC STRIPES, CURB, DRIVEWAY, SIDEWALK, FENCE, LANDSCAPING, COUPLINGS, BYPASS PUMPING, SERVICE SADDLES, DETECTABLE WARNING TAPE OR TESTING. ALL COSTS TO BE INCLUDED IN THE VARIOUS ITEMS SCHEDULED IN THE PROPOSAL.

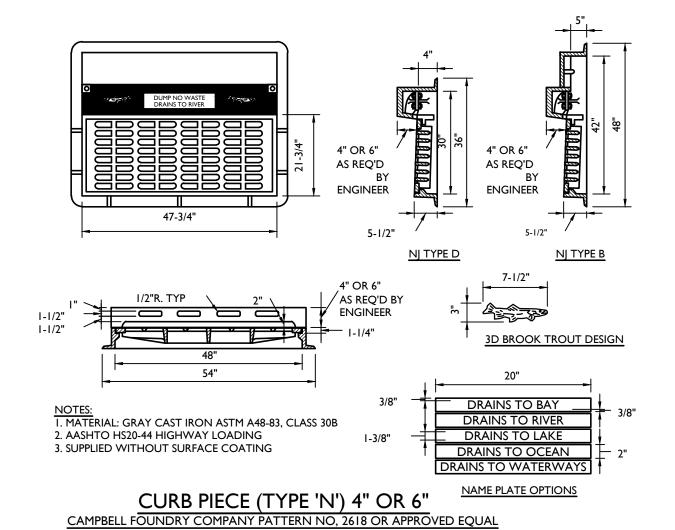






#### BICYCLE SAFE GRATE (PHASE II STORM WATER COMPLIANT GRATE)

(CAMPBELL FOUNDRY PATTERN NO. 2618 OR APPROVED EQUAL)



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NEW JERSEY LICENSED PROFESSIONAL ENGINEER

LICENSE NUMBER: GE45154

COLLIERS ENGINEERING & DESIGN, INC.

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

CONSTRUCTION PLANS

FOR 2020 VARIOUS ROADWAY **IMPROVEMENTS** 

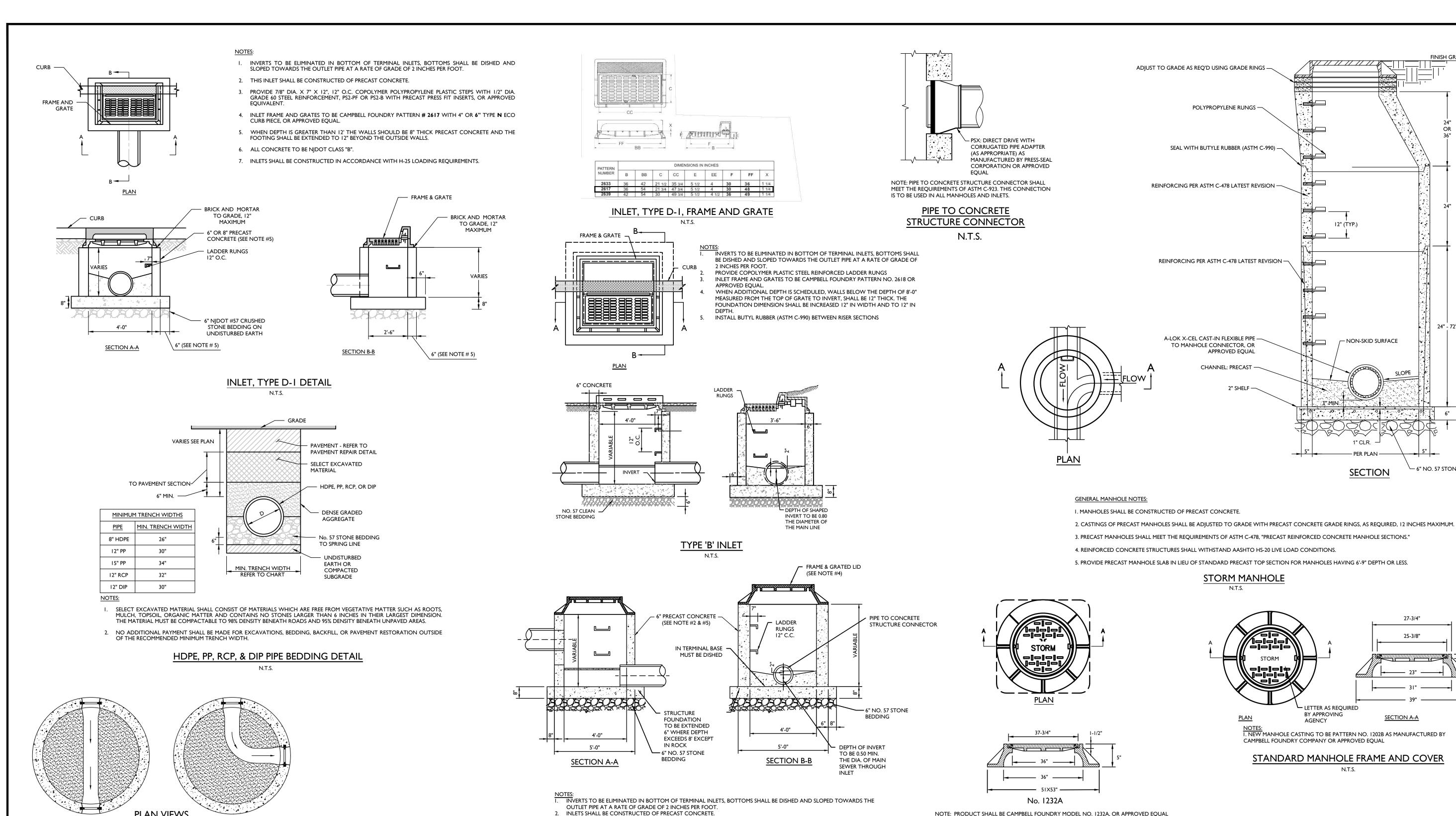
MAKATOM DRIVE, MORNINGSIDE PLACE, INDIAN SPRING ROAD, & ORCHARD STREET

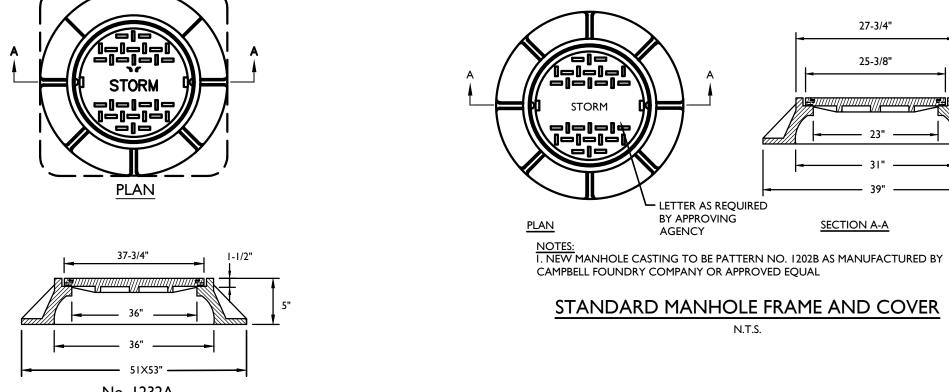
TOWNSHIP OF CRANFORD UNION COUNTY **NEW JERSEY** 

			MT. ARLINGTON			
Colli	ers		400 Valley Suite 3			
			Suite 3 Mt. Arlington,	• .		
nginee & Des			Phone: 973.3 LLIERS ENGINEER C. DOING BUSIN CONSUL	RING & DESIGN IESS AS MASER		
.E:	DATE:		DRAWN BY:	CHECKED B		
SHOWN	1/8	/21	PPC	ВКР		
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CDT027		C-DTL	-DTLS			

CONSTRUCTION DETAILS

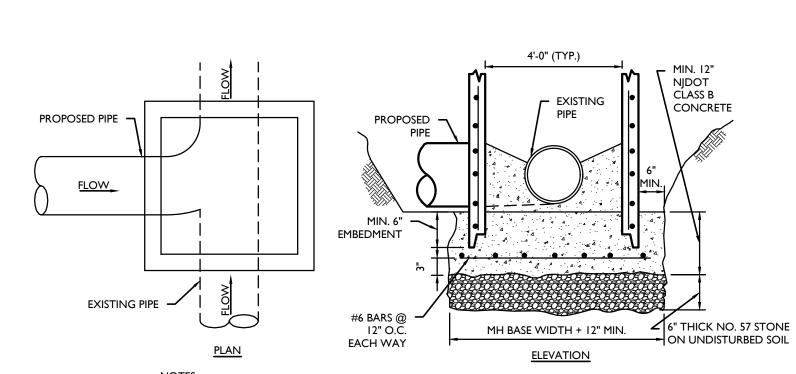
26 of





2" SHELF -





I. SEE PRECAST STANDARD MANHOLE DETAIL FOR TYPICAL INSTALLATION. 2. PRECAST MANHOLE SECTION TO BE IN ACCORDANCE WITH ASTM DESIGNATION C-478.

DOGHOUSE STRUCTURE

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**FINISH GRADE** 

– 6" NO. 57 STONE BEDDING

- NON-SKID SURFACE

**SECTION** 

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CONSTRUCTION PLANS

2020 VARIOUS **ROADWAY IMPROVEMENTS** 

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

TOWNSHIP OF CRANFORD UNION COUNTY

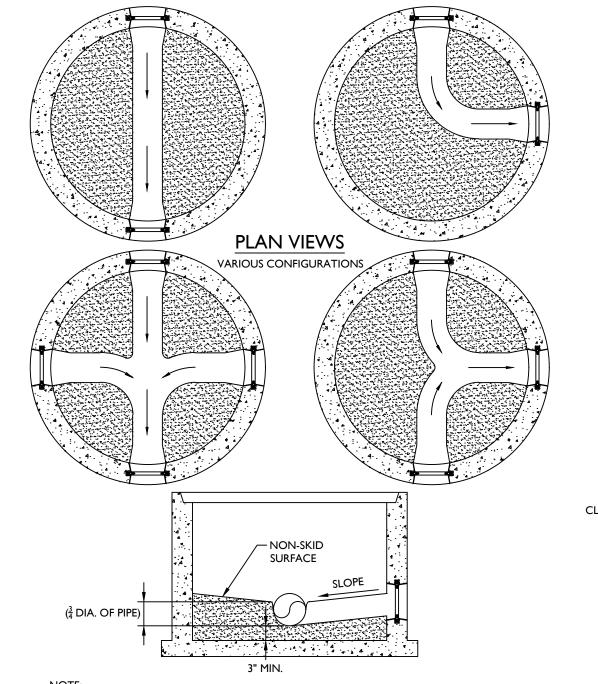
**NEW JERSEY** 

**Colliers** 400 Valley Road, Suite 304 Mt. Arlington, NJ 07856 Engineering Phone: 973.398.3110 & Design COLLIERS ENGINEERING & DESIGN INC. DOING BUSINESS AS MASER CONSULTING

CONSTRUCTION DETAILS

of

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.



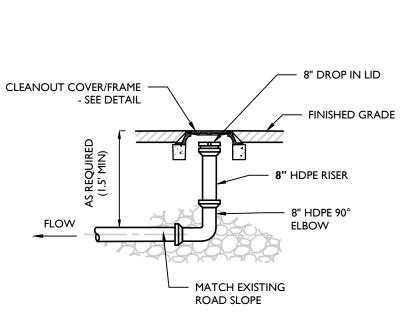
THE INVERT SHALL BE PRECAST OR FORMED IN THE FIELD USING PRECISION FORMS

TYPICAL BENCHING CROSS SECTIONS

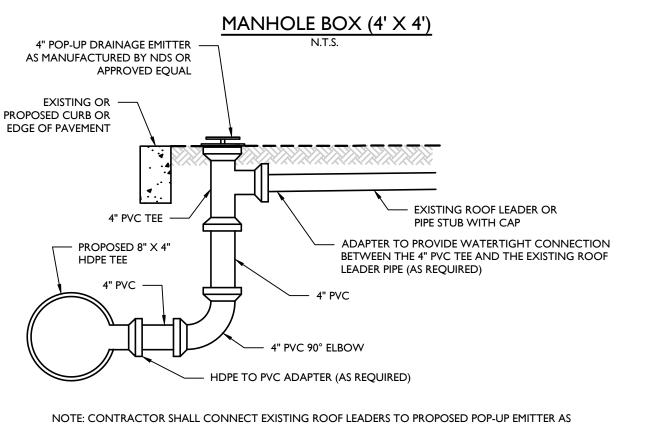
RESULTS IN OPTIMUM FLOW

TO CREATE A SMOOTH, ACCURATE CHANNEL THAT MINIMIZES TURBULENCE AND

N.T.S.



8" RISER DETAIL



PROVIDE 7/8" DIA. X 7" X 12", 12" O.C. COPOLYMER POLYPROPYLENE PLASTIC STEPS WITH 1/2" DIA. GRADE 60 STEEL

4. INLET FRAME AND GRATES TO BE CAMPBELL FOUNDARY PATTERN NO. 1232A, SQUARE FLANGE FLARED TYPE FRAME OR

5. WHEN DEPTH IS GREATER THAN 12' THE WALLS SHOULD BE 8" THICK PRECAST CONCRETE AND THE FOOTING SHALL BE

REINFORCEMENT, PS2-PF OR PS2-B WITH PRECAST PRESS FIT INSERTS, OR APPROVED EQUIVALENT.

7. INLETS SHALL BE CONSTRUCTED IN ACCORDANCE WITH H-25 LOADING REQUIREMENTS.

APPROVED EQUAL.

EXTENDED TO 12" BEYOND THE OUTSIDE WALLS.

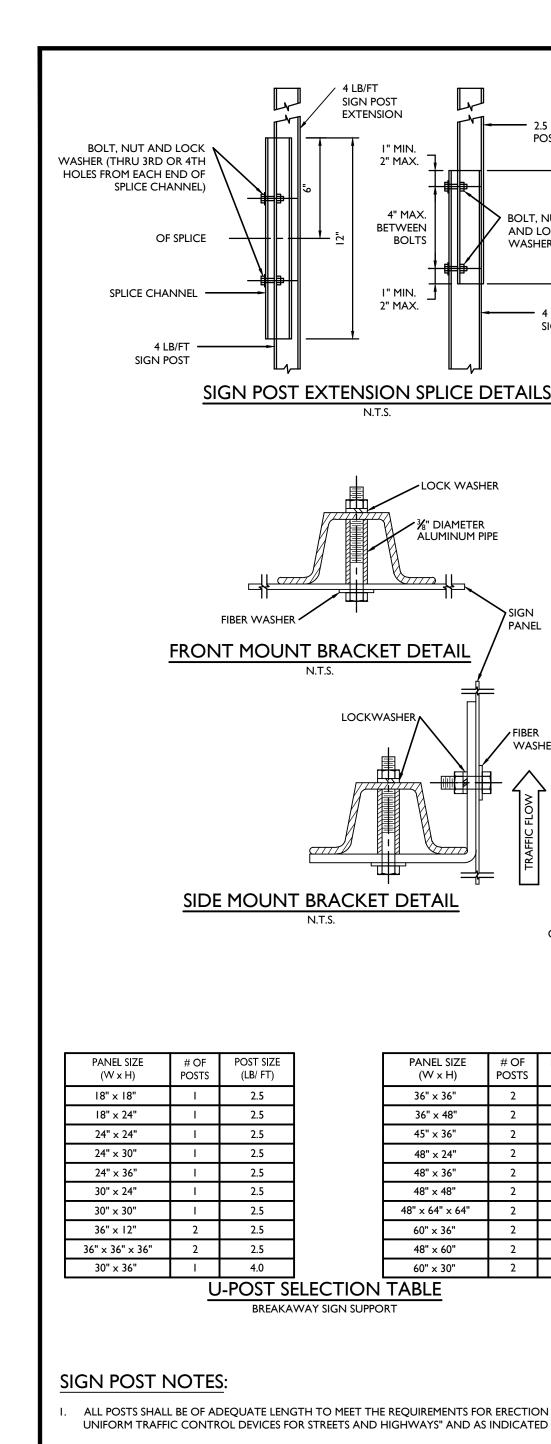
6. ALL CONCRETE TO BE NIDOT CLASS "B".

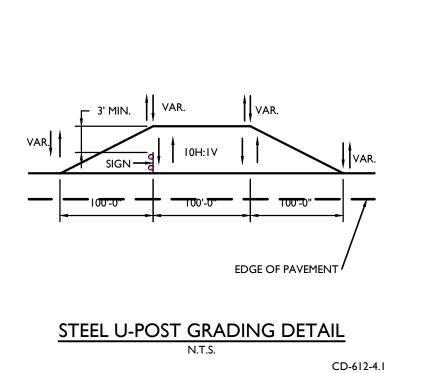
COPOLYMER -POLYPROPYLENE - ½" GRADE 60 STEEL REINFORCEMENT SECTION A-A

NOTE: STEPS SHALL MEET OR EXCEED ASTM NOTE: LADDER RUNGS FACING C-478 AND OSHA STANDARDS TRAFFIC 12" C TO C.

DEPICTED. WHERE DEPICTED ON THE CONSTRUCTION PLANS, CONTRACTOR SHALL INSTALL POP UP EMITTER WITH NO ROOF LEADER OR SUMP PUMP CONNECTION. ROOF LEADER CONNECTION WITH 4" POP-UP EMITTER DETAIL

LADDER RUNG

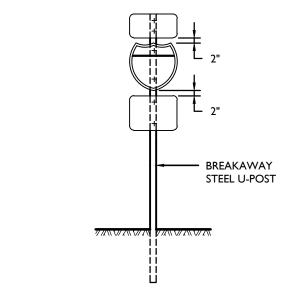


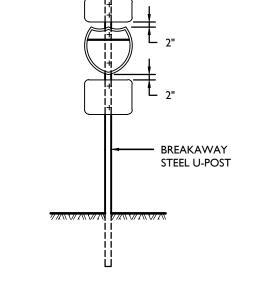


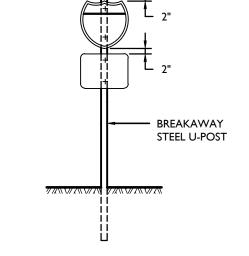
BRACKET FOR SIDE MOUNTWS SIGNS DETAIL

36" x 36" OR LARGER MOUNTING DETAIL

CD-612-4.1







33.3%

BREAKAWAY

STEEL U-POST

CD-612-4.1

CD-612-4.1

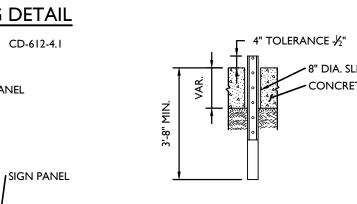
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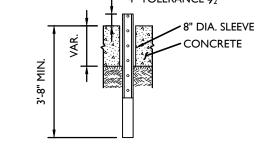
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STEEL U-POST SPACING DETAIL

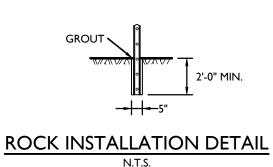
36" x 36" SHIELD MOUNTING DETAIL

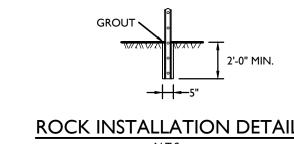




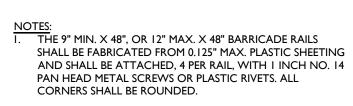




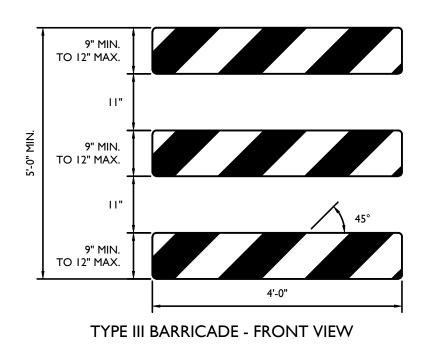




CD-612-4.1



- ORANGE AND SILVER (WHITE) STRIPES SHALL BE RETROREFLECTIVE SHEETING, ASTM D 4956 TYPE III. AS SHOWN FOR CONSTRUCTION SIGNS, ALTERNATE ORANGE AND SILVER (WHITE) STRIPES 6" WIDE SLOPING DOWNWARD AT AN ANGLE OF 45 DEGREES IN THE DIRECTION TRAFFIC IS
- 3. IF NECESSARY, THE SANDBAGS SHALL BE FABRICATED AND PLACED ACCORDING TO THE MANUFACTURE'S
- 4. THE FRAMING FOR BARRICADE PANELS SHALL BE NCHRP-350 CRASHED TESTED AND FHWA APPROVED.



CD-159-1.3

30" x 30"

COLORS:

LEGEND = WHITE (RETROREFLECTIVE)

BACKGROUND = RED (RETROREFLECTIVE)

RI-I SIGN DETAIL

# **BREAKAWAY BARRICADES**

#### ALL POSTS SHALL BE OF ADEQUATE LENGTH TO MEET THE REQUIREMENTS FOR ERECTION AS STATED IN THE CURRENT "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" AND AS INDICATED BELOW.

CD-612-4.1

# OF POST SIZE POSTS (LB/FT)

2 2.5

2 4.0

2 4.0

48" x 64" x 64" 2 2.5

2.5

2.5

4.0

4.0

CD-612-4.1

2.5 LB/FT SIGN

SIGN POST

AND LOCK

LOCK WASHER

WASHER 9

POST EXTENSION

ALL SMALL SIGN SUPPORTS SHALL BE OF THE BREAKAWAY TYPE WITH EXCEPTION OF THOSE INSTALLED BEHIND GUIDE RAIL OR OTHER ROADSIDE BARRIER. ALL STEEL POSTS AND BRACKETS SHALL BE CUT, BENT, AND HOLES PUNCHED AND DRILLED BEFORE GALVANIZING. GALVINIZING

 $(W \times H)$ 

36" × 48"

36" x 36"

45" x 36"

48" x 24"

48" × 36"

48" × 48"

60" x 36"

48" × 60"

- 4. ALL STEEL U-POST SIGN SUPPORTS MUST BE INSTALLED FACING THE PREDOMINANT TRAFFIC FLOW. A MOUNTING BRACKET SHOULD BE USED ON SIDE MOUNTED SIGNS SUCH AS "ONE WAY" SIGNS INSTALLED IN MEDIANS.
- SIGN PANEL SIZES SHALL DETERMINE POST TYPE AND NUMBER AS SHOWN ON THIS DETAIL.

SHALL BE IN CONFORMANCE WITH ASTM A123.

- 6. BOLTS SHALL NOT PROTRUDE MORE THAN ¾" BEYOND THE NUT WHEN TIGHT, BUT SHALL ENGAGE ALL THREADS IN THE NUT.
- WHEN SIGNS ARE INSTALLED ON SLOPES 10H:1V OR FLATTER, THE MINIMUM VERTICAL CLEARANCE REQUIREMENTS FOR SIGNS ARE: FOR SINGLE POST INSTALLATIONS - THE MINIMUM DISTANCE BETWEEN THE EDGE OF THE PAVEMENT AND THE BOTTOM OF ANY PANEL MUST BE 7 FEET, AND THE MINIMUM DISTANCE FROM EDGE OF PAVEMENT TO THE TOP OF ANY SIGN PANEL MUST BE 9 FEET. FOR MULTI-POST INSTALLATIONS - THE MINIMUM DISTANCE BETWEEN THE EDGE OF PAVEMENT AND THE BOTTOM OF A MAJOR
- SECONDARY SIGN PANELS (LAND SERVICE HIGHWAYS) THE MINIMUM DISTANCE BETWEEN THE EDGE OF PAVEMENT AND THE BOTTOM OF A SECONDARY SIGN PANEL IS 6 FEET.

SECONDARY SIGN PANELS (INTERSTATE AND FREEWAYS) - THE BOTTOM OF THE MAJOR SIGN SHALL BE A MINIMUM OF 8 FEET AND

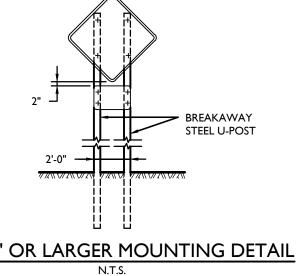
- THE SECONDARY SIGN PANEL A MINIMUM OF 5 FEET ABOVE THE EDGE OF PAVEMENT.
- WHERE GRADING OF IOH: IV OR FLATTER CANNOT BE OBTAINED, OR WHERE CURB OR BERM IS GREATER THAN 4 INCHES, THE MINIMUM VERTICAL CLEARANCE WILL BE MEASURED FROM THE GROUND LINE TO THE BOTTOM OF THE SIGN.
- THE HORIZONTAL OFFSET FROM EDGE OF PAVEMENT TO EDGE OF SIGN IS DERIVED FROM SECTION 2A.19 OF THE MUTCD AS FOLLOWS:
- FOR URBAN INSTALLATION IN AREAS WHERE LATERAL OFFSETS ARE LIMITED, A MINIMUM LATERAL OFFSET OF 2 FEET IS DESIRABLE. A MINIMUM OFFSET OF I FOOT FROM THE FACE OF THE CURB MAY BE USED IN AREAS WHERE THE SIDEWALK WIDTH IS LIMITED OR
- FOR RURAL INSTALLATION 6 FEET MINIMUM DESIRABLE FROM EDGE OR SHOULDER, BUT 12 FEET MINIMUM DESIRABLE FROM EDGE OF TRAFFIC OR AUXILIARY LANE.
- FOR INTERSTATE AND FREEWAY INSTALLATION 6 FEET MINIMUM DESIRABLE FROM EDGE OF SHOULDER, BUT NOT LESS THAN 12 FEET FROM THE EDGE OF TRAFFIC OR AUXILIARY LANE.
- FOR RAMP INSTALLATIONS 6 FEET MINIMUM FROM EDGE OF ROAD.

GROUND LINE TO CENTER LINE OF SPLICE.

- WHERE BEHIND GUIDE RAIL 4 FEET MINIMUM FROM BACK OF BEAM GUIDE RAIL ELEMENT TO SIGN POST.
- PERMANENT SIGN SUPPORTS SHOULD NOT BE INSTALLED ON SLOPES GREATER THAN 10H:1V, EXCEPT WHERE GRADING OF 10H:1V CANNOT BE OBTAINED OR THE SIGN SUPPORTS WILL BE BEHIND A TRAFFIC BARRIER.
- 10. EXTRUDED ALUMINUM SIGN PANELS ARE NOT PERMITTED FOR USE WITH STEEL U-POST SIGN SUPPORTS.
- 11. STEEL U-POST SIGN SUPPORTS SHALL NOT BE PLACED IN FRONT OF GUIDE RAIL AND THE POSTS MUST NOT STRADDLE GUIDE RAIL.
- 12. TO EXTEND THE HEIGHT OF A SIGN POST, A MAXIMUM OF ONE SPLICE MAY BE MADE AND MUST BE A MINIMUM OF 9 FEET FROM THE
- THE NEW JERSEY DEPARTMENT OF TRANSPORTATION "STANDARD ROADWAY CONSTRUCTION/TRAFFIC CONTROL/BRIDGE CONSTRUCTION DETAILS" BOOKLET DATED (2016) AND "ELECTRICAL BUREAU STANDARD DETAILS" (2007) TO GOVERN, EXCEPT FOR THOSE DETAILS CONTAINED HEREIN.

## 30" x 30" OR SMALLER MOUNTING DETAIL

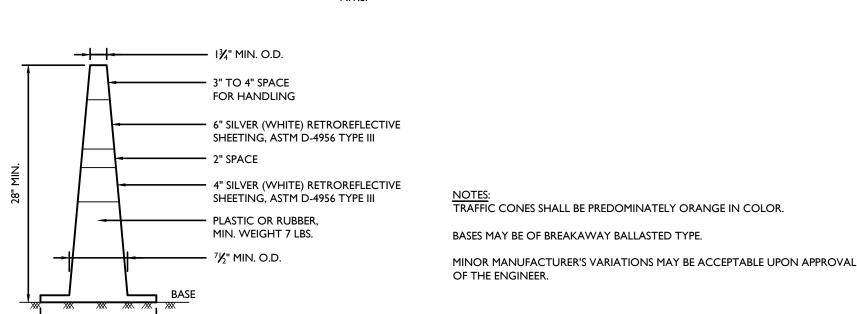
BREAKAWAY STEEL U-POST



36" x 36" OR LARGER MOUNTING DETAIL

 BREAKAWAY STEEL U-POST

 $30" \times 30"$  OR SMALLER MOUNTING DETAIL

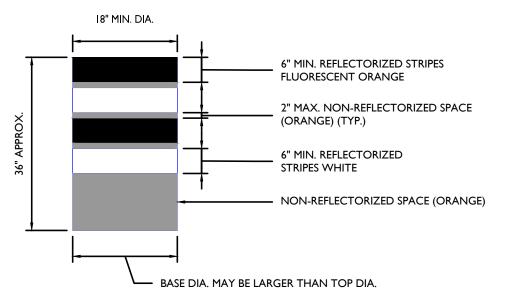


DRUMS SHALL BE MADE OF ORANGE PLASTIC WITH A MINIMUM OF FOUR ALTERNATE FLUORESCENT ORANGE AND WHITE RETROREFLECTIVE STRIPES. IF THERE ARE NON-REFLECTORIZED SPACES BETWEEN THE STRIPES, THEY SHALL BE NO MORE THAN 2" WIDE. RETROREFLECTIVE SHEETING FOR STRIPES SHALL CONFORM WITH ASTM D 4956 TYPE VII OR VIII WITH S2 REQUIREMENTS.

TRAFFIC CONE DETAIL

THE TOP OF THE DRUM SHALL NOT BE OPEN. DRUMS SHALL BE CONSTRUCTED TO INHIBIT ROLLING IF KNOCKED OVER.

THE REFLECTORIZED AREA OF DRUMS SHALL BE ROUND EXCEPT THAT OTHER SHAPES, WHICH PROVIDE THE SAME VISIBILITY AS AN 18 INCH DIAMETER ROUND DRUM REGARDLESS OF ORIENTATION, MAY BE USED.



WHEN BALLAST IS REQUIRED BY THE ENGINEER, SAND SHALL BE USED. THE MAXIMUM WEIGHT OF THE BALLAST SHALL BE 50 LBS. AND BE LOCATED APPROXIMATELY AT GROUND LEVEL. ALTERNATE TYPES OF BALLAST SHALL BE APPROVED BY THE ENGINEER.

CD-159-1.1

#### **SIGN NOTES:**

DIMENSIONS, COLORS AND DETAILS OF VARIOUS SIZE SIGNS, AND ACCESSORY PANELS TO FOLLOW STANDARDS IN THE CURRENT "STANDARD HIGHWAY SIGN PUBLICATION" AND THE CURRENT "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS".

- 2. (S) REPRESENTS A SPECIAL SIZE SIGN.
- 3. LETTERS AND NUMERALS SHALL CONFORM TO THE CURRENT MANUAL. "STANDARD ALPHABETS FOR HIGHWAY SIGNS" U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION.
- 4. THE CONTRACTOR SHALL OBTAIN THE APPROVAL OF THE ENGINEER FOR THE DISTANCE TO BE USED ON THE ADVANCE WARNING SIGNS, AND FOR THE SPEED LIMIT TO BE USED ON THE R2-I SIGN.
- 5. DISTANCE LEGEND: SIGN NUMBER FOLLOWED BY LETTER & DISTANCE

1000' AHEAD

#### BACKING MATERIAL

- I. ALUMINUM SHALL BE FLAT SHEET OF ALLOY AND TEMPER 5052-H38 OR 6061-T6:
- A. 0.10" THICK FOR ALL CONSTRUCTION SIGNS EXCEPT SIGNS SHOWN MOUNTED ON BREAKAWAY BARRICADES.
- B. 0.024" THICK FOR ALL CONSTRUCTION SIGNS SHOWN MOUNTED ON BREAKAWAY BARRICADES.

#### TEMPORARY SIGN SUPPORTS:

- I. SIGN SUPPORTS SHALL BE OF WELL SEASONED LUMBER, S4S, FREE OF SPLITS, KNOTS AND WARPS, OR OF STEEL COMPONENTS.
- 2. WOOD POSTS SHALL HAVE A UNIFORM CROSS-SECTION AND SHALL NOT EXCEED THE FOLLOWING DIMENSIONS FOR: SINGLE POST =  $4" \times 6"$

TWO POSTS = 3" x 6" OR 4" x 5" THREE POSTS =  $3" \times 5"$  OR  $4" \times 4"$ 

4" X 6" WOOD POSTS SHALL BE MODIFIED BY DRILLING  $^{\prime\prime}$  INCH DIAMETER HOLES 4 INCHES AND 18 INCHES ABOVE THE GROUND LINE AND PERPENDICULAR TO THE ROADWAY CENTERLINE.

- NO BRACING IS PERMITTED. VERTICAL CLEARANCES FOR SIGNS MOUNTED ON WOOD SUPPORTS SHALL BE 7 FOOT MINIMUM. EMBEDMENT DEPTH FOR THE WOOD POST SHALL NOT EXCEED 3.5 FEET.
- 4. STEEL POSTS SHALL BE IN ACCORDANCE WITH THE STANDARD DETAIL FOR U-POST SIGN SUPPORT.
- TEMPORARY SIGN SUPPORTS NOT MEETING THIS CRITERIA SHALL BE SHIELDED BY A LONGITUDINAL BARRIER OR CRASH CUSHIONS.
- 6. WOOD POSTS TO BE USED ONLY ON TEMPORARY SIGN SUPPORT.

#### **SIGN FACES:**

I. SIGN FACES SHALL BE ASTM D 4956 TYPE VII OR VIII FLUORESCENT ORANGE SHEETING.

#### **FASTENING:**

I. ALL SIGNS SHALL BE SECURELY FASTENED TO THEIR SUPPORTS WITH BOLTS, NUTS AND WASHERS IN

ACCORDANCE WITH THE SPECIFICATIONS. CD-159-6.1

#### MAINTENANCE AND PROTECTION OF TRAFFIC NOTES:

ALL DEVICES AND PROCEDURES FOR THE MAINTENANCE AND PROTECTION OF TRAFFIC SHALL BE IN ACCORDANCE WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" FOR STREETS AND HIGHWAYS. THE CONTRACTOR SHALL PLAN AND CARRY OUT HIS WORK TO PROVIDE FOR THE CONVENIENT AND SAFE PASSAGE OF ALL VEHICULAR AND PEDESTRIAN TRAFFIC.

- 2. CONTRACTOR TO DEVELOP DETAILED MAINTENANCE AND PROTECTION OF TRAFFIC PLAN FOR REVIEW BY THE ENGINEER PRIOR TO CONSTRUCTION.
- THE CONTRACTOR SHALL FOLLOW THE RECOMMENDED TRAFFIC CONTROL PROCEDURES. IF THE CONTRACTOR DESIRES TO CHANGE THE PROCEDURE, HE SHALL PRESENT HIS CHANGES IN WRITING TO THE ENGINEER FOR REVIEW AND APPROVAL. THERE MAY BE UTILITY RELOCATIONS, ADJUSTMENTS AND IMPROVEMENTS WHICH ARE NECESSITATED BY THE PROPOSED CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH EACH OF THE UTILITY COMPANIES LOCATED WITHIN THE
- 4. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING MAINTENANCE AND PROTECTION OF TRAFFIC THROUGHOUT THE DURATION OF CONSTRUCTION. THE COSTS FOR THE INDIVIDUAL DEVICES USED TO MAINTAIN AND PROTECT TRAFFIC SHALL BE INCLUDED IN THE UNIT PRICES BID FOR THE SPECIFIC TRAFFIC CONTROL DEVICES IN THE PROPOSAL. NO ADDITIONAL PAYMENT WILL BE MADE FOR RELOCATING THE DEVICES AS REQUIRED, OR AS DIRECTED BY THE ENGINEER, DURING THE COURSE OF
- THE CONTRACTOR WILL NOT BE PERMITTED TO CLOSE DOWN THE ENTIRE STREET. THE CONTRACTOR SHALL PROVIDE MEANS OF ACCESS AT ALL TIMES FOR PEDESTRIANS AND VEHICULAR TRAFFIC AT ALL PRIVATE DRIVEWAYS AND OCCUPIED BUILDINGS AFFECTED BY THE WORK OF THIS CONTRACT. DURING CONSTRUCTION, IN THE VICINITY OF A DRIVEWAY, THE ACCESS WIDTH AT THE DRIVEWAY ENTRANCE SHALL BE PLAINLY MARKED BY LIGHTS, BARRICADES OR OTHER SUCH DEVICES APPROVED BY THE
- 6. DURING CONSTRUCTION, ALL ROADS SHALL BE PROPERLY MAINTAINED TO ACCOMMODATE EMERGENCY VEHICLES AT ALL TIMES.
- 7. ALL BARRICADES SHALL BE TYPE III BREAKAWAY BARRICADES.
- 8. FILL MATERIAL FOR ESCAPE RAMPS SHALL BE ON-SITE MATERIAL. ALL COSTS FOR STORING, PLACING, MOVING, AND REMOVING FILLET MATERIAL SHALL BE INCLUDED IN THE PRICE BID FOR THE VARIOUS

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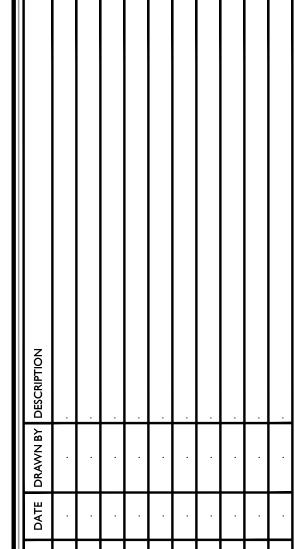
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LICENSE NUMBER: GE45154

COLLIERS ENGINEERING & DESIGN, INC.

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

CONSTRUCTION PLANS

2020 VARIOUS ROADWAY **IMPROVEMENTS** 

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

TOWNSHIP OF CRANFORD UNION COUNTY **NEW JERSEY** 

Colliers Suite 304 Mt. Arlington, NJ 07856 Engineering Phone: 973.398.3110 & Design COLLIERS ENGINEERING & DESIGI INC. DOING BUSINESS AS MASER

AS SHOWN RAWING NAME: CDT027 -DTLS

**CONSTRUCTION DETAILS** 

of

# LEGEND

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, (all other approved)

TEMPORARY CRASH CUSHION, INERTIAL BARRIER SYSTEM

THE PLACEMENT OF THESE SIGNS SHALL BE AS DIRECTED BY THE RE. 12. 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 BUFFER ZONE

GENERAL NOTES:

BE IN PLACE.

COVERED.

CONSTRUCTION.

AHEAD) AS A MINIMUM.

THE PLANS AND SPECIFICATIONS.

ADVANCE OF PROJECT LIMITS.

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.

ADVANCE WARNING SIGNS DISTANCES, AND TAPER LENGTHS MAY BE EXTENDED, AT

SHOWN ON THE TRAFFIC CONTROL PLANS. THESE LOCATIONS MAY BE MODIFIED AS

FLASHING ARROW BOARDS ARE TO BE USED FOR TEMPORARY LANE CLOSINGS AND AT

APPROVED BY RE TO ADJUST FOR VISIBILITY DUE TO HORIZONTAL OR VERTICAL CURVATURE OF THE ROADWAY OR TO POSITION AT A SAFER LOCATION, ILLUMINATED

DIRECTION OF THE DEPARTMENT, TO ADJUST FOR REDUCED VISIBILITY DUE TO

2. THE APPROXIMATE LOCATIONS OF THE ILLUMINATED FLASHING ARROW BOARDS ARE

3. PRIOR TO ANY ROAD CONSTRUCTION, TRAFFIC CONTROL SIGNS AND DEVICES SHALL

5. ALL EXISTING ROAD SIGNS, PAVEMENT MARKINGS AND/OR PLOWABLE PAVEMENT

CONFLICTING OR NON-OPERATING SIGNAL INDICATIONS ON EITHER THE EXISTING, TEMPORARY.OR PROPOSED TRAFFIC SIGNAL SYSTEMS SHALL BE BAGGED OR

MAINTENANCE AND PROTECTION OF TRAFFIC SHALL BE IN ACCORDANCE WITH THE

FOR TRAFFIC CONTROL FOR STREET AND HIGHWAY CONSTRUCTION, MAINTENANCE.

CONSTRUCTION SIGN W99-2 (GIVE US A BRAKE) SHALL BE LOCATED 200 FEET IN

THE CLOSED WIDTH SHALL BE LOCATED 100 FEET BEYOND EACH INTERSECTION OR

9. A W1-6 (ARROW) SIGN MOUNTED ON A BREAKAWAY BARRICADE AND CENTERED ON

10. CONSTRUCTION SIGNS R11-4 (ROAD CLOSED TO THRU TRAFFIC) SHALL BE PLACED

AT THE INTERSECTING STREETS WHICH ARE CLOSED TO TRAFFIC BECAUSE OF

(GROOVED PAVEMENT) SHALL BE USED WHEN SUCH PAVEMENT CONDITIONS EXIST.

MAIN ACCESS POINT WITHIN THE AREA OF A LANE OR SHOULDER CLOSURE.

11. CONSTRUCTION SIGNS W8-9A (SYMBOL FOR UNEVEN PAVEMENT) AND W8-14A

UTILITY, AND INCIDENT MANAGEMENT OPERATIONS", UNLESS OTHERWISE NOTED IN

MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES - PART VI "STANDARDS AND GUIDES

BE COVERED, REMOVED OR RELOCATED AS DIRECTED BY THE RE.

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

REFLECTORS WHICH CONFLICT WITH THE PROPOSED TRAFFIC CONTROL PLAN SHALL

HORIZONTAL AND VERTICAL CURVATURE OF THE ROADWAY.

LOCATIONS SHOWN ON THE TRAFFIC CONTROL PLANS.

13. 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.

14. TRAFFIC SAFETY SERVICES SHALL BE USED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR TRAFFIC CONTROL.

15. 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.

16. WHERE REQUIRED. THE CONTRACTOR SHALL MAKE PROVISIONS FOR MAINTAINING PEDESTRIAN CROSSING LOCATIONS AND TYPE AS DIRECTED BY THE RE.

17. 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.

18. 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.

19. 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..

20. 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.

21. 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.

22. 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.

23. THE FINAL HMA SURFACE PAVEMENT SHALL NOT BE CONSTRUCTED UNTIL THE FINAL STAGE OF THE PROJECT UNLESS OTHERWWISE 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

24. 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.

25. CONES MAY BE SUBSTITUTED FOR DRUMS AND INSTALLED UPON THE APPROVAL OF THE RE.

26. TRAFFIC IMPACT NOTICES AND CHANGES

WHEN THE FOLLOWING TERMS ARE USED, THE INTENT AND MEANING SHALL BE AS FOLLOWS:

i. 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.

iii. PERMANENT LANE CLOSURES - WORK DESCRIBED UNDER "IMPACTS TO NORMAL TRAFFIC FLOW" WHICH REMAINS IN PLACE CONTINUOUSLY FOR 24 HOURS OR MORE.

B. 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.

C. 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

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 MMEDIATELY PRECEDING FRIDAY ON THE DAILY FORM TO-102 PROVIDED BY THE DEPARTMENT.

D. 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

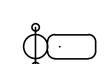
NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS

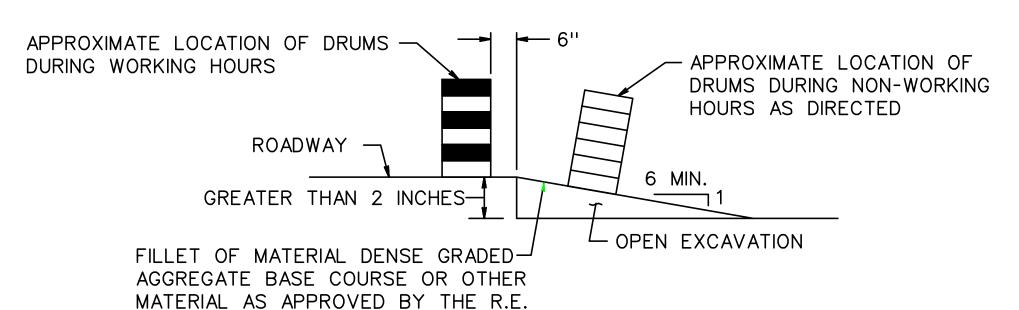
LEFT RIGHT

LEFT RIGHT BOTH

WORK AREA



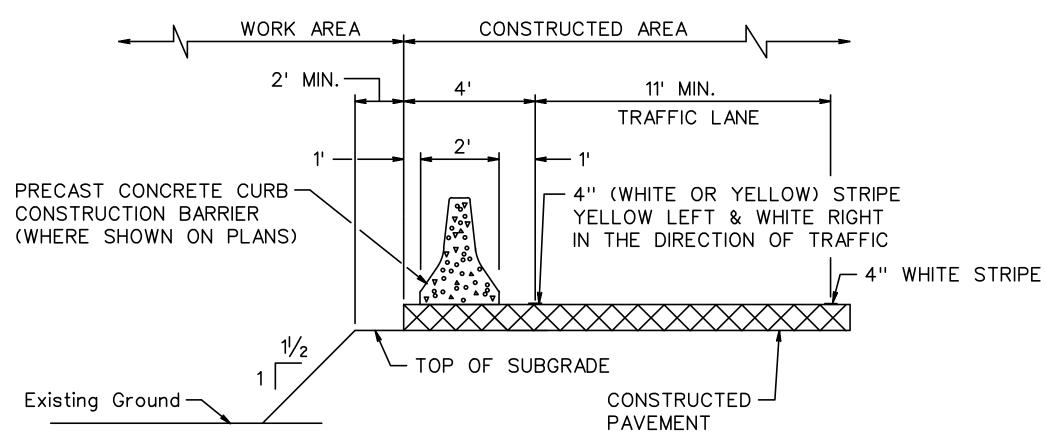
PAINT STRIPING TRUCK OR OTHER OPERATING VEHICLE



NOTE:

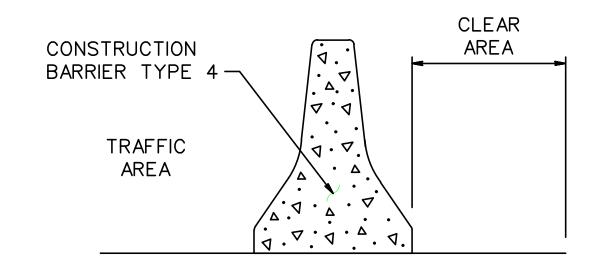
ESCAPE RAMPS MUST BE CONSTRUCTED AND MAINTAINED DURING NON-WORKING HOURS WHERE A VERTICAL DROP GREATER THAN 2 INCHES EXISTS ADJACENT TO TRAVELED LANE.

ESCAPE RAMP DETAIL



TYPICAL SECTION

PLACEMENT OF PRECAST CONCRETE CONSTRUCTION BARRIER



#### NOTES:

- 1. CHANGES TO THE PROPOSED JOINT CLASS AT ANY LOCATION MUST BE APPROVED BY THE DEPT.
- 2. 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. STA.	ТО	

JOINT CLASS	CLEAR AREA
Α	20 INCHES
В	16 INCHES
С	11 INCHES

CONSTRUCTION BARRIER, TYPE 4
JOINT CLASS AND CLEAR AREA

REGULATORY APPROACH SPEED OF	RECOMMENDED SIGHT DISTANCE TO BEGINNING OF CHANNELIZING TAPERS			
TRAFFIC	DES	DESIRABLE		
MILES/HOUR	RURAL 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:

- 1. AVOIDANCE MANEUVER IS FOR A SPEED, PATH, AND/OR DIRECTION CHANGE PRIOR TO THE BEGINNING OF CHANNELIZING TAPERS.
- 2. RECOMMENDED DISTANCES BETWEEN TWO SEPARATE LANE CLOSURES SHALL BE DOUBLE THE VALUES SHOWN ABOVE.
- 3. RURAL AND URBAN ROAD DESIGNATIONS SHALL BE AS DEFINED IN THE NJDOT STATE HIGHWAY STRAIGHT LINE DIAGRAMS.
- 4. 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.
- 5. TAPERS SHALL BE LOCATED TO MAXIMIZE THE VISIBILITY OF THEIR TOTAL LENGTH.

RECC	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 10' 11' 12'		IGTH .ANE	MAXIMUM DEVICE (B) SPACING ALONG TAPERS IN FEET	MAXIMUM DEVICE (D) SPACING ALONG TANGENTS IN FEET
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.

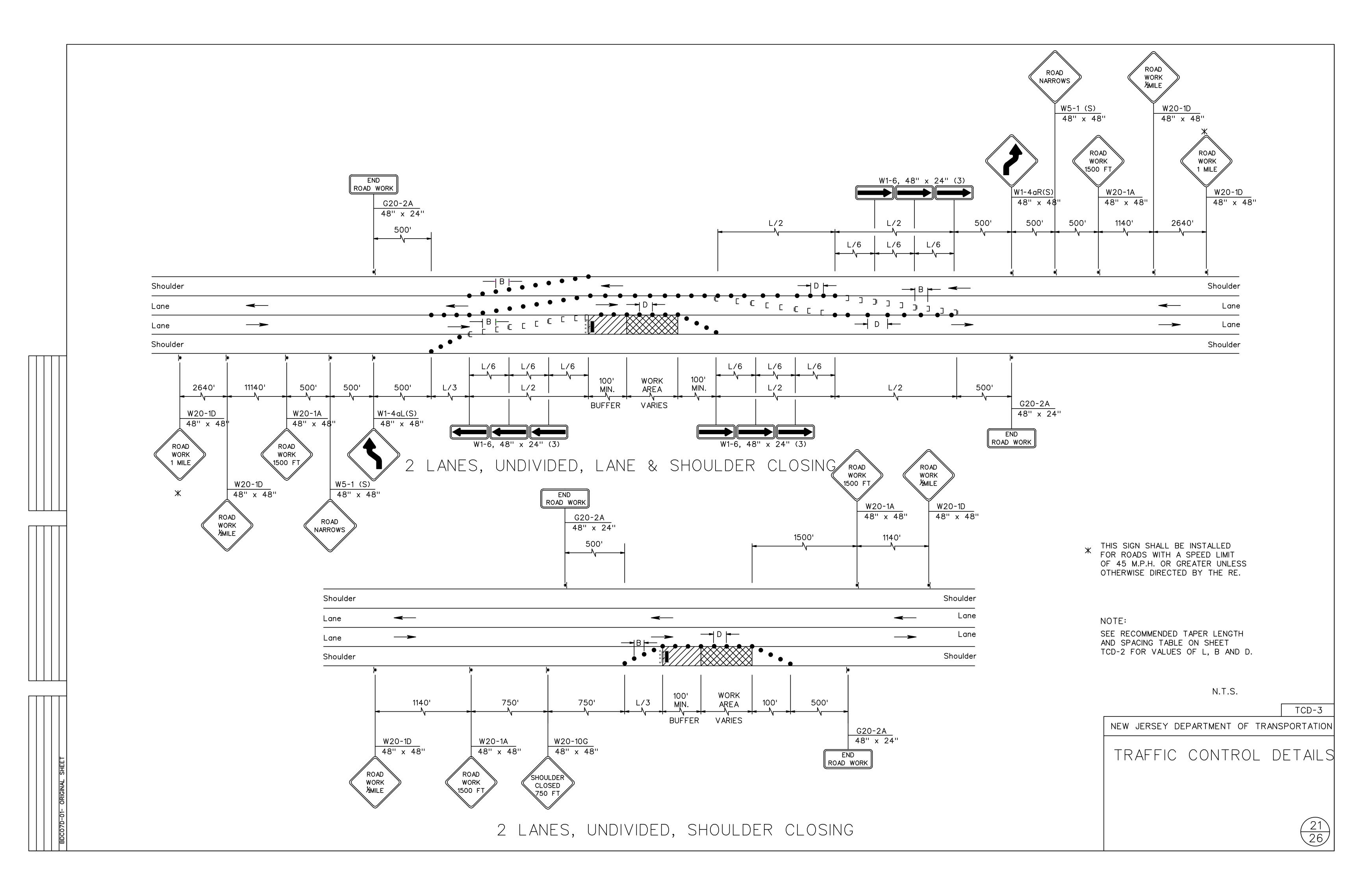
TCD-2

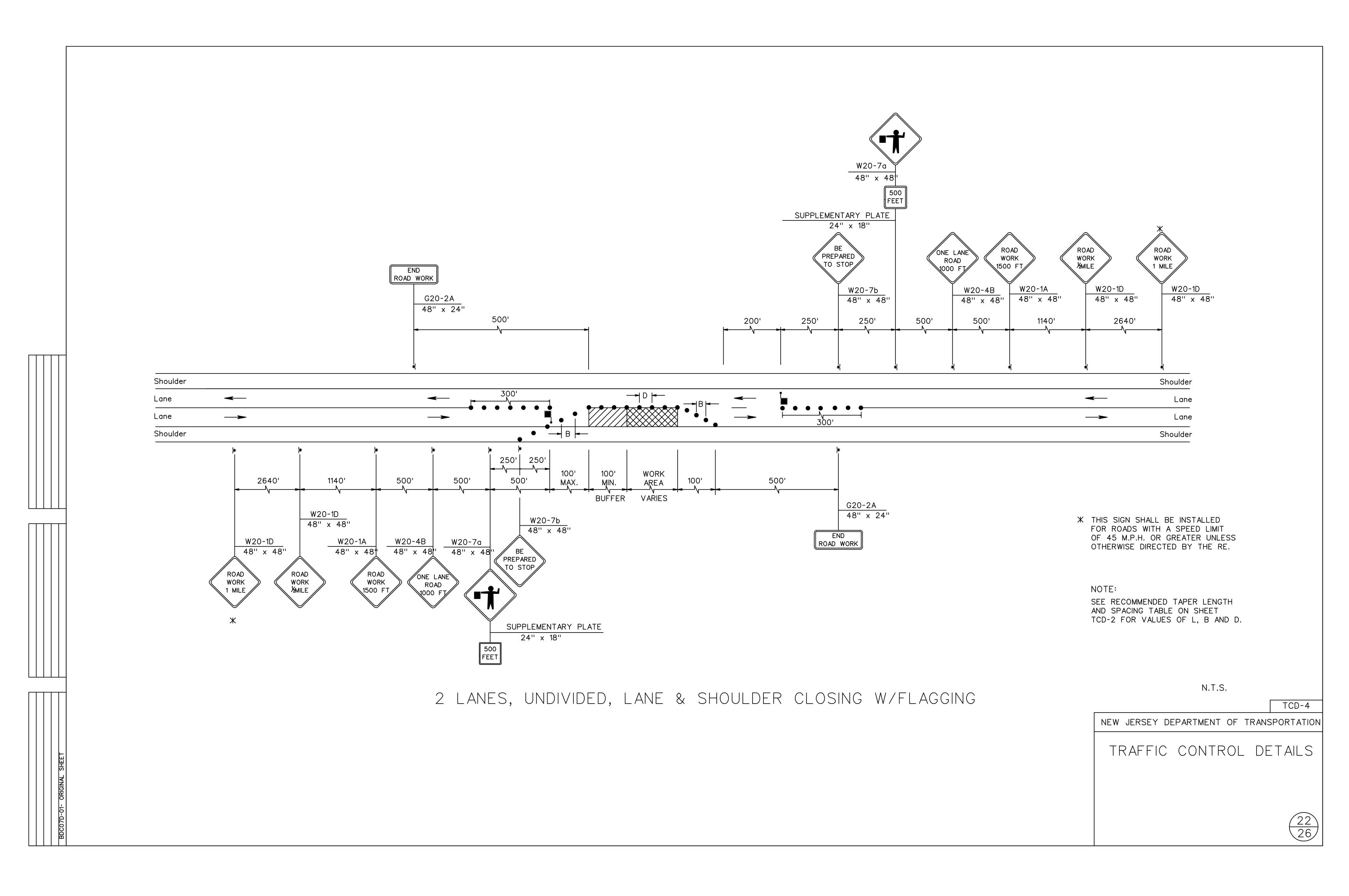
NEW JERSEY DEPARTMENT OF TRANSPORTATION

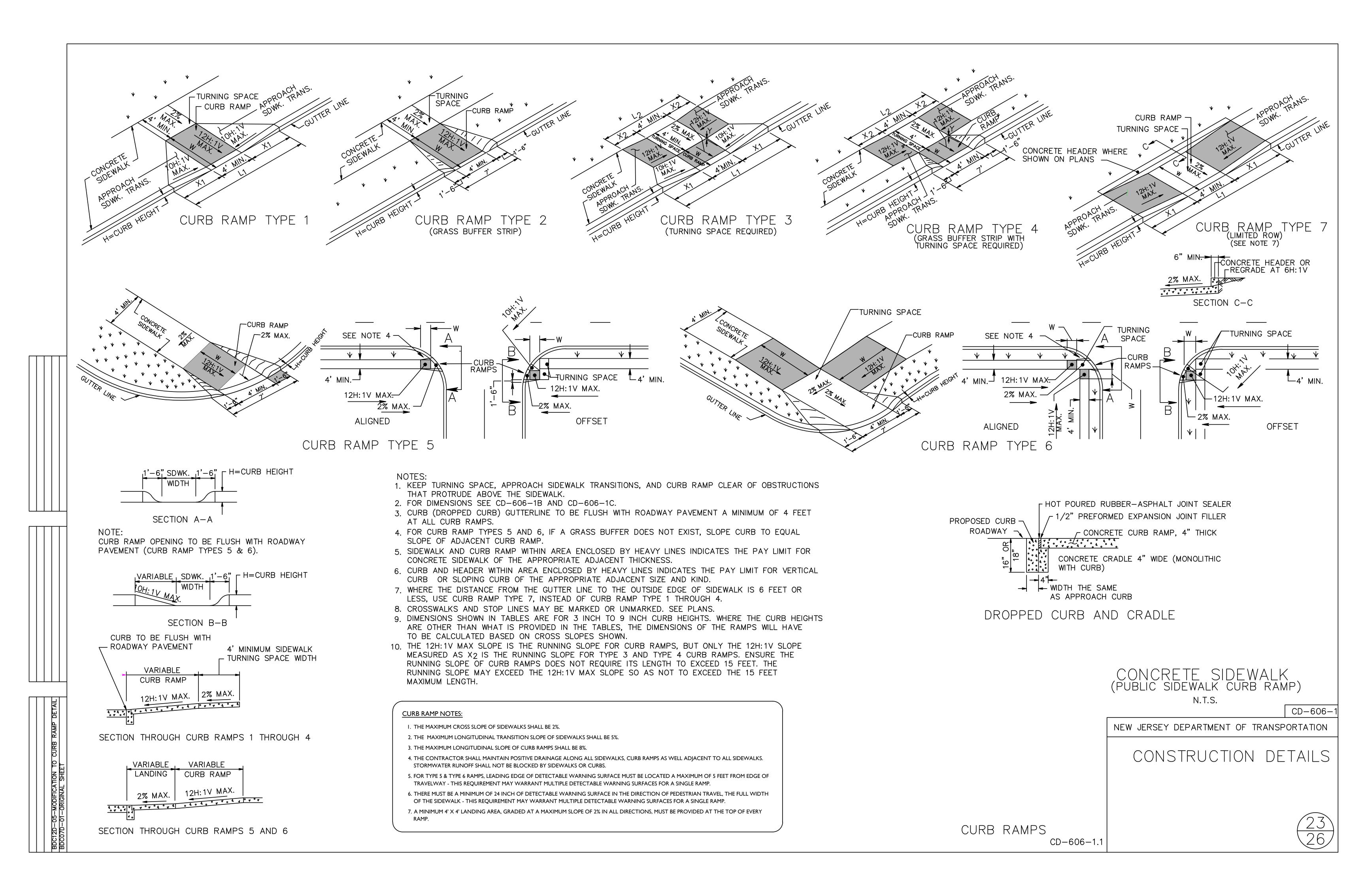
TRAFFIC CONTROL DETAILS

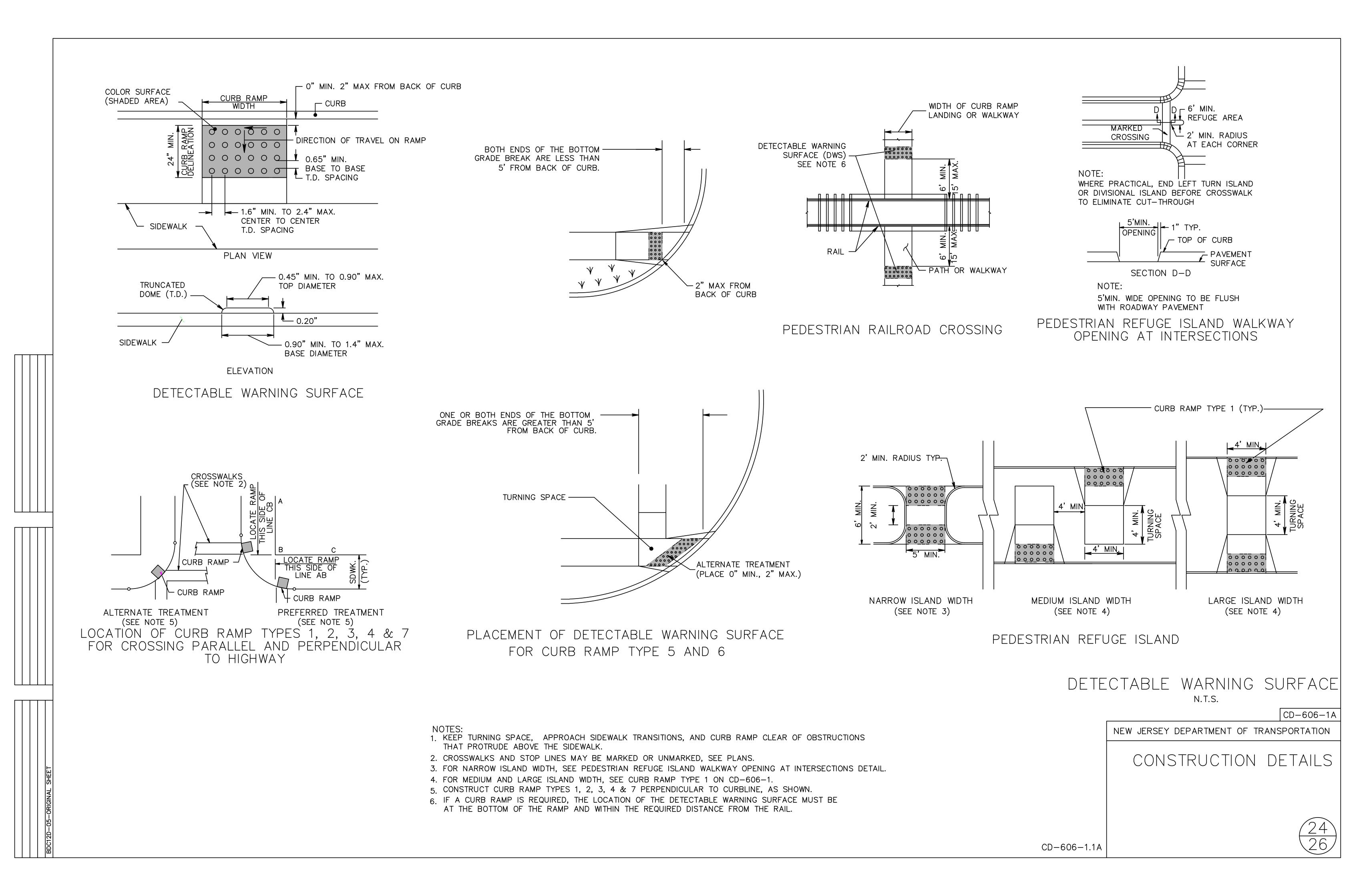


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# **CURB RAMP TYPE 1**

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% GUT	TER LINE PRO	OFILE	
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% GUT	TER LINE PRO	OFILE	
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% GUT	TER LINE PRO	OFILE							
H	W X1u X1L Lz FEET FEET FEET FEET									
INCHES	FEET	FEET	PEEI	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						

		15.0	7.05	25.05
	0.0% GUT	ΓER LINE PRO	OFILE	
H INCH	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 3

0.0% Gl	JTTER LINE	PROFILE						
H INCHES	W FEET	X1u FEET	X1L FEET	L1 FEET	Y INCHES	X2u FEET	X2L FEET	L <sub>2</sub> FEET
3		2.50	2.50	9.00		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	2.5	5.00	5.00	14.00	2.5	4.10	4.10	12.20
7		5.83	5.83	15.67		5.10	5.10	14.21
8		6.67	6.67	17.33	]	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	3.0	5.00	5.00	14.00	3.0	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		3.33	3.33	10.67	]	1.34	1.34	6.68
5		4.17	4.17	12.33		2.34	2.34	8.68
6	3.5	5.00	5.00	14.00	3.5	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		7.50	7.50	19.00		6.34	6.34	16.69
3		*	*	*	]	*	*	*
4		*	*	*		*	*	*
5		4.17	4.17	12.33		1.96	1.96	7.92
6	4.0	5.00	5.00	14.00	4.0	2.96	2.96	9.93
7		5.83	5.83	15.67	]	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		2.78	2.27	9.0
	4		3.70	3.03	10.7
) )	5		4.63	3.79	12.4
)	6	2.5	5.56	4.55	14.1
1	7		6.48	6.06	15.7
1	8		7.41	6.06	17.4
1	9		8.33	6.82	19.1
	3		2.78	2.27	9.0
4	4		3.70	3.03	10.7
4	5		4.63	3.79	12.4
5	6	3.0	5.56	4.55	14.1
5 5 5	7		6.48	6.06	15.7
5	8		7.41	6.06	17.4
5	9		8.33	6.82	19.1
	33		*	*	*
3	4		3.70	3.03	10.7
3 3	5		4.63	3.79	12.4
9	6	3.5	5.56	4.55	14.1
9	7		6.48	6.06	15.7
9	8		7.41	6.06	17.4
9	9		8.33	6.82	19.1
	33		*	*	*
	4		3.70	3.03	10.7
2	5		4.63	3.79	12.4
	6	4.0	5.56	4.55	14.1
3 3 3	7		6.48	6.06	15.7
3	8		7.41	6.06	17.4
3	9		8.33	6.82	19.2

X1u FEET

FEET

INCHES

X1L L1 FEET FEET

INCHES

3.53

7.64

3.80

7.21

3.37

4.50

6.78

X<sub>2</sub>L FEET

1.18 8.27

2.77 10.30

4.56 14.36

6.34 18.42

1.54 7.49 2.43 9.52 3.32 11.55 4.22 13.58 5.11 15.61

6.00 17.64

1.20 6.72 2.09 8.75

3.88 12.81

2.65 10.01

3.54 12.04

4.43 14.07

5.32 16.01

H	W	PROFILE X1u	X1L	L <sub>1</sub>	Υ	X2u	X2L	l
INCHES	FEET	FEET	FEET	FEET	INCHES	FEET	FEET	FE
3		3.13	2.08	9.21		1.45	0.89	6.
4		4.17	2.78	10.94		2.77	1.69	8
5		5.21	3.47	12.68		4.08	2.50	10
6	2.5	6.25	4.17	14.42	2.5	5.40	3.31	12
7		7.29	4.86	16.15		6.72	4.12	14
8		8.23	5.56	17.89		8.03	4.92	16
9		9.38	6.25	19.63		9.35	5.73	19
3		3.13	2.08	9.21		0.95	0.58	5
4		4.17	2.78	10.94		2.27	1.39	7
5		5.21	3.47	12.68		3.58	2.20	9
6	3.0	6.25	4.17	14.42	3.0	4.90	3.00	11.
7		7.29	4.86	16.15		6.22	3.81	14
8		8.23	5.56	17.89		7.53	4.62	16
9		9.38	6.25	19.63		8.85	5.42	18
33		*	*	*		*	*	*
4		4.17	2.78	10.94		1.77	1.08	6
5		5.21	3.47	12.68		3.08	1.89	8
6	3.5	6.25	4.17	14.42	3.5	4.40	2.70	11
7		7.29	4.86	16.15		5.72	3.50	13.
8		8.23	5.56	17.89		7.03	4.31	15.
9		9.38	6.25	19.63		8.35	5.12	17.
33		*	*	*		*	*	*
4		4.17	2.78	10.94		1.27	0.78	6
5		5.21	3.47	12.68		2.58	1.58	8
6	4.0	6.25	4.17	14.42	4.0	3.90	2.39	10
7		7.29	4.86	16.15	]	5.22	3.20	12
8		8.23	5.56	17.89	]	6.53	4.00	14
9		9.38	6.25	19.63		7.85	4.81	16

3.0% Gl	JTTER LINE	PROFILE						
H INCHES	W FEET	X1u FEET	X1L FEET	L1 FEET	Y INCHES	X2u FEET	X <sub>2</sub> L FEET	L2 FEET
3		3.57	1.92	9.49		1.72	0.81	6.53
4		4.76	2.56	11.33		3.28	1.55	8.83
5		5.95	3.21	13.16		4.85	2.28	11.13
6	2.5	7.14	3.85	14.99	2.5	6.41	3.02	13.43
7		8.33	4.49	16.82		7.98	3.75	15.73
8		9.52	5.13	18.65		9.54	4.49	18.03
9		10.71	5.77	20.48		11.10	5.22	20.33
3		3.57	1.92	9.49		1.13	0.53	5.66
4		4.76	2.56	11.33		2.69	1.27	7.96
5		5.95	3.21	13.16		4.25	2.00	10.26
6	3.0	7.14	3.85	14.99	3.0	5.82	2.74	12.55
7		8.33	4.49	16.82		7.38	3.47	14.85
8		9.52	5.13	18.65		8.94	4.21	17.15
9		10.71	5.77	20.48		10.51	4.94	19.45
33		*	*	*		*	*	*
4		4.76	2.56	11.33		2.10	0.99	7.08
5		5.95	3.21	13.16		3.66	1.72	9.38
6	3.5	7.14	3.85	14.99	3.5	5.22	2.46	11.68
7		8.33	4.49	16.82		6.79	3.19	13.98
8		9.52	5.13	18.65		8.35	3.93	16.28
9		10.71	5.77	20.48		9.91	4.66	18.58
33		*	*	*		*	*	*
4		4.76	2.56	11.33		1.50	0.71	6.21
5		5.95	3.21	13.16		3.07	1.44	8.51
6	4.0	7.14	3.85	14.99	4.0	4.63	2.18	10.81
7		8.33	4.49	16.82		6.19	2.91	13.11
8		9.52	5.13	18.65		7.76	3.65	15.41
9		10.71	5.77	20.48		9.32	4.38	17.71

4.0% Gl	JTTER LINE	PROFILE						
H INCHES	W FEET	X1u FEET	X1L FEET	L1 FEET	Y INCHES	X2u FEET	X <sub>2</sub> L FEET	L2 FEET
3		4.17	1.79	9.95		2.12	0.74	6.86
4		5.56	2.38	11.94	1	4.04	1.42	9.46
5		6.94	2.98	13.92	]	4.85	2.28	11.13
6	2.5	8.33	3.57	15.90	2.5	6.41	3.02	13.43
7		9.72	4.17	17.89		7.98	3.75	15.73
8		11.11	4.76	19.87		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	3.0	8.33	3.57	15.90	3.0	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		5.56	2.38	11.94		2.58	0.91	7.49
5		6.94	2.98	13.92		4.51	1.58	10.09
6	3.5	8.33	3.57	15.90	3.5	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		12.50	5.36	21.86		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	4.0	8.33	3.57	15.90	4.0	5.70	2.00	11.70
7		9.72	4.17	17.89		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

H INCHES	W FEET	X1u FEET	X1L FEET	L1 FEET	Y INCHES	X <sub>2</sub> u FEET	X <sub>2</sub> L FEET	L2 FEET
3		5.00	1.67	10.67		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	2.5	10.00	3.33	17.33	2.5	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		5.00	1.67	10.67		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	3.0	10.00	3.33	17.33	3.0	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		*	*	*		*	*	*
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	3.5	10.00	3.33	17.33	3.5	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		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	4.0	10.00	3.33	17.33	4.0	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

6.0% Gl	JTTER LINE	PROFILE						
H INCHES	W FEET	X1u FEET	X1L FEET	L1 FEET	Y INCHES	X2u FEET	X2L FEET	L <sub>2</sub> FEET
3		6.25	1.56	11.81		3.94	0.64	8.58
4		8.33	2.08	14.42		7.51	1.22	12.74
5		10.42	2.60	17.02		11.09	1.80	16.89
6	2.5	12.50	3.13	19.63	2.5	14.67	2.38	21.05
7		14.48	3.65	22.23		15.00	2.97	21.97
8		15.00	4.17	23.71		15.00	3.81	22.81
9		15.00	4.69	23.69		15.00	4.44	23.44
3		6.25	1.56	11.81		2.58	0.42	7.00
4		8.33	2.08	14.42		6.16	1.00	11.16
5		10.42	2.60	17.02		9.73	1.58	15.31
6	3.0	12.50	3.13	19.63	3.0	13.31	2.16	19.47
7		14.48	3.65	22.23		15.00	2.75	21.75
8		15.00	4.17	23.71		15.00	3.33	22.33
9		15.00	4.69	23.69		15.00	3.91	22.91
3		*	*	*		*	*	*
4		8.33	2.08	14.42		4.80	0.78	9.58
5		10.42	2.60	17.02		8.37	1.36	13.74
6	3.5	12.50	3.13	19.63	3.5	11.95	1.94	17.89
7		14.48	3.65	22.23		15.00	2.52	21.52
8		15.00	4.17	23.71		15.00	3.11	22.11
9		15.00	4.69	23.69		15.00	3.69	22.96
3		*	*	*		*	*	*
4		8.33	2.08	14.42	]	3.44	0.56	8.00
5		10.42	2.60	17.02	]	7.02	1.14	12.16
6	4.0	12.50	3.13	19.63	4.0	10.59	1.72	16.31
7		14.48	3.65	22.23		14.17	2.30	20.47
8		15.00	4.17	23.71		15.00	2.89	21.89
9		15.00	4.69	23.69		15.00	3.47	22.47

LEGEND

U = UPPER SIDE OF GUTTER LINE PROFILE

L = LOWER SIDE OF GUTTER LINE PROFILE

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

7.0% Gl	7.0% GUTTER LINE PROFILE								
H INCHES	W FEET	X1u FEET	X1L FEET	L1 FEET	Y INCHES	X <sub>2</sub> u FEET	X <sub>2</sub> L FEET	L2 FEET	
3		8.33	1.47	13.80		6.90	0.60	11.50	
4		11.11	1.96	17.07		13.16	1.14	18.31	
5		13.89	2.45	20.34		15.00	1.69	20.69	
6	2.5	15.00	2.94	21.94	2.5	15.00	2.23	21.05	
7		15.00	3.43	22.43		15.00	2.77	21.97	
8		15.00	3.92	22.92		15.00	3.32	22.32	
9		15.00	4.41	23.41		15.00	3.86	22.86	
3		8.33	1.47	13.80		4.52	0.39	8.91	
4		11.11	1.96	17.07		10.78	0.94	15.72	
5		13.89	2.45	20.34		15.00	1.58	20.48	
6	3.0	15.00	2.94	21.94	3.0	15.00	2.02	21.00	
7		15.00	3.43	22.43		15.00	2.57	21.57	
8		15.00	3.92	22.92		15.00	3.11	22.11	
9		15.00	4.41	23.41		15.00	3.65	22.65	
3		*	*	*	1	*	*	*	
4		11.11	1.96	17.07	1	8.40	0.73	13.13	
5		13.89	2.45	20.34		14.67	1.27	19.94	
6	3.5	15.00	2.94	21.94	3.5	15.00	1.82	20.82	
7		15.00	3.43	22.43	1	15.00	2.36	21.36	
8		15.00	3.92	22.92		15.00	2.90	21.90	
9		15.00	4.41	23.41		15.00	3.45	22.45	
3		*	*	*		*	*	*	
4		11.11	1.96	17.07		6.03	0.52	10.55	
5		13.89	2.45	20.34		12.29	1.07	17.36	
6	4.0	15.00	2.94	21.94	4.0	15.00	1.61	20.61	
7		15.00     3.43     22.43       15.00     3.92     22.92	3.43	22.43		15.00	2.15	21.15	
8				15.00	2.70	21.70			
9		15.00	4.41	23.41		15.00	3.24	22.24	

# 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					

NOTES:

- 1. FOR CURB RAMP TYPES, SEE CD-606-1.
- 2. THE ABOVE TABLES ARE BASED ON THE SPECIFIC GUTTER PROFILE REFERENCED. THEY DO NOT TAKE INTO ACCOUNT VARIATIONS IN THE GUTTER PROFILE. THE ABOVE TABLES TO BE USED BY THE DESIGNERS AND CONTRACTORS TO GET APPROXIMATE DIMENSIONS OF THE CURB RAMP AT EACH LOCATION. FINAL DIMENSIONS WILL BE DETERMINED BY ACTUAL MEASUREMENTS IN THE FIELD DURING CONSTRUCTION.
- 3. THE 12H: 1V MAX SLOPE IS THE RUNNING SLOPE FOR CURB RAMPS, BUT ONLY THE 12H: 1V SLOPE MEASURED AS X 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. THE TABLES ALREADY APPLY THE 15 FEET RULE FOR THOSE CALCULATED LENGTHS WHICH EXCEED 15 FEET.

CONCRETE SIDEWALK (PUBLIC SIDEWALK CURB RAMP TABLES)

N.T.S.

CD-606-1B

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

FOR THE OTHER ABBREVIATIONS - REFER TO CD-606-1 \* TYPE 3 RAMP IS NOT APPLICABLE, USE TYPE 1

CD-606-1.1B

#### CLIDD DAMD TVDE A

CURB RAMP TYPE 4									
0.0% GL	0.0% GUTTER LINE PROFILE								
H INCHES	W FEET	Y INCHES	Xzu FEET	X <sub>2</sub> L FEET	Lz FEET				
3			1.10	1.10	6.20				
4			2.10	2.10	8.20				
5			3.10	3.10	10.20				
6	2.5	2.5	4.10	4.10	12.20				
7			5.10	5.10	14.21				
8			6.10	6.10	16.21				
9			7.10	7.10	18.21				
3			**	**	**				
4			1.72	1.72	7.44				
5			2.72	2.72	9.44				
6	3.0	3.0	3.72	3.72	11.45				
7			4.72	4.72	13.45				
8			5.72	5.72	15.45				
9			6.72	6.72	17.45				
3			**	**	**				
4			1.34	1.34	6.68				
5			2.34	2.34	8.68				
6	3.5	3.5	3.34	3.34	10.69				
7			4.34	4.34	12.69				
8			5.34	5.34	14.69				
9			6.34	6.34	16.69				
3			**	**	**				
4			**	**	**				
5			1.96	1.96	7.92				
6	4.0	4.0	2.96	2.96	9.93				
7			3.96	3.96	11.93				
8			4.96	4.96	13.93				
9			5.96	5.96	15.93				

1.0% GL	JTTER LINE	PROFILE			
H INCHES	W FEET	Y INCHES	Xzu FEET	X <sub>2</sub> L FEET	Lz FEET
3			1.25	0.98	6.24
4			2.39	1.88	8.27
5			3.53	2.77	10.30
6	2.5	2.5	4.66	3.66	12.33
7			5.80	4.56	14.36
8			6.94	5.45	16.39
9			8.07	6.34	18.42
3			0.82	0.64	5.46
4			1.96	1.54	7.49
5			3.09	2.43	9.52
6	3.0	3.0	4.23	3.32	11.55
7			5.37	4.22	13.58
8			6.50	5.11	15.61
9			7.64	6.00	17.64
3			0.39	0.30	4.69
4			1.53	1.20	6.72
5			2.66	2.09	8.75
6	3.5	3.5	3.80	2.98	10.78
7			4.94	3.88	12.81
8			6.07	4.77	14.84
9			7.21	5.66	16.87
3			**	**	**
4			1.09	0.86	5.95
5			2.23	1.75	7.98
6	4.0	4.0	3.37	2.65	10.01
7			4.50	3.54	12.04
8			5.64	4.43	14.07
9			6.78	5.32	16.10

2.0% GUTTER LINE PROFILE								
H INCHES	W FEET	Y INCHES	Xzu FEET	X2L FEET	Lz FEET			
3			1.45	0.89	6.34			
4			2.77	1.69	8.46			
5			4.08	2.50	10.58			
6	2.5	2.5	5.40	3.31	12.71			
7			6.72	4.12	14.83			
8			8.03	4.92	16.95			
9			9.35	5.73	19.08			
3			0.95	0.58	5.53			
4			2.27	1.39	7.65			
5			3.58	2.20	9.78			
6	3.0	3.0	4.90	3.00	11.90			
7			6.22	3.81	14.02			
8			7.53	4.62	16.15			
9			8.85	5.42	18.27			
3			0.45	0.28	4.72			
4			1.77	1.08	6.85			
5			3.08	1.89	8.97			
6	3.5	3.5	4.40	2.70	11.09			
7			5.72	3.50	13.22			
8			7.03	4.31	15.34			
9			8.35	5.12	17.46			
3			**	**	**			
4			1.27	0.78	6.04			
5			2.58	1.58	8.16			
6	4.0	4.0	3.90	2.39	10.29			
7			5.22	3.20	12.41			
8			6.53	4.00	14.53			
9			7.85	4.81	16.66			

3.0% GUTTER LINE PROFILE								
H INCHES	W FEET	Y INCHES	Xzu FEET	X2L FEET	Lz FEET			
3			1.72	0.81	6.53			
4			3.28	1.55	8.83			
5			4.85	2.28	11.13			
6	2.5	2.5	6.41	3.02	13.43			
7			7.98	3.75	15.73			
8			9.54	4.49	18.03			
9			11.10	5.22	20.33			
3	3.0		1.13	0.53	5.66			
4		3.0	2.69	1.27	7.96			
5			4.25	2.00	10.26			
6			5.82	2.74	12.55			
7			7.38	3.47	14.85			
8			8.94	4.21	17.15			
9			10.51	4.94	19.45			
3			0.53	0.25	4.78			
4			2.10	0.99	7.08			
5			3.66	1.72	9.38			
6	3.5	3.5	5.22	2.46	11.68			
7			6.79	3.19	13.98			
8			8.35	3.93	16.28			
9			9.91	4.66	18.58			
3			**	**	**			
4			1.50	0.71	6.21			
5			3.07	1.44	8.51			
6	4.0	4.0	4.63	2.18	10.81			
7			6.19	2.91	13.11			
8			7.76	3.65	15.41			
9			9.32	4.38	17.71			
					_			

4.0% GUTTER LINE PROFILE								
H INCHES	W FEET	Y INCHES	Xzu FEET	X2L FEET	Lz FEET			
3			2.12	0.74	6.86			
4			4.04	1.42	9.46			
5			5.97	2.10	12.06			
6	2.5	2.5	7.89	2.77	14.66			
7			9.82	3.45	17.26			
8			11.74	4.12	19.87			
9			13.67	4.80	22.47			
3			1.39	0.49	5.88			
4			3.31	1.16	8.48			
5			5.24	1.84	11.08			
6	3.0	3.0	7.16	2.52	13.68			
7			9.09	3.19	16.28			
8			11.01	3.87	18.88			
9			12.94	4.54	21.48			
3			0.66	0.23	4.89			
4			2.58	0.91	7.49			
5			4.51	1.58	10.09			
6	3.5	3.5	6.43	2.26	12.69			
7			8.36	2.93	15.29			
8			10.28	3.61	17.89			
9			12.20	4.29	20.49			
3			**	**	**			
4			1.85	0.65	6.50			
5			3.78	1.33	9.10			
6	4.0	4.0	5.70	2.00	11.70			
7			7.62	2.68	14.30			
8			9.55	3.35	16.90			
9			11.47	4.03	19.50			

5.0% GUTTER LINE PROFILE								
H INCHES	W FEET	Y INCHES	Xzu FEET	X <sub>2</sub> L FEET	Lz FEET			
3			2.76	0.69	7.44			
4			5.26	1.31	10.57			
5			7.76	1.94	13.70			
6	2.5	2.5	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			1.80	0.45	6.26			
4		3.0	4.31	1.08	9.38			
5			6.81	1.70	12.51			
6	3.0		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			0.85	0.21	5.07			
4			3.36	0.84	8.20			
5			5.86	1.46	11.32			
6	3.5	3.5	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			2.41	0.60	7.01			
5			4.91	1.23	10.14			
6	4.0	4.0	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	Xzu FEET	X2L FEET	Lz FEET				
3			3.94	0.64	8.58				
4			7.51	1.22	12.74				
5			11.09	1.80	16.89				
6	2.5	2.5	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		2.58	0.42	7.0				
4		3.0	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			1.22	0.20	5.42				
4			4.80	0.78	9.58				
5			8.37	1.36	13.74				
6	3.5	3.5	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			3.44	0.56	8.00				
5			7.02	1.14	12.16				
6	4.0	4.0	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% Gl	JTTER LINE	PROFILE						
H INCHES	W FEET	Y INCHES	Xzu FEET	X <sub>2</sub> L FEET	Lz FEET			
3			6.90	0.60	11.50			
4			13.16	1.14	18.31			
5			15.00	1.69	20.69			
6	2.5	2.5	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			4.52	0.39	8.91			
4		3.0	10.78	0.94	15.72			
5			15.00	1.48	20.48			
6	3.0		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			2.14	0.19	6.32			
4			8.40	0.73	13.13			
5			14.67	1.27	19.94			
6	3.5	3.5	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			6.03	0.52	10.55			
5			12.29	1.07	17.36			
6	4.0	4.0	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			

LEGEND

U = UPPER SIDE OF GUTTER LINE PROFILE

L = LOWER SIDE OF GUTTER LINE PROFILE

FOR THE OTHER ABBREVIATIONS - REFER TO CD-606-1

\* TYPE 3 RAMP IS NOT APPLICABLE, USE TYPE 1

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

# NOTES:

- 1. FOR CURB RAMP TYPES, SEE CD-606-1.
- 2. THE ABOVE TABLES ARE BASED ON THE SPECIFIC GUTTER PROFILE REFERENCED. THEY DO NOT TAKE INTO ACCOUNT VARIATIONS IN THE GUTTER PROFILE. THE ABOVE TABLES TO BE USED BY THE DESIGNERS AND CONTRACTORS TO GET APPROXIMATE DIMENSIONS OF THE CURB RAMP AT EACH LOCATION. FINAL DIMENSIONS WILL BE DETERMINED BY ACTUAL MEASUREMENTS IN THE FIELD DURING CONSTRUCTION.
- 3. THE 12H: 1V MAX SLOPE IS THE RUNNING SLOPE FOR CURB RAMPS, BUT ONLY THE 12H: 1V SLOPE MEASURED AS X 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. THE TABLES ALREADY APPLY THE 15 FEET RULE FOR THOSE CALCULATED LENGTHS WHICH EXCEED 15 FEET.

# CURB RAMP TYPE 7

	0.0% GUTTER LINE PROFILE					4.0% GUTTER LINE PROFILE				
H INCHES	W FEET	X1u FEET	X1L FEET	Lz FEET		H INCHES	W FEET	X1u FEET	X1L FEET	Lz FEET
3	3	3.00	3.00	10.00		3	3	5.77	2.03	11.80
4	4	4.00	4.00	12.00		4	4	7.70	2.70	11.40
5	5	5.00	5.00	14.00		5	5	9.62	3.38	17.00
6	6	6.00	6.00	16.00	16.00	6	6	11.55	4.06	19.60
7	7	7.00	7.00	18.01		7	7	13.47	4.73	22.20
8	8	8.00	8.00	20.01		8	8	15.40	5.41	24.80
9	9	9.00	9.00	22.01		9	9	17.32	6.08	27.40
_	•	•					•	•		

	1.0% GUTTER LINE PROFILE				5.0% GUTTER LINE PROFILE					
H INCHES	W FEET	X1u FEET	X1L FEET	Lz FEET	H INCHES	W FEET	X1u FEET	X1L FEET	Lz FEET	
3	3	3.41	2.68	10.09	3	3	7.51	1.88	13.38	
4	4	4.55	3.57	12.12	4	4	10.01	2.50	16.51	
5	5	5.68	4.47	14.15	5	5	12.51	3.13	19.64	
6	6	6.82	5.36	16.18	6	6	15.00	3.75	22.75	
7	7	7.96	6.25	18.21	7	7	15.00	4.38	23.38	
8	8	9.10	7.15	20.24	8	8	15.00	5.00	24.00	
9	9	10.23	8.04	22.27	9	9	15.00	5.63	24.63	

2.0% GUTTER LINE PROFILE					6.0% GUTTER LINE PROFILE					
H INCHES	W FEET	X1u FEET	X1L FEET	Lz FEET	H INCHES	W FEET	X1u FEET	X1L FEET	Lz FEET	
3	3	3.95	2.42	10.37	3	3	10.73	1.74	16.47	
4	4	5.27	3.23	12.49	4	4	14.31	2.33	20.63	
5	5	6.58	4.03	14.62	5	5	15.00	2.91	21.91	
6	6	7.90	4.84	16.74	6	6	15.00	3.49	22.49	
7	7	9.22	5.65	18.86	7	7	15.00	4.07	23.07	
8	8	10.53	6.45	20.99	8	8	15.00	4.65	23.65	
9	9	11.85	7.26	23.11	9	9	15.00	5.23	24.23	

3.0% GUTTER LINE PROFILE					7.0% GUTTER LINE PROFILE					
H INCHES	W FEET	X1u FEET	X1L FEET	Lz FEET	H INCHES	W FEET	X1u FEET	X1L FEET	Lz FEET	
3	3	4.69	2.21	10.90	3	3	15.00	1.63	20.63	
4	4	6.25	2.94	13.20	4	4	15.00	2.17	20.17	
5	5	7.82	3.68	15.49	5	5	15.00	2.72	21.72	
6	6	9.38	4.41	17.79	6	6	15.00	3.26	22.26	
7	7	10.94	5.15	20.09	7	7	15.00	3.81	22.81	
8	8	12.51	5.88	22.38	8	8	15.00	4.35	23.35	
9	9	14.07	6.62	24.69	9	9	15.00	4.89	23.89	

CONCRETE SIDEWALK (PUBLIC SIDEWALK CURB RAMP TABLES)

N.T.S.

CD-606-1C

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS