CONSTRUCTION PLANS
FOR
ELM STREET AREA
DRAINAGE IMPROVEMENTS
TOWNSHIP OF CRANFORD
COUNTY OF UNION
NEW JERSEY

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

INDEX OF SHEETS

KEY MAP

* 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.

NEW JERSEY DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION 2019 AND AS AMENDED BY THE SUPPLEMENTAL SPECIFICATION SHALL GOVERN THIS CONSTRUCTION.

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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REV	DATE	DRAWN BY	DESCRIPTION

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
ELM STREET AREA DRAINAGE IMPROVEMENTS

TOWNSHIP OF CRANFORD
UNION COUNTY
NEW JERSEY

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

SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	12/23/20	MIB	PWJ

PROJECT NUMBER: CDT071
DRAWING NAME: C-COVER

SHEET TITLE: COVER

SHEET NUMBER: 1 of 43

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

C:\CD7071\Engineering\Site Plan\C-COVER.dwg\C-1-COVER By: MIBRIXELMAN

SURVEY NOTES:

1. EXISTING FEATURES SHOWN ON MANSION TERRACE WERE BASED ON INFORMATION FROM THE SURVEY ENTITLED "TOPOGRAPHIC SURVEY FOR MANSION TERRACE" DATED 06/29/20, LATEST REV. 1, DATED 12/09/20, FOR THE TOWNSHIP OF CRANFORD, PREPARED BY MASER CONSULTING, INC.
2. EXISTING FEATURES SHOWN ON BROAD STREET WERE BASED ON INFORMATION FROM THE SURVEY ENTITLED "TOPOGRAPHIC SURVEY FOR BROAD STREET" DATED 06/25/20 FOR THE TOWNSHIP OF CRANFORD, PREPARED BY MASER CONSULTING, INC.
3. EXISTING FEATURES SHOWN ON STRATFORD TERRACE WERE BASED ON INFORMATION FROM THE SURVEY ENTITLED "TOPOGRAPHIC SURVEY FOR STRATFORD TERRACE" DATED 06/24/20, LATEST REV. 1, DATED 12/09/20, FOR THE TOWNSHIP OF CRANFORD, PREPARED BY MASER CONSULTING, INC.
4. EXISTING FEATURES SHOWN ON LAWN TERRACE WERE BASED ON INFORMATION FROM THE SURVEY ENTITLED "TOPOGRAPHIC SURVEY FOR LAWN TERRACE" DATED 06/17/20, LATEST REV. 1, DATED 12/09/20, FOR THE TOWNSHIP OF CRANFORD, PREPARED BY MASER CONSULTING, INC.
5. ALL EXISTING FEATURES DEPICTED ON ELM STREET WERE BASED ON AERIAL IMAGERY AND UTILITY MARKOUTS OBSERVED IN THE FIELD. ALL INFORMATION DEPICTED ON PLANS SHALL BE VERIFIED IN THE FIELD BY CONTRACTOR.
6. THE HORIZONTAL POSITION OF THE SURVEYS FOR MANSION TERRACE, BROAD STREET, STRATFORD TERRACE AND LAWN TERRACE IS BASED ON GPS OBSERVATIONS TIED TO THE KEYNET VIRTUAL REFERENCE STATION SYSTEM RELATIVE TO THE NEW JERSEY STATE PLANE COORDINATE SYSTEM, NAD 83.
7. THE VERTICAL POSITION OF THE SURVEYS FOR MANSION TERRACE, BROAD STREET, STRATFORD TERRACE AND LAWN TERRACE IS BASED ON GPS OBSERVATIONS TIED TO THE KEYNET VIRTUAL REFERENCE STATION SYSTEM, ADJUSTED AND RELATIVE TO THE NORTH AMERICAN DATUM (NAVD 88).
8. ALL RIGHT-OF-WAY LINES AND LOT LINES ARE APPROXIMATE PER TAX MAPS OF THE TOWNSHIP OF CRANFORD, UNION COUNTY, NEW JERSEY.
9. 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:

1. 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 THE 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.
2. THE CONTRACTOR IS RESPONSIBLE FOR PROJECT SAFETY INCLUDING PROVISION OF ALL SAFETY DEVICES AND TRAINING REQUIRED.
3. THE CONTRACTOR IS RESPONSIBLE FOR THOROUGHLY EXAMINING THE PROJECT PLANS, SPECIFICATIONS, DETAILS, AND SITE. THE CONTRACTOR SHALL NOTIFY THE UNDERSIGNED PROFESSIONAL IMMEDIATELY IF ANY SITE CONDITIONS DIFFER MATERIALLY FROM THOSE REPRESENTED HEREIN.
4. THE CONTRACTOR SHALL OBTAIN PERMITS REQUIRED FOR THE PROPOSED IMPROVEMENTS.
5. ALL MATERIALS MUST BE AMERICAN MADE. THE CONTRACTOR MUST PROVIDE THE ENGINEER WITH SHIPPING AND DELIVERY TICKETS/RECEIPTS FOR ALL MATERIALS TO BE USED FOR THE CONSTRUCTION OF THE PROPOSED IMPROVEMENTS.
6. THE CONTRACTOR SHALL OBTAIN SHOP DRAWING APPROVAL PRIOR TO THE INSTALLATION OF EACH ITEM. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR REVIEW AND APPROVAL AT LEAST TWO (2) WEEKS PRIOR TO ORDERING MATERIALS.
7. THE CONTRACTOR IS RESPONSIBLE FOR ALL STAKEOUT AND LAYOUT, AS NECESSARY, TO CONSTRUCT THE PROPOSED IMPROVEMENTS IN STRICT CONFORMANCE WITH THE PROJECT PLANS, SPECIFICATIONS AND DETAILS.
8. ACTUAL FIELD LIMITS OF MILLING, PAVING, CURB AND SIDEWALK WORK WILL BE DETERMINED IN THE FIELD BY THE ENGINEER.
9. NO "SIDE PROJECTS" FOR RESIDENTS, UTILITIES OR BUSINESS MAY BE CONSTRUCTED WITH MATERIAL PURCHASED FOR THE COMPLETION OF THE PROPOSED IMPROVEMENTS SHOWN HEREIN.
10. THE CONTRACTOR MUST REVIEW AND AGREE TO AS-BUILT QUANTITIES WITH THE ENGINEER.
11. THE ENGINEER MUST BE CONTACTED IMMEDIATELY UPON THE CONTRACTOR RECEIVING A COMPLAINT FROM ANY PERSON WITHIN THE PROJECT AREA OR MUNICIPAL OFFICIAL.
12. CLEARING SITE SHALL INCLUDE REMOVAL OF BUSHES AND SHRUBS AS WELL AS TREES UNDER 6" IN DIAMETER. TREES 6" AND GREATER IN DIAMETER SHALL BE PAID UNDER SEPARATE PAY ITEMS. CLEARING SITE SHALL ALSO INCLUDE, BUT IS NOT LIMITED TO REMOVING AND TEMPORARILY REMOVING ITEMS AS NECESSARY TO PERFORM THE CONTRACT WORK. REFER TO THE CONTRACT SPECIFICATIONS FOR ADDITIONAL INFORMATION.

UTILITY NOTES:

1. UNDERGROUND UTILITIES AND FEATURES WITHIN MANSION TERRACE, BROAD STREET, STRATFORD TERRACE AND LAWN TERRACE 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.
4. PLOTTED UTILITY POSITIONS AND DEPTHS REPRESENT LOCATION OF MOST APPROPRIATE INTERPRETED GEOPHYSICAL RESPONSE. THIS RESPONSE IS GENERALLY PRESENT OVER THE TOP CENTER OF THE TARGET BUT MAY BE LOCATED OFF-CENTER DEPENDING ON SIGNAL QUALITY AND THE EFFECTS OF LOCAL INTERFERENCE. FEATURE MAY BE WIDER THAN PLOTTED LINE (E.G. DUCT BANKS, LARGE CONDUIT).
5. UTILITIES MAY BE INSTALLED WITHIN A DUCT BANK. DUE TO THE LIMITATIONS OF GEOPHYSICAL EQUIPMENT AND THE LOCATION OF FEATURES WITHIN THE DUCT BANK, THE ACTUAL HORIZONTAL AND VERTICAL DIMENSIONS OF THE DUCT BANK SYSTEM (AS OBSERVED IN GEOPHYSICAL DATA) MAY VARY.
6. DUE TO LIMITATIONS OF GEOPHYSICAL METHODS, IT IS NOT ALWAYS POSSIBLE TO DISCRIMINATE BETWEEN UTILITIES AND OTHER BURIED FEATURES; THEREFORE IT IS POSSIBLE THAT SOME PLOTTED FEATURES MAY REPRESENT OBJECTS OTHER THAN UTILITIES.
7. DUE TO VARYING SOIL CONDITIONS, POSSIBLE CHANGES IN UTILITY MATERIAL, AND OTHER FACTORS, SOME UNDERGROUND UTILITIES COULD NOT BE TRACED ENTIRELY WITHIN THE PROJECT LIMITS. THE UTILITY MAY CONTINUE, BUT SINCE IT WAS NOT OBSERVED IN THE GEOPHYSICAL DATA BEYOND THESE POINTS, IT COULD NOT BE MAPPED.
8. DEPTHS SHOWN FOR UTILITIES ARE IN FEET BELOW EXISTING GROUND SURFACE AT TIME OF SURVEY. AS RFLS CANNOT PROVIDE RELIABLE 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 EXCAVATION ACTIVITIES.
13. NOT ALL UTILITY POLES, UTILITY VALVES AND UTILITY LINES ARE SHOWN ON THE PLAN. THE CONTRACTOR SHALL FIELD VERIFY ALL UTILITIES PRIOR TO THE START OF CONSTRUCTION.
14. THE CONTRACTOR SHALL CALL FOR A UTILITY MARK-OUT PRIOR TO THE START OF CONSTRUCTION (CALL 1-800-272-1000).
15. UTILITY RELOCATIONS SHOWN ON THE PLAN, IF ANY, ARE FOR INFORMATIONAL PURPOSES ONLY AND MAY NOT REPRESENT ALL REQUIRED WORK. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH ALL UTILITY COMPANIES/AUTHORITIES IMPACTED BY THE PROPOSED WORK AND PERFORMING UTILITY RELOCATIONS IN ACCORDANCE WITH THE REQUIREMENTS OF THE PERTINENT UTILITY COMPANIES/AUTHORITIES. NO SEPARATE PAYMENT SHALL BE MADE FOR COORDINATING AND PERFORMING UTILITY RELOCATIONS.
16. ALL UTILITY MANHOLES, VALVE BOXES, CLEANOUTS, METERS, ETC. SHALL BE RESET BY THE CONTRACTOR TO MEET PROPOSED ROAD, SIDEWALK AND DRIVEWAY 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.

THE CONTRACTOR SHALL CLEAN AND MAINTAIN ALL STORM SEWER STRUCTURES, AS NECESSARY, FOR THE DURATION OF THE PROJECT.

MAINTENANCE AND PROTECTION OF TRAFFIC NOTES:

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

WORKING HOURS:

1. THE CONTRACTOR SHALL WORK ON WEEKDAYS ONLY. APPROVAL TO WORK ON WEEKENDS MUST BE GRANTED BY THE LOCAL POLICE DEPARTMENT AND OWNER.
2. THE CONTRACTOR SHALL NOT COMMENCE ANY CONSTRUCTION RELATED ACTIVITIES BEFORE 7 AM ON WEEKDAYS. ALL CONSTRUCTION RELATED ACTIVITIES MUST BE FINISHED, AND THE SITE SHALL BE CLEANED AND SECURED BY 5 PM DAILY.

SOIL EROSION AND TREE PROTECTION NOTES:

1. THE CONTRACTOR SHALL INSTALL AND MAINTAIN SOIL EROSION AND SEDIMENT CONTROL MEASURES FOR THE DURATION OF THE PROJECT IN ACCORDANCE WITH THE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL MEASURES IN NEW JERSEY.
2. INLET FILTERS ARE TO BE INSTALLED ON ALL EXISTING AND NEW INLETS WITHIN THE PROJECT LIMITS AND IMMEDIATELY ADJACENT TO PROJECT LIMITS.
3. SILT FENCE SHALL BE INSTALLED AS DIRECTED IN THE FIELD BY THE ENGINEER, AS NECESSARY.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING DUST CONTROL MEASURES, AS NECESSARY. ALL VEHICLES SHALL BE CLEAN AND ALL ROADWAYS SHALL BE MAINTAINED TO AVOID DUST POLLUTION.
5. THE CONTRACTOR SHALL PROTECT ALL TREES SCHEDULED TO REMAIN DURING CONSTRUCTION. DAMAGE TO EXISTING TREES WILL BE EVALUATED BY THE OWNER AND ENGINEER. DAMAGED TREES WILL BE REPLACED AS REQUIRED BY THE CONTRACTOR 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.

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DEMOLITION AND CONSTRUCTION NOTES:

1. 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 DEPARTMENT.
3. THE CONTRACTOR SHALL NOTE THAT ROADWAY BASE MATERIAL MAY CONSIST OF COBBLESTONES, CONCRETE AND/OR ASPHALT. NO ADDITIONAL PAYMENTS WILL BE MADE TO THE CONTRACTOR FOR DAMAGES TO EQUIPMENT OR ADDITIONAL LABOR REQUIRED TO MAKE IMPROVEMENTS AS DESCRIBED ON THE PLANS, DUE TO VARIATIONS IN ROADWAY BASE MATERIALS.
4. ALL EXISTING GRATES AND CASTINGS ARE THE PROPERTY OF THE MUNICIPALITY OR RESPECTIVE UTILITY AUTHORITY. ALL EXISTING GRATES AND CASTINGS THAT ARE TO BE REPLACED AS A PART OF THE PROPOSED IMPROVEMENTS SHALL BE RETURNED TO THE MUNICIPALITY OR RESPECTIVE UTILITY AUTHORITY.
5. THE CONTRACTOR MUST PROTECT CONCRETE UNTIL CONCRETE IS CURED. DAMAGED AND VANDALIZED CONCRETE SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
6. THE CONTRACTOR SHALL RESET ALL RAILINGS, GATES AND FENCES AS REQUIRED TO COMPLETE THE PROPOSED IMPROVEMENTS.
7. THE CONTRACTOR IS RESPONSIBLE TO REPLACE/RESET ANY SPRINKLERS DAMAGED/DISTURBED DURING CONSTRUCTION AT NO ADDITIONAL COST TO THE OWNER.

ACCESSIBLE CURB RAMP NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR LAYING OUT FORMS, POURING CONCRETE AND CONSTRUCTING ACCESSIBLE CURB RAMPS TO MEET ADA STANDARDS. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF FIELD CONDITIONS CONFLICT WITH INDICATED ACCESSIBLE CURB RAMP TYPES AND DETAILS PROVIDED HEREIN.
2. THIS PROJECT MAY REQUIRE THE USE OF RECTANGULAR, RADIAL AND A COMBINATION OF RADIAL/RECTANGULAR DETECTABLE WARNING SURFACES. THE DETECTABLE WARNING SURFACES WILL BE MEASURED BASED ON ACTUAL FINISHED PRODUCT AND NOT INCLUDE SECTIONS THAT ARE CUT AND DISCARDED.
3. DETECTABLE WARNING SURFACES SHALL BE CAST-IN-PLACE AND THE COLOR SHALL CONTRAST FROM THE SURROUNDING MATERIAL.
4. THE ENGINEER WILL INSPECT AND MEASURE THE FINAL CONDITION OF EACH CONSTRUCTED CURB RAMP. ALL CURB RAMPS FOUND NOT TO COMPLY WITH ADA STANDARDS SHALL BE DEMOLISHED AND REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

ACCESS TO RESIDENCES AND BUSINESSES:

1. THE CONTRACTOR SHALL MAINTAIN SAFE PEDESTRIAN AND VEHICULAR ACCESS TO ALL RESIDENCES AND BUSINESSES FOR THE DURATION OF THE PROJECT.
2. DURING DEMOLITION AND IMMEDIATELY AFTER POURING CONCRETE, THE CONTRACTOR MUST PLACE WOOD PLANKS AT LEAST TWO (2) FT. WIDE AT EACH ADJACENT BUILDING ENTRANCE TO ALLOW FOR SAFE ACCESS. PEDESTRIANS CANNOT BE EXPECTED TO CROSS OVER STONE, DIRT OR OTHER DEMOLISHED MATERIAL WITHOUT PLANKS. THE CONTRACTOR WILL NOT BE PERMITTED TO LEAVE THE SITE WITHOUT PLACING WOODEN ACCESS PLANKS TO PROVIDE SAFE ACCESS TO RESIDENCES AND BUSINESSES.
3. THE CONTRACTOR SHALL MAINTAIN VEHICULAR ACCESS TO ALL DRIVEWAYS DURING CONSTRUCTION. THE CONTRACTOR SHALL TEMPORARILY INSTALL AND MAINTAIN DENSE GRADED AGGREGATE OR HOT MIX ASPHALT TO PROVIDE A RIDING SURFACE FOR VEHICLE ACCESS TO EACH PROPERTY DURING CONSTRUCTION.
4. THE CONTRACTOR MUST ENSURE 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.

SIGNS, STRIPING AND MARKING NOTES:

1. ALL SIGNAGE, TRAFFIC STRIPING AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.), AS CURRENTLY AMENDED.
2. REGULATORY SIGNS MUST BE REINSTALLED AS SOON AS SIDEWALKS ARE POURED.

MILLING AND PAVING NOTES:

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

FINAL CLEAN UP AND PROJECT ACCEPTANCE:

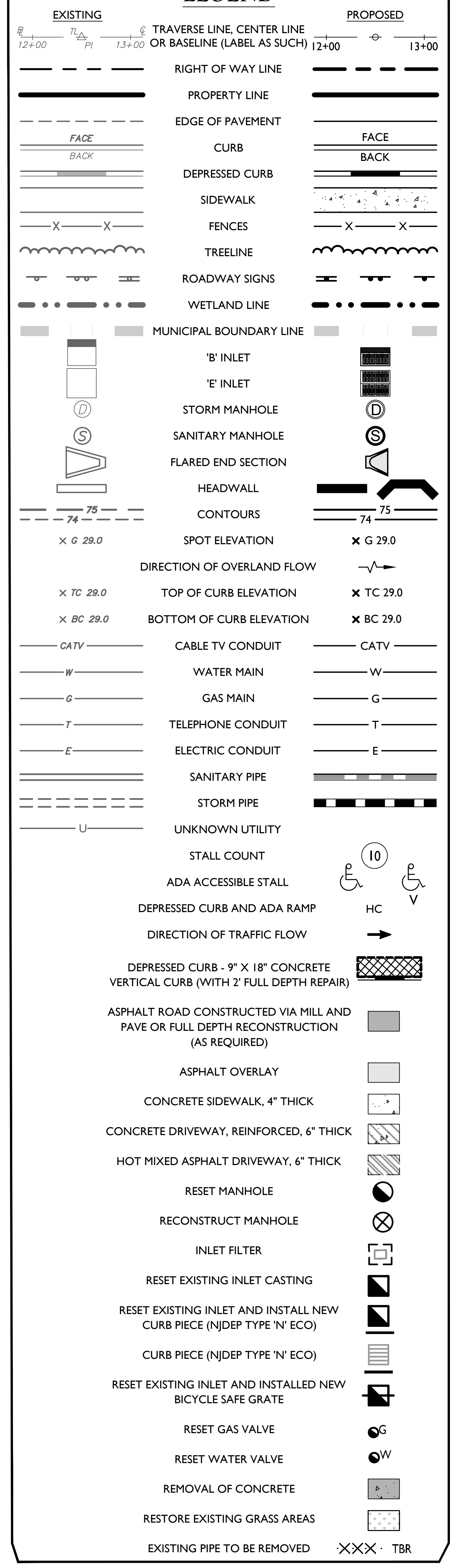
1. PRIOR TO FINAL ACCEPTANCE, ALL PROPERTY CORNERS OR MONUMENTS REMOVED OR DAMAGED DURING CONSTRUCTION SHALL BE REPLACED BY A NEW JERSEY LICENSED LAND SURVEYOR AT NO ADDITIONAL COST TO THE OWNER.
2. THE CONTRACTOR MUST REPLACE ANY DAMAGED CONCRETE CURB AND SIDEWALK BEFORE ACCEPTANCE OF THE PROJECT BY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

QUANTITIES

PAY ITEM NO.	BASE BID - ELM STREET AREA DRAINAGE IMPROVEMENTS	UNIT	TOTAL BASE BID QUANTITY	IF/WHERE DIRECTED QUANTITY	PLAN SHEET QUANTITY	SHEET 7 MANSION TERRACE	SHEET 8 BROAD STREET	SHEET 9 STRATFORD TERRACE	SHEET 10 LAWN TERRACE	SHEET 11-12 ELM STREET
1	INLET FILTER, TYPE 2, 2'X4'	UNIT	37	0	37	7	7	7	6	10
2	SILT FENCE	LF	1,500	1,500	0	0	0	0	0	0
3	BREAKAWAY BARRICADE	UNIT	10	10	0	0	0	0	0	0
4	DRUM	UNIT	20	20	0	0	0	0	0	0
5	TRAFFIC CONE	UNIT	80	80	0	0	0	0	0	0
6	CONSTRUCTION SIGNS	SF	250	250	0	0	0	0	0	0
7	POLICE TRAFFIC DIRECTORS	HOUR	200	200	0	0	0	0	0	0
8	FUEL PRICE ADJUSTMENT	DOLLAR	2,800	2,800	0	0	0	0	0	0
9	ASPHALT PRICE ADJUSTMENT	DOLLAR	7,300	7,300	0	0	0	0	0	0
10	CLEARING SITE	LS	1	1	0	0	0	0	0	0
11	EXCAVATION, TEST PIT	CY	60	60	0	0	0	0	0	0
12	EXCAVATION, UNCLASSIFIED	CY	146	0	146	36	37	36	37	0
13	REMOVAL OF PAVEMENT	SY	442	0	442	109	113	109	111	0
14	EXCAVATION, BORROW EXCAVATION AND GRADING, UNCLASSIFIED	LS	1	1	0	0	0	0	0	0
15	DENSE-GRADED AGGREGATE BASE COURSE, 6" THICK	SY	442	0	442	109	113	109	111	0
16	HMA MILLING, 3" OR LESS	SY	19,989	0	19,989	4107	3796	3426	3108	5552
17	HOT MIX ASPHALT PAVEMENT REPAIR	SY	999	999	0	0	0	0	0	0
18	HOT MIX ASPHALT 9.5 M 64 SURFACE COURSE, 2" THICK	TON	3,000	0	3,000	616	570	514	467	833
19	HOT MIX ASPHALT 19 M 64 BASE COURSE, 4" THICK	TON	531	0	531	131	136	131	133	0
20	FULL DEPTH CONCRETE PAVEMENT REPAIR, HMA	SY	1,044	1,000	44	0	31	0	0	12
21	15" HIGH DENSITY POLYETHYLENE PIPE	LF	210	0	210	56	78	38	38	0
22	18" HIGH DENSITY POLYETHYLENE PIPE	LF	1,637	0	1,637	647	509	446	35	0
23	24" HIGH DENSITY POLYETHYLENE PIPE	LF	375	0	375	0	0	0	375	0
24	INLET, TYPE B	UNIT	12	0	12	3	3	3	3	0
25	MANHOLE, 4' DIAMETER	UNIT	8	0	8	2	2	2	2	0
26	RESET EXISTING CASTING (INLET)	UNIT	4	4	0	0	0	0	0	0
27	BICYCLE SAFE GRATE (PHASE II STORMWATER COMPLIANT GRATE)	UNIT	3	0	3	0	0	2	0	1
28	CURB PIECE (NJDEP TYPE 'N' ECO)	UNIT	8	0	8	2	4	2	0	0
29	REPAIR INTERIOR OF DRAINAGE STRUCTURE	UNIT	14	0	14	4	4	3	1	2
30	CONCRETE SIDEWALK, 4" THICK	SY	414	0	414	104	91	102	94	23
31	HOT MIX ASPHALT DRIVEWAY, 6" THICK	SY	50	0	50	0	41	0	0	9
32	CONCRETE DRIVEWAY, REINFORCED, 6" THICK	SY	112	0	112	0	87	0	0	25
33	DETECTABLE WARNING SURFACE	SY	32	0	32	8	8	8	6	2
34	9" X 18" CONCRETE VERTICAL CURB	LF	1,049	80	969	195	324	195	200	55
35	TRAFFIC STRIPES, 4"	LF	210	10	200	0	0	0	0	200
36	TRAFFIC STRIPES, 6"	LF	1,193	0	1,193	233	226	225	167	342
37	TRAFFIC MARKING LINES, 12"	LF	215	0	215	43	43	43	43	43
38	REGULATORY AND WARNING SIGN	SF	99	0	99	22	22	22	11	22
39	WATER SERVICE RECONNECTION (2" AND UNDER)	UN	10	0	10	6	2	1	1	0
40	SANITARY SEWER SERVICE RECONNECTION	UN	17	0	17	5	5	4	3	0
41	RESET MANHOLE, SANITARY SEWER, USING NEW CASTING	UN	26	0	26	6	6	5	4	5
42	TOPSOILING, 4" THICK	SY	434	0	434	104	102	102	109	17
43	FERTILIZING AND SEEDING, TYPE ERNMX-106	SY	434	0	434	104	102	102	109	17
44	STRAW MULCHING	SY	434	0	434	104	102	102	109	17

PAY ITEM NO.	ALTERNATE BID 'A' - BLUFF STREET RESURFACING	UNIT	TOTAL BASE BID QUANTITY	IF/WHERE DIRECTED QUANTITY	PLAN SHEET QUANTITY	SHEET 13
A-1	INLET FILTER, TYPE 2, 2'X4'	UNIT	4	0	4	4
A-2	FUEL PRICE ADJUSTMENT	DOLLAR	200	200	0	0
A-3	HMA MILLING, 3" OR LESS	SY	1,668	0	1,668	1668
A-4	HOT MIX ASPHALT 9.5 M 64 SURFACE COURSE, 2" THICK	TON	228	0	228	228
A-5	REPAIR INTERIOR OF DRAINAGE STRUCTURE	UNIT	2	0	2	2
A-6	TRAFFIC STRIPES, 4"	LF	100	0	100	100
A-7	TRAFFIC STRIPES, 6"	LF	60	0	60	60
A-8	TRAFFIC MARKING LINES, 12"	LF	12	0	12	12

LEGEND



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DRAINAGE
IMPROVEMENTS

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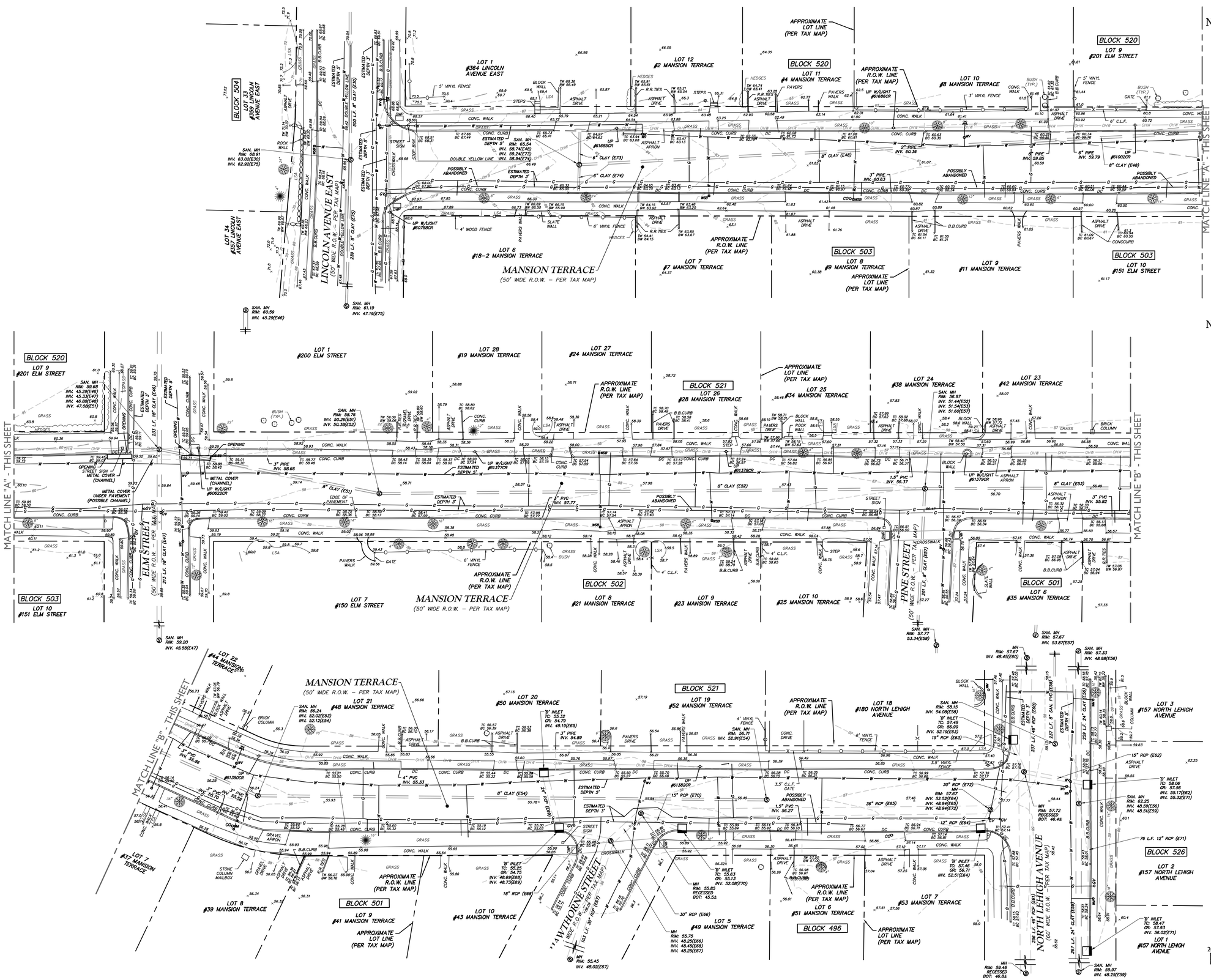
SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	12/23/20	MIB	PWJ

PROJECT NUMBER: CDT071
DRAWING NAME: C-CVER

SHEET TITLE:
GENERAL NOTES AND QUANTITIES

SHEET NUMBER:
2 of 43

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.



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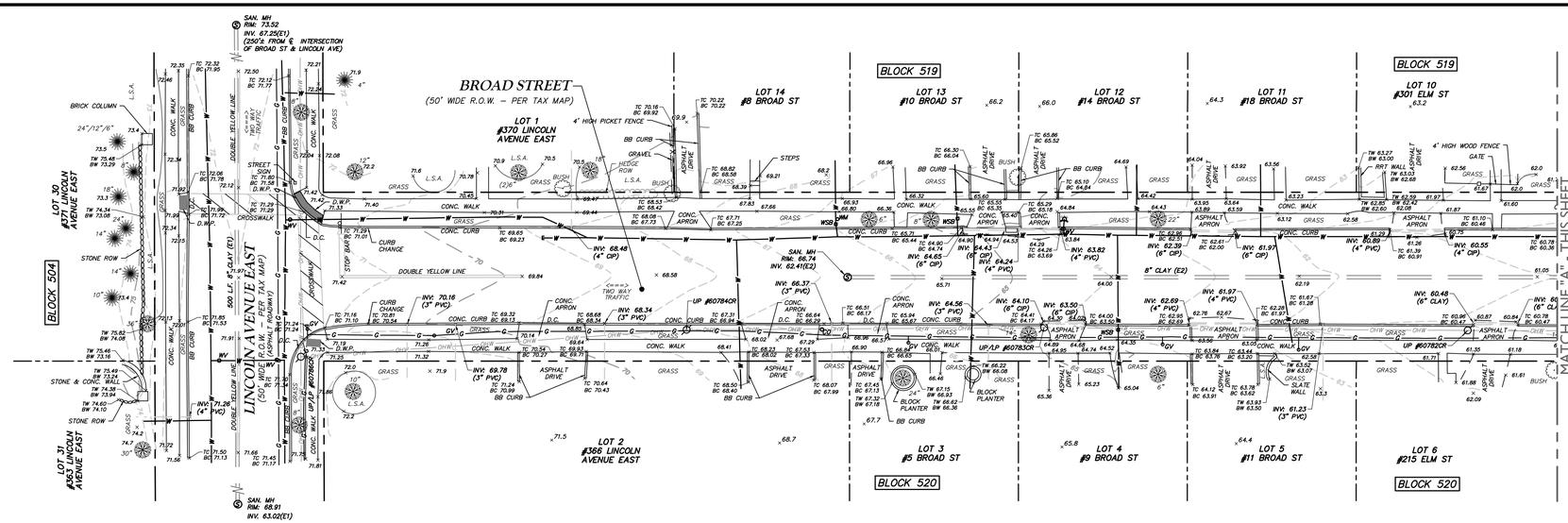
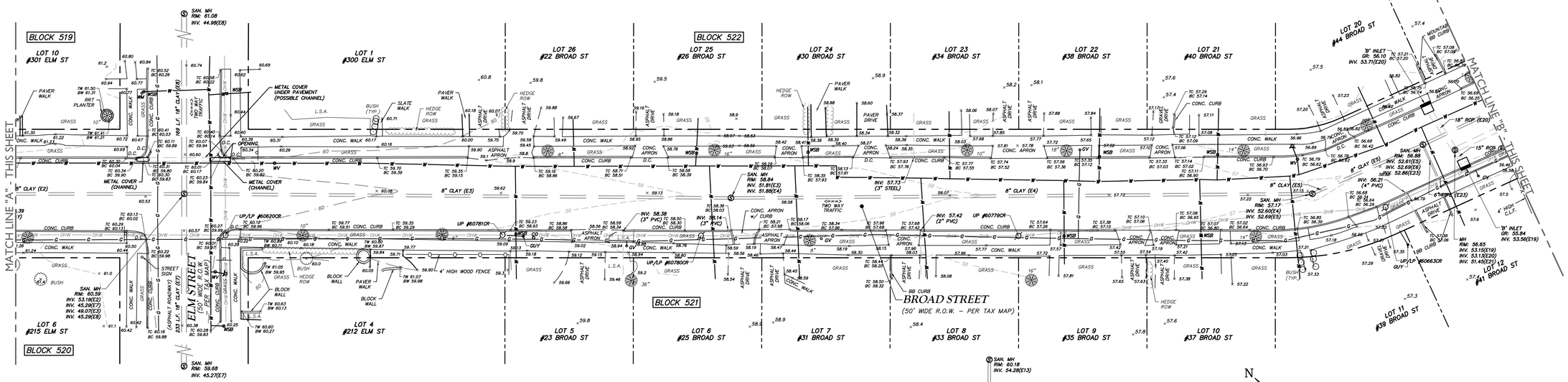
PROJECT NUMBER:	DRAWING NAME:
CDT071	C-BASE-MANS-TERR

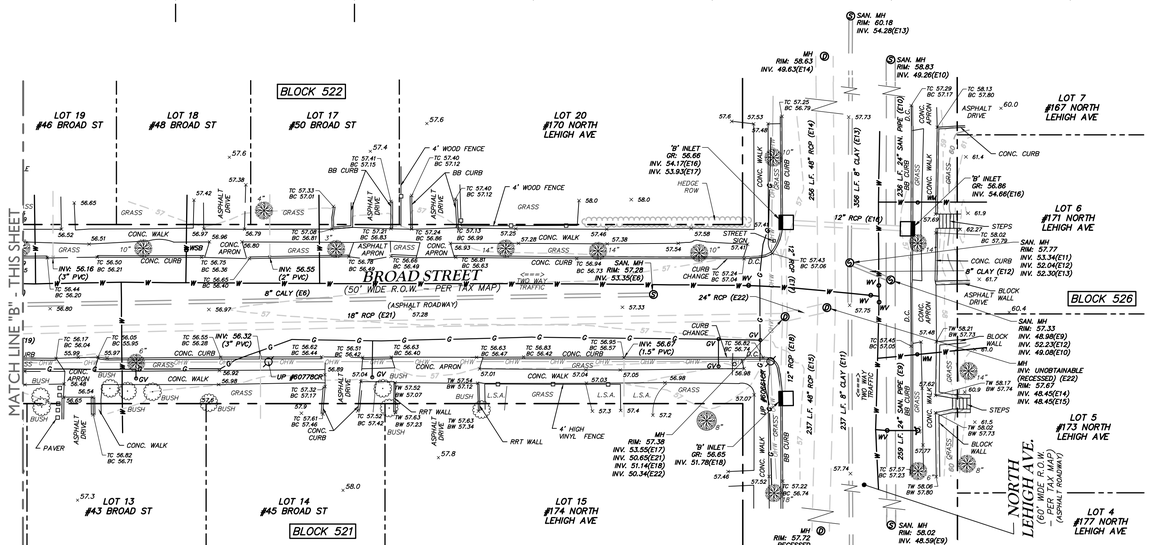
SHEET TITLE
EXISTING CONDITIONS PLAN (MANSION TERRACE)

SHEET NUMBER:
3 of 43

CCD7071\Engineering\Site Plan\C-BASE-MANS-TERR.dwg\C-3.DX COND-MANS-TERR By: MBERGES.MAN







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PROJECT NUMBER:	DRAWING NAME:
CDT071	C-BASE-BROD-STRT

SHEET TITLE
EXISTING CONDITIONS PLAN (BROAD STREET)

SHEET NUMBER:
4 of 43

20 0 20 40
SCALE : 1" = 20'

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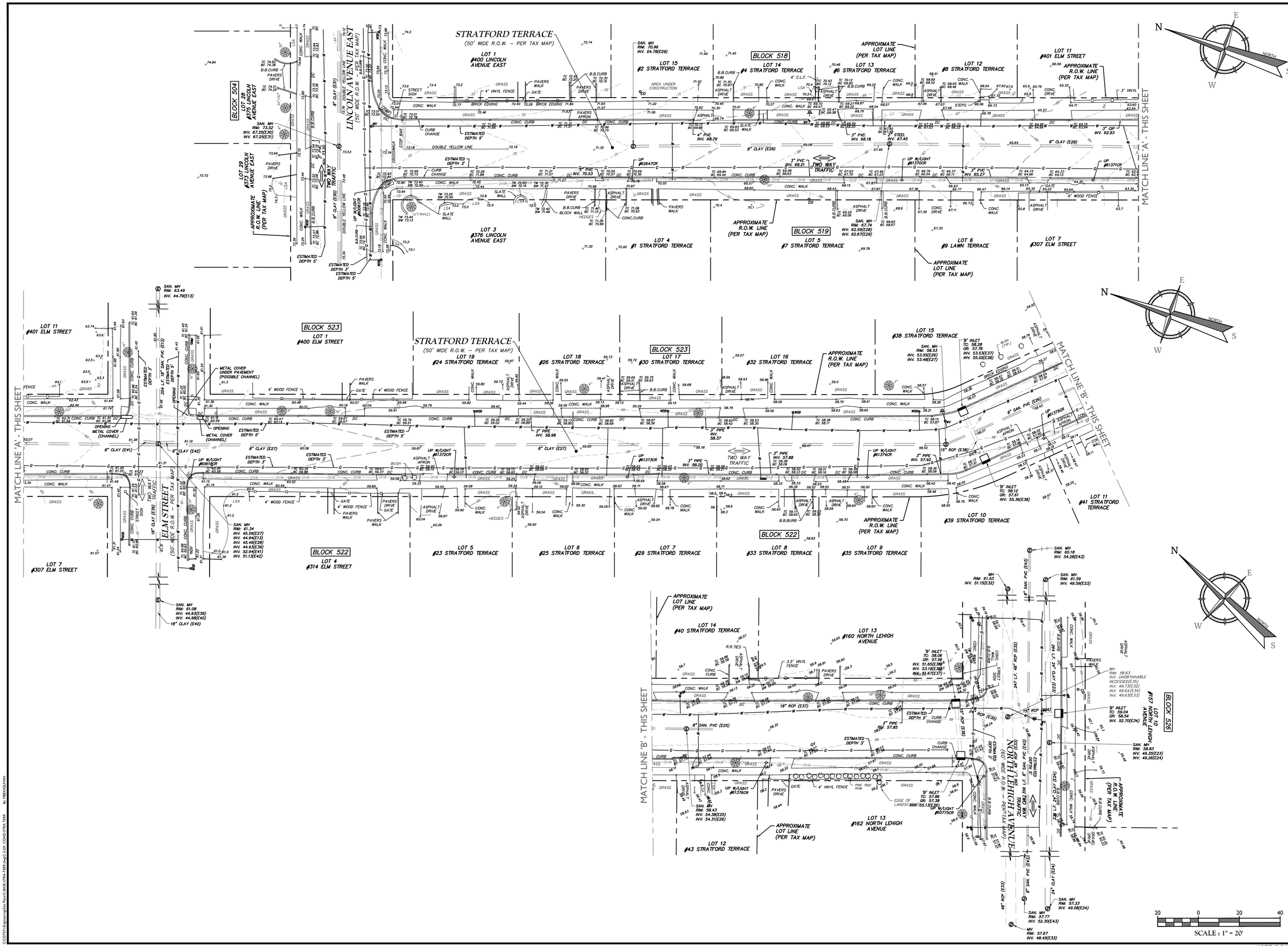
CCD071\Engineering\Site Plans\C-BASE-BROD-STRT.dwg\C-4.DX, COND-BROAD STRT By:MIBENKEMAN



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PROJECT NUMBER:	DRAWING NAME:
CDT071	C-BASE-STRA-TERR

SHEET TITLE: EXISTING CONDITIONS PLANS (STRATFORD TERRACE)

SHEET NUMBER: 5 of 43

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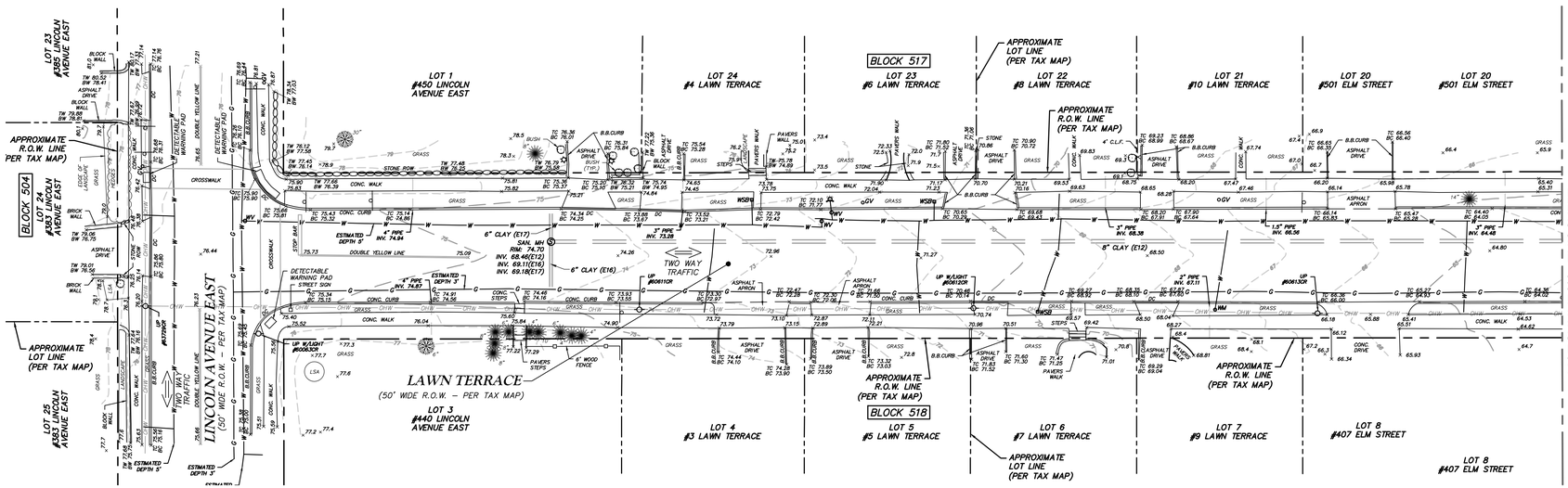

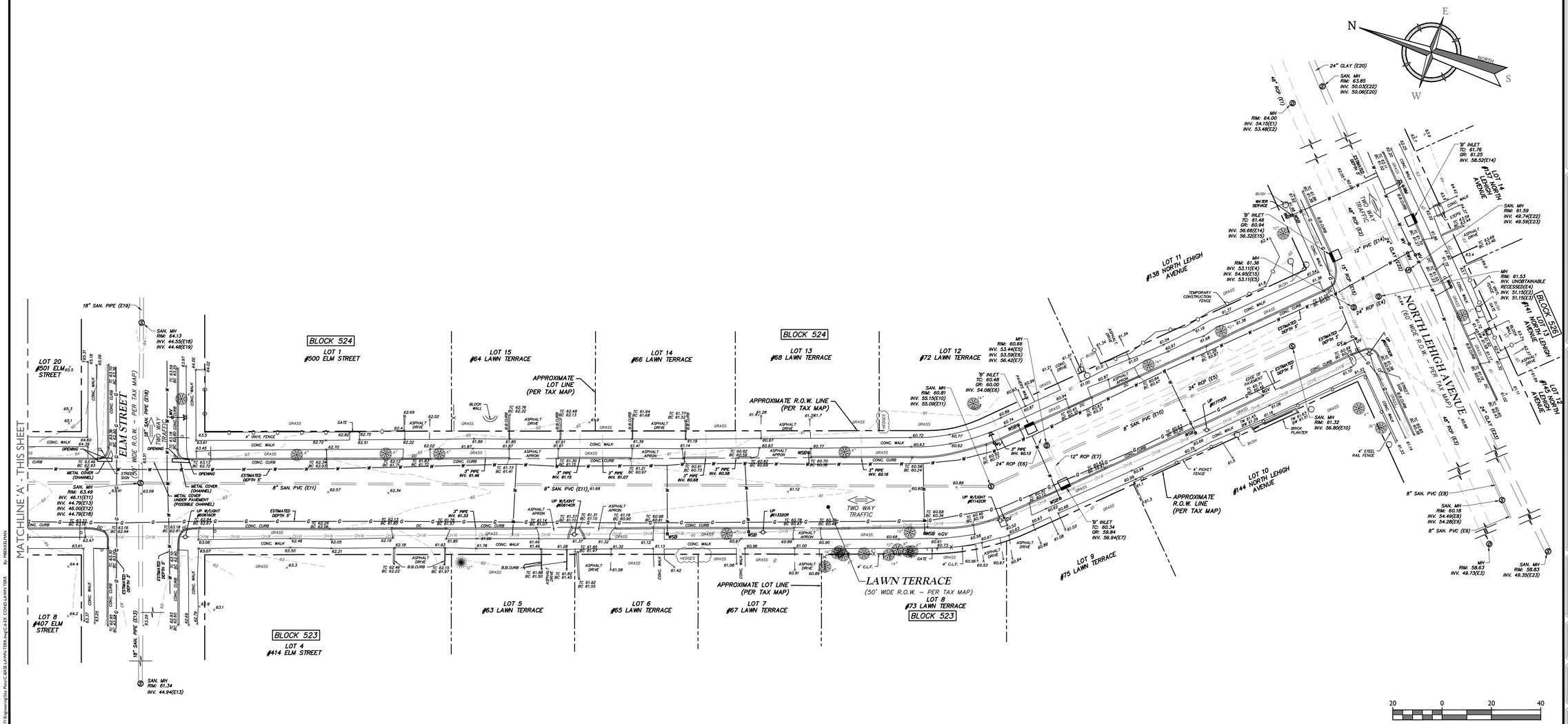

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PROJECT NUMBER:	DRAWING NAME:
CDT071	C-BASE-LAWN-TERR

SHEET TITLE:
EXISTING CONDITIONS PLAN (LAWN TERRACE)

SHEET NUMBER:
6 of 43

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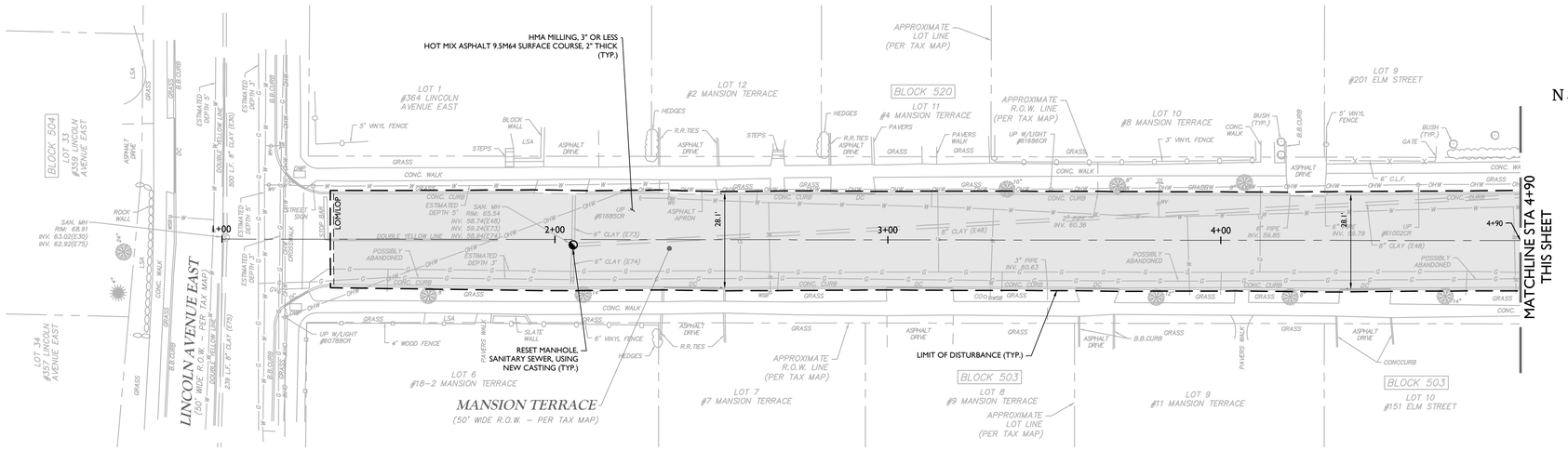

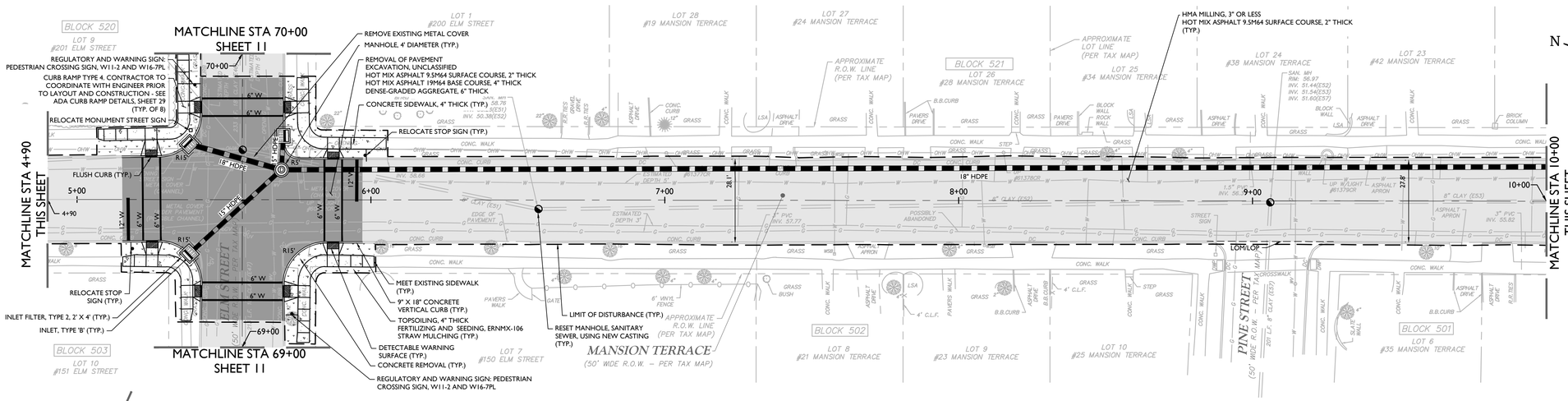

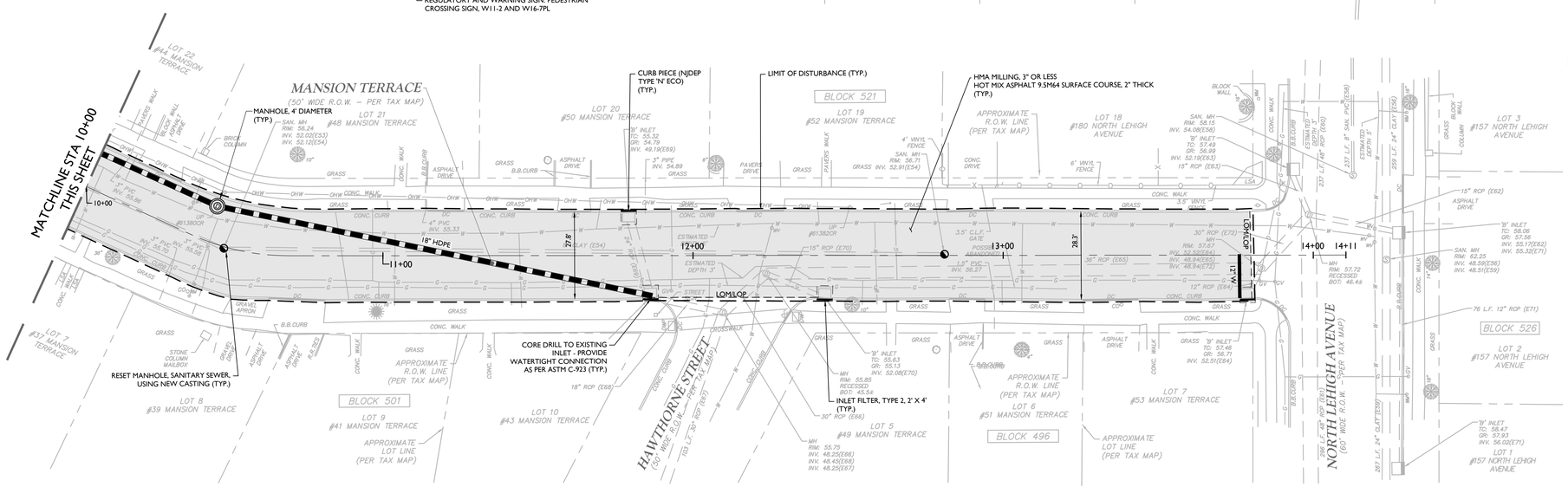

LEGEND

- HMA MILLING, 3" OR LESS, AND INSTALLATION OF HOT MIX ASPHALT 9.5M64 SURFACE COURSE, 2" THICK
- ASPHALT ROAD CONSTRUCTED VIA MILL AND PAVE. ASPHALT OVERLAY OR FULL DEPTH RECONSTRUCTION, AS REQUIRED
- CONCRETE SIDEWALK, 4" THICK
- RESTORATION USING TOPSOILING, 4" THICK FERTILIZING AND SEEDING, ERNMX-106 STRAW MULCHING

20 0 20 40

SCALE : 1" = 20'

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

SOIL EROSION & SEDIMENT CONTROL PLAN

C:\CDT071\Engineering\Site Plans\C-LAYT-MANS-TERR.dwg\C-2.DIM PLAN-MANSION TERRACE By: MBEKKEDMAN

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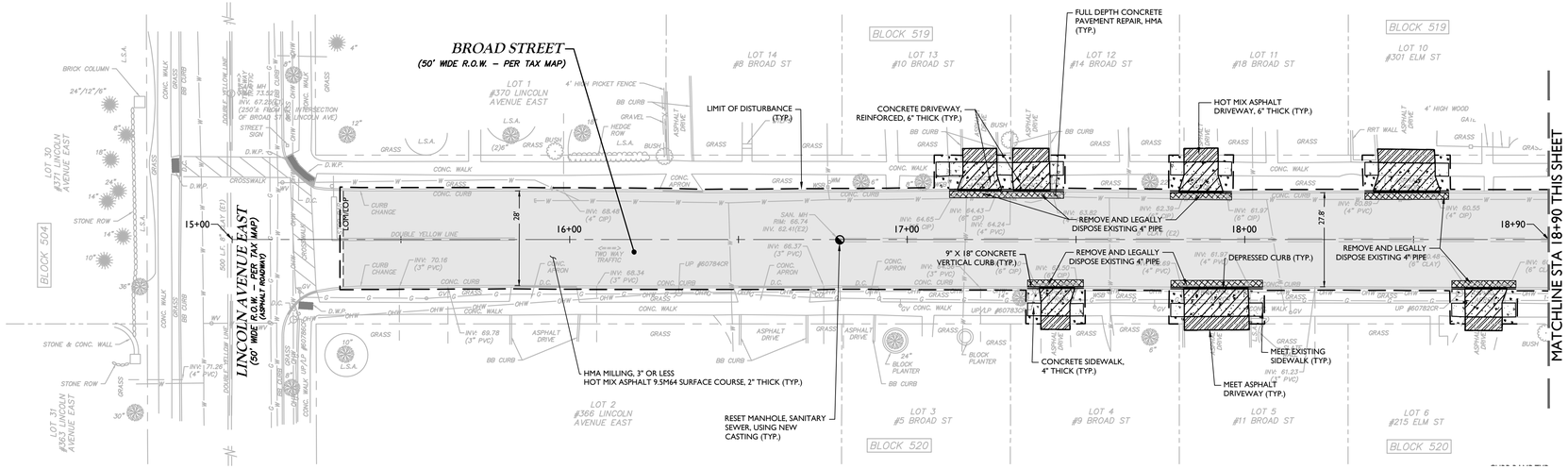
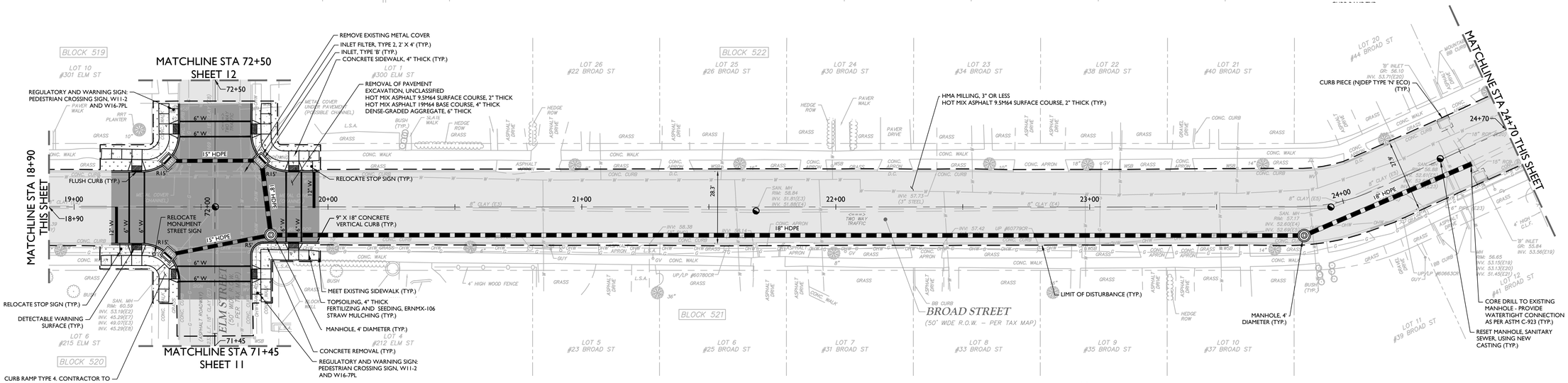
PROJECT NUMBER:	DRAWING NAME:
CDT071	C-LAYT-MANS-TERR

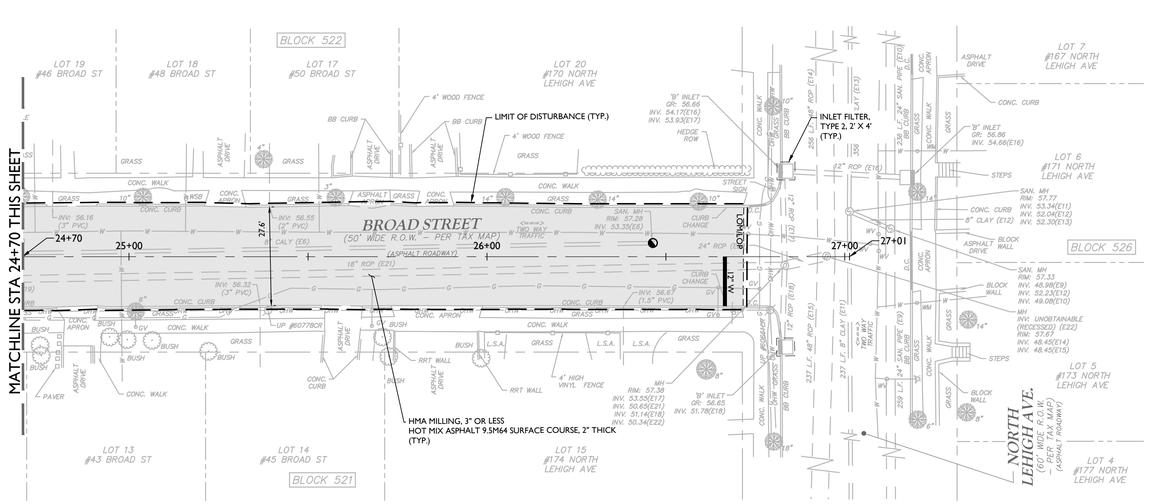
SHEET TITLE:

DIMENSION PLAN (MANSION TERRACE)

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.







LEGEND

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- HOT MIX ASPHALT PAVEMENT REPAIR
- HOT MIX ASPHALT DRIVEWAY, 6" THICK
- CONCRETE DRIVEWAY, REINFORCED, 6" THICK
- CONCRETE SIDEWALK, 4" THICK
- RESTORATION USING TOPSOILING, 4" THICK FERTILIZING AND SEEDING, ERNMX-106 STRAW MULCHING

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PROJECT NUMBER: CDT071
DRAWING NAME: C-LAYT-BROD-STRT

SHEET TITLE:
DIMENSION PLAN (BROAD STREET)

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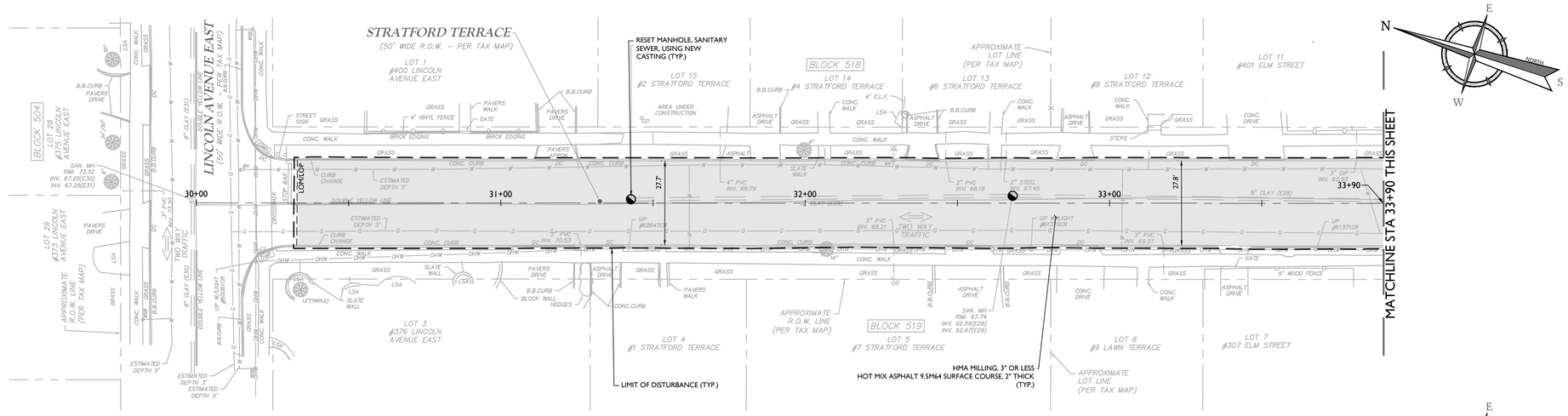
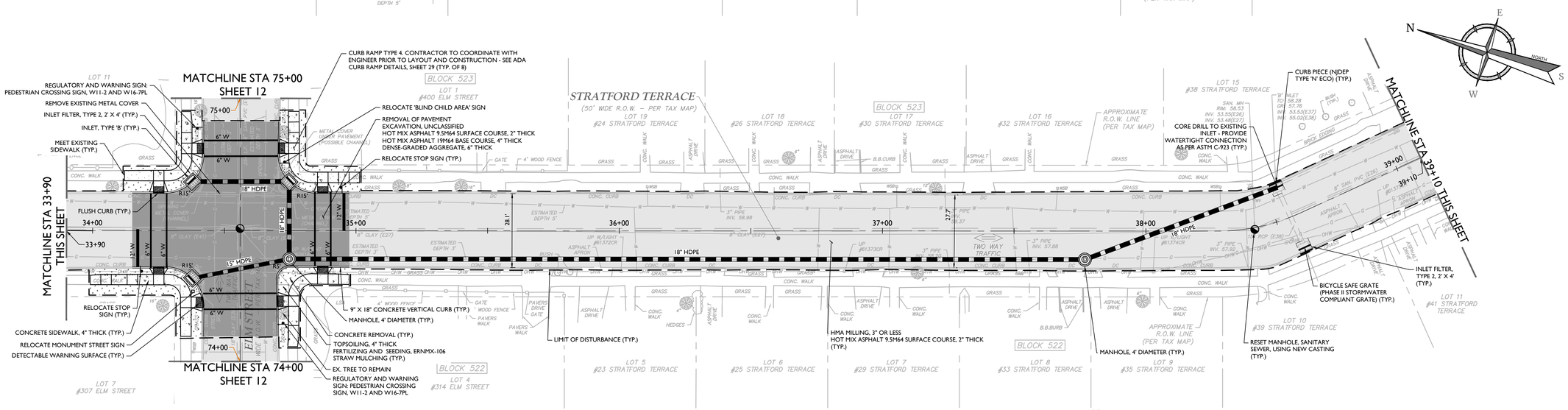
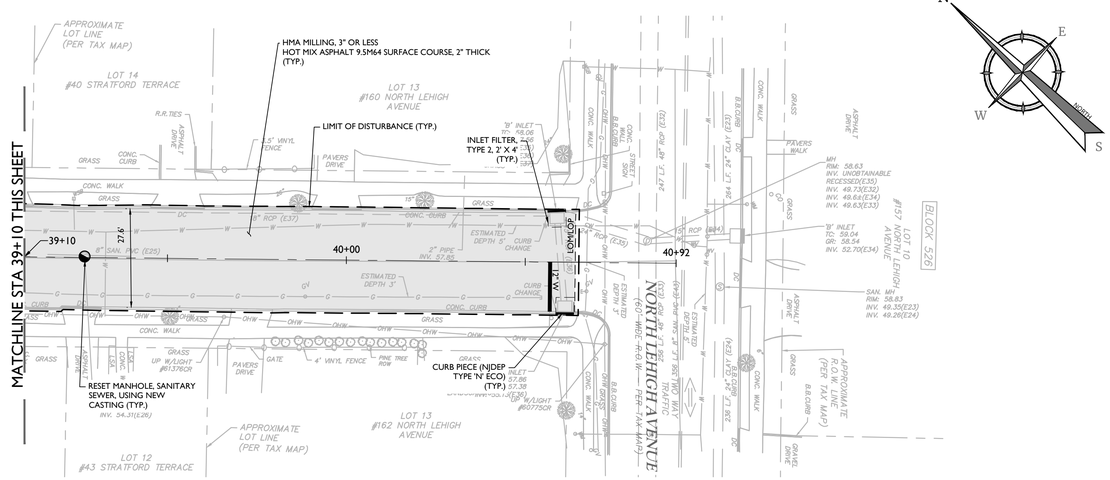
CCDT071 Engineering\Site Plans\C-LAYT-BROD-STRT.dwg\C-8-DIM PLAN-BROAD STREET By: MBRKEEMAN







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SOIL EROSION & SEDIMENT CONTROL PLAN

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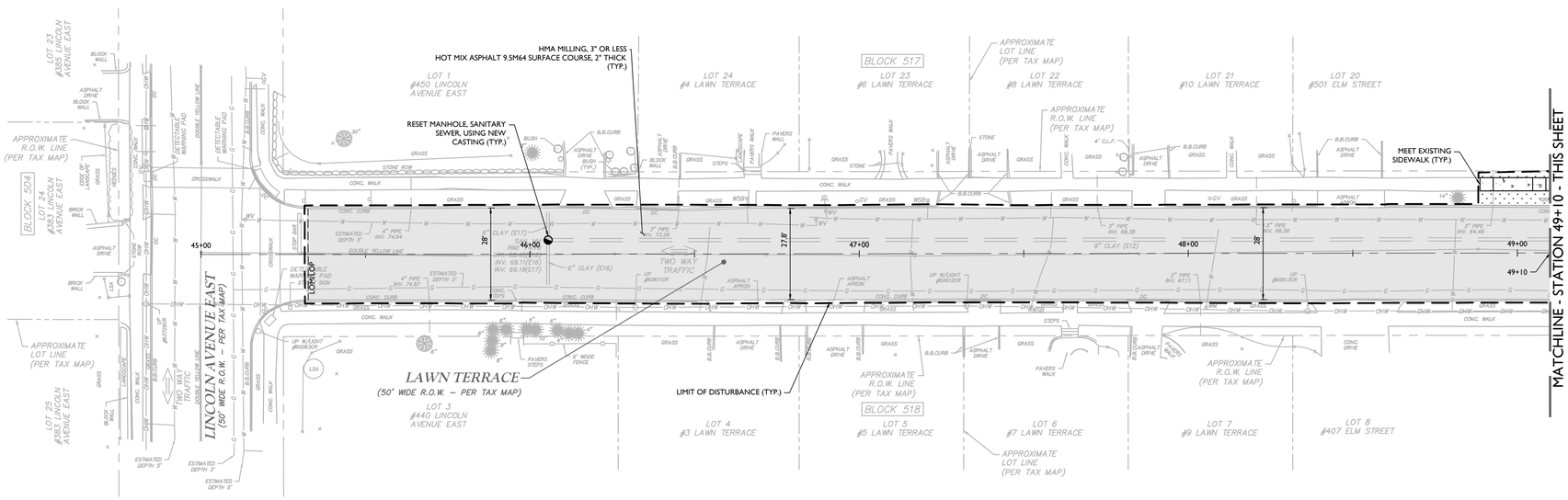
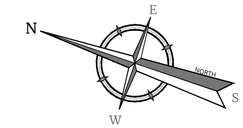
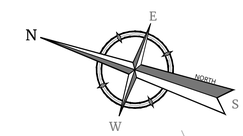
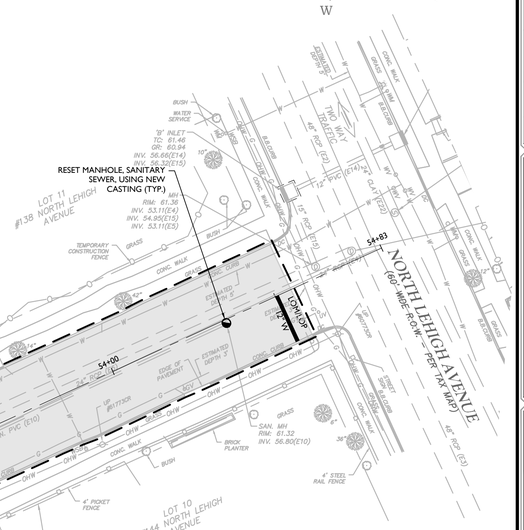
PROJECT NUMBER: CDT071
DRAWING NAME: C-LAYT-STRA-TERR

SHEET TITLE:
DIMENSION PLAN (STRATFORD TERRACE)









LEGEND

- HMA MILLING, 3" OR LESS, AND INSTALLATION OF HOT MIX ASPHALT 9.5M64 SURFACE COURSE, 2" THICK
- ASPHALT ROAD CONSTRUCTED VIA MILL AND PAVE. ASPHALT OVERLAY OR FULL DEPTH RECONSTRUCTION, AS REQUIRED
- CONCRETE SIDEWALK, 4" THICK
- RESTORATION USING TOPSOILING, 4" THICK FERTILIZING AND SEEDING, ERNMX-106 STRAW MULCHING

20 0 20 40

SCALE : 1" = 20'

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

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NEW JERSEY LICENSED PROFESSIONAL ENGINEER
LICENSE NUMBER: GE45154
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N.J. C.O.A. #: 24GA27986500

CONSTRUCTION PLANS

FOR

ELM STREET AREA DRAINAGE IMPROVEMENTS

TOWNSHIP OF CRANFORD
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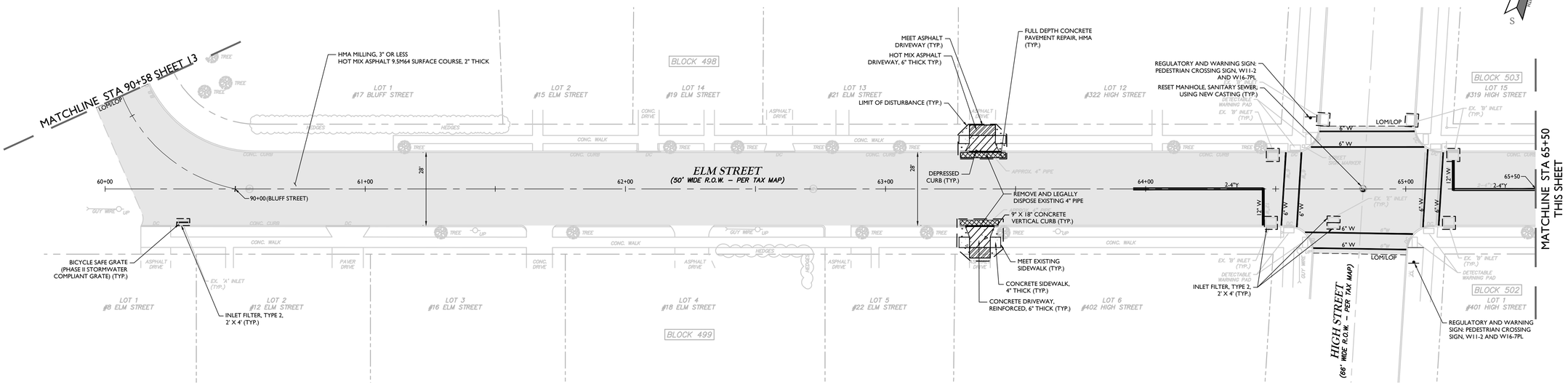
SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	12/23/20	MIB	PWJ

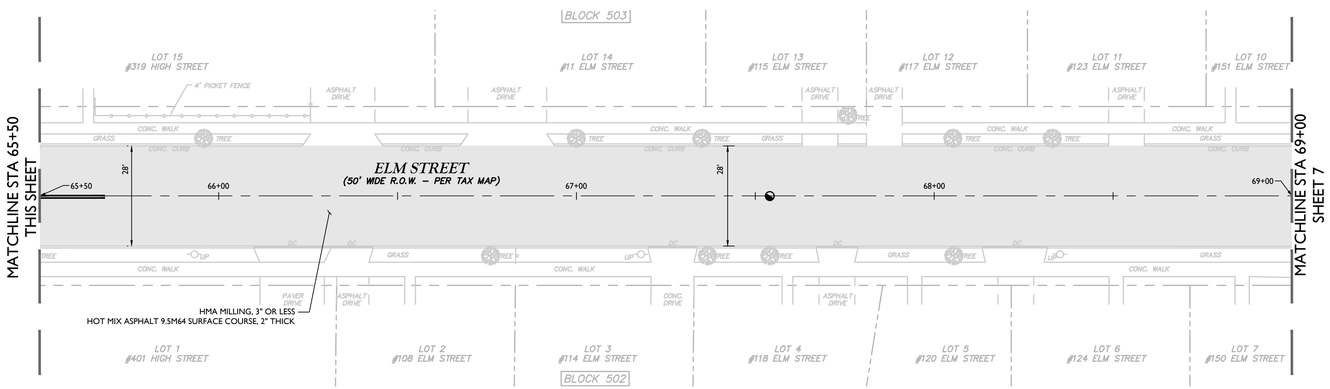
PROJECT NUMBER: CDT071
DRAWING NAME: C-LAYT-LAWN-TERR

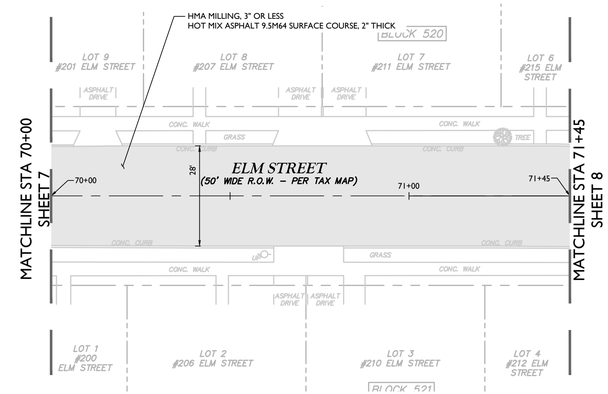
SHEET TITLE:
DIMENSION PLAN (LAWN TERRACE)

SHEET NUMBER:
10 of 43

By: MBERGEMAN
CCDT071\Engineering\Site Plans\C-LAYT-LAWN-TERR.dwg\C-10-DIM-PLAN-LAWN TERRACE







LEGEND

- HMA MILLING, 3" OR LESS, AND INSTALLATION OF HOT MIX ASPHALT 9.5M64 SURFACE COURSE, 2" THICK
- HOT MIX ASPHALT PAVEMENT REPAIR
- HOT MIX ASPHALT DRIVEWAY, 6" THICK
- CONCRETE DRIVEWAY, REINFORCED, 6" THICK
- CONCRETE SIDEWALK, 4" THICK
- RESTORATION USING TOPSOILING, 4" THICK FERTILIZING AND SEEDING, ERNMX-106 STRAW MULCHING

20 0 20 40

SCALE : 1" = 20'

NOTES:

1. ALL EXISTING FEATURES DEPICTED ON THIS PLAN WERE BASED ON AERIAL IMAGERY AND UTILITY MARKOUTS OBSERVED IN THE FIELD. ALL INFORMATION DEPICTED ON THE PLAN SHOULD BE VERIFIED IN THE FIELD BY THE CONTRACTOR. 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. 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.
2. AFTER MILLING AND PRIOR TO PAVING, THE CONTRACTOR SHALL PROOF ROLL THE ROAD TO DETERMINE THE CONDITION OF THE BASE COURSE. SOFT SPOTS AND UNSUITABLE ROAD BASE SHALL BE REPAIRED. IF & WHERE DIRECTED BY THE ENGINEER, SAWCUT, REMOVE, REPLACE HMA AND AGGREGATE AS REQUIRED. CONSTRUCT NEW AGGREGATE AND BASE COURSE TO MEET EXISTING DEPTHS. SEE FULL DEPTH REPAIR DETAIL.

SOIL EROSION & SEDIMENT CONTROL PLAN

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

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

CCD7071/Engineering/Site Plans/C-LAYT-ELM-STRT.dwg/C11-ELM-ST By: PRIBEKKEEMAN

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LICENSE NUMBER: GE45154
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N.J. C.O.A. #: 24GA27986500

CONSTRUCTION PLANS

FOR

ELM STREET AREA DRAINAGE IMPROVEMENTS

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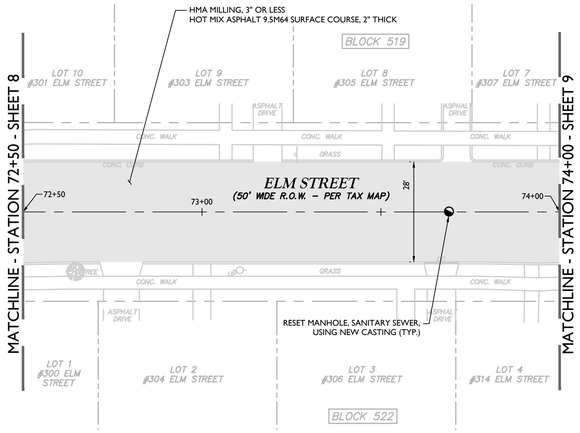
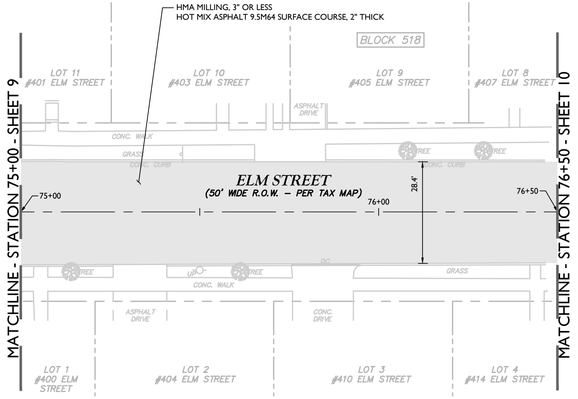
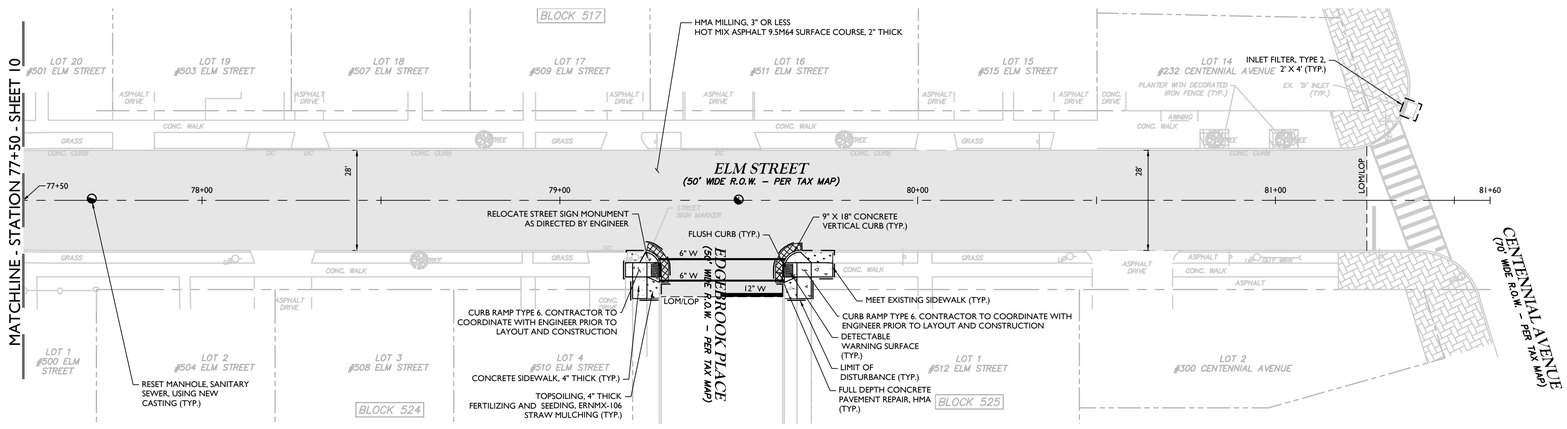
SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	12/23/20	MIB	PWJ

PROJECT NUMBER: CDT071
DRAWING NAME: C-LAYT-ELM-STRT

SHEET TITLE: DIMENSION PLAN (ELM STREET) (STA. 60+00 TO STA. 69+00) (STA. 70+00 TO STA. 71+45)







LEGEND

- HMA MILLING, 3" OR LESS, AND INSTALLATION OF HOT MIX ASPHALT 9.5M64 SURFACE COURSE, 2" THICK
- HOT MIX ASPHALT PAVEMENT REPAIR
- HOT MIX ASPHALT DRIVEWAY, 6" THICK
- CONCRETE DRIVEWAY, REINFORCED, 6" THICK
- CONCRETE SIDEWALK, 4" THICK
- RESTORATION USING TOPSOILING, 4" THICK FERTILIZING AND SEEDING, ERNMX-106 STRAW MULCHING

20 0 20 40

SCALE : 1" = 20'

NOTES:

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SOIL EROSION & SEDIMENT CONTROL PLAN

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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
ELM STREET AREA DRAINAGE IMPROVEMENTS

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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	12/23/20	MIB	PWJ

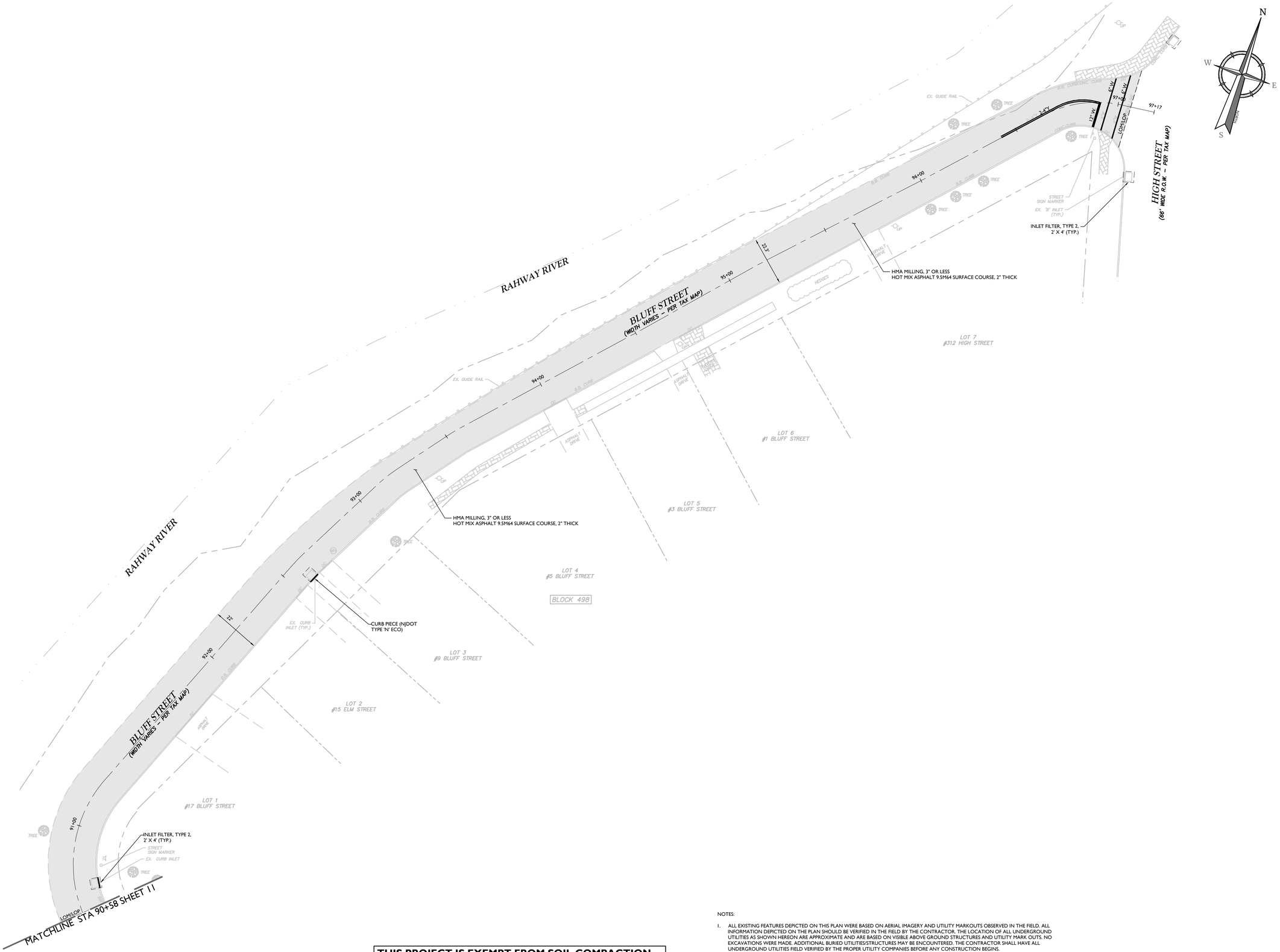
PROJECT NUMBER: CDT071
DRAWING NAME: C-LAYT-ELM-STRT

SHEET TITLE: DIMENSION PLAN (ELM STREET) (STA. 72+50 TO STA. 74+00) (STA. 75+00 TO STA. 76+50) (STA. 77+50 TO CENTENNIAL AVENUE)

SHEET NUMBER: 12 of 43

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

CCDT071\Engineering\Site Plans\C-LAYT-ELM-STRT.dwg\C-12-ELM-ST By: PWEBKEEMAN



SOIL EROSION & SEDIMENT CONTROL PLAN

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NOTES:

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20 0 20 40

SCALE : 1" = 20'

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

C:\CDT071\Engineering\Site Plans\C-LAYT-ELM-STRT.dwg\C-13-DIMPLAN ALT A By: MBENKESEMAN

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CONSTRUCTION PLANS

FOR

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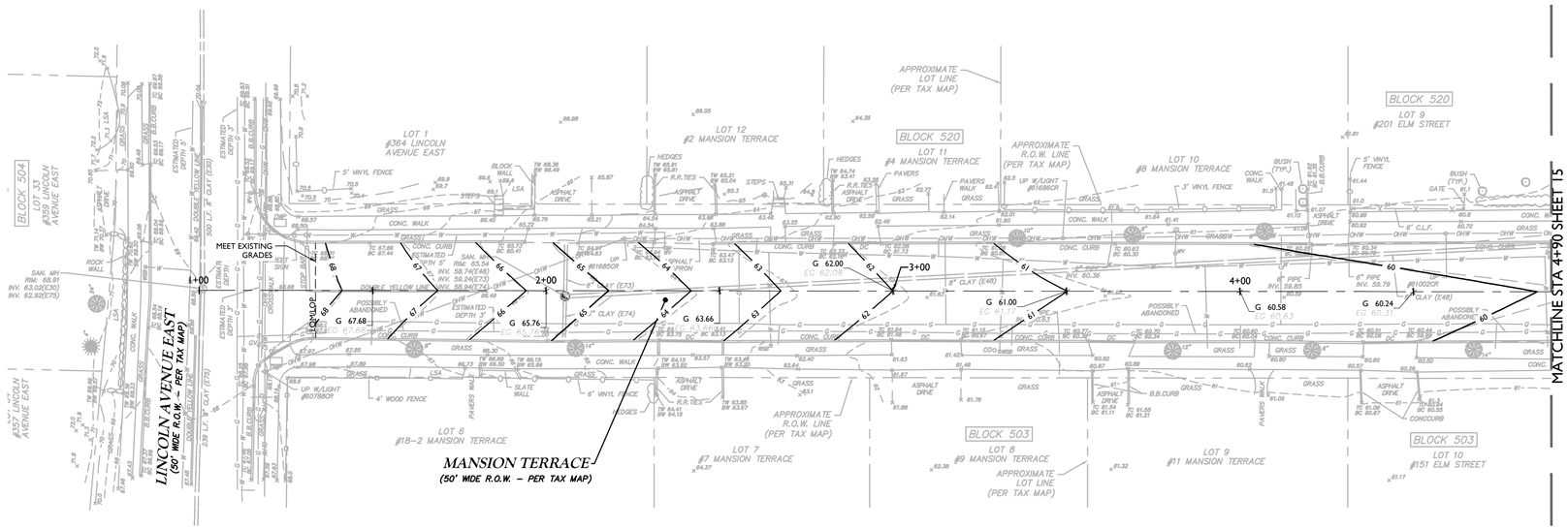
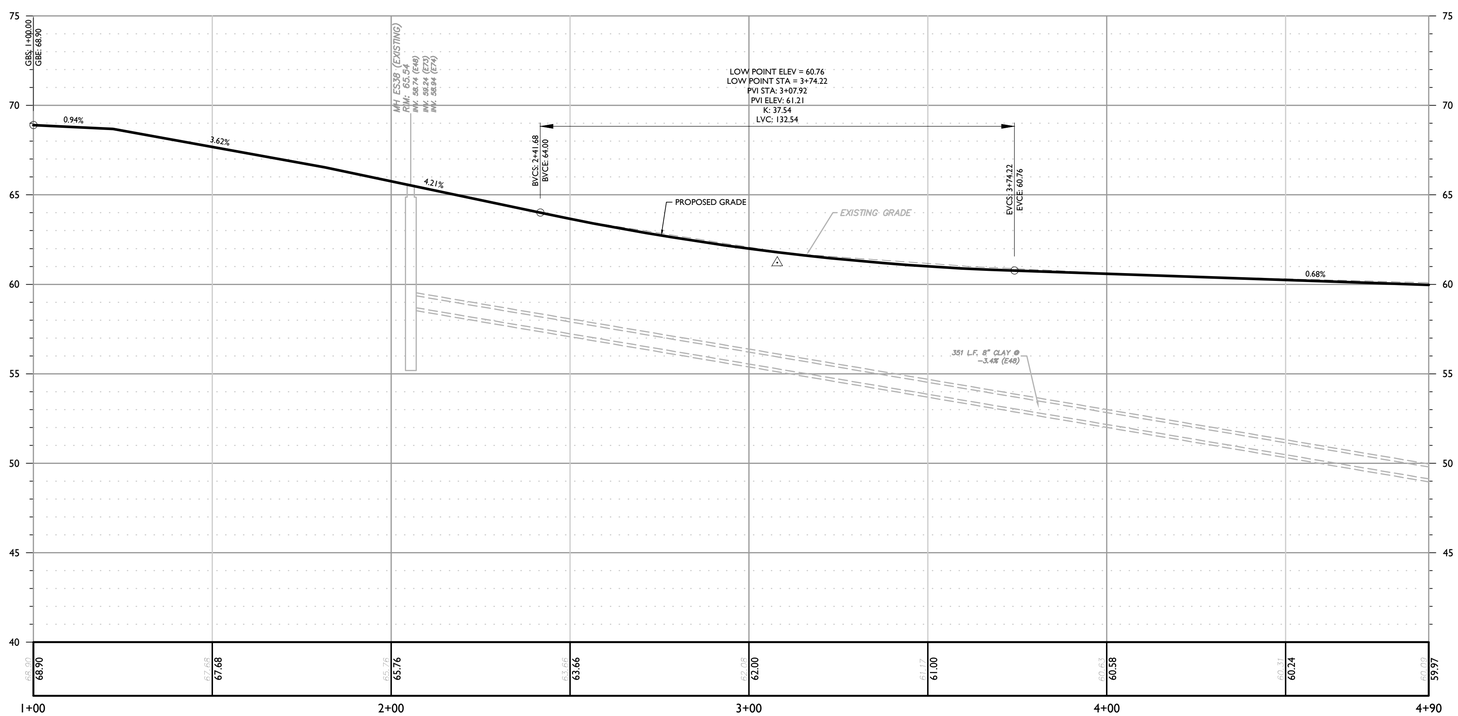
AS SHOWN	12/23/20	MIB	PWJ

PROJECT NUMBER:	DRAWING NAME:
CDT071	C-LAYT-ELM-STRT

SHEET TITLE: DIMENSION PLAN ALTERNATE A (BLUFF STREET)



GRADING PLAN - MANSION TERRACE
STA 1+00 - STA 4+90



PROFILE OF MANSION TERRACE CENTERLINE ALIGNMENT
HORIZONTAL : 1" = 20'
VERTICAL : 1" = 4'

LEGEND

G 29.55	PROPOSED SPOT ELEVATION
TC 30.00	PROPOSED TOP OF CURB ELEVATION
BC 29.50	PROPOSED BOTTOM OF CURB ELEVATION
EG 33.00	EXISTING GRADE ELEVATION (PROVIDED FOR REFERENCE AND CLARITY)

20 0 20 40
SCALE : 1" = 20'

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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	12/23/20	MIB	PWJ

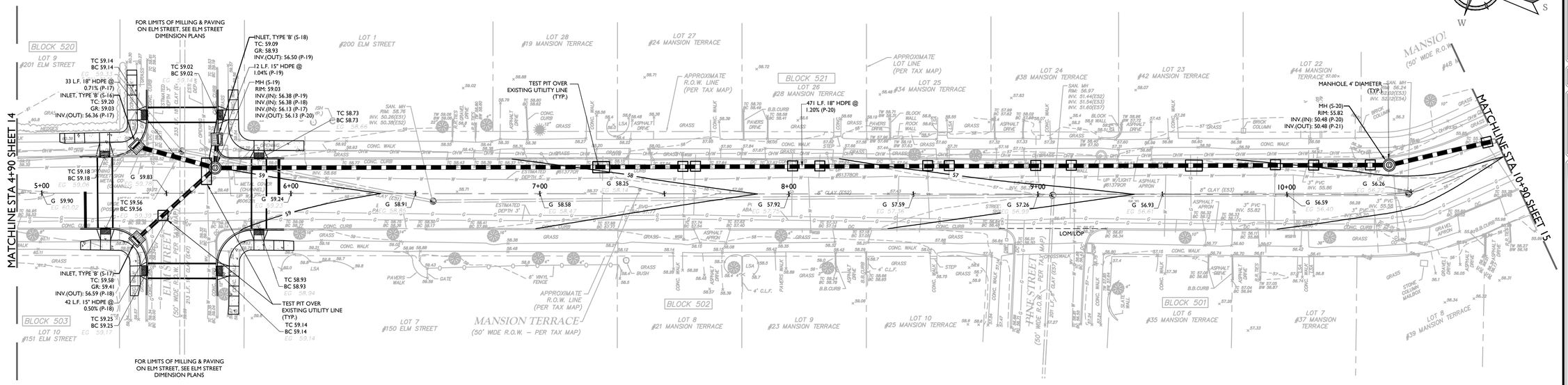
PROJECT NUMBER:	DRAWING NAME:
CDT071	C-GRAD-MANS

SHEET TITLE:
GRADING & DRAINAGE PLAN (MANSION TERRACE) STA. 1+00 TO STA. 4+90

SHEET NUMBER:
14 of 43

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

CCDT071 Engineering\Site Plans\C-GRAD-MANS.dwg\C-14 STA 1+00 - STA 4+90 By: MIBRKEEMAN



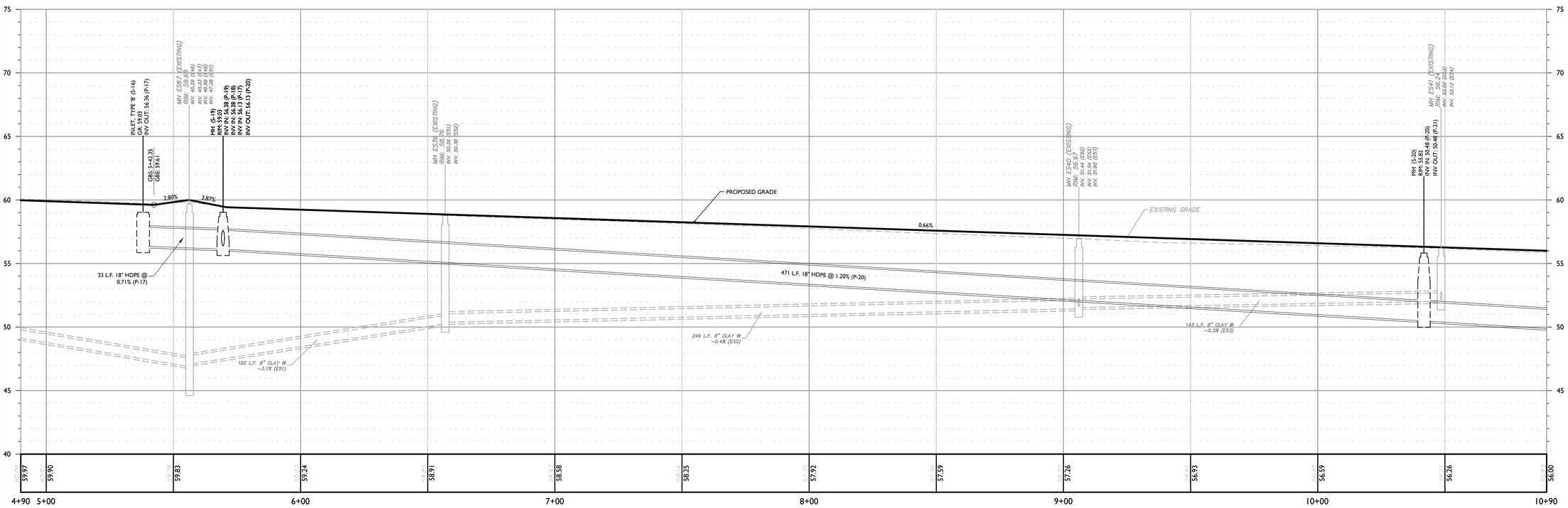
GRADING PLAN - MANSION TERRACE
STA 4+90 - STA 10+90

NOTES:

1. EXISTING GAS MAIN TO BE RETIRED IN-PLACE BY ELIZABETHTOWN GAS. CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF THE ABANDONED GAS PIPES PRIOR TO CONSTRUCTION OF DRAINAGE IMPROVEMENTS.
2. TEST PIT LOCATIONS DEPICTED ON THE CONSTRUCTION PLANS ARE TO CONFIRM THE COVER OVER EXISTING UTILITIES OR TO CHECK HORIZONTAL AND VERTICAL CLEARANCE BETWEEN EXISTING UTILITIES AND PROPOSED FACILITIES. THE CONTRACTOR SHALL SUBMIT TEST PIT RESULTS TO THE ENGINEER PRIOR TO CONSTRUCTION TO CONFIRM SUFFICIENT COVER OVER EXISTING UTILITIES AND CLEARANCE BETWEEN EXISTING UTILITIES AND PROPOSED FACILITIES. THE CONTRACTOR SHALL PROVIDE THE ENGINEER 5 BUSINESS DAYS TO REVIEW THE TEST PIT RESULTS.

LEGEND

G 29.55	PROPOSED SPOT ELEVATION
TC 30.00	PROPOSED TOP OF CURB ELEVATION
BC 29.50	PROPOSED BOTTOM OF CURB ELEVATION
EG 33.00	EXISTING GRADE ELEVATION (PROVIDED FOR REFERENCE AND CLARITY)



PROFILE OF MANSION TERRACE CENTERLINE ALIGNMENT
HORIZONTAL : 1" = 20'
VERTICAL : 1" = 4'

SCALE : 1" = 20'

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

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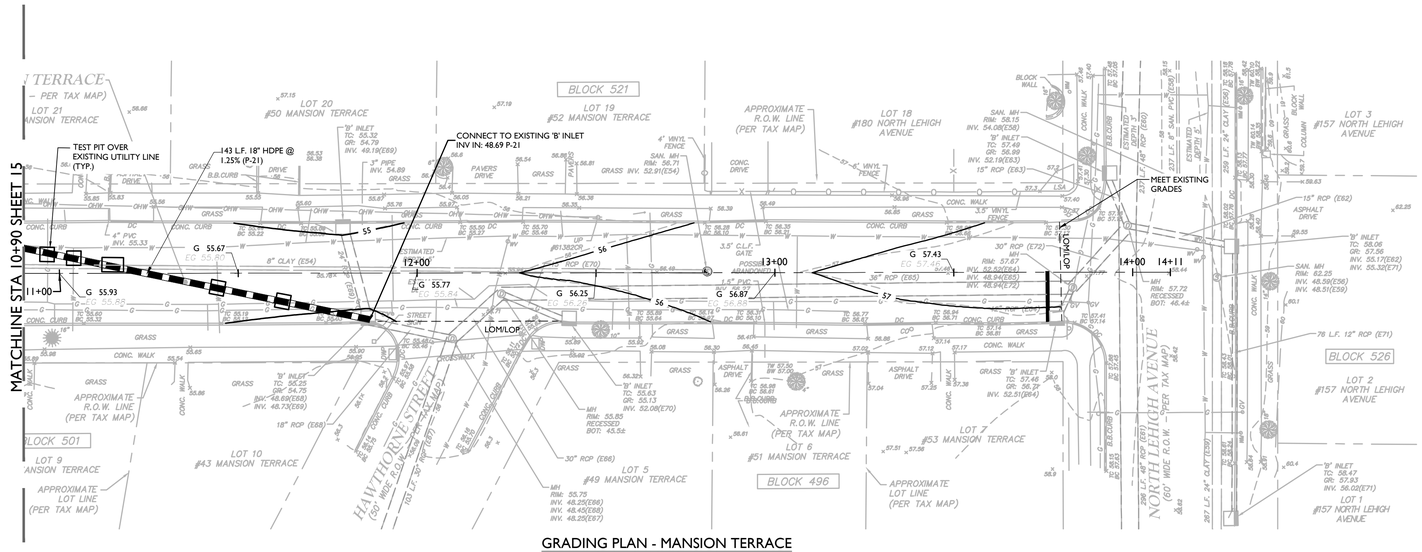
SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	12/23/20	MIB	PWJ

PROJECT NUMBER: CDT071
DRAWING NAME: C-GRAD-MANS

SHEET TITLE:
GRADING & DRAINAGE PLAN (MANSION TERRACE) STA. 4+90 TO STA. 10+90

SHEET NUMBER:
15 of 43

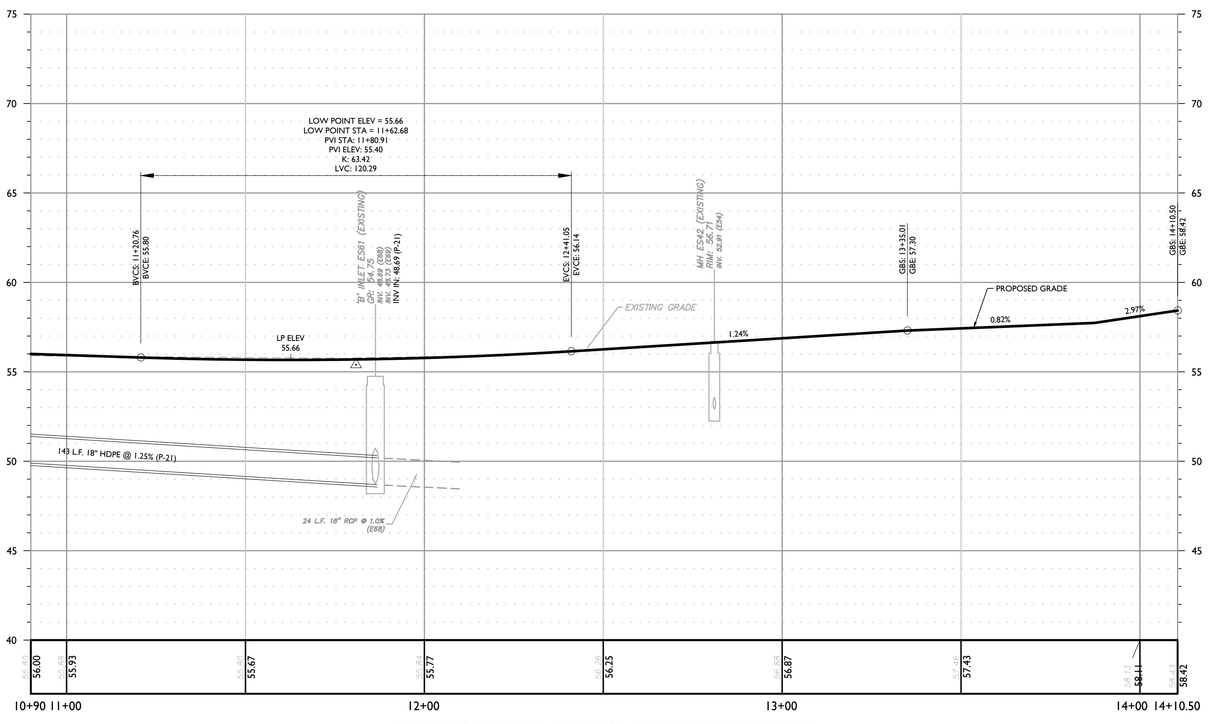
CCDT071\Engineering\Site Plans\C-GRAD-MANS.dwg\C-15 STA 4+90 - STA 10+90 By: MBEKKEEMAN



GRADING PLAN - MANSION TERRACE
STA 10+90 - STA 14+11

LEGEND

G 29.55	PROPOSED SPOT ELEVATION
TC 30.00	PROPOSED TOP OF CURB ELEVATION
BC 29.50	PROPOSED BOTTOM OF CURB ELEVATION
EG 33.00	EXISTING GRADE ELEVATION (PROVIDED FOR REFERENCE AND CLARITY)



PROFILE OF MANSION TERRACE CENTERLINE ALIGNMENT
HORIZONTAL : 1" = 20'
VERTICAL : 1" = 4'

SCALE : 1" = 20'

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SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	12/23/20	MIB	PWJ

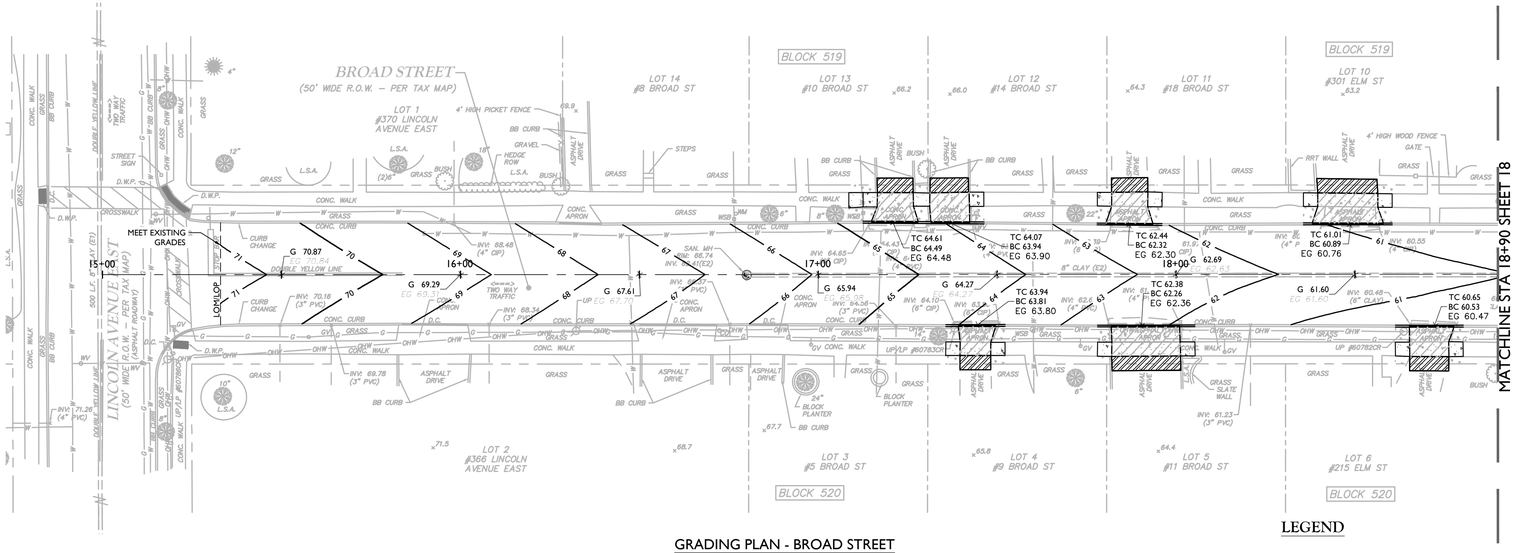
PROJECT NUMBER: CDT071
DRAWING NAME: C-GRAD-MANS

SHEET TITLE:
GRADING & DRAINAGE PLAN (MANSION TERRACE) STA. 10+90 TO STA. 14+11

SHEET NUMBER:
16 of 43

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

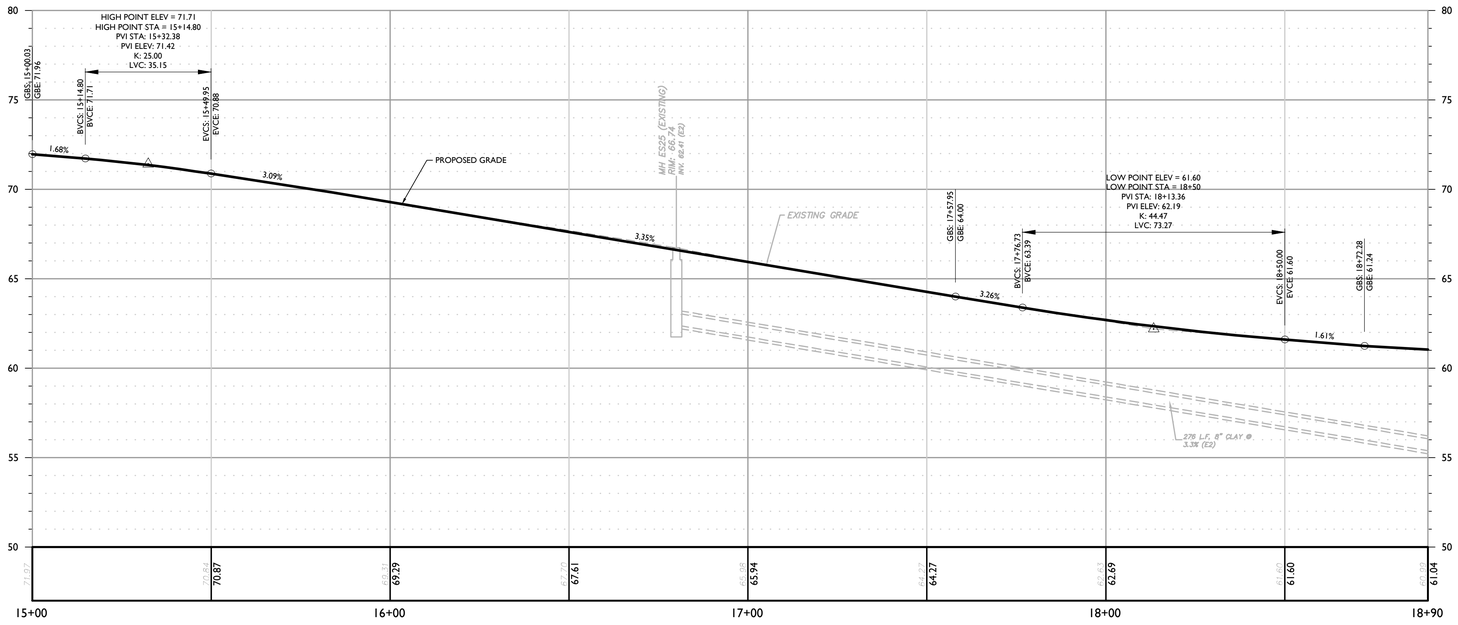
C:\CDT071\Engineering\Site Plans\C-GRAD-MANS.dwg\C16, STA. 10+90 - STA. 14+11 By: MBERKELMAN



GRADING PLAN - BROAD STREET
STA 15+00 - STA 18+90

LEGEND

G 29.55	PROPOSED SPOT ELEVATION
TC 30.00	PROPOSED TOP OF CURB ELEVATION
BC 29.50	PROPOSED BOTTOM OF CURB ELEVATION
EG 33.00	EXISTING GRADE ELEVATION (PROVIDED FOR REFERENCE AND CLARITY)



PROFILE OF PROPOSED STORMWATER SEWER ON BROAD STREET (S-11 - ES18)
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'

20 0 20 40
SCALE : 1" = 20'

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

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LICENSE NUMBER: GE45154
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N.J. C.O.A. #: 24GA27986500

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FOR
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NEW JERSEY

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AS SHOWN	12/23/20	MIB	PWJ

PROJECT NUMBER: CDT071
DRAWING NAME: C-GRAD-BROD

SHEET TITLE:
GRADING & DRAINAGE PLAN (BROAD STREET)
STA. 15+00 TO STA. 18+90

SHEET NUMBER:
17 of 43

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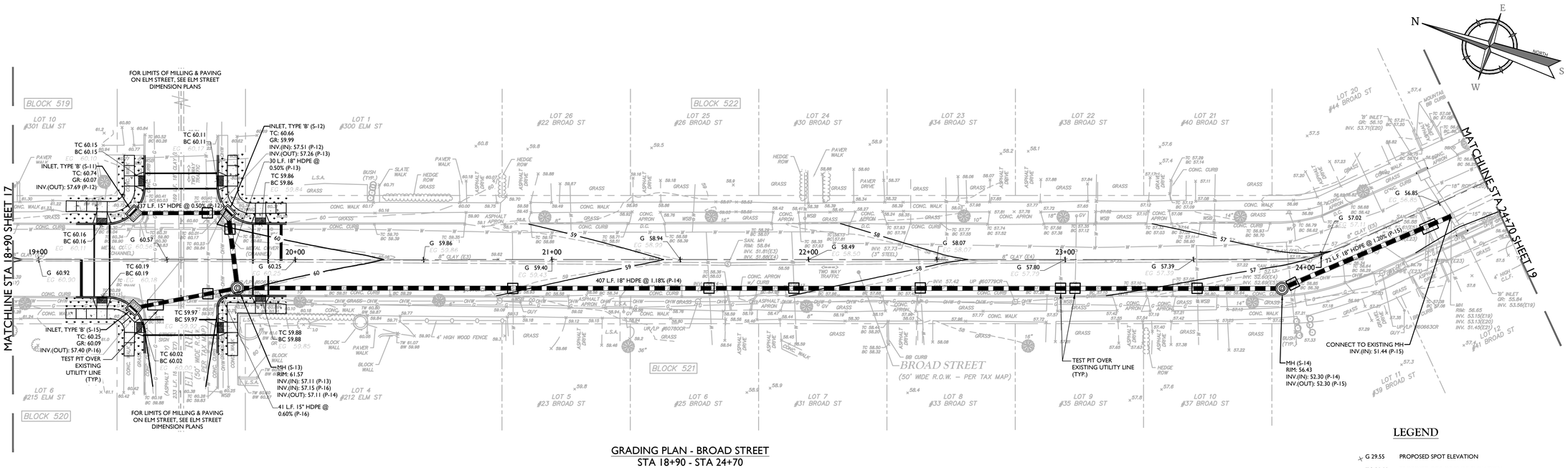


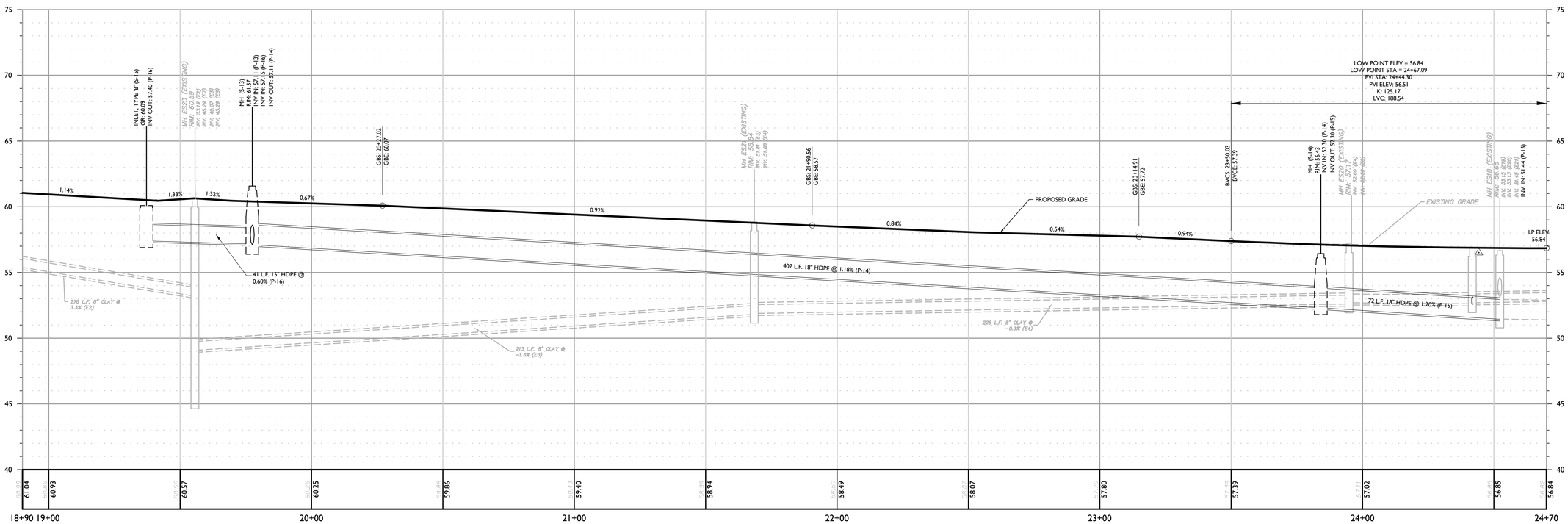
GRADING PLAN - BROAD STREET
STA 18+90 - STA 24+70

NOTES:

1. EXISTING GAS MAIN TO BE RETIRED IN-PLACE BY ELIZABETHTOWN GAS. CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF THE ABANDONED GAS PIPES PRIOR TO CONSTRUCTION OF DRAINAGE IMPROVEMENTS.
2. TEST PIT LOCATIONS DEPICTED ON THE CONSTRUCTION PLANS ARE TO CONFIRM THE COVER OVER EXISTING UTILITIES OR TO CHECK HORIZONTAL AND VERTICAL CLEARANCE BETWEEN EXISTING UTILITIES AND PROPOSED FACILITIES. THE CONTRACTOR SHALL SUBMIT TEST PIT RESULTS TO THE ENGINEER PRIOR TO CONSTRUCTION TO CONFIRM SUFFICIENT COVER OVER EXISTING UTILITIES AND CLEARANCE BETWEEN EXISTING UTILITIES AND PROPOSED FACILITIES. THE CONTRACTOR SHALL PROVIDE THE ENGINEER 5 BUSINESS DAYS TO REVIEW THE TEST PIT RESULTS.

LEGEND

G 29.55	PROPOSED SPOT ELEVATION
TC 30.00	PROPOSED TOP OF CURB ELEVATION
BC 29.50	PROPOSED BOTTOM OF CURB ELEVATION
EG 33.00	EXISTING GRADE ELEVATION (PROVIDED FOR REFERENCE AND CLARITY)



PROFILE OF PROPOSED STORMWATER SEWER ON BROAD STREET (S-11 - ES18)
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'

20 0 20 40
SCALE : 1" = 20'

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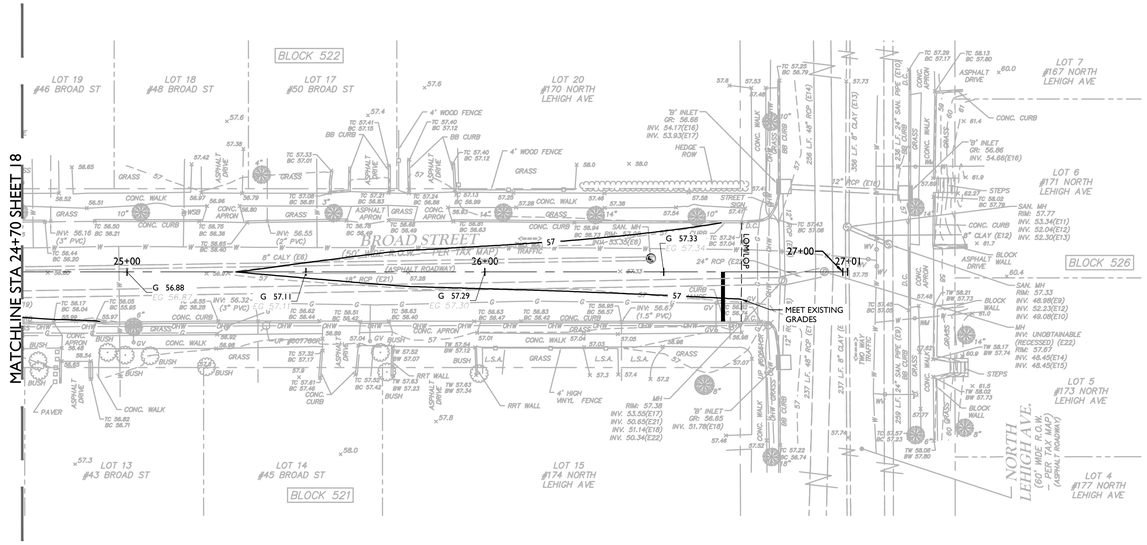
AS SHOWN	12/23/20	MIB	PWJ

PROJECT NUMBER:	DRAWING NAME:
CDT071	C-GRAD-BROD

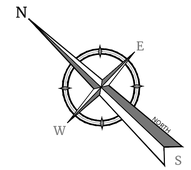
SHEET TITLE:
GRADING & DRAINAGE PLAN (BROAD STREET) STA. 18+90 TO STA. 24+70

SHEET NUMBER:
18 of 43

C:\CDT071\Engineering\Site Plans\C-GRAD-BROD.dwg\C-18 STA 18+90 - STA 24+70 By: MIBERKELMAN

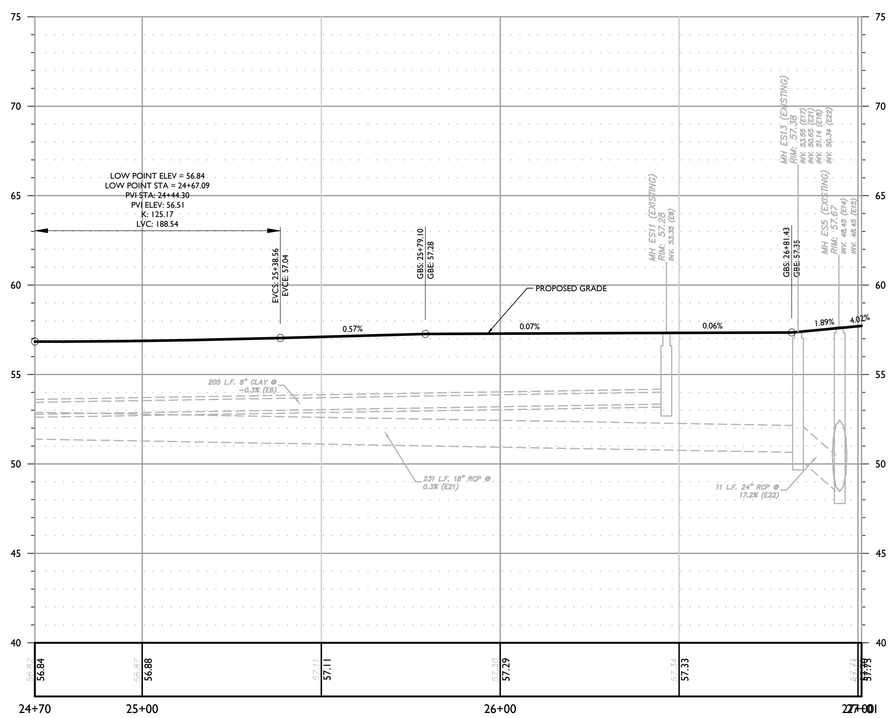


GRADING PLAN - BROAD STREET
STA 24+70 - STA 27+01



LEGEND

G 29.55	PROPOSED SPOT ELEVATION
TC 30.00	PROPOSED TOP OF CURB ELEVATION
BC 29.50	PROPOSED BOTTOM OF CURB ELEVATION
EG 33.00	EXISTING GRADE ELEVATION (PROVIDED FOR REFERENCE AND CLARITY)



PROFILE OF PROPOSED STORMWATER SEWER ON BROAD STREET (S-11 - ES18)
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'

20 0 20 40
SCALE : 1" = 20'

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

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AS SHOWN	12/23/20	MIB	PWJ

PROJECT NUMBER: CDT071
DRAWING NAME: C-GRAD-BROD

SHEET TITLE:
GRADING & DRAINAGE PLAN (BROAD STREET) STA. 24+70 TO STA. 27+01

SHEET NUMBER:
19 of 43

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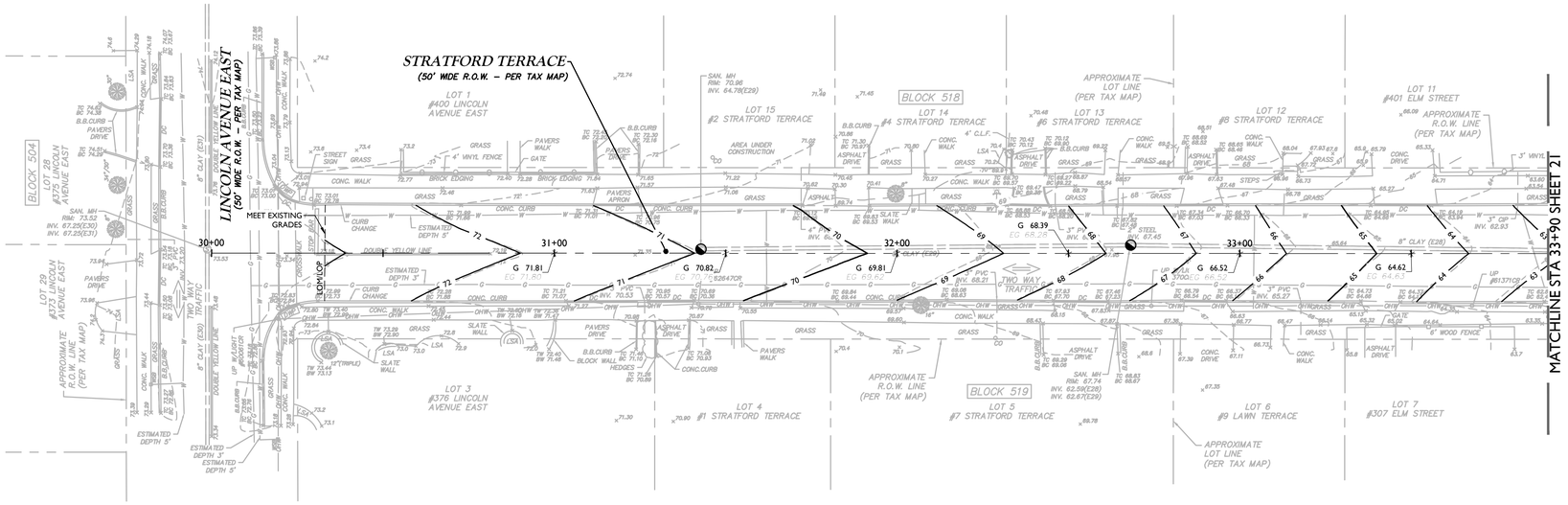
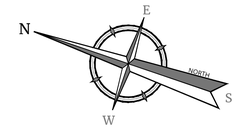
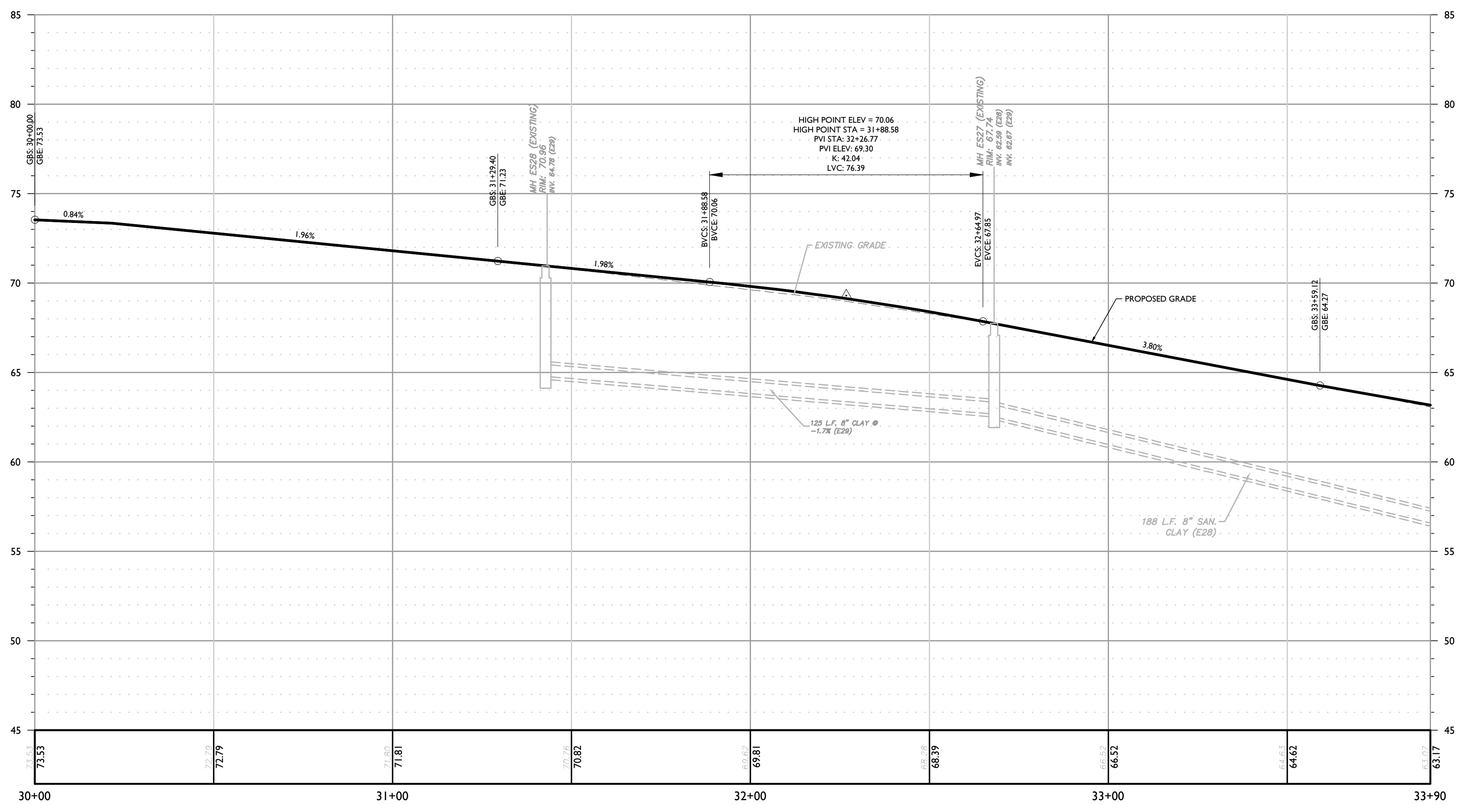




GRADING PLAN - STRATFORD TERRACE
STA 30+00 - STA 33+90

LEGEND

G 29.55	PROPOSED SPOT ELEVATION
TC 30.00	PROPOSED TOP OF CURB ELEVATION
BC 29.50	PROPOSED BOTTOM OF CURB ELEVATION
EG 33.00	EXISTING GRADE ELEVATION (PROVIDED FOR REFERENCE AND CLARITY)



PROFILE OF PROPOSED STORMWATER SEWER ON STRATFORD TERRACE (S-6 - ES23)
HORIZONTAL : 1" = 20'
VERTICAL : 1" = 4'

20 0 20 40
SCALE : 1" = 20'

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

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PROJECT NUMBER: CDT071
DRAWING NAME: C-GRAD-STRA

SHEET TITLE:
GRADING & DRAINAGE PLAN (STRATFORD TERRACE) STA. 30+00 TO STA. 33+90

SHEET NUMBER:

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

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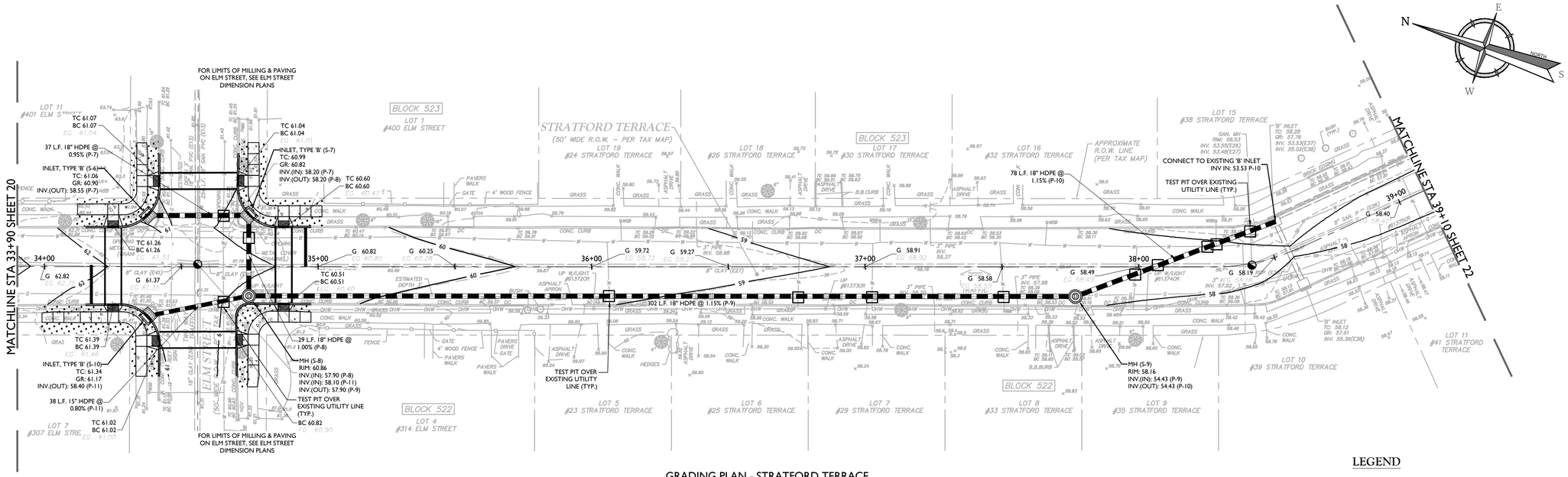


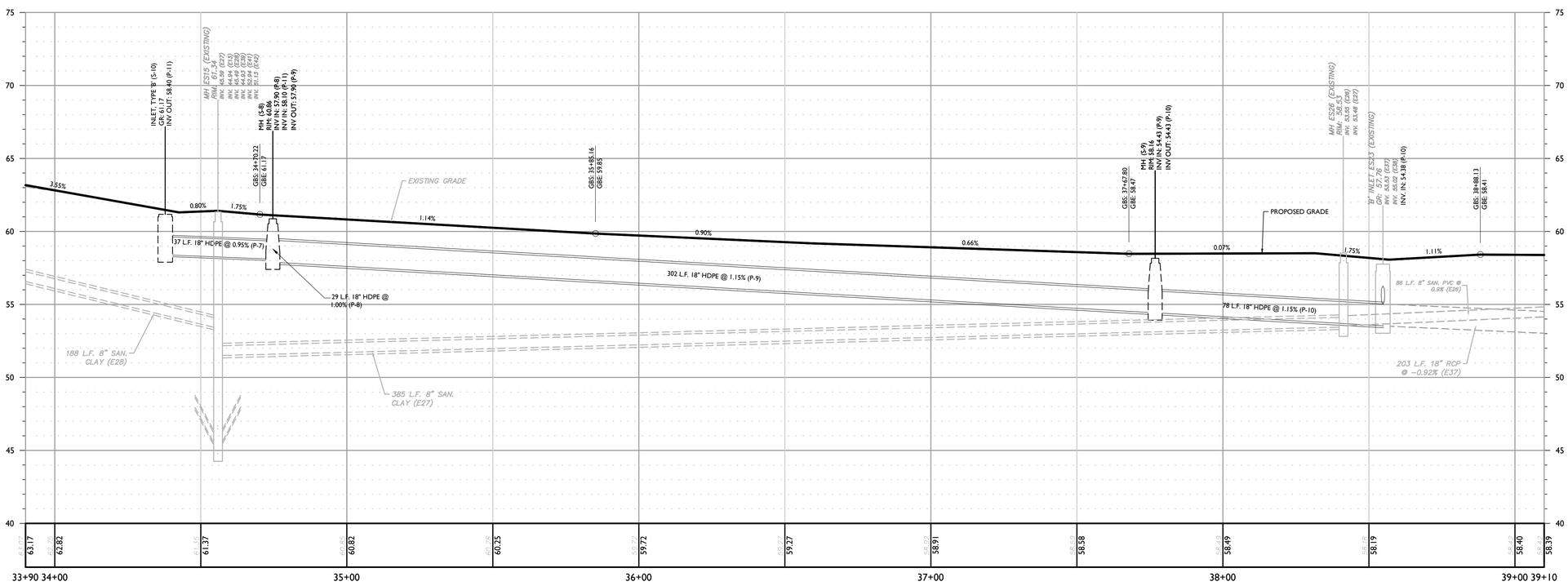
GRADING PLAN - STRATFORD TERRACE
STA 33+90 - STA 39+10

NOTES:

1. EXISTING GAS MAIN TO BE RETIRED IN-PLACE BY ELIZABETHTOWN GAS. CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF THE ABANDONED GAS PIPES PRIOR TO CONSTRUCTION OF DRAINAGE IMPROVEMENTS.
2. TEST PIT LOCATIONS DEPICTED ON THE CONSTRUCTION PLANS ARE TO CONFIRM THE COVER OVER EXISTING UTILITIES OR TO CHECK HORIZONTAL AND VERTICAL CLEARANCE BETWEEN EXISTING UTILITIES AND PROPOSED FACILITIES. THE CONTRACTOR SHALL SUBMIT TEST PIT RESULTS TO THE ENGINEER PRIOR TO CONSTRUCTION TO CONFIRM SUFFICIENT COVER OVER EXISTING UTILITIES AND CLEARANCE BETWEEN EXISTING UTILITIES AND PROPOSED FACILITIES. THE CONTRACTOR SHALL PROVIDE THE ENGINEER 5 BUSINESS DAYS TO REVIEW THE TEST PIT RESULTS.

LEGEND

G 29.55	PROPOSED SPOT ELEVATION
TC 30.00	PROPOSED TOP OF CURB ELEVATION
BC 29.50	PROPOSED BOTTOM OF CURB ELEVATION
EG 33.00	EXISTING GRADE ELEVATION (PROVIDED FOR REFERENCE AND CLARITY)



PROFILE OF PROPOSED STORMWATER SEWER ON STRATFORD TERRACE (S-6 - ES23)
HORIZONTAL : 1" = 20'
VERTICAL : 1" = 4'

20 0 20 40
SCALE : 1" = 20'

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

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PROJECT NUMBER: CDT071
DRAWING NAME: C-GRAD-STRA

SHEET TITLE:
GRADING & DRAINAGE PLAN (STRATFORD TERRACE) STA. 33+90 TO STA. 39+10

SHEET NUMBER:
21 of 43

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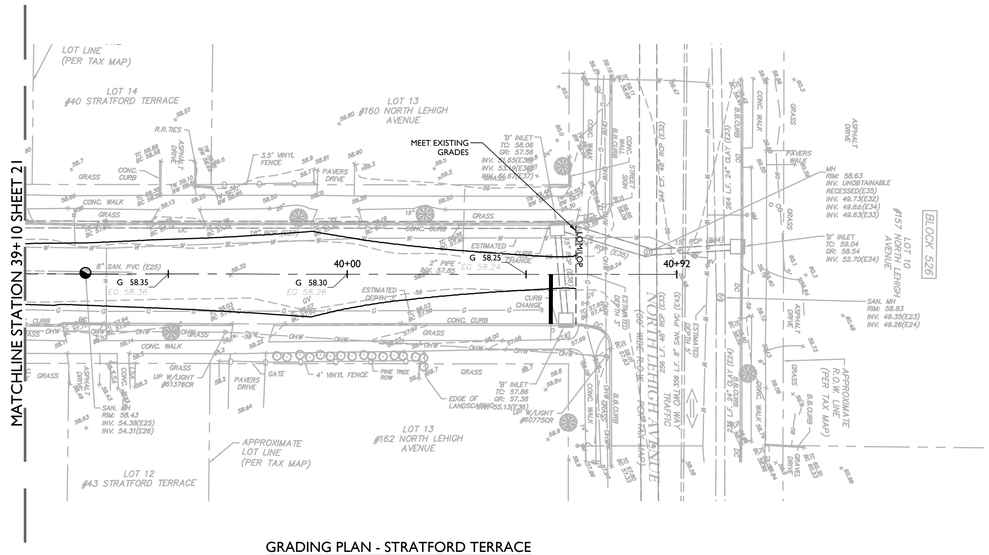
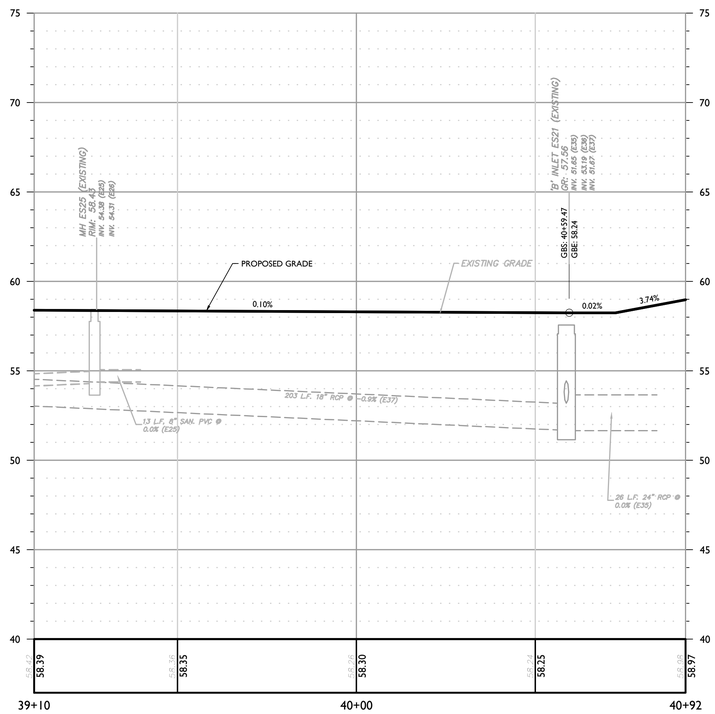


N
E
S
W

GRADING PLAN - STRATFORD TERRACE
STA 39+10 - STA 40+92

LEGEND

G 29.55	PROPOSED SPOT ELEVATION
TC 30.00	PROPOSED TOP OF CURB ELEVATION
BC 29.50	PROPOSED BOTTOM OF CURB ELEVATION
EG 33.00	EXISTING GRADE ELEVATION (PROVIDED FOR REFERENCE AND CLARITY)



PROFILE OF PROPOSED STORMWATER SEWER ON STRATFORD TERRACE (S-6 - ES23)
HORIZONTAL : 1" = 20'
VERTICAL : 1" = 4'

20 0 20 40
SCALE : 1" = 20'

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CONSTRUCTION PLANS
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PROJECT NUMBER: CDT071
DRAWING NAME: C-GRAD-STRA

SHEET TITLE:
GRADING & DRAINAGE PLAN (STRATFORD TERRACE) STA. 39+10 TO STA. 40+92

SHEET NUMBER:
22 of 43

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

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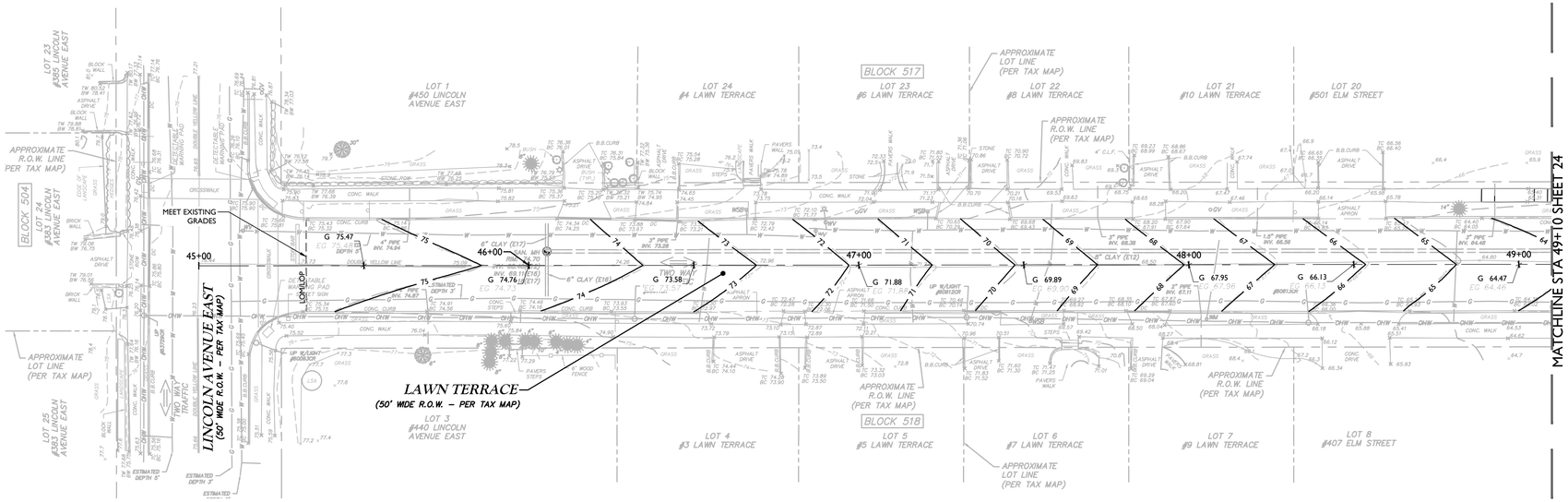
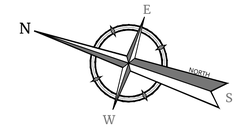
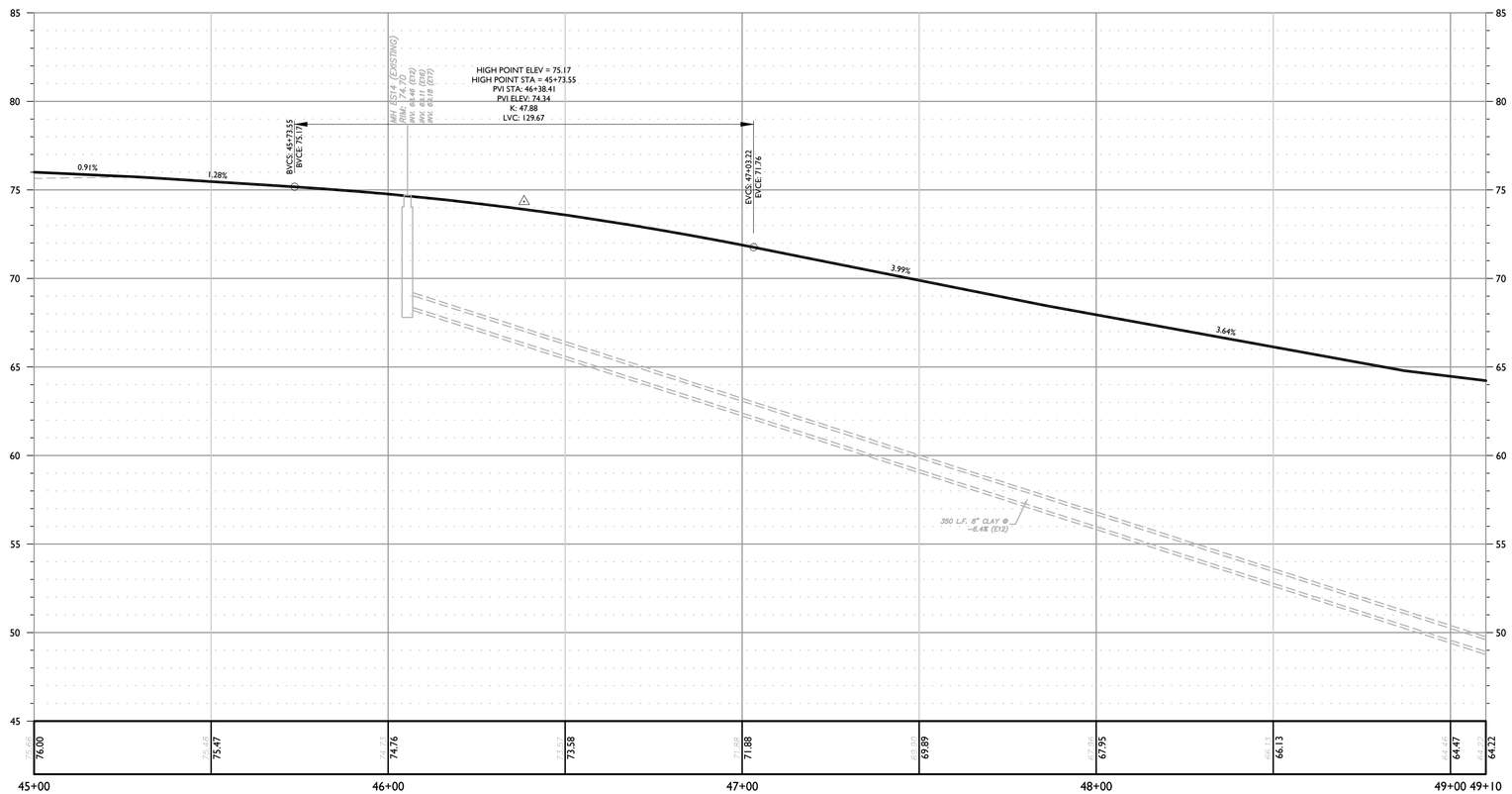




GRADING PLAN - LAWN TERRACE
STA 45+00 - STA 49+10

LEGEND

G 29.55	PROPOSED SPOT ELEVATION
TC 30.00	PROPOSED TOP OF CURB ELEVATION
BC 29.50	PROPOSED BOTTOM OF CURB ELEVATION
EG 33.00	EXISTING GRADE ELEVATION (PROVIDED FOR REFERENCE AND CLARITY)



PROFILE OF LAWN TERRACE CENTERLINE ALIGNMENT
HORIZONTAL : 1" = 20'
VERTICAL : 1" = 4'

SCALE : 1" = 20'

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REV	DATE	DRAWN BY	DESCRIPTION

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CONSTRUCTION PLANS
FOR
ELM STREET AREA DRAINAGE IMPROVEMENTS

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PROJECT NUMBER: CDT071
DRAWING NAME: C-GRAD-LAWN

SHEET TITLE:
GRADING & DRAINAGE PLAN (LAWN TERRACE) STA. 45+00 TO STA. 49+10

SHEET NUMBER:
23 of 43

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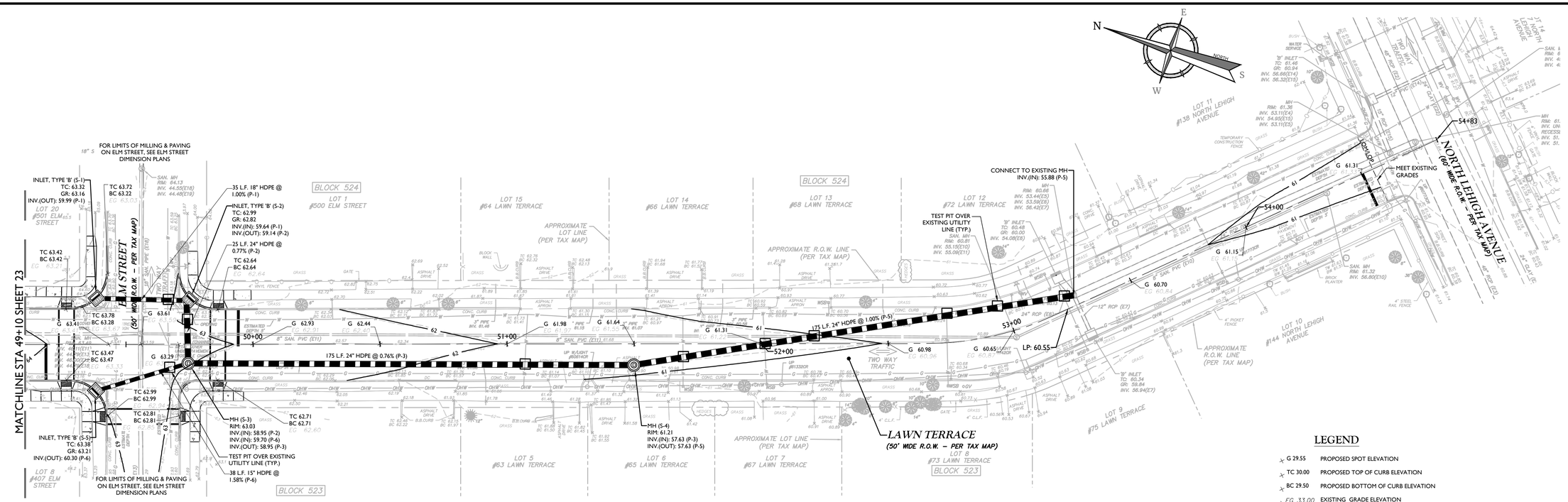
NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.



LEGEND

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TC 30.00	PROPOSED TOP OF CURB ELEVATION
BC 29.50	PROPOSED BOTTOM OF CURB ELEVATION
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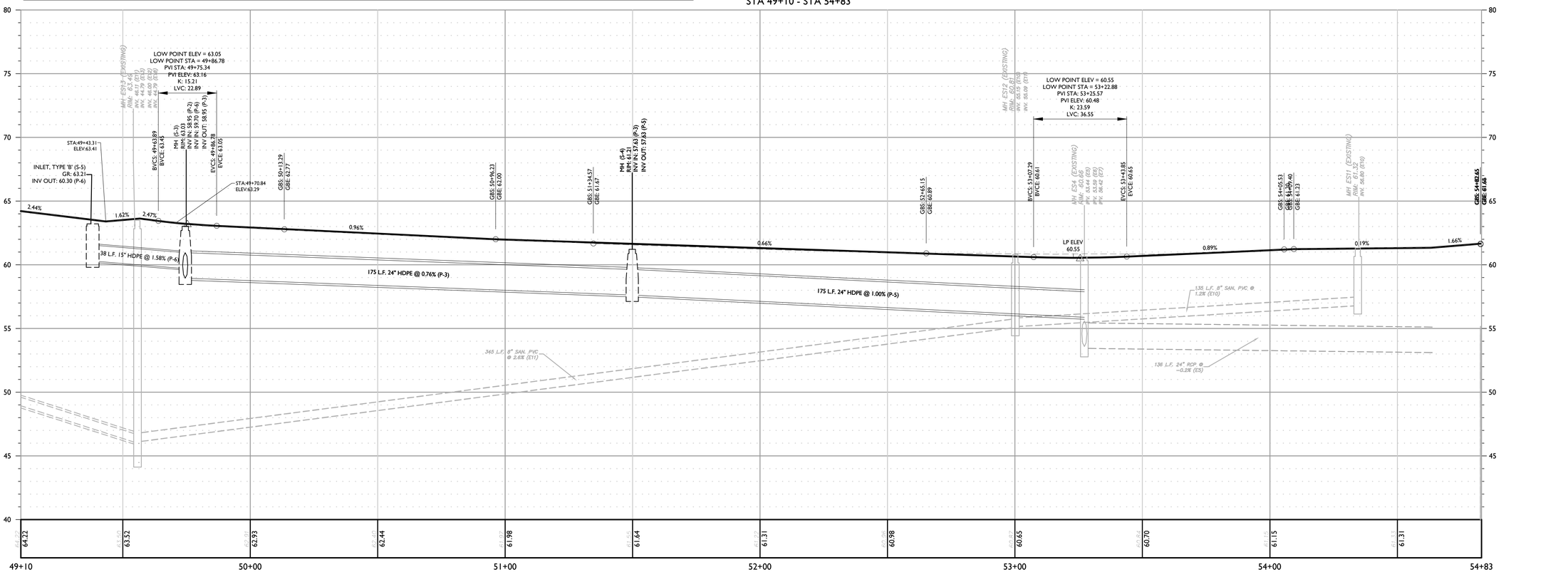
GRADING PLAN - LAWN TERRACE
STA 49+10 - STA 54+83



PROFILE OF LAWN TERRACE CENTERLINE ALIGNMENT
HORIZONTAL : 1" = 20'
VERTICAL : 1" = 4'

SCALE : 1" = 20'

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

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LICENSE NUMBER: GE45154
COLLIERS ENGINEERING & DESIGN, INC.
N.J. C.O.A. #: 24GA27986500

CONSTRUCTION PLANS
FOR
ELM STREET AREA
DRAINAGE
IMPROVEMENTS

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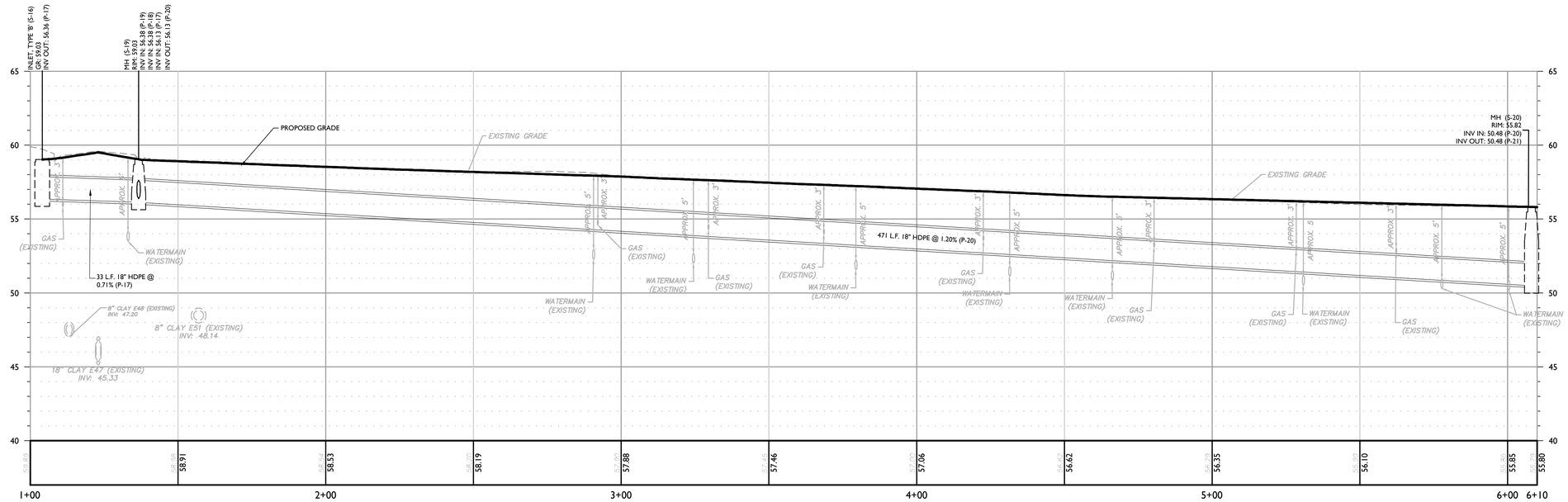
SCALE:	DATE:	DRAWN BY:	CHECKED BY:
AS SHOWN	12/23/20	MIB	PWJ

PROJECT NUMBER: CDT071
DRAWING NAME: C-GRAD-LAWN

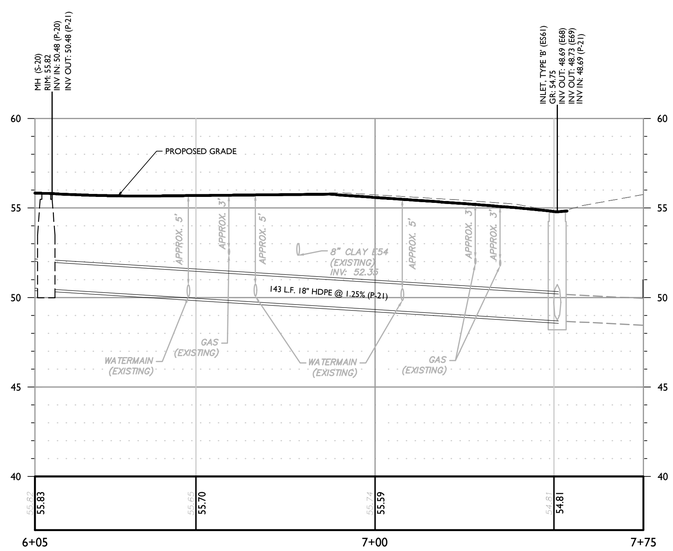
SHEET TITLE:
GRADING & DRAINAGE PLAN
(LAWN TERRACE)
STA. 49+10 TO STA. 54+83

SHEET NUMBER:

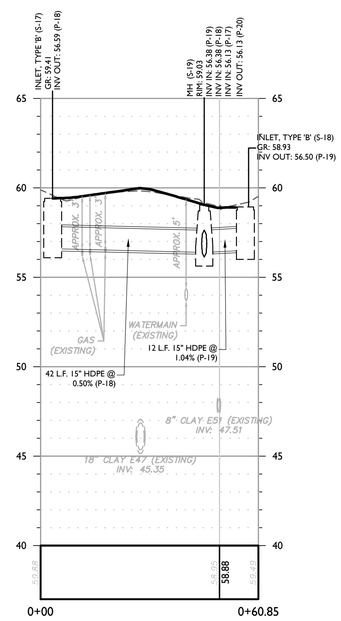
CCDT071\Engineering\Site Plans\C-GRAD-LAWN.dwg\C24, STA 49+10 - STA 54+83 By: MBERKELMAN



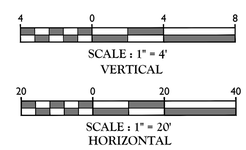
PROFILE OF PROPOSED STORMWATER SEWER ON MANSION TERRACE (S-16 - S-20)
HORIZONTAL : 1" = 20'
VERTICAL : 1" = 4'



PROFILE OF PROPOSED STORMWATER SEWER ON MANSION TERRACE (S-20 - ES61)
HORIZONTAL : 1" = 20'
VERTICAL : 1" = 4'



PROFILE OF PROPOSED STORMWATER SEWER ON MANSION TERRACE (S-17 - S-18)
HORIZONTAL : 1" = 20'
VERTICAL : 1" = 4'



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

CONSTRUCTION PLANS
FOR
ELM STREET AREA DRAINAGE IMPROVEMENTS

TOWNSHIP OF CRANFORD
UNION COUNTY
NEW JERSEY

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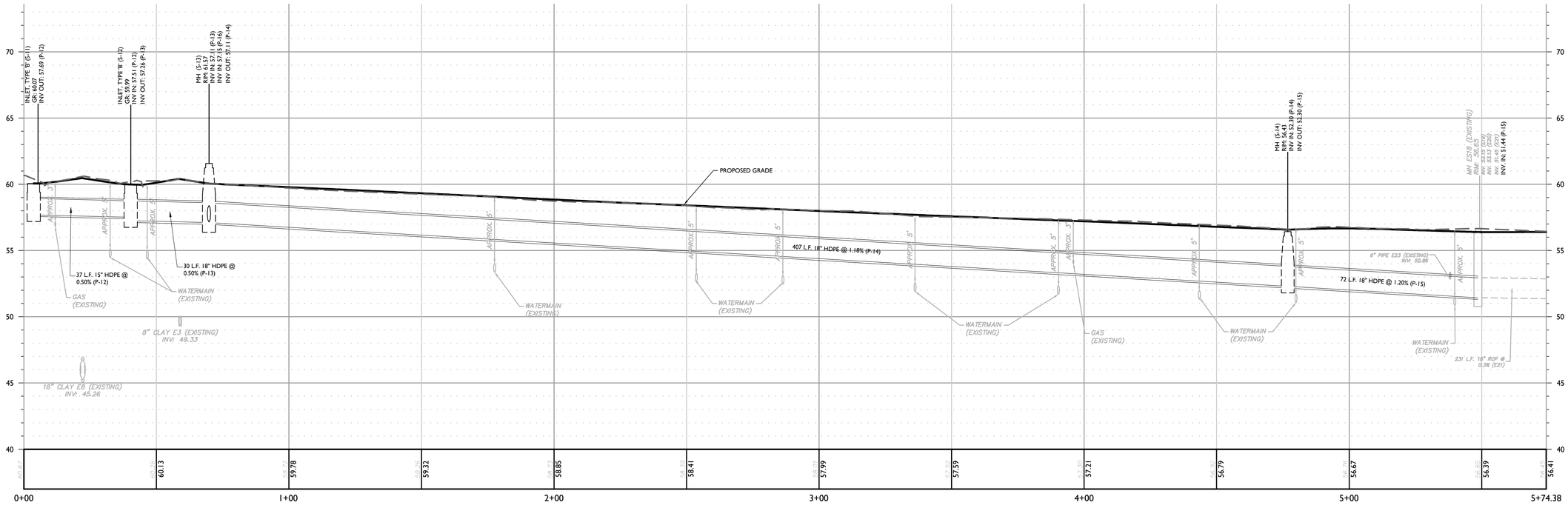
PROJECT NUMBER:	DRAWING NAME:
CDT071	C-GRAD-MANS

SHEET TITLE:
STORM PROFILES (MANSION TERRACE)

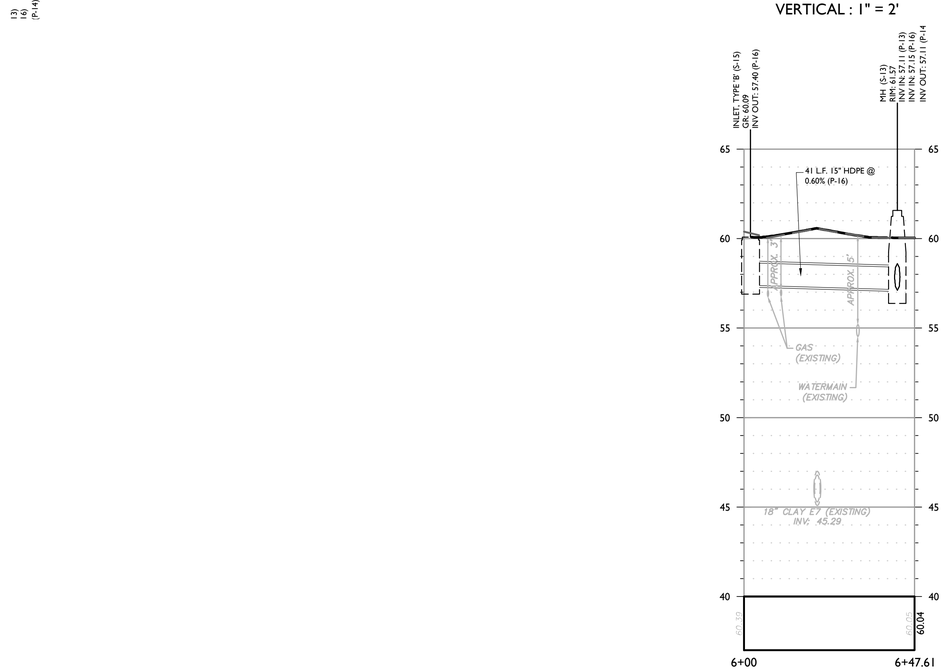
SHEET NUMBER:

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

C:\CDT071\Engineering\Site Plans\C-GRAD-MANS.dwg\C-15 Profiles By: MIBEKKELMAN



PROFILE OF PROPOSED STORMWATER SEWER ON BROAD STREET (S-11 - ES18)
HORIZONTAL : 1" = 10'
VERTICAL : 1" = 2'



PROFILE OF PROPOSED STORMWATER SEWER ON BROAD STREET (S-15 - S-13)
HORIZONTAL : 1" = 20'
VERTICAL : 1" = 4'

4 0 4 8
SCALE : 1" = 4'
VERTICAL

20 0 20 40
SCALE : 1" = 20'
HORIZONTAL

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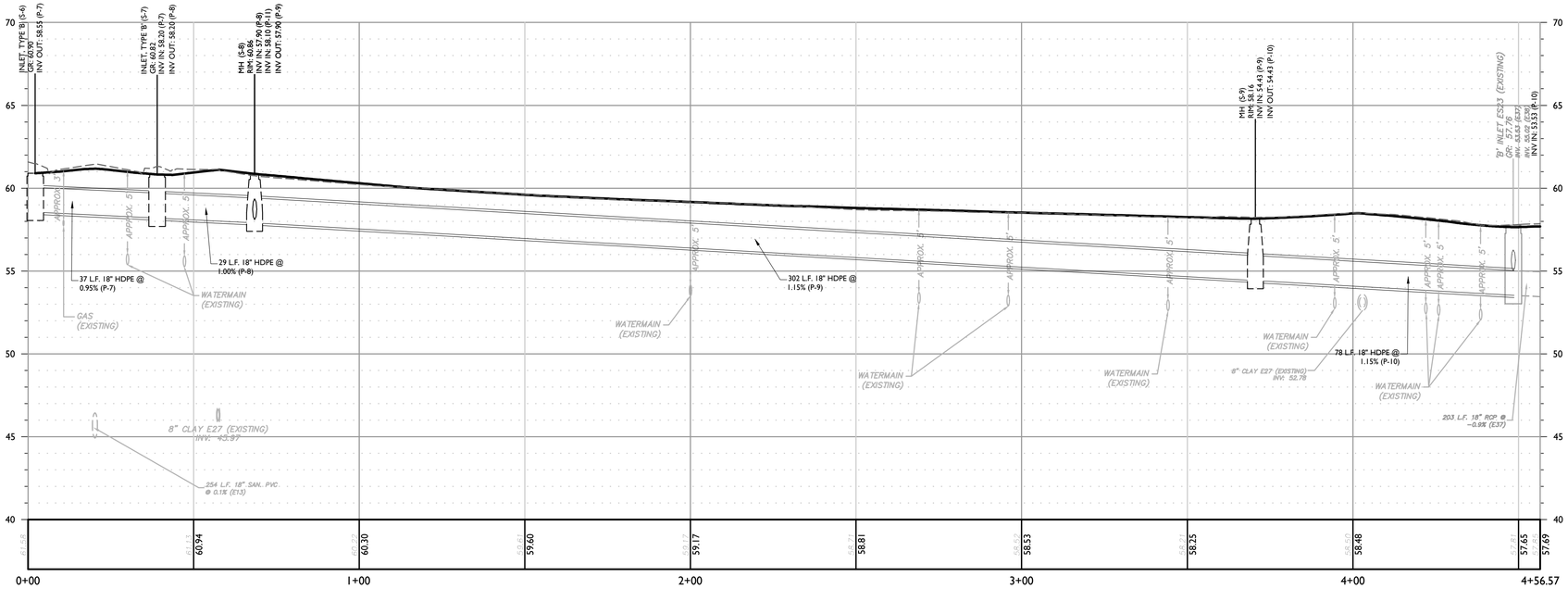
PROJECT NUMBER: CDT071
DRAWING NAME: C-GRAD-BROD

SHEET TITLE:
STORM PROFILES (BROAD STREET)

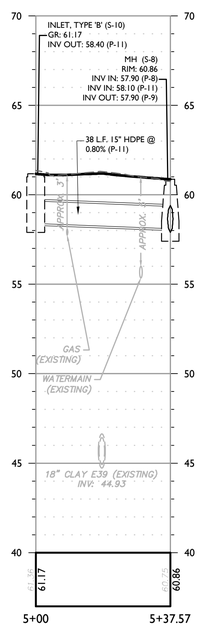
SHEET NUMBER:
26 of 43

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

C:\CDT071\Engineering\Site Plans\C-GRAD-BROD.dwg\C-16_PROFILES By: MBEAKELMAN



PROFILE OF PROPOSED STORMWATER SEWER ON STRATFORD TERRACE (S-6 - ES23)
HORIZONTAL : 1" = 20'
VERTICAL : 1" = 4'



PROFILE OF PROPOSED STORMWATER SEWER ON STRATFORD TERRACE (S-10 - S-8)
HORIZONTAL : 1" = 20'
VERTICAL : 1" = 4'

SCALE : 1" = 4'
VERTICAL

SCALE : 1" = 20'
HORIZONTAL

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PROJECT NUMBER:	DRAWING NAME:
CDT071	C-GRAD-STRA

SHEET TITLE:
STORM PROFILES
(STRATFORD TERRACE)

SHEET NUMBER:
27 of 43

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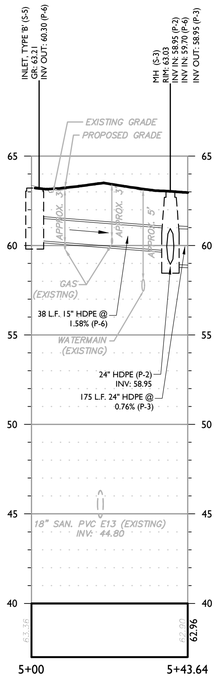
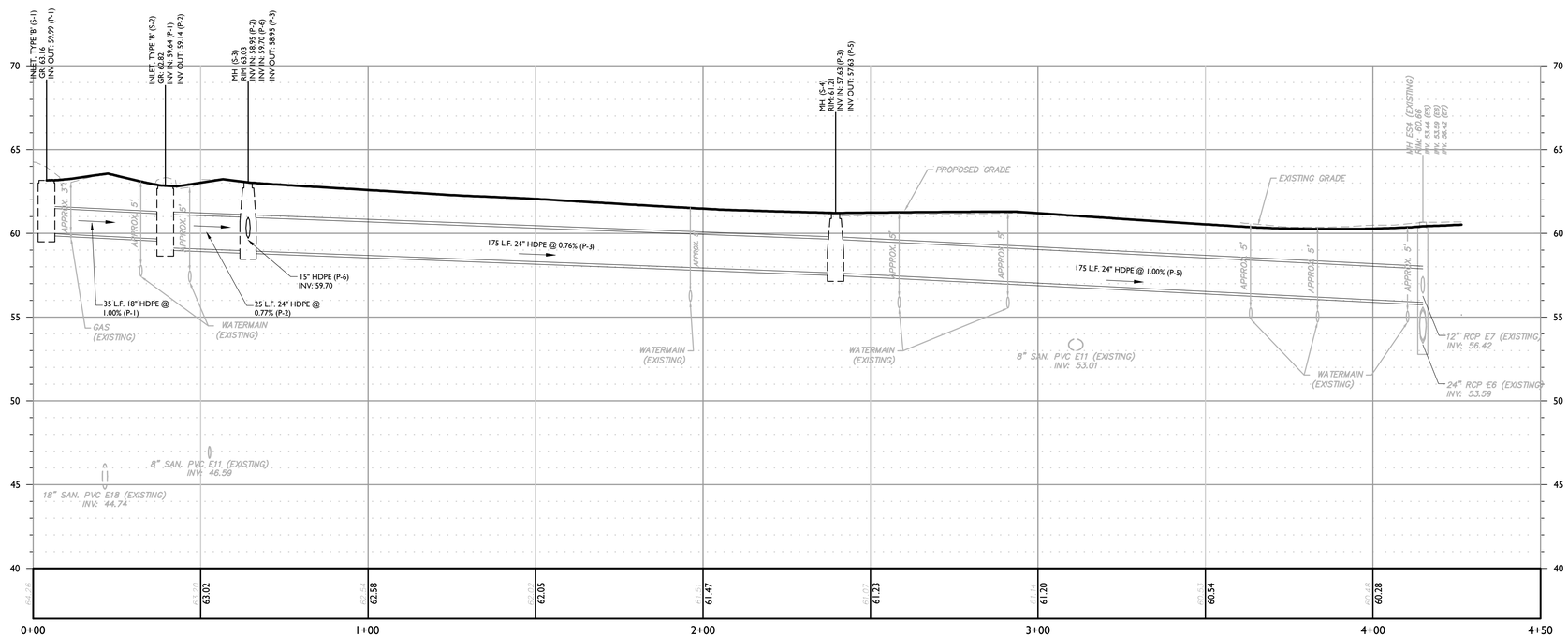
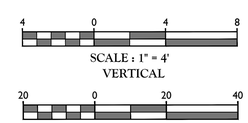


PROFILE OF PROPOSED STORMWATER SEWER ON LAWN TERRACE (S-5 - S-3)
HORIZONTAL : 1" = 20'
VERTICAL : 1" = 4'



PROFILE OF PROPOSED STORMWATER SEWER ON LAWN TERRACE (S-1 - ES4)
HORIZONTAL : 1" = 20'
VERTICAL : 1" = 4'



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PROJECT NUMBER:	DRAWING NAME:
CDT071	C-GRAD-LAWN

SHEET TITLE:
STORM PROFILES (LAWN TERRACE)

SHEET NUMBER:
28 of 43

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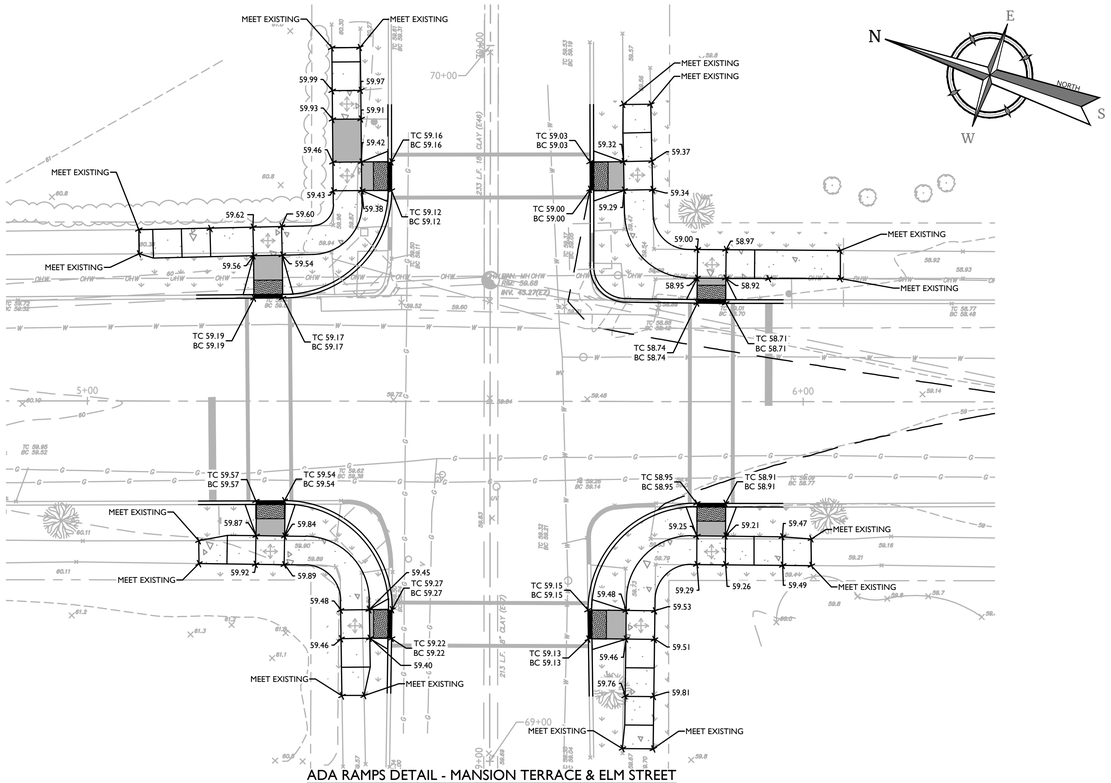
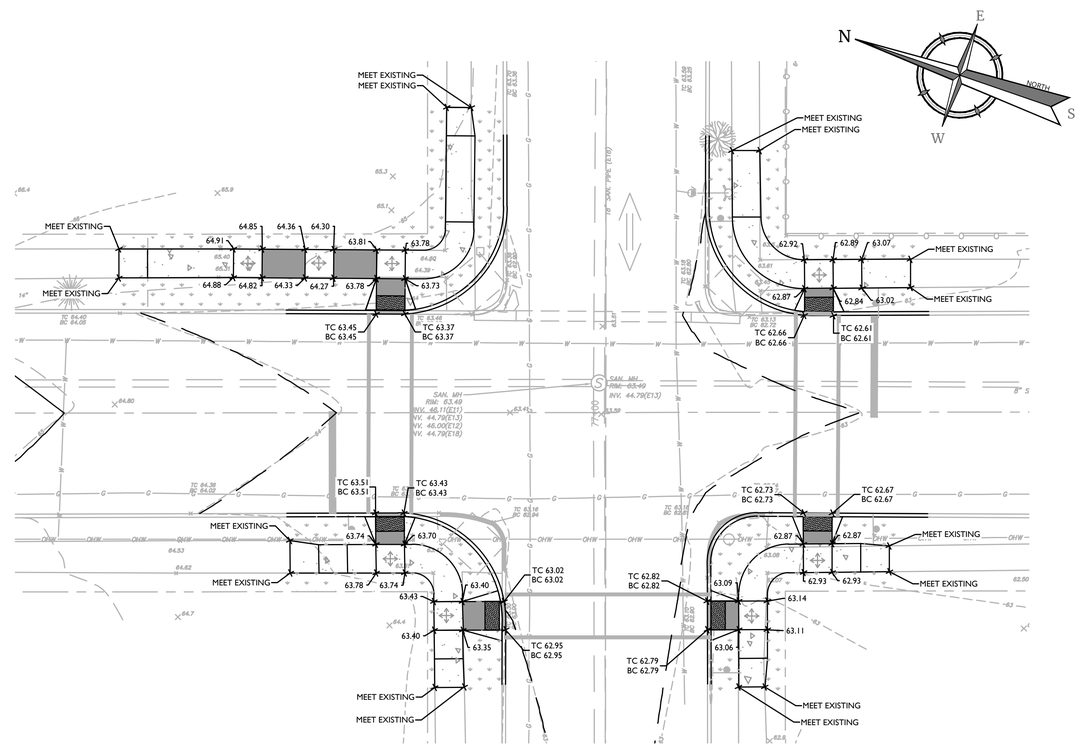
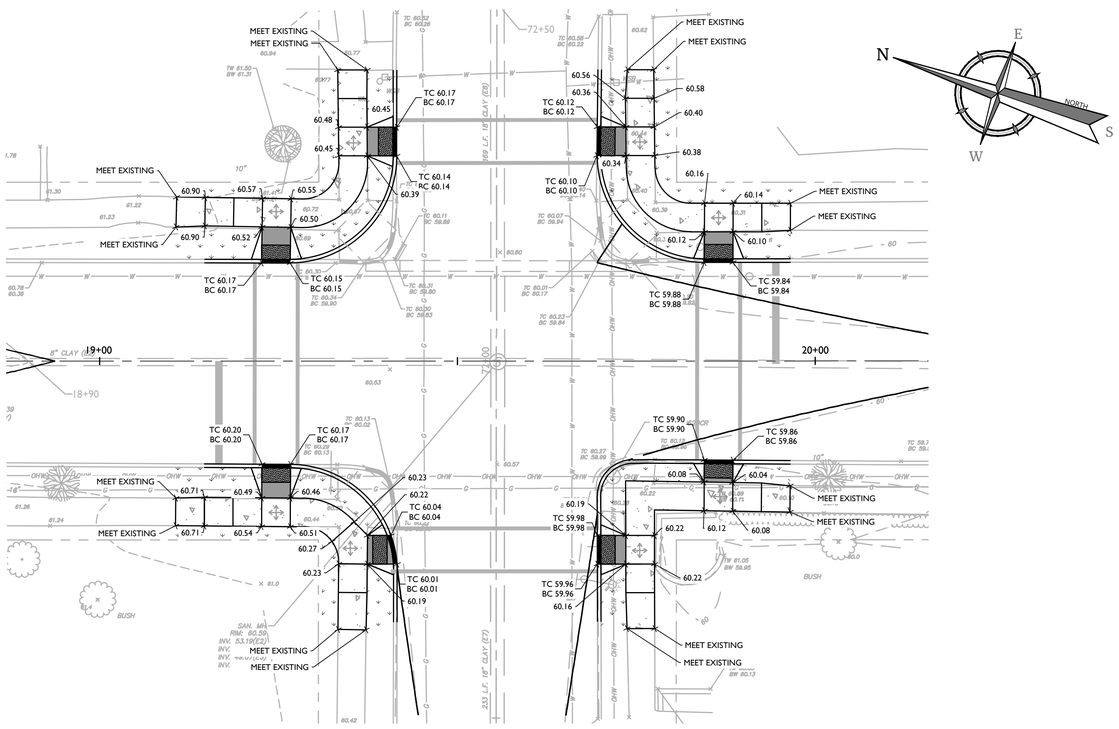
NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.



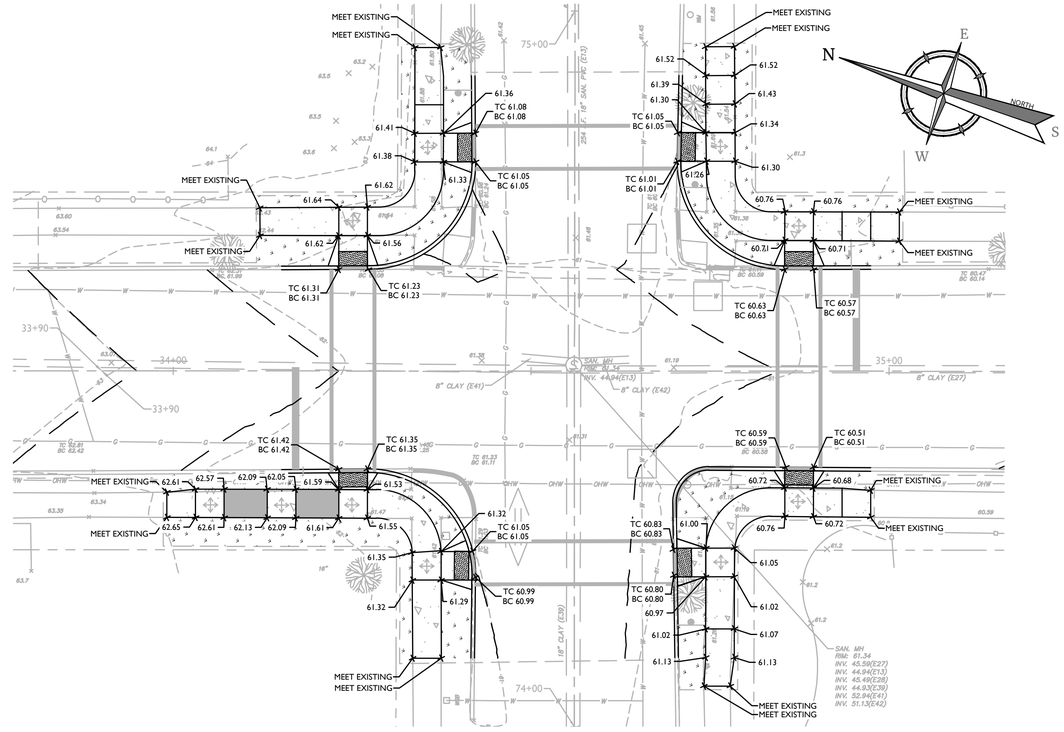
ADA RAMPS DETAIL - MANSION TERRACE & ELM STREET



ADAV RAMPS DETAIL - LAWN TERRACE & ELM STREET



ADA RAMPS DETAIL - BROAD STREET & ELM STREET



ADA RAMPS DETAIL - STRATFORD TERRACE & ELM STREET

10 0 10 20

SCALE : 1" = 10'

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PROJECT NUMBER:	DRAWING NAME:
CDT071	C-DTLS-ADA

SHEET TITLE:

ADA CURB RAMP DETAILS

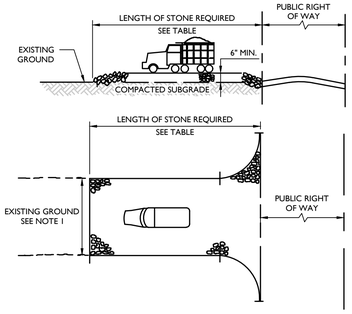
SHEET NUMBER:

CCDT071\Engineering\Site Plans\C-DTLS-ADA.dwg\C-29-ADA RAMPS By: MIBERKESMAN

SOMERSET-UNION SOIL CONSERVATION DISTRICT NOTES

MCNJ-SOIL-NOTE-1013 05/01/17

1. THE SOMERSET-UNION SOIL CONSERVATION DISTRICT SHALL BE NOTIFIED IN WRITING 48 HOURS IN ADVANCE OF ANY LAND DISTURBING ACTIVITY.
2. 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.
3. 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
4. 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
5. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE NJ STATE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY.
6. 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.
7. 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.
8. ANY STEEP SLOPES RECEIVING PIPELINE INSTALLATION WILL BE BACKFILLED AND STABILIZED DAILY, AS THE INSTALLATION PROCEEDS (I.E.: SLOPES GREATER THAT 3:1)
9. TRAFFIC CONTROL STANDARDS REQUIRE THE INSTALLATION OF A 50'X30'X6"PAD OF 1 1/2" OR 2" STONE, AT ALL CONSTRUCTION DRIVEWAYS, IMMEDIATELY AFTER INITIAL SITE DISTURBANCE.
10. AT THE TIME WHEN THE SITE PREPARATION FOR PERMANENT VEGETATIVE STABILIZATION IS GOING TO BE ACCOMPLISHED, ANY SOIL THAT WILL NOT PROVIDE A SUITABLE ENVIRONMENT TO SUPPORT 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 EMPLOYED.
11. 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 EROSION 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.
12. CONDUIT OUTLET PROTECTION MUST BE INSTALLED AT ALL REQUIRED OUTFALLS PRIOR TO THE DRAINAGE SYSTEM BECOMING OPERATIONAL.
13. 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.
14. THE SOMERSET-UNION SOIL CONSERVATION DISTRICT SHALL BE NOTIFIED OF ANY CHANGES IN OWNERSHIP.
15. MULCHING TO THE NJ STANDARDS IS REQUIRED FOR OBTAINING A CONDITIONAL REPORT OF COMPLIANCE. CONDITIONALS ARE ONLY ISSUED WHEN THE SEASON PROHIBITS SEEDING.
16. CONTRACTOR IS RESPONSIBLE FOR KEEPING ALL ADJACENT ROADS CLEAN DURING LIFE OF CONSTRUCTION PROJECT.
17. 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.
18. 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.
19. 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 DEWATERING.



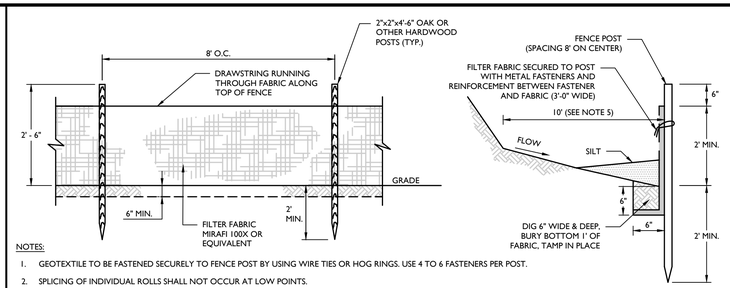
NOTES:

1. 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.
2. THICKNESS SHOWN IS FOR STONE CONSTRUCTION ENTRANCE ONLY.
3. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO ROADWAYS.
4. THE ENTRANCE SHALL BE PERIODICALLY TOP DRESSED WITH ADDITIONAL STONE OR ADDITIONAL LENGTH AS ON-SITE CONDITIONS REQUIRE.
5. SPILLED, DROPPED, WASHED, OR TRACKED SEDIMENT ONTO ROADWAYS OR OTHER IMPERVIOUS SURFACES SHALL BE REMOVED IMMEDIATELY.
6. 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.
7. 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 1 $\frac{1}{2}$") OR #3 (2" TO 1") STONE.
9. INDIVIDUAL INTERIOR LOT INGRESS/EGRESS CONSTRUCTION ACCESS SHALL HAVE # 3 (1" 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
> 5%	ENTIRE SURFACE STABILIZED WITH HMA BASE COURSE, MIX I-2	

1 STABILIZED CONSTRUCTION ACCESS DETAIL

NOT TO SCALE MCNJ-SOIL-EROS-1000 05/01/17

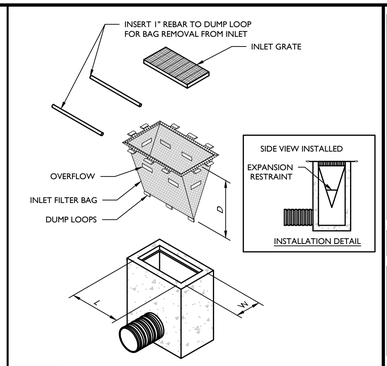


NOTES:

1. GEOTEXTILE TO BE FASTENED SECURELY TO FENCE POST BY USING WIRE TIES OR HOG RINGS. USE 4 TO 6 FASTENERS PER POST.
2. SPLICING OF INDIVIDUAL ROLLS SHALL NOT OCCUR AT LOW POINTS.
3. ALL SILT FENCE TO BE INSPECTED AND REMEDIAL MAINTENANCE PERFORMED BY THE CONTRACTOR WITHIN 24 HOURS AFTER EACH RAINFALL. REMOVE THE SILT ACCUMULATION WHEN IT REACHES 1/3 OF THE FENCE FABRIC HEIGHT.
4. FOR EVERY 100 FEET OF SILT FENCE, OR 1/4 ACRE OF DRAINAGE AREA, PROVIDE AN OVERFLOW POINT TO REDUCE PONDING IN FRONT OF THE FENCE.
5. IF SPACE PERMITTED, LOCATE SILT FENCE 10' AWAY FROM TOE OF SLOPE IF THE SLOPE IS STEEPER THAN 1:1.

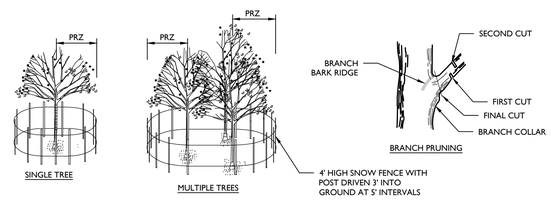
2 SILT FENCE DETAIL

NOT TO SCALE MCNJ-SOIL-EROS-1100 11/01/18



3 INLET PROTECTION (FILTER BAG) DETAIL

NOT TO SCALE MCNJ-SOIL-EROS-1500 09/01/17

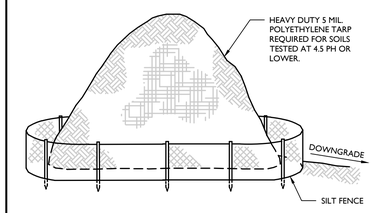


NOTES:

1. 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.
2. NO CONSTRUCTION ACTIVITY IS PERMITTED WITHIN THE PROTECTIVE FENCING.
3. AS CONSTRUCTION NEARS COMPLETION THE FENCING WILL BE REMOVED AS DIRECTED.
4. AT THE COMPLETION OF CONSTRUCTION, ALL TREES WILL BE PRUNED AS NECESSARY TO CORRECT ANY DAMAGE RESULTING FROM CONSTRUCTION ACTIVITY.
5. GENERAL MECHANICAL DAMAGE - SEE CRITICAL ROOT ZONE CALCULATION (CRZ) FOR CORRECT PLACEMENT OF TREE PROTECTION.
6. 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.
7. BOARDS WILL NOT BE NAILED TO TREES DURING BUILDING OPERATIONS.
8. 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 DRIP LINE.
9. DAMAGED TRUNKS OR EXPOSED ROOTS SHOULD HAVE DAMAGED BARK REMOVED IMMEDIATELY AND NO PAINT SHALL BE APPLIED. EXPOSED ROOTS SHOULD BE COVERED WITH TOPSOIL IMMEDIATELY AFTER EXCAVATION IS COMPLETE. ROOTS SHALL BE PRUNED TO GIVE A CLEAN, SHARP SURFACE AMENABLE TO HEALING. ROOTS EXPOSED DURING HOT WEATHER SHOULD BE IRRIGATED TO PREVENT PERMANENT TREE INJURY. CARE FOR SERIOUS INJURY SHOULD BE PRESCRIBED BY A PROFESSIONAL FORESTER OR CERTIFIED TREE EXPERT.
10. 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.
11. 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/TOLERANT TREES), EXPRESS IN FEET.

4 TEMPORARY TREE PROTECTION DETAIL

NOT TO SCALE MCNJ-SOIL-EROS-2100 05/01/17



NOTES:

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

5 STOCKPILE DETAIL

NOT TO SCALE MCNJ-SOIL-EROS-2500 05/01/17

Athletic Field Mix - ERNMX-106

	Botanical Name	Common Name
30.00 %	*Festuca arundinacea, 'Fawn'*	Tall Fescue, 'Fawn'
30.00 %	*Lolium perenne, 'Fastball RGL'*	Perennial Ryegrass, 'Fastball RGL' (turf type)
15.00 %	*Poa pratensis, 'Shamrock'*	Kentucky Bluegrass, 'Shamrock'
15.00 %	*Poa pratensis, 'Volt'*	Kentucky Bluegrass, 'Volt'
10.00 %	*Lolium multiflorum*	Annual Ryegrass

100.00 %

Seeding Rate: 75-150 lb per acre, or 3-5 lb per 1,000 sq ft

Lawn & Turfgrass Sites

This mix is good for high-traffic areas. Mix formulations are subject to change without notice depending on the availability of existing and new products. While the formula may change, the guiding philosophy and function of the mix will not.

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CONSTRUCTION PLANS

FOR

ELM STREET AREA DRAINAGE IMPROVEMENTS

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PROJECT NUMBER: CDT071
DRAWING NAME: C-DTLS

SHEET TITLE: SOIL EROSION & SEDIMENT CONTROL NOTES AND DETAILS

SHEET NUMBER: 30 of 43

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

CCDT071/Engineering/Site Plans/C-DTLS.dwg/C-30-SEC NOTES & DETAILS By: MBEKKELMAN

STANDARD FOR PERMANENT VEGETATIVE COVER FOR SOIL STABILIZATION

DEFINITION

ESTABLISHMENT OF PERMANENT VEGETATIVE COVER ON EXPOSED SOILS WHERE PERENNIAL VEGETATION IS NEEDED FOR LONG-TERM PROTECTION.

PURPOSE

TO PERMANENTLY STABILIZE THE SOIL, ENSURING CONSERVATION OF SOIL AND WATER, AND TO ENHANCE THE ENVIRONMENT. WATER QUALITY ENHANCEMENT SLOWS THE OVER-LAND MOVEMENT OF STORMWATER RUNOFF, INCREASES INFILTRATION AND RETAINS SOIL AND NUTRIENTS ON SITE, PROTECTING STREAMS OR OTHER STORMWATER CONVEYANCES.

WHERE APPLICABLE

ON EXPOSED SOILS THAT HAVE A POTENTIAL FOR CAUSING OFF-SITE ENVIRONMENTAL DAMAGE.

METHODS AND MATERIALS

1. SITE PREPARATION

A. GRADE AS NEEDED AND FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, AND MULCH ANCHORING. ALL GRADING SHOULD BE DONE IN ACCORDANCE WITH STANDARD FOR LAND GRADING.

B. IMMEDIATELY PRIOR TO SEEDING AND TOPSOIL APPLICATION, THE SUBSOIL SHALL BE EVALUATED FOR COMPACTION IN ACCORDANCE WITH THE STANDARD FOR LAND GRADING.

C. TOPSOIL SHOULD BE HANDLED ONLY WHEN IT IS DRY ENOUGH TO WORK WITHOUT DAMAGING THE SOIL STRUCTURE. A UNIFORM APPLICATION TO A DEPTH OF 5 INCHES (UNSETTLED) IS REQUIRED ON ALL SITES. TOPSOIL SHALL BE AMENDED WITH ORGANIC MATTER, AS NEEDED, IN ACCORDANCE WITH THE STANDARD FOR TOPSOILING.

D. INSTALL NEEDED EROSION CONTROL PRACTICES OR FACILITIES SUCH AS DIVERSIONS, GRADE-STABILIZATION STRUCTURES, CHANNEL STABILIZATION MEASURES, SEDIMENT BASINS, AND WATERWAYS.

2. SEEDBED PREPARATION

A. UNIFORMLY APPLY GROUND LIMESTONE AND FERTILIZER TO TOPSOIL WHICH HAS BEEN SPREAD AND FIRMED, 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 (HTTP://NJ'PAES.RUTGERS.EDU/COUNTY/). FERTILIZER SHALL BE APPLIED AT THE RATE OF 500 POUNDS PER ACRE OR 11 POUNDS PER 1,000 SQUARE FEET OF 10-10-10 OR EQUIVALENT WITH 50% WATER INSOLUBLE NITROGEN UNLESS A SOIL TEST INDICATES OTHERWISE AND INCORPORATED INTO THE SURFACE 4 INCHES. IF FERTILIZER IS NOT INCORPORATED, APPLY ONE-HALF THE RATE DESCRIBED ABOVE DURING SEEDBED PREPARATION AND REPEAT ANOTHER ONE-HALF RATE APPLICATION OF THE SAME FERTILIZER WITHIN 3 TO 5 WEEKS AFTER SEEDING.

B. WORK LIME AND FERTILIZER INTO THE TOPSOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH A DISC, SPRING-TOOTH HARROW, OR OTHER SUITABLE EQUIPMENT. THE FINAL HARROWING OR DISKING OPERATION SHOULD BE ON THE GENERAL CONTOUR. CONTINUE TILLAGE UNTIL A REASONABLE UNIFORM SEEDBED IS PREPARED.

C. HIGH ACID PRODUCING SOIL. SOILS HAVING A PH OF 4 OR LESS OR CONTAINING IRON SULFIDE SHALL BE COVERED WITH A MINIMUM OF 12 INCHES OF SOIL HAVING A PH OF 5 OR MORE BEFORE INITIATING SEEDBED REPARATION. SEE STANDARD FOR MANAGEMENT OF HIGH ACID-PRODUCING SOILS FOR SPECIFIC REQUIREMENTS.

3. SEEDING

A. SELECT A MIXTURE FROM TABLE 4-3 OR USE A MIXTURE RECOMMENDED BY RUTGERS COOPERATIVE EXTENSION OR NATURAL RESOURCES CONSERVATION SERVICE WHICH IS APPROVED BY THE SOIL CONSERVATION DISTRICT. SEED GERMINATION SHALL HAVE BEEN TESTED WITHIN 12 MONTHS OF THE PLANTING DATE. NO SEED SHALL BE ACCEPTED WITH A GERMINATION TEST DATE MORE THAN 12 MONTHS OLD UNLESS RETESTED.

1. SEEDING RATES SPECIFIED ARE REQUIRED WHEN A REPORT OF COMPLIANCE IS REQUESTED PRIOR TO ACTUAL ESTABLISHMENT OF PERMANENT VEGETATION. UP TO 50% REDUCTION IN RATES MAY BE USED WHEN PERMANENT VEGETATION IS ESTABLISHED PRIOR TO A REPORT OF COMPLIANCE INSPECTION. THESE RATES APPLY TO ALL METHODS OF SEEDING. ESTABLISHING PERMANENT VEGETATION MEANS 80% VEGETATIVE COVERAGE WITH THE SPECIFIED SEED MIXTURE FOR THE SEEDED AREA AND MOWED ONCE.

2. WARM-SEASON MIXTURES ARE GRASSES AND LEGUMES WHICH MAXIMIZE GROWTH AT HIGH TEMPERATURES, GENERALLY 85O F AND ABOVE. SEE TABLE 4-3 MIXTURES 1 TO 7. PLANTING RATES FOR WARM-SEASON GRASSES SHALL BE THE AMOUNT OF PURE LIVE SEED (PLS) AS DETERMINED BY GERMINATION TESTING RESULTS.

3. COOL-SEASON MIXTURES ARE GRASSES AND LEGUMES WHICH MAXIMIZE GROWTH AT TEMPERATURES BELOW 85OF. MANY GRASSES BECOME ACTIVE AT 65OF. SEE TABLE 4-3, MIXTURES 8-20. ADJUSTMENT OF PLANTING RATES TO COMPENSATE FOR THE AMOUNT OF PLS IS NOT REQUIRED FOR COOL SEASON GRASSES.

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. 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 BE MAXIMIZED.

D. HYDROSEEDING IS A BROADCAST SEEDING METHOD USUALLY INVOLVING A TRUCK, OR TRAILER-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. WHEN POOR SEED TO SOIL CONTACT OCCURS, THERE IS A REDUCED SEED GERMINATION AND GROWTH.

4. MULCHING

MULCHING IS REQUIRED ON ALL SEEDING. MULCH WILL PROTECT AGAINST EROSION BEFORE GRASS IS ESTABLISHED AND WILL PROMOTE FASTER AND EARLIER ESTABLISHMENT. THE EXISTENCE OF VEGETATION SUFFICIENT TO CONTROL SOIL EROSION SHALL BE DEEMED COMPLIANCE WITH THIS MULCHING REQUIREMENT.

A. STRAW OR HAY. UNROTTED SMALL GRAIN STRAW, HAY FREE OF SEEDS, 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.

APPLICATION - SPREAD MULCH UNIFORMLY BY HAND OR MECHANICALLY SO THAT AT LEAST 85% OF THE SOIL SURFACE IS COVERED. FOR UNIFORM DISTRIBUTION OF HAND-SPREAD MULCH, DIVIDE AREA INTO APPROXIMATELY 1,000 SQUARE FEET SECTIONS AND DISTRIBUTE 70 TO 90 POUNDS WITHIN EACH SECTION.

ANCHORING SHALL BE ACCOMPLISHED IMMEDIATELY AFTER PLACEMENT TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS, DEPENDING UPON THE SIZE OF THE AREA, STEEPNESS OF SLOPES, AND COSTS.

1. PEG AND TWINE. DRIVE 8 TO 10 INCH WOODEN PEGS TO WITHIN 2 TO 3 INCHES OF THE SOIL SURFACE EVERY 4 FEET IN ALL DIRECTIONS. STAKES MAY BE DRIVEN BEFORE OR AFTER APPLYING MULCH. SECURE MULCH TO SOIL SURFACE BY STRETCHING TWINE BETWEEN PEGS IN A CRISS-CROSS AND A SQUARE PATTERN. SECURE TWINE AROUND EACH PEG WITH TWO OR MORE ROUND TURNS.

2. MULCH NETTINGS - STAPLE PAPER, JUTE, COTTON, OR PLASTIC NETTINGS TO THE SOIL SURFACE. USE A DEGRADABLE NETTING IN AREAS TO BE MOWED.

3. CRIMPER (MULCH ANCHORING COULTER TOOL) - A TRACTOR-DRAWN IMPLEMENT, SOMEWHAT LIKE A DISC HARROW, ESPECIALLY DESIGNED TO PUSH OR CUT SOME OF THE BROADCAST LONG FIBER MULCH 3 TO 4 INCHES INTO THE SOIL SO AS TO ANCHOR IT AND LEAVE PART STANDING UPRIGHT. THIS TECHNIQUE IS LIMITED TO AREAS TRAVERSABLE BY A TRACTOR, WHICH MUST OPERATE ON THE CONTOUR OF SLOPES. STRAW MULCH RATE MUST BE 3 TONS PER ACRE. NO TACKIFYING OR ADHESIVE AGENT IS REQUIRED.

4. LIQUID MULCH-BINDERS - MAY BE USED TO ANCHOR SALT HAY, HAY OR STRAW MULCH.

A. APPLICATIONS SHOULD BE HEAVIER AT EDGES WHERE WIND MAY CATCH THE MULCH, IN VALLEYS, AND AT CRESTS OF BANKS. THE REMAINDER OF THE AREA SHOULD BE UNIFORM IN APPEARANCE.

B. USE ONE OF THE FOLLOWING:

(1) ORGANIC AND VEGETABLE BASED BINDERS - NATURALLY OCCURRING, POWDER-BASED, HYDROPHILIC MATERIALS WHEN MIXED WITH WATER FORMULATES A GEL AND WHEN APPLIED TO MULCH UNDER SATISFACTORY CURING CONDITIONS WILL FORM MEMBRANED NETWORKS OF INSOLUBLE POLYMERS. THE VEGETABLE GEL SHALL BE PHYSIOLOGICALLY HARMLESS AND NOT RESULT IN A PHYTOTOXIC EFFECT OR IMPEDE GROWTH OF TURF GRASS. USE AT RATES AND WEATHER CONDITIONS AS RECOMMENDED BY THE MANUFACTURER TO ANCHOR MULCH MATERIALS. MANY NEW PRODUCTS ARE AVAILABLE, SOME OF WHICH MAY NEED FURTHER EVALUATION FOR USE IN THIS STATE.

(2) SYNTHETIC BINDERS - HIGH POLYMER SYNTHETIC EMULSION, MISCIBLE WITH WATER WHEN DILUTED AND, FOLLOWING APPLICATION OF MULCH, DRYING AND CURING, SHALL NO LONGER BE SOLUBLE OR DISPERSIBLE IN WATER. BINDER SHALL BE APPLIED AT RATES RECOMMENDED BY THE MANUFACTURER AND REMAIN TACKY UNTIL GERMINATION OF GRASS.

NOTE: ALL NAMES GIVEN ABOVE ARE REGISTERED TRADE NAMES. THIS DOES NOT CONSTITUTE A RECOMMENDATION OF THESE PRODUCTS TO THE EXCLUSION OF OTHER PRODUCTS.

B. 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. 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.

C. PELLETIZED MULCH - COMPRESSED AND EXTRUDED PAPER AND/OR WOOD FIBER PRODUCT, WHICH MAY CONTAIN CO-POLYMERS, TACKIFIERS, FERTILIZERS, AND COLORING AGENTS. THE DRY PELLETS, WHEN APPLIED TO A SEEDED AREA AND WATERED, FORM A MULCH MAT. PELLETIZED MULCH SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. MULCH MAY BE APPLIED BY HAND OR MECHANICAL SPREADER AT THE RATE OF 60-75 LBS/1,000 SQUARE FEET AND ACTIVATED WITH 0.2 TO 0.4 INCHES OF WATER. THIS MATERIAL HAS BEEN FOUND TO BE BENEFICIAL FOR USE ON SMALL LAWN OR RENOVATION AREAS, SEEDED AREAS WHERE WEED-SEED FREE MULCH IS DESIRED, OR ON SITES WHERE STRAW MULCH AND TACKIFIER AGENT ARE NOT PRACTICAL OR DESIRABLE. APPLYING THE FULL 0.2 TO 0.4 INCHES OF WATER AFTER SPREADING PELLETIZED MULCH ON THE SEED BED IS EXTREMELY IMPORTANT FOR SUFFICIENT ACTIVATION AND EXPANSION OF THE MULCH TO PROVIDE SOIL COVERAGE.

5. IRRIGATION (WHERE FEASIBLE)

IF SOIL MOISTURE IS DEFICIENT SUPPLY NEW SEEDING WITH ADEQUATE WATER (A MINIMUM OF 1/4 INCH APPLIED UP TO TWICE A DAY UNTIL VEGETATION IS WELL ESTABLISHED). THIS IS ESPECIALLY TRUE WHEN SEEDINGS ARE MADE IN ABNORMALLY DRY OR HOT WEATHER OR ON DROUGHTY SITES.

6. TOPDRESSING

SINCE SOIL ORGANIC MATTER CONTENT AND SLOW RELEASE NITROGEN FERTILIZER (WATER INSOLUBLE) ARE PRESCRIBED IN SECTION 2A - SEEDBED PREPARATION IN THIS STANDARD, NO FOLLOW-UP OF TOPDRESSING IS MANDATORY. AN EXCEPTION MAY BE MADE WHERE GROSS NITROGEN DEFICIENCY EXISTS IN THE SOIL TO THE EXTENT THAT TURF FAILURE MAY DEVELOP. IN THAT INSTANCE, TOPDRESS WITH 10-10-10 OR EQUIVALENT AT 300 POUNDS PER ACRE OR 7 POUNDS PER 1,000 SQUARE FEET EVERY 3 TO 5 WEEKS UNTIL THE GROSS NITROGEN DEFICIENCY IN THE TURF IS AMELIORATED.

7. ESTABLISHING PERMANENT VEGETATIVE STABILIZATION

THE QUALITY OF PERMANENT VEGETATION RESTS WITH THE CONTRACTOR. THE TIMING OF SEEDING, PREPARING THE SEEDBED, APPLYING NUTRIENTS, MULCH AND OTHER MANAGEMENT ARE ESSENTIAL. THE SEED APPLICATION RATES IN TABLE 4-3 ARE REQUIRED WHEN A REPORT OF COMPLIANCE IS REQUESTED PRIOR TO ACTUAL ESTABLISHMENT OF PERMANENT VEGETATION. UP TO 50% REDUCTION IN APPLICATION RATES MAY BE USED WHEN PERMANENT VEGETATION IS ESTABLISHED PRIOR TO REQUESTING A REPORT OF COMPLIANCE FROM THE DISTRICT. THESE RATES APPLY TO ALL METHODS OF SEEDING. ESTABLISHING PERMANENT VEGETATION MEANS 80% VEGETATIVE COVER (OF THE SEEDED SPECIES) AND MOWED ONCE. NOTE THIS DESIGNATION OF MOWED ONCE DOES NOT GUARANTEE THE PERMANENCY OF THE TURF SHOULD OTHER MAINTENANCE FACTORS BE NEGLECTED OR OTHERWISE MISMANAGED. ULCH SHALL NOT BE MIXED IN THE TANK WITH SEED. USE IS LIMITED TO FLATTER SLOPES AND DURING OPTIMUM SEEDING PERIODS IN SPRING AND FALL.

NOTE:
ALL PAGE NUMBERS AND STANDARDS REFERENCES REFER TO "THE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY", JANUARY 2014, REVISED JULY 2017, BY THE NEW JERSEY STATE SOIL CONSERVATION COMMITTEE.

C:\CDT071\Engineering\Site Plans\C-DTLS.dwg\C-31-SESC DETAILS By: MBEKKELMAN

STANDARD FOR TEMPORARY VEGETATIVE COVER FOR SOIL STABILIZATION

DEFINITION

ESTABLISHMENT OF TEMPORARY VEGETATIVE COVER ON SOILS EXPOSED FOR PERIODS OF TWO TO 6 MONTHS WHICH ARE NOT BEING GRADED, NOT UNDER ACTIVE CONSTRUCTION OR NOT SCHEDULED FOR PERMANENT SEEDING WITHIN 60 DAYS.

PURPOSE

TO TEMPORARILY STABILIZE THE SOIL AND REDUCE DAMAGE FROM WIND AND WATER EROSION UNTIL PERMANENT STABILIZATION IS ACCOMPLISHED.

WATER QUALITY ENHANCEMENT

PROVIDES TEMPORARY PROTECTION AGAINST THE IMPACTS OF WIND AND RAIN, SLOWS THE OVER LAND MOVEMENT OF STORMWATER RUNOFF, INCREASES INFILTRATION AND RETAINS SOIL AND NUTRIENTS ON SITE, PROTECTING STREAMS OR OTHER STORMWATER CONVEYANCES.

WHERE APPLICABLE

ON EXPOSED SOILS THAT HAVE THE POTENTIAL FOR CAUSING OFF-SITE ENVIRONMENTAL DAMAGE.

METHODS AND MATERIALS

1. SITE PREPARATION

A. GRADE AS NEEDED AND FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, AND MULCH ANCHORING. ALL GRADING SHOULD BE DONE IN ACCORDANCE WITH STANDARDS FOR LAND GRADING, PG. 19-1.

B. INSTALL NEEDED EROSION CONTROL PRACTICES OR FACILITIES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, CHANNEL STABILIZATION MEASURES, SEDIMENT BASINS, AND WATERWAYS. SEE STANDARDS 11 THROUGH 42.

C. IMMEDIATELY PRIOR TO SEEDING, 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.).

2. SEEDBED PREPARATION

A. 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 AT THE RATE OF 2 TONS/ACRE UNLESS SOIL TESTING INDICATES OTHERWISE. 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.

B. WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH A DISC, SPRINGTOOTH HARROW, OR OTHER SUITABLE EQUIPMENT. THE FINAL HARROWING OR DISKING OPERATION SHOULD BE ON THE GENERAL CONTOUR. CONTINUE TILLAGE UNTIL A REASONABLE UNIFORM SEEDBED IS PREPARED.

C. INSPECT SEEDBED JUST BEFORE SEEDING. IF TRAFFIC HAS LEFT THE SOIL COMPACTED, THE AREA MUST BE RETILLED IN ACCORDANCE WITH THE ABOVE.

D. SOILS HIGH IN SULFIDES OR HAVING A PH OF 4 OR LESS REFER TO STANDARD FOR MANAGEMENT OF HIGH ACID PRODUCING SOILS, PG. 1-1.

3. SEEDING

A. SELECT SEED FROM RECOMMENDATIONS IN TABLE 7-2.

TABLE 7-2
TEMPORARY VEGETATIVE STABILIZATION GRASSES, SEEDING RATES, DATES AND DEPTH

SEED SELECTIONS	SEEDING RATES 1/ (POUNDS)		OPTIMUM SEEDING DATE 2/ BASED ON PLANT HARDINESS ZONE 3/			OPTIMUM SEED DEPTH 4/ (INCHES)
	PER ACRE	PER 1,000 SQ. FT.	ZONE 5B, 6S	ZONE 6B	ZONE 7A, B	
COOL SEASON GRASSES						
PERENNIAL RYEGRASS	100	1.0	3/15-6/1 8/1-9/15	3/1-5/15 8/15-10/1	2/15-5/1 8/15-10-15	0.5
***SPRING OATS	86	2.0	3/15-6/1 8/1-9/15	3/1-5/15 8/15-10/1	2/15-5/1 8/15-10/15	1.0
WINTER BARLEY	96	2.0	8/1-9/15	8/15-10/1	8/15-10/15	1.0
ANNUAL RYEGRASS	100	1.0	3/15-6/1 8/1-9/15	3/15-6/1 8/1-9/15	2/15-5/1 8/15-10/15	0.5
WINTER CEREAL RYE	112	2.8	8/1-11/1	8/1-11/15	8/1-12/15	1.0
WARM SEASON GRASSES						
PEARL MILLET	20	0.5	6/1-8/1	5/15-8/15	5/1-9/1	1.0
MILLET (GERMAN OR HUNGARIAN)	30	0.7	6/1-8/1	5/15-8/15	5/1-9/1	1.0

1 SEEDING RATE FOR WARM SEASON GRASS, SELECTIONS 5 - 7 SHALL BE ADJUSTED TO REFLECT THE AMOUNT OF PURE LINE SEED (PLS) AS DETERMINED BY A GERMINATION TEST RESULT. NO ADJUSTMENT IS REQUIRED FOR COOL SEASON GRASSES.
2 MAY BE PLANTED THROUGHOUT SUMMER IF SOIL MOISTURE IS ADEQUATE OR SEEDED AREA CAN BE IRRIGATED.
3 PLANT HARDINESS ZONE (SEE FIGURE 7-1, PG. 7-4.)
4 TWICE THE DEPTH FOR SANDY SOILS.

B. CONVENTIONAL SEEDING. APPLY 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, 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 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 IV MULCHING) 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 BE MAXIMIZED.

4. MULCHING

MULCHING IS REQUIRED ON ALL SEEDING. MULCH WILL INSURE AGAINST EROSION BEFORE GRASS IS ESTABLISHED AND WILL PROMOTE FASTER AND EARLIER ESTABLISHMENT. THE EXISTENCE OF VEGETATION SUFFICIENT TO CONTROL SOIL EROSION SHALL BE DEEMED COMPLIANCE WITH THIS MULCHING REQUIREMENT.

A. STRAW OR HAY. UNROTTED SMALL GRAIN STRAW, HAY FREE OF SEEDS, 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.

APPLICATION. SPREAD MULCH UNIFORMLY BY HAND OR MECHANICALLY SO THAT APPROXIMATELY 95% OF THE SOIL SURFACE WILL BE COVERED. FOR UNIFORM DISTRIBUTION OF HAND-SPREAD MULCH, DIVIDE AREA INTO APPROXIMATELY 1,000 SQUARE FEET SECTIONS AND DISTRIBUTE 70 TO 90 POUNDS WITHIN EACH SECTION.

ANCHORING SHALL BE ACCOMPLISHED IMMEDIATELY AFTER PLACEMENT TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS, DEPENDING UPON THE SIZE OF THE AREA, STEEPNESS OF SLOPES, AND COSTS.

1. PEG AND TWINE. DRIVE 8 TO 10 INCH WOODEN PEGS TO WITHIN 2 TO 3 INCHES OF THE SOIL SURFACE EVERY 4 FEET IN ALL DIRECTIONS. STAKES MAY BE DRIVEN BEFORE OR AFTER APPLYING MULCH. SECURE MULCH TO SOIL SURFACE BY STRETCHING TWINE BETWEEN PEGS IN A CRIS-CROSS AND A SQUARE PATTERN. SECURE TWINE AROUND EACH PEG WITH TWO OR MORE ROUND TURNS.

2. MULCH NETTINGS. STAPLE PAPER, JUTE, COTTON, OR PLASTIC NETTINGS TO THE SOIL SURFACE. USE A DEGRADABLE NETTING IN AREAS TO BE MOWED.

3. CRIMPER (MULCH ANCHORING TOOL). A TRACTOR-DRAWN IMPLEMENT, SOMEWHAT LIKE A DISC HARROW, ESPECIALLY DESIGNED TO PUSH OR CUT SOME OF THE BROADCAST LONG FIBER MULCH 3 TO 4 INCHES INTO THE SOIL SO AS TO ANCHOR IT AND LEAVE PART STANDING UPRIGHT. THIS TECHNIQUE IS LIMITED TO AREAS TRAVERSABLE BY A TRACTOR, WHICH MUST OPERATE ON THE CONTOUR OF SLOPES. STRAW MULCH RATE MUST BE 3 TONS PER ACRE. NO TACKIFYING OR ADHESIVE AGENT IS REQUIRED.

4. LIQUID MULCH-BINDERS. - MAY BE USED TO ANCHOR HAY OR STRAW MULCH.

A. APPLICATIONS SHOULD BE HEAVIER AT EDGES WHERE WIND MAY CATCH THE MULCH, IN VALLEYS, AND AT CRESTS OF BANKS. THE REMAINDER OF THE AREA SHOULD BE UNIFORM IN APPEARANCE.

B. USE ONE OF THE FOLLOWING:

(1) ORGANIC AND VEGETABLE BASED BINDERS - NATURALLY OCCURRING, POWDER BASED, HYDROPHILIC MATERIALS WHEN MIXED WITH WATER FORMULATES A GEL AND WHEN APPLIED TO MULCH UNDER SATISFACTORY CURING CONDITIONS WILL FORM MEMBRANED NETWORKS OF INSOLUBLE POLYMERS. THE VEGETABLE GEL SHALL BE PHYSIOLOGICALLY HARMLESS AND NOT RESULT IN A PHYTOTOXIC EFFECT OR IMPEDE GROWTH OF TURFGRASS. USE AT RATES AND WEATHER CONDITIONS AS RECOMMENDED BY THE MANUFACTURER TO ANCHOR MULCH MATERIALS. MANY NEW PRODUCTS ARE AVAILABLE, SOME OF WHICH MAY NEED FURTHER EVALUATION FOR USE IN THIS STATE.

(2) SYNTHETIC BINDERS - HIGH POLYMER SYNTHETIC EMULSION, MISCIBLE WITH WATER WHEN DILUTED AND FOLLOWING APPLICATION TO MULCH, DRYING AND CURING SHALL NO LONGER BE SOLUBLE OR DISPERSIBLE IN WATER. IT SHALL BE APPLIED AT RATES RECOMMENDED BY THE MANUFACTURER AND REMAIN TACKY UNTIL GERMINATION OF GRASS.

NOTE: ALL NAMES GIVE ABOVE ARE REGISTERED TRADE NAMES. THIS DOES NOT CONSTITUTE A COMMENDATION OF THESE PRODUCTS TO THE EXCLUSION OF OTHER PRODUCTS.

B. 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 PONDS PER ACRE (OR AS RECOMMENDED BY THE PROJECT 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.

C. PELLETIZED MULCH. COMPRESSED AND EXTRUDED PAPER AND/OR WOOD FIBER PRODUCT, WHICH MAY CONTAIN CO-POLYMERS, TACKIFIERS, FERTILIZERS AND COLORING AGENTS. THE DRY PELLETS, WHEN APPLIED TO A SEEDED AREA AND WATERED, FORMA MULCH MAT. PELLETIZED MULCH SHALL BE APPLIES IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS. MULCH MAY BE APPLIED BY HAND OR MECHANICAL SPREADER AT THE RATE OF 60-75 LBS./1,000 SQUARE FEET AND ACTIVATED WITH 0.2 TO 0.4INCHES OF WATER. THIS MATERIAL HAS BEE FOUND TO BE BENEFICIAL FOR USE ON SMALL LAWN OR RENOVATION AREAS, SEEDED AREAS WHERE WEED-SEED FREE MULCH IS DESIRED OR ON SITES WHERE STRAW MULCH AND TACKIFIER AGENT ARE NOT PRACTICAL OR DESIRABLE.

APPLYING THE FULL 0.2 TO 0.4 INCHES OF WATER AFTER SPREADING PELLETIZED MULCH ON THE SEED BED IS EXTREMELY IMPORTANT FOR SUFFICIENT ACTIVATION AND EXPANSION OF THE MULCH TO PROVIDE SOIL COVERAGE.

DUST CONTROL NOTES

THE FOLLOWING METHODS SHOULD BE CONSIDERED FOR CONTROLLING DUST:

MULCHES	SEE STANDARD FOR STABILIZATION WITH MULCHES ONLY. (PAGE 5-1 OF "STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY", LATEST EDITION)
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 6-1 OF "STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY", LATEST EDITION).
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	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 26-1 OF "STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY", LATEST EDITION)		
ACIDULATED SOY BEAN SOAP STICK	NONE	COARSE SPRAY	1200

TILLAGE	TO ROUGHEN SURFACE AND BRING CLODS TO THE SURFACE. THIS IS A TEMPORARY EMERGENCY 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.
SPRINKLING	SITE IS SPRINKLED UNTIL THE SURFACE IS WET.
BARRIERS	SOLID BOARD FENCES, SNOW FENCES, BURLAP FENCES, CRATE WALLS, BALES OF HAY, AND SIMILAR MATERIAL CAN BE USED TO CONTROL AIR CURRENTS AND SOIL BLOWING.
CALCIUM CHLORIDE	SHALL BE IN THE FORM OF LOOSE, DRY GRANULATES OF FLAKES FINE ENOUGH TO FEED THROUGH 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.
STONE	COVER SURFACE WITH CRUSHED STONE OR COARSE GRAVEL.

CONSTRUCTION SEQUENCE

IMPLEMENTATION OF SOIL EROSION & SEDIMENT CONTROL MEASURES INCLUDING:	
- INLET FILTERS	1 DAY
CONSTRUCT IMPROVEMENTS:	
- SITE CLEARING	3 DAYS
- COMPLETE MILLING OPERATIONS	2 WEEKS
- COMPLETE GRADING	2 WEEKS
- INSTALL CURBING AND DRAINAGE IMPROVEMENTS	3 WEEKS
- INSTALL CURB RAMPS	2 WEEKS
- PAVEMENT IMPROVEMENTS	2 WEEKS
- UNIFORMLY APPLY TOPSOIL TO AVERAGE DEPTH OF 5", MINIMUM OF 4", FIRMED IN PLACE	1 DAY
- TOPSOILING, FERTILIZING, SEEDING AND STRAW MULCHING	1 DAY
- REMOVAL OF SOIL EROSION & SEDIMENT CONTROL MEASURES	1 DAY

NOTE: TOTAL ESTIMATED PROJECT DURATION: 12 WEEKS

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

STOCKPILE

1. ALL EXCAVATED MATERIAL SHALL BE DISPOSED OF OFF-SITE. NO EXCAVATED MATERIAL SHALL BE STOCKPILED AND STORED WITHIN THE PROJECT LIMITS.

TOTAL PROJECT AREA OF DISTURBANCE = 146,045 SF OR 3.35 ACRES

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CONSTRUCTION PLANS

FOR

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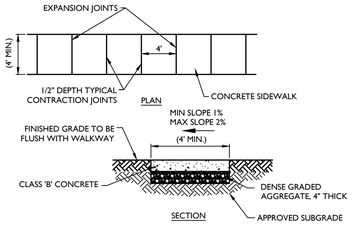
AS SHOWN	12/23/20	MIB	PWJ

PROJECT NUMBER: CDT071
DRAWING NAME: C-DTLS

SHEET TITLE:
SOIL EROSION &
SEDIMENT CONTROL
NOTES

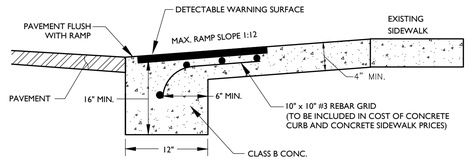
SHEET NUMBER:
31 of 43

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.



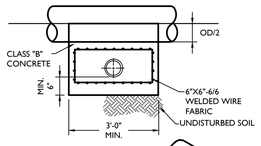
NOTES:
1. THE CONTRACTOR SHALL PROVIDE MIN. CROSS SLOPE 1%, MAX. CROSS SLOPE 2% IN THE PREDOMINANT DIRECTION OF THE EXISTING GRADE.
2. CURB AND SIDEWALK CONCRETE TO BE N.J.D.O.T. CLASS "B" AIR-ENTRAINED.
3. PROVIDE PERFORMED BITUMINOUS FIBER EXPANSION JOINTS 1/2" THICK, AT 12'-0" INTERVALS. PROVIDE DUMMY 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.
5. ANY EXCAVATION BELOW DESIRED GRADE DUE TO OVER EXCAVATION OR WET SOIL CONDITIONS SHALL BE BACKFILLED WITH DENSE GRADED AGGREGATE. ALL SUBGRADES SHALL BE REVIEWED AND APPROVED BY THE ENGINEER AFTER REMOVAL OF THE EXISTING SIDEWALK BUT BEFORE PLACING AND COMPACTION OF DENSE GRADED AGGREGATE.

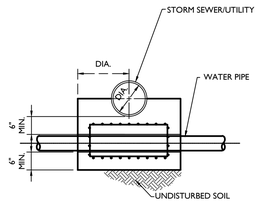
CONCRETE SIDEWALK, 4" THICK
N.T.S.

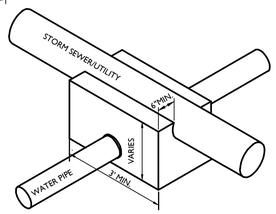


NOTES:
1. NO SEPARATE PAYMENT WILL BE MADE FOR REBAR/CONCRETE REINFORCEMENT. COSTS TO BE INCLUDED IN VARIOUS PROPOSAL ITEMS.
2. FLUSH CURBS AT HANDICAP RAMPS SHALL BE POURED MONOLITICALLY WITH HANDICAP RAMP. FLUSH BELGIAN BLOCK CURB IS NOT ACCEPTABLE.

HANDICAP RAMP DETAIL
N.T.S.



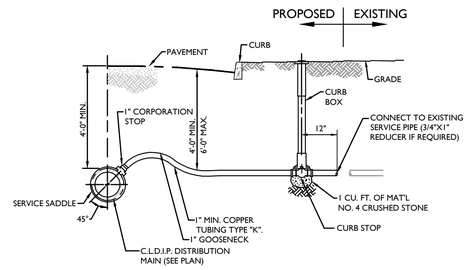




NOTES:

1, TO BE CONSTRUCTED WHERE SHOWN ON THE PLANS OR WHERE CLEARANCE BETWEEN SANITARY SEWER PIPE AND WATER MAIN IS LESS THAN 10' HORIZONTAL AND 18" VERTICALLY OR AS DIRECTED IN THE FIELD BY THE ENGINEER.

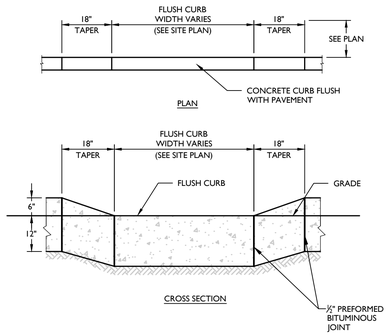
CONCRETE ENCASEMENT
N.T.S.



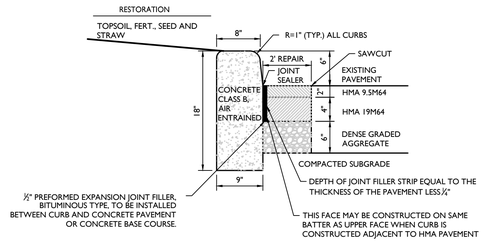
NOTES:

1. SERVICE PIPE TO BE 1" MINIMUM TYPE K, SOFT COPPER TUBING
2. CORP STOP TO BE 1" MUELLER 300 BALL CORPORATION VALVE, #B-25008 OR
3. CURB STOP TO BE 1" MUELLER 300 BALL CURB VALVE, #B-25209N.
4. CURB BOX TO BE CAST IRON, SCREW TYPE, 2" INSIDE DIAMETER MIN.
5. ALL FITTINGS SHALL BE FLARED END CONNECTION TYPE.
6. SERVICE SADDLE TO BE MUELLER H-13000 SERIES 2 PIECE SERVICE SADDLE. APPROVED EQUAL.
7. SEPARATE PAYMENT WILL NOT BE MADE FOR SAW CUTTING, EXCAVATION AND BACKFILL, REMOVAL OF EXISTING ABANDONED UTILITIES, PIPE BEDDING, DEWATERING, ABANDONMENT OF EXISTING WATER UTILITIES OR REMOVAL IF REQUIRED, TRENCH PROTECTION, TEMPORARY SURFACE RESTORATION INCLUDING TEMPORARY PAVING, TRAFFIC STRIPES, PERMANENT RESTORATION OF NON-ROAD AREAS, TOPSOILING, SEEDING, FERTILIZING AND STRAW MULCHING, CURB, DRIVEWAY, SIDEWALK, FENCE, LANDSCAPING, FITTINGS, BENDS, COUPLINGS, TEMPORARY SHUTDOWNS, RESTRAINTS, RETAINER GLANDS, THRUST BLOCKS, VALVES, VALVE BOXES, SERVICE SADDLES, CORPORATION STOPS, TAPPING SLEEVES, DETECTABLE WARNING TAPE, TRACER WIRE, TRACER BOXES, TEST PITS, DISINFECTION OR TESTING. ALL COSTS TO BE INCLUDED IN THE VARIOUS ITEMS SCHEDULED IN THE PROPOSAL.

TYPICAL WATER SERVICE RECONNECTION, 2" AND UNDER
N.T.S.

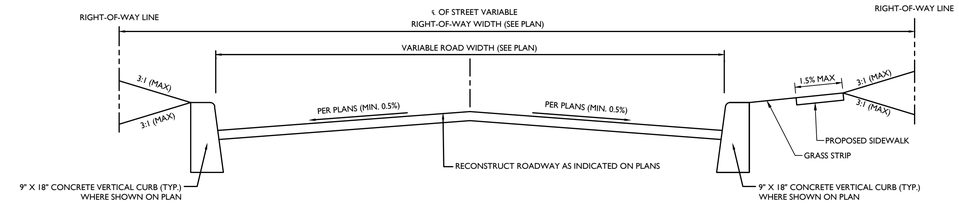


CONCRETE FLUSH CURB
N.T.S.



NOTES:
1. TRAVERSE JOINTS,1/2" WIDE SHALL BE INSTALLED IN THE CURB 20 FEET APART AND SHALL BE FILLED WITH PREFORMED BITUMINOUS-IMPREGNATED FIBER JOINT FILLER RECESSED 1/4" IN FROM FRONT FACE AND TOP OF CURB.
2. EXPANSION JOINTS THRU AND ADJACENT TO THE CURB SHALL BE INCLUDED IN THE UNIT PRICE FOR THE CURB. PROVIDE DUMMY JOINTS (FORMED) MIDWAY BETWEEN EXPANSION JOINTS.
3. FULL DEPTH REPAIR STRIP WITHIN ROADWAY TO BE PAID FOR UNDER HOT MIX ASPHALT PAVEMENT REPAIR ITEM.
4. CONTRACTOR SHALL APPLY TACK COAT PRIOR TO PAVING AS REQUIRED. NO SEPARATE PAYMENT SHALL BE MADE FOR TACK COAT AND PRIME COAT, INCLUDE COST IN VARIOUS ITEMS IN THE PROPOSAL.

9" X 18" CONCRETE VERTICAL CURB
N.T.S.

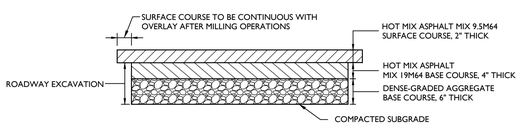


ASPHALT TYPE	MINIMUM COMPACTED THICKNESS	MAXIMUM COMPACTED THICKNESS
HOT MIX ASPHALT 9.5M64	1.5" LEVELING COURSE, 2" SURFACE COURSE	4"

INSTRUCTIONS:

- AFTER MILLING, PERFORM BASE REPAIR AS DIRECTED IN THE FIELD BY THE ENGINEER, PRIOR TO OVERLAYING SURFACE;
- TO DETERMINE BASE REPAIR, THE CONTRACTOR SHALL ROLL THE ROAD TO DETERMINE THE CONDITION OF THE BASE COURSE. SOFT SPOTS AND UNSUITABLE ROAD BASE SHALL BE REPAIRED. SAW CUT, REMOVE AND REPLACE HMA AND AGGREGATE AS REQUIRED. CONSTRUCT NEW AGGREGATE AND BASE COURSE TO MEET EXISTING DEPTHS. SEE FULL DEPTH BASE REPAIR DETAIL.
- WHEN PROPOSED HMA SURFACE IS 0" - 2" ABOVE EXISTING HMA SURFACE COURSE, MILL EXISTING HMA SURFACE COURSE TO ACHIEVE 2" BETWEEN EXISTING HMA SURFACE COURSE AND PROPOSED SURFACE. INSTALL 9.5M64 2" COMPACTED LIFT THICKNESS.
- WHEN PROPOSED HMA SURFACE IS 2" - 4" ABOVE EXISTING HMA SURFACE COURSE, INSTALL 9.5M64 2" - 4" COMPACTED LIFT THICKNESS. LIFTS MAY BE SEPARATED INTO MULTIPLE THINNER LIFTS AS LONG AS MINIMUM COMPACTED THICKNESSES ARE ADHERED TO. PERFORM CRACK SEALING AND BASE REPAIR AS DIRECTED IN THE FIELD BY THE ENGINEER, PRIOR TO OVERLAYING SURFACE;
- WHEN PROPOSED SURFACE IS 4" - 5" ABOVE EXISTING HMA SURFACE COURSE, INSTALL TWO LIFTS OF 9.5M64, ADHERING TO MINIMUM AND MAXIMUM COMPACTED LIFT THICKNESS DESCRIBED ABOVE;
- WHEN PROPOSED HMA SURFACE IS 5" - 10" ABOVE EXISTING HMA SURFACE COURSE, INSTALL A LIFT OF 19M96 AND A LIFT OF 9.5M64, ADHERING TO MINIMUM AND MAXIMUM COMPACTED LIFT THICKNESS DESCRIBED ABOVE. LIFTS MAY BE SEPARATED INTO MULTIPLE THINNER LIFTS AS LONG AS MINIMUM COMPACTED THICKNESSES ARE ADHERED TO;
- INSTALLATION OF HMA SHALL BE REIMBURSED BY THE TON FOR THE HMA INSTALLED. NO SEPARATE PAYMENT SHALL BE MADE FOR INSTALLING MULTIPLE LIFTS OF HMA. INCLUDE COSTS IN HOT MIX ASPHALT PAY ITEMS.
- CONTRACTOR SHALL APPLY TACK COAT PRIOR TO PAVING AS REQUIRED. NO SEPARATE PAYMENT SHALL BE MADE FOR TACK COAT AND PRIME COAT, INCLUDE COST IN VARIOUS ITEMS IN THE PROPOSAL.

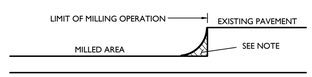
TYPICAL ROAD SECTION
N.T.S.



NOTES:

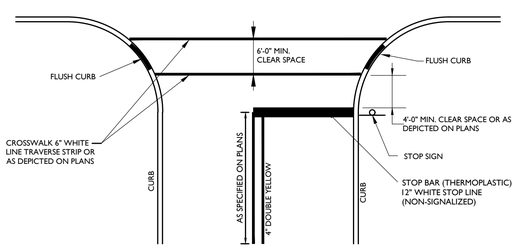
1. THE CONTRACTOR SHALL COMPLETE HOT MIX ASPHALT PAVEMENT REPAIRS. HOT MIX ASPHALT PAVEMENT REPAIRS SHALL CONSIST OF SAWCUTTING, ROADWAY EXCAVATION, BACKFILL AND COMPACTION OF DENSE-GRADED AGGREGATE BASE AND HOT MIX ASPHALT 19M64 BASE COURSE. THE COST TO SAWCUT THE PERIMETER OF FULL DEPTH REPAIRS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE PAY ITEM HOT MIX ASPHALT PAVEMENT REPAIRS.
2. THE PROPOSED SURFACE COURSE SHALL NOT BE INCLUDED IN THE WORK ASSOCIATED WITH HMA PAVEMENT REPAIR. THE PROPOSED SURFACE COURSE SHALL BE PLACED IN ACCORDANCE WITH THE ITEM 'HOT MIX ASPHALT 9.5 M 64 SURFACE COURSE, 2" THICK'.
3. ALL COSTS ASSOCIATED WITH HOT MIX ASPHALT PAVEMENT REPAIRS, SHALL INCLUDE THE FOLLOWING WORK:
   - SAWCUTTING
   - EXCAVATION, UNCLASSIFIED
   - DENSE-GRADED AGGREGATE BASE COURSE, 6" THICK
   - HOT MIX ASPHALT BASE COURSE, MIX 19M64 (4" THICK)

HOT MIX ASPHALT PAVEMENT REPAIR
N.T.S.



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

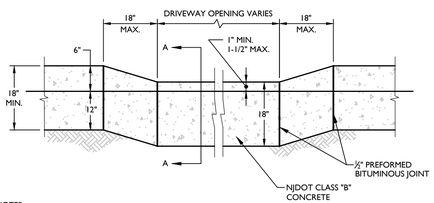
END TREATMENT FOR MILLING OPERATIONS DETAIL
N.T.S.



NOTES:

1. THE CONTRACTOR SHALL CONSTRUCT ROADWAY STRIPING AS INDICATED WITHIN THE CONSTRUCTION PLANS. PRIOR TO INSTALLATION, THE CONTRACTOR SHALL OBTAIN APPROVAL OF THE STRIPING LOCATION FROM THE MUNICIPAL TRAFFIC SAFETY BUREAU AND ENGINEER.
2. ALL TRAFFIC STRIPES AND MARKINGS SHALL BE THERMOPLASTIC.

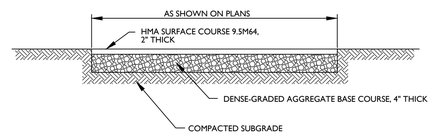
CROSSWALK & STOP BAR LINE DETAIL
N.T.S.



NOTES:

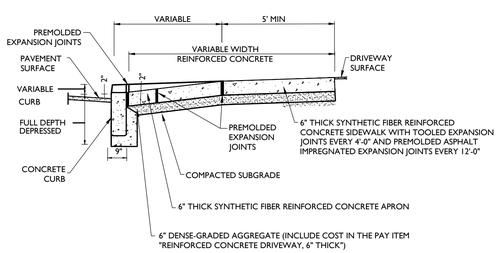
1. DEPRESSED VERTICAL CURB AT DRIVEWAY AND RAMP AREAS SHALL BE FULL DEPTH OF 18".

9"X18" DEPRESSED CONCRETE VERTICAL CURB
N.T.S.



NOTES:
1. 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.
2. PAYMENT FOR ALL ITEMS AND WORK INCLUDED IN THE CONSTRUCTION OF HOT MIX ASPHALT DRIVEWAYS SHALL BE PAID FOR UNDER THE ITEM "HOT MIX ASPHALT DRIVEWAY, 6" THICK".
3. SAWCUT, REMOVAL, AND DISPOSAL OF EXISTING DRIVEWAY SURFACE AND SUBSOILS FOR DRIVEWAY REPAIR SHALL BE PAID FOR UNDER THE ITEM "CLEARING SITE".

HOT MIX ASPHALT DRIVEWAY, 6" THICK
N.T.S.



SECTION

NOTES:

1. CONCRETE PAD SHALL BE 6" THICK FIBER REINFORCED CONCRETE, WITH A 28 DAY COMPRESSIVE STRENGTH OF 4,500 PSI AND INCLUDE 6" THICK DENSE GRADED AGGREGATE BEDDING ON COMPACTED SUBGRADE.
2. CONCRETE SLAB SHALL INCLUDE SYNTHETIC FIBER REINFORCEMENT.
3. SYNTHETIC FIBER REINFORCEMENT SHALL BE FIBRILLATED POLYPROPYLENE MICRO-FIBER, PSI FIBERSTRAND F, AS MANUFACTURED BY EUCLID CHEMICAL, OR APPROVED EQUAL.
4. SYNTHETIC FIBER DOSAGE RATE SHALL BE 1.5 LBS/CY.
5. CONCRETE SHALL HAVE BROOM FINISH.

CONCRETE DRIVEWAY, REINFORCED 6" THICK
N.T.S.

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REV	DATE	DRAWN BY	DESCRIPTION
-	-	-	-

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

ELM STREET AREA DRAINAGE IMPROVEMENTS

TOWNSHIP OF CRANFORD
UNION COUNTY
NEW JERSEY

Colliers Engineering & Design
MT. ARLINGTON
400 Valley Road, Suite 304
Mt. Arlington, NJ 07856
Phone: 973.398.3110
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AS SHOWN	12/23/20	MIB	PWJ

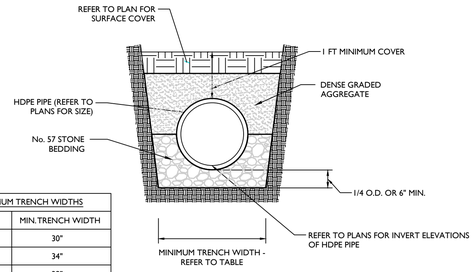
PROJECT NUMBER:	DRAWING NAME:
CDT071	C-DTLS

SHEET TITLE:
CONSTRUCTION DETAILS

SHEET NUMBER:
32 of 43

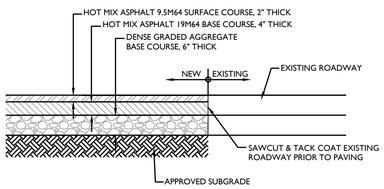
NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

By: MBEKKELMAN
CCD7071/Engineering/Site Plans/C-DTLS.dwg/C-33-DETAILS



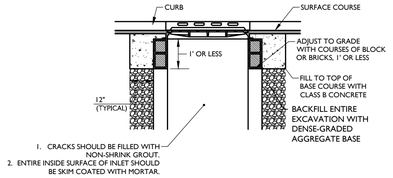
MINIMUM TRENCH WIDTHS	
PIPE DIAM.	MIN.TRENCH WIDTH
12"	30"
15"	34"
18"	39"
24"	48"

HDPE PIPE BEDDING DETAIL
N.T.S.

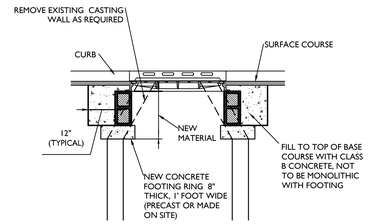


NOTES:
1. ANY EXCAVATION BELOW DESIRED GRADE DUE TO OVER EXCAVATION OR UNSUITABLE SOIL CONDITIONS SHALL BE BACKFILLED WITH DENSE GRADED AGGREGATE. ALL SUBGRADES SHALL BE REVIEWED AND APPROVED BY THE ENGINEER PRIOR TO INSTALLING PAVEMENT REPAIR.
2. CONTRACTOR IS TO SUBMIT A PAVING PLAN TO THE ENGINEER PRIOR TO CONSTRUCTION.
3. MATERIALS AND METHODS USED SHALL COMPLY WITH NJDOT SPECIFICATIONS.
4. HMA PAVEMENT REPAIR SHALL CONSIST OF SAWCUTTING, ROADWAY EXCAVATION, BACKFILL AND COMPACTION OF DENSE-GRADED AGGREGATE BASE AND HOT MIX ASPHALT 19M64 BASE COURSE.
5. THE PROPOSED SURFACE COURSE SHALL NOT BE INCLUDED IN THE WORK ASSOCIATED WITH HMA PAVEMENT REPAIR. THE PROPOSED SURFACE COURSE SHALL BE PLACED IN ACCORDANCE WITH THE ITEM, HOT MIX ASPHALT SURFACE COURSE, MIX 9.5M64, 2" THICK.

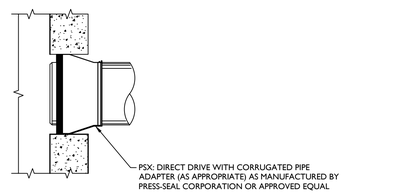
FULL DEPTH CONCRETE PAVEMENT REPAIR, HMA
N.T.S.



RESET EXISTING CASTING (INLET)
N.T.S.

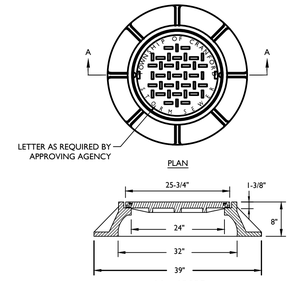


RECONSTRUCTED INLET OR MANHOLE, USING EXISTING CASTING
N.T.S.



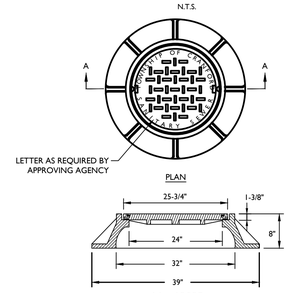
NOTE: PIPE TO CONCRETE STRUCTURE CONNECTOR SHALL MEET THE REQUIREMENTS OF ASTM C-923. THIS CONNECTION IS TO BE USED IN ALL MANHOLES AND INLETS.

PIPE TO CONCRETE STRUCTURE CONNECTOR
N.T.S.



NOTES:
1. NEW MANHOLE CASTING TO BE PATTERN NO. 1203B AS MANUFACTURED BY CAMPBELL FOUNDRY COMPANY OR APPROVED EQUAL.
2. ALL MANHOLE FRAMES AND COVERS SHALL BE MADE IN THE USA.

STANDARD MANHOLE COVER/FRAMES
N.T.S.



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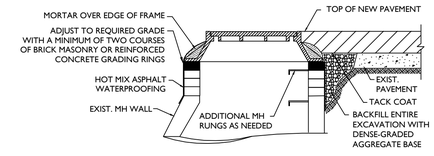
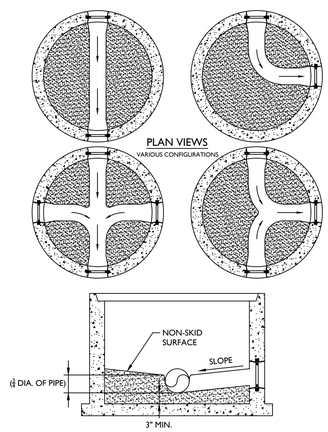
N.T.S.



NOTES: FRAMES AND COVERS: CAST IRON MINIMUM CLASS 25 CONFORMING TO ASTM A48, AND AS FOLLOWS:
1. CASTINGS TO BE FREE FROM SCALE, LUMPS, BLISTERS AND SANDHOLES.
2. MACHINE CONTACT SURFACES TO PREVENT ROCKING.
3. THOROUGHLY CLEAN AND HAMMER INSPECT.
4. CAPABLE OF WITHSTANDING AASHTO H-20 LOADING UNLESS OTHERWISE INDICATED OR SPECIFIED.
5. COVERS FOR SEWER MANHOLES SHALL BE MARKED "SEWER".
6. COVERS FOR DRAIN MANHOLES SHALL BE MARKED "DRAIN".
7. STANDARD MANHOLE FRAMES AND COVERS SHALL BE PATTERN No.1202B AS MANUFACTURED BY CAMPBELL FOUNDRY COMPANY OR APPROVED EQUAL

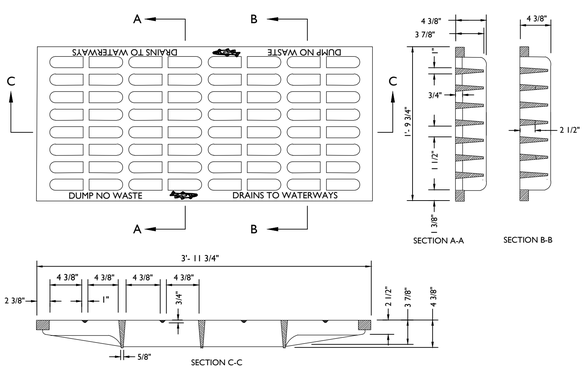
BITUMINOUS WATERPROOFING MATERIAL:
1. H.B. TNEMECOL 46-465, BY TNEMEC COMPANY.
2. AMERCOAT 78HB, BY AMERON INTERNATIONAL.
3. BITUMASTIC SUPER SERVICE BLACK, BY CARBOLINE OR ACCEPTABLE EQUIVALENT PRODUCT.

RESET EXISTING CASTING (MANHOLE)
N.T.S.



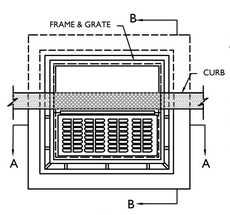
NOTE:
1. THE INVERT SHALL BE PRECAST OR FORMED IN THE FIELD USING PRECISION FORMS TO CREATE A SMOOTH, ACCURATE CHANNEL THAT MINIMIZES TURBULENCE AND RESULTS IN OPTIMUM FLOW

TYPICAL BENCHING CROSS SECTIONS
N.T.S.

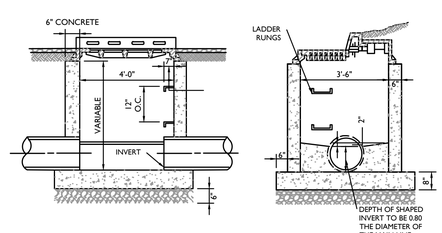


BICYCLE SAFE GRATE
(PHASE II STORM WATER COMPLIANT GRATE)
(CAMPBELL FOUNDRY PATTERN NO. 2618 OR APPROVED EQUAL)

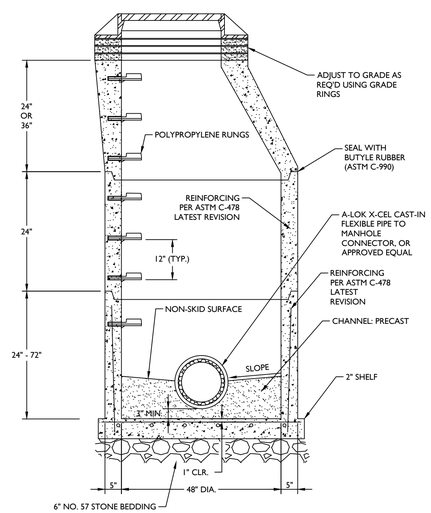
BICYCLE SAFE GRATE DETAIL
N.T.S.



NOTES:
1. INVERTS TO BE ELIMINATED IN BOTTOM OF TERMINAL INLETS AND BOTTOMS SHALL BE DISHED AND SLOPED TOWARDS THE OUTLET PIPE AT A RATE OF GRADE OF 2 INCHES PER FOOT.
2. PROVIDE COPOLYMER PLASTIC, STEEL REINFORCED LADDER RUNGS
3. INLET FRAME AND GRATE TO BE CAMPBELL FOUNDRY PATTERN NO. 2618 OR APPROVED EQUAL.
4. WHEN ADDITIONAL DEPTH IS SCHEDULED, WALLS BELOW THE DEPTH OF 8'-0" MEASURED FROM THE TOP OF GRATE TO INVERT, SHALL BE 12" THICK. THE FOUNDATION DIMENSION SHALL BE INCREASED 12" IN WIDTH AND 12" IN DEPTH.



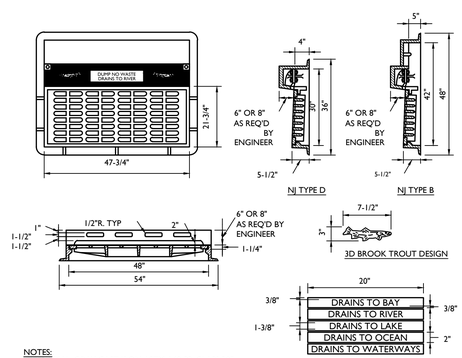
TYPE 'B' INLET DETAIL
N.T.S.



GENERAL MANHOLE NOTES:

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

STORM MANHOLE
N.T.S.



NOTES:
1. MATERIAL: GRAY CAST IRON ASTM A48-83, CLASS 30B
2. AASHTO HS20-44 HIGHWAY LOADING
3. SUPPLIED WITHOUT SURFACE COATING

CURB PIECE (TYPE 'N') 6"
CAMPBELL FOUNDRY COMPANY PATTERN NO. 2618 OR APPROVED EQUAL
N.T.S.

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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
ELM STREET AREA DRAINAGE IMPROVEMENTS

TOWNSHIP OF CRANFORD
UNION COUNTY
NEW JERSEY

Colliers Engineering & Design
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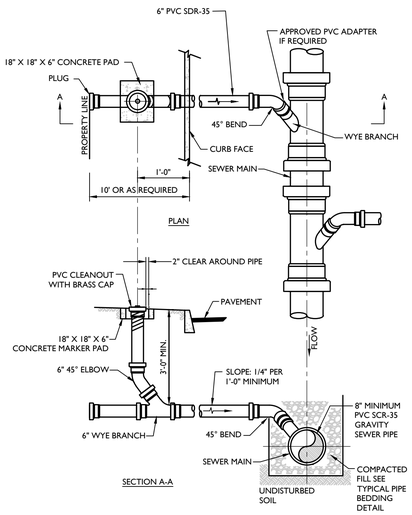
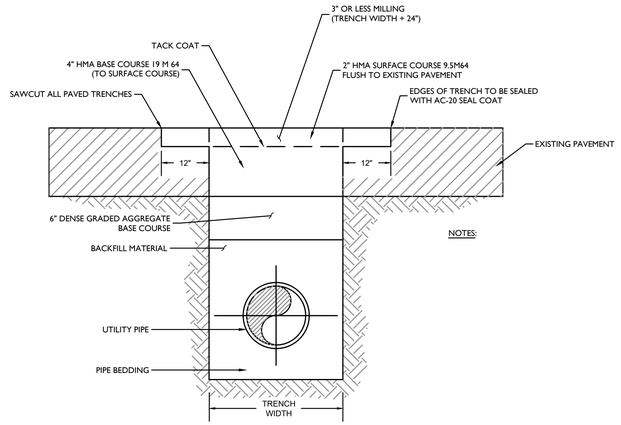
AS SHOWN	12/23/20	MIB	PWJ
PROJECT NUMBER: CDT071	DRAWING NAME: C-DTLS		

SHEET TITLE:
CONSTRUCTION DETAILS



SANITARY SEWER LATERAL & CLEANOUT DETAIL
N.T.S.



NOTES:

1. IN PAVED ROADWAY AREAS, THE TRENCH SURFACE SHALL BE RESTORED TO ALLOW FOR VEHICULAR TRAFFIC OVER THE TRENCH DURING NON-WORK HOURS. ALL COSTS ASSOCIATED WITH TEMPORARY SURFACE RESTORATION WILL NOT BE MEASURED FOR SEPARATE PAYMENT AND SHALL BE INCLUDED IN THE VARIOUS ITEMS SCHEDULED IN THE PROPOSAL.
2. ALL TRENCHES TO BE SAW-CUT.
3. DISTURBED TRAFFIC STRIPING AND MARKINGS SHALL BE REPLACED WITH EPOXY AND THERMOPLASTIC, RESPECTIVELY, PER NJDOT SPECIFICATIONS, AS NECESSARY.
4. THE ABOVE DEPICTED DETAIL IS APPLICABLE TO TEST PITS.
5. TEMPORARY RESTORATION SHALL INCLUDE DGA TO GRADE ON A DAILY BASIS AND BASE PAVING TO GRADE ON A WEEKLY BASIS. THE CONTRACTOR MAY INSTALL BASE COURSE PAVING TO GRADE ON A DAILY BASIS AT NO ADDITIONAL COST TO THE OWNER.
6. CONTRACTOR SHALL MILL AND CONSTRUCT FINAL PAVING AFTER BASE COURSE PAVING, AT A TIME AND DATE AGREED TO BY THE ENGINEER.

PAVEMENT RESTORATION DETAIL
N.T.S.

36" X 36"

NOTE: SIGN TO BE IN FLUORESCENT YELLOW/GREEN

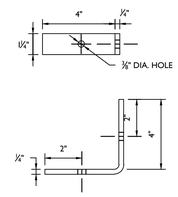
W11-2 SIGN DETAIL
N.T.S.

24" X 12"

W16-7P(L) PLAQUE DETAIL
N.T.S.

PROPOSED SIGN LEGEND

W11-2	PEDESTRIAN WARNING SIGN	36" X 36"
W16-7PL	DOWNWARD DIAGONAL ARROW PLAQUE (LEFT)	24" X 12"



BRACKET FOR SIDE MOUNT WS SIGNS DETAIL
N.T.S.

SIGN NOTES:

1. 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 R2-1 SIGN.
5. DISTANCE LEGEND: SIGN NUMBER FOLLOWED BY LETTER & DISTANCE

LETTER	DISTANCE
A	1500'
B	1000'
C	500'
D	___MILE
E	___MILES AHEAD
F	AHEAD

BACKING MATERIAL:

1. 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:

1. 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" x 6"

   TWO POSTS = 3" x 6" OR 4" x 5"

   THREE POSTS = 3" x 5" OR 4" x 4"

   4" X 6" WOOD POSTS SHALL BE MODIFIED BY DRILLING 1/2 INCH DIAMETER HOLES 4 INCHES AND 18 INCHES ABOVE THE GROUND LINE AND PERPENDICULAR TO THE ROADWAY CENTERLINE.
3. 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.
5. 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.

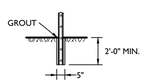
SIGN FACES:

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

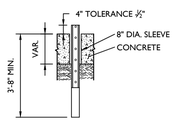
FASTENING:

1. ALL SIGNS SHALL BE SECURELY FASTENED TO THEIR SUPPORTS WITH BOLTS, NUTS AND WASHERS IN ACCORDANCE WITH THE SPECIFICATIONS.

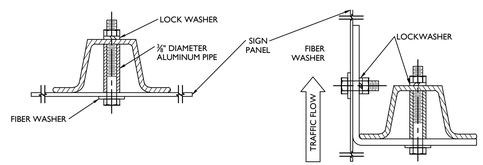
SIGN NOTES
N.T.S.



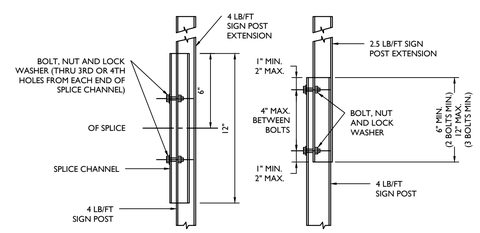
ROCK INSTALLATION DETAIL
N.T.S.



CONCRETE INSTALLATION DETAIL
N.T.S.



FRONT MOUNT
SIDE MOUNT
MOUNTING BRACKET DETAIL
N.T.S.



SIGN POST EXTENSION SPLICE DETAILS
N.T.S.

SIGN POST NOTES:

1. 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" LATEST EDITION AND AS INDICATED BELOW.
2. ALL SMALL SIGN SUPPORTS SHALL BE OF THE BREAKAWAY TYPE WITH THE EXCEPTION OF THOSE INSTALLED BEHIND GUIDE RAIL OR OTHER ROADSIDE BARRIER.
3. ALL STEEL POSTS AND BRACKETS SHALL BE CUT, BENT, AND HOLES PUNCHED AND DRILLED BEFORE GALVANIZING. GALVINIZING SHALL BE IN CONFORMANCE WITH ASTM A123.
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.
5. SIGN PANEL SIZES SHALL DETERMINE POST TYPE AND NUMBER AS SHOWN ON THIS SHEET.
6. BOLTS SHALL NOT PROTRUDE MORE THAN 1/2" BEYOND THE NUT WHEN TIGHT, BUT SHALL ENGAGE ALL THREADS IN THE NUT.
7. 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 SIGN PANEL MUST BE 7 FEET.

   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 10H:1V 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.
8. 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 1 FOOT FROM THE FACE OF THE CURB MAY BE USED IN AREAS WHERE THE SIDEWALK WIDTH IS LIMITED OR WHERE EXISTING POLES ARE CLOSE TO THE CURB.

   FOR RURAL INSTALLATION - 6 FEET MINIMUM DESIRABLE FROM EDGE OF 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.

   WHERE BEHIND GUIDE RAIL - 4 FEET MINIMUM FROM BACK OF BEAM GUIDE RAIL ELEMENT TO SIGN POST.
9. 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 GROUND LINE TO CENTER LINE OF SPLICE.

SIGN POST NOTES
N.T.S.

PANEL SIZE (W x H)	# OF POSTS	POST SIZE (LB/ FT)
18" x 18"	1	2.5
18" x 24"	1	2.5
24" x 24"	1	2.5
24" x 30"	1	2.5
24" x 36"	1	2.5
30" x 24"	1	2.5
30" x 30"	1	2.5
36" x 12"	2	2.5
36" x 36" x 36"	2	2.5
30" x 36"	1	4.0

PANEL SIZE (W x H)	# OF POSTS	POST SIZE (LB/FT)
36" x 36"	2	2.5
36" x 48"	2	2.5
45" x 36"	2	2.5
48" x 24"	2	2.5
48" x 36"	2	2.5
48" x 48"	2	4.0
48" x 64" x 64"	2	2.5
60" x 36"	2	4.0
48" x 60"	2	4.0
60" x 30"	2	4.0

U-POST SELECTION TABLE
BREAKAWAY SIGN SUPPORT

30" x 30" OR SMALLER MOUNTING DETAIL
N.T.S.

PAVEMENT MARKING LEGEND

UNLESS OTHERWISE SHOWN, PAVEMENT MARKINGS SHALL CONFORM TO THE FOLLOWING:

STOP LINE	- 12" WIDE WHITE LINE
CENTER LINE	-2-4" WIDE YELLOW LINES
CROSSWALK LINES	-6" WIDE WHITE LINES

NOTES:
1) ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE CURRENT MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES
2) EXISTING STRIPING THAT DOES NOT CONFORM TO THIS PLAN SHALL BE REMOVED BY THE GRINDING METHOD.
3) GRADE CROSSING PAVEMENT MARKINGS TO CONFORM TO THE CURRENT MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES
4) W = WHITE STRIPE
   Y = YELLOW STRIPE

SIGN POST NOTES
N.T.S.

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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

ELM STREET AREA DRAINAGE IMPROVEMENTS

TOWNSHIP OF CRANFORD
UNION COUNTY
NEW JERSEY

Colliers Engineering & Design

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

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AS SHOWN	12/23/20	MIB	PWJ

PROJECT NUMBER:	DRAWING NAME:
CDT071	C-DTLS

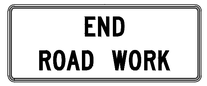
SHEET TITLE:

CONSTRUCTION DETAILS

SHEET NUMBER:

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

CCDT071\Engineering\Site Plans\C-DTLS.dwg\C-34-DETAILS By: MBEKKELMAN



G20–2A
60" x 24"
(10 S.F.)

M4–9L (LEFT)
M4–9R (RIGHT)
30" x 24"
(5 S.F.)

M4–9 (L OR R) (S)
48" x 36"
(12 S.F.)

M4–9LX (LEFT)
M4–9RX (RIGHT)
30" x 24"
(5 S.F.)

M4–9 (L OR R) (XS)
48" x 36"
(12 S.F.)

M4–9X
30" x 24"
(5 S.F.)

M4–9X (S)
48" x 36"
(12 S.F.)

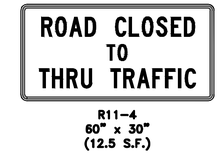
M4–10L (LEFT)
M4–10R (RIGHT)
48" x 18"
(6 S.F.)

M4–11
30" x 24"
(5 S.F.)

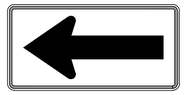
R11–2
48" x 30"
(10 S.F.)

R11–3
60" x 30"
(12.5 S.F.)

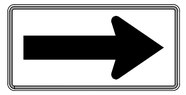
G20–2
60" x 24"



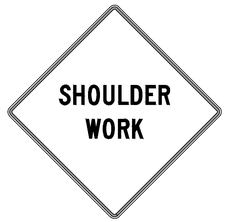
R11–4
60" x 30"
(12.5 S.F.)



W1–6(L)
48" x 30"



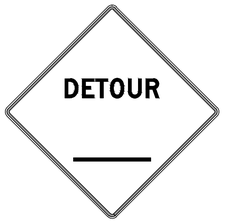
W1–6(R)
48" x 30"



W21–5
48" x 48"

W20–1
48" x 48"

W20–1A
48" x 48"
(16 S.F.)



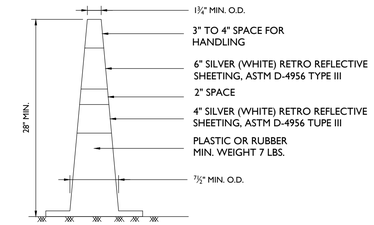
W20–2
48" x 48"
(16 S.F.)

W20–3
48" x 48"
(16 S.F.)

W99–2
48" x 48"
(16 S.F.)

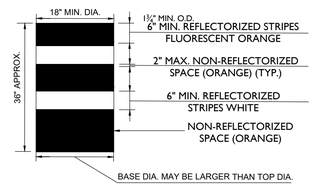
W20–7A
48" x 48"
(16 S.F.)

CONSTRUCTION SIGN DETAILS
N.T.S.



NOTES:
1. TRAFFIC CONES SHALL BE PREDOMINATELY ORANGE IN COLOR.
2. BASES MAY BE OF BREAKAWAY BALLASTED TYPE.
3. MINOR MANUFACTURER'S VARIATIONS MAY BE ACCEPTABLE UPON APPROVAL OF THE ENGINEER.

TRAFFIC CONE DETAIL
N.T.S.

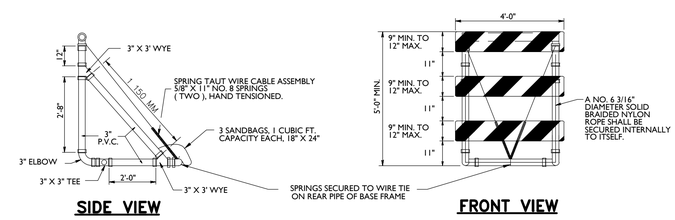


NOTES :
1. DRUMS SHALL BE MADE OF ORANGE PLASTIC WITH A MINIMUM OF FOUR ALTERNATE FLUORESCENT ORANGE AND WHITE RETROREFLECTIVE STRIPES. IF THERE ARE NON-REFLECTORIZED SPACES BETWEEN THE STRIPES, THEY SHALL BE NO MORE THAN 2" WIDE. RETROREFLECTIVE SHEETING FOR STRIPES SHALL CONFORM WITH ASTM D 4956 TYPE VII OR VIII WITH S2 REQUIREMENTS.
2. THE TOP OF THE DRUM SHALL NOT BE OPEN. DRUMS SHALL BE CONSTRUCTED TO INHIBIT ROLLING IF KNOCKED OVER.
3. 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.
4. WHEN BALLAST IS REQUIRED BY THE R.E., 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 HALL BE APPROVED BY THE R.E.
5. CONES AND DRUMS SHALL BE SURRENDERED TO THE OWNER AT CLOSEOUT OF PROJECT.

DRUM DETAIL
N.T.S.

1. 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.
3. 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 PROJECT.
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 CONSTRUCTION.
5. 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 ENGINEER.
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 ITEMS IN THE PROPOSAL.

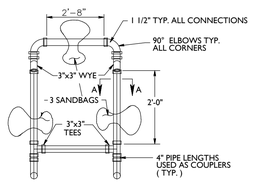
MAINTENACE AND PROTECTION OF TRAFFIC NOTES
N.T.S.



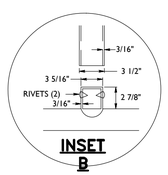
SIDE VIEW

FRONT VIEW

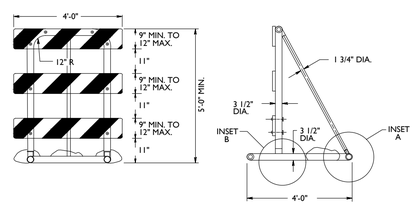
INSET A



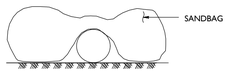
TOP VIEW OF BASE



INSET B



PIPE SHALL BE WHITE PVC SCHEDULE 40 ASTM D 1785 OR PVC, SDR-26 ASTM D 2241. FITTINGS SHALL BE WHITE PVC OR ABS OF MATCHING WALL THICKNESS AND INSIDE DIAMETER AND MEETING THE MATERIALS, REQUIREMENTS AND TESTING SECTIONS OF ASTM D 2466 FOR PVC AND ASTM D 2468 FOR ABS. ALL JOINTS SHALL BE SLIP FIT AND NOT THREADED OR CEMENTED. PVC FITTINGS MEETING ASTM D 2665 WILL ALSO BE ACCEPTABLE. PVC OR ABS MATERIAL SHALL BE ULTRAVIOLET LIGHT STABILIZED.



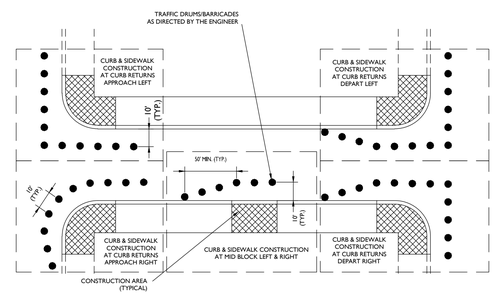
SECTION A–A

THE BASE AND UPRIGHT SHALL BE 3 1/2" DIA. ROTATIONALLY MOLDED POLYETHYLENE PLASTIC CONFORMING TO ASTM D 1248-II A3-E4. THE BRACE SHALL BE 1 3/4" DIA. EXTRUDED POLYETHYLENE PLASTIC CONFORMING TO ASTM D 1248-III A4. POLYETHYLENE PLASTIC SHALL BE WHITE AND SHALL BE ULTRA-VIOLET LIGHT STABILIZED.

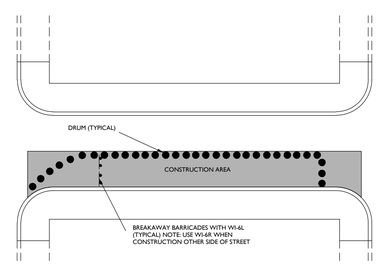
TYPE III, PE

NOTES:
1. THE 9" MIN. x 48", OR 12" MAX. x 48" BARRICADE RAILS SHALL BE FABRICATED FROM 0.024" ANODIZED ALUMINUM OR 0.125" MAX. PLASTIC SHEETING AND SHALL BE ATTACHED, 4 PER RAIL, WITH 1 INCH NO.14 PAN HEAD METAL SCREWS OR PLASTIC RIVETS. ALL CORNERS SHALL BE ROUNDED.
2. ORANGE AND SILVER (WHITE) STRIPES SHALL BE RETROREFLECTIVE SHEETING, TYPE II OR III-A, AS SHOWN FOR CONSTRUCTION SIGNS.
3. ALTERNATE ORANGE AND SILVER (WHITE) STRIPES 6" WIDE SLOPING DOWNWARD AT AN ANGLE OF 45 DEGREES IN THE DIRECTION TRAFFIC IS TO PASS.
4. THE 18" X 24" SANDBAGS SHALL BE FABRICATED FROM POLYPROPYLENE AND SHALL HAVE A CAPACITY OF 1 CUBIC FOOT.PLACEMENT OF SANDBAGS SHALL BE AS SHOWN ABOVE.
5. SANDBAG PLACEMENT MAY BE ADJUSTED AT THE DIRECTION OF THE ENGINEER. ALL DIMENSIONS ON FULL PIPE LENGTH.
6. EITHER TYPE III, PE OR TYPE III, PVC CAN BE USED AT THE OPTION OF THE CONTRACTOR.

BREAKAWAY BARRICADES DETAILS
N.T.S.



TRAFFIC CONTROL FOR CURB & SIDEWALK CONSTRUCTION DETAIL
N.T.S.



TRAFFIC CONTROL FOR MILLING & OVERLAY DETAIL
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Carl P. O'Brien
NEW JERSEY LICENSED PROFESSIONAL ENGINEER
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COLLIERS ENGINEERING & DESIGN, INC.
N.J. C.O.A. #: 24GA27986500

CONSTRUCTION PLANS
FOR
ELM STREET AREA DRAINAGE IMPROVEMENTS

TOWNSHIP OF CRANFORD
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PROJECT NUMBER: CDT071
DRAWING NAME: C-DTL5

SHEET TITLE:
CONSTRUCTION DETAILS

SHEET NUMBER:
35 of 43

NOTE: DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

C:\CDT071\Engineering\Site Plan\C-DTL5.dwg\C-13-DETAILS By: MBEKKERMAN

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
- LEFT RIGHT BOTH — 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
- LEFT RIGHT BOTH — TRAFFIC CONTROL TRUCK WITH MOUNTED CRASH CUSHION AND ARROW BOARD SHOWING ARROW PATTERN (Left, Right, Both)
- TEMPORARY CRASH CUSHION, INERTIAL BARRIER SYSTEM
- TEMPORARY CRASH CUSHION, (all other approved)
- BUFFER ZONE
- WORK AREA
- PAINT STRIPING TRUCK OR OTHER OPERATING VEHICLE

GENERAL NOTES:

1. ADVANCE WARNING SIGNS DISTANCES, AND TAPER LENGTHS MAY BE EXTENDED, AT DIRECTION OF THE DEPARTMENT, TO ADJUST FOR REDUCED VISIBILITY DUE TO HORIZONTAL AND VERTICAL CURVATURE OF THE ROADWAY.

2. THE APPROXIMATE LOCATIONS OF THE ILLUMINATED FLASHING ARROW BOARDS ARE SHOWN ON THE TRAFFIC CONTROL PLANS. THESE LOCATIONS MAY BE MODIFIED AS APPROVED BY RE TO ADJUST FOR VISIBILITY DUE TO HORIZONTAL OR VERTICAL CURVATURE OF THE ROADWAY OR TO POSITION AT A SAFER LOCATION. ILLUMINATED FLASHING ARROW BOARDS ARE TO BE USED FOR TEMPORARY LANE CLOSINGS AND AT LOCATIONS SHOWN ON THE TRAFFIC CONTROL PLANS.

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

4. RAMPS AND/OR SIDE STREETS ENTERING THE ROADWAY AFTER THE FIRST ADVANCE WARNING SIGN SHALL BE PROVIDED WITH AT LEAST ONE W20-IF SIGN (ROAD WORK AHEAD) AS A MINIMUM.

5. ALL EXISTING ROAD SIGNS, PAVEMENT MARKINGS AND/OR PLOWABLE PAVEMENT REFLECTORS WHICH CONFLICT WITH THE PROPOSED TRAFFIC CONTROL PLAN SHALL BE COVERED, REMOVED OR RELOCATED AS DIRECTED BY THE RE.

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

7. MAINTENANCE AND PROTECTION OF TRAFFIC SHALL BE IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES - PART VI "STANDARDS AND GUIDES FOR TRAFFIC CONTROL FOR STREET AND HIGHWAY CONSTRUCTION, MAINTENANCE, UTILITY, AND INCIDENT MANAGEMENT OPERATIONS", UNLESS OTHERWISE NOTED IN THE PLANS AND SPECIFICATIONS.

8. CONSTRUCTION SIGN W99-2 (GIVE US A BRAKE) SHALL BE LOCATED 200 FEET IN ADVANCE OF PROJECT LIMITS.

9. A W1-6 (ARROW) SIGN MOUNTED ON A BREAKAWAY BARRICADE AND CENTERED ON THE CLOSED WIDTH SHALL BE LOCATED 100 FEET BEYOND EACH INTERSECTION OR MAIN ACCESS POINT WITHIN THE AREA OF A LANE OR SHOULDER CLOSURE.

10. CONSTRUCTION SIGNS R11-4 (ROAD CLOSED TO THRU TRAFFIC) SHALL BE PLACED AT THE INTERSECTING STREETS WHICH ARE CLOSED TO TRAFFIC BECAUSE OF CONSTRUCTION.

11. CONSTRUCTION SIGNS W8-9A (SYMBOL FOR UNEVEN PAVEMENT) AND W8-14A (GROOVED PAVEMENT) SHALL BE USED WHEN SUCH PAVEMENT CONDITIONS EXIST. THE PLACEMENT OF THESE SIGNS SHALL BE AS DIRECTED BY THE RE.

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 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.

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

A. TERMS:
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.

ii. 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 TO-101 PROVIDED BY THE DEPARTMENT.

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

"TEMPORARY LANE CLOSURES" FOR WEEKENDS SHALL BE SUBMITTED TO THE RE BY 9:00 AM ON THE 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.

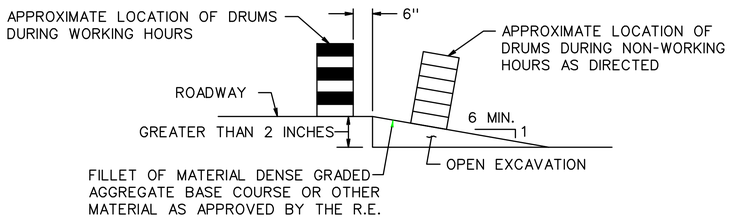
OTHER PROPOSED CHANGES TO "TEMPORARY LANE CLOSURES" AND ALL CHANGES TO "PERMANENT LANE CLOSURES" SHALL BE SUBMITTED TO THE RE AS SPECIFIED IN THE SPECIFICATIONS.

TCD-1

NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS

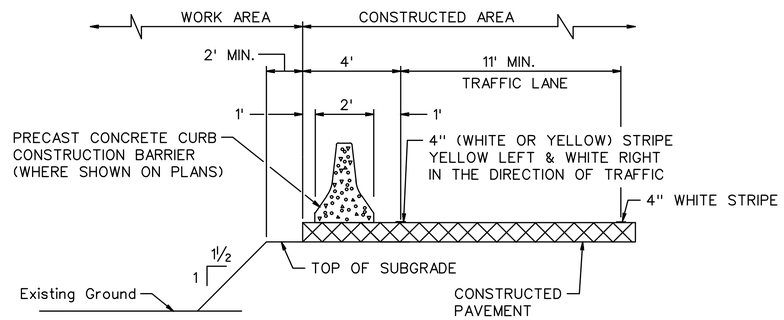
BDC07D-01- ORIGINAL SHEET



NOTE:

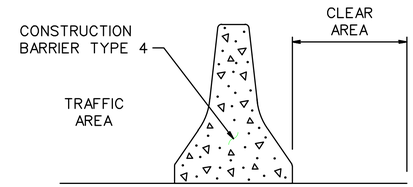
ESCAPE RAMPS MUST BE CONSTRUCTED AND MAINTAINED DURING NON-WORKING HOURS WHERE A VERTICAL DROP GREATER THAN 2 INCHES EXISTS ADJACENT TO TRAVELED LANE.

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. TO STA.	

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

CONSTRUCTION BARRIER, TYPE 4
JOINT CLASS AND CLEAR AREA

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

NOTES:

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.

RECOMMENDED TAPER LENGTH AND SPACING FOR CHANNELIZING TAPERS						RECOMMENDED SPACING ALONG TANGENTS
REGULATORY APPROACH SPEED OF TRAFFIC MILES/HOUR	MINIMUM TAPER RATIO IN LENGTH PER FOOT OF WIDTH	MINIMUM TAPER LENGTH L - FOR LANE WIDTHS 10'	11'	12'	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:

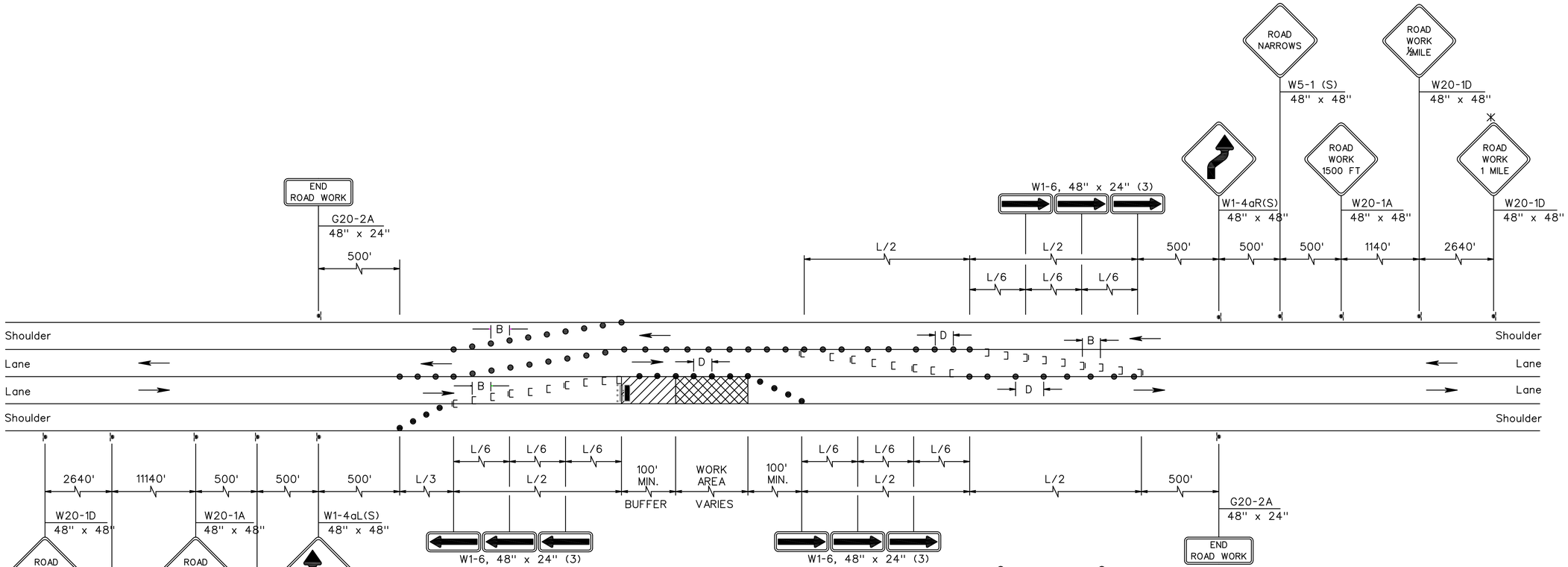
THE MAXIMUM DEVICE SPACING ALONG CURVES SHALL BE AS DEFINED FOR TAPERS (B) IN THE ABOVE TABLE.

N.T.S.

TCD-2

NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS



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

NOTE:

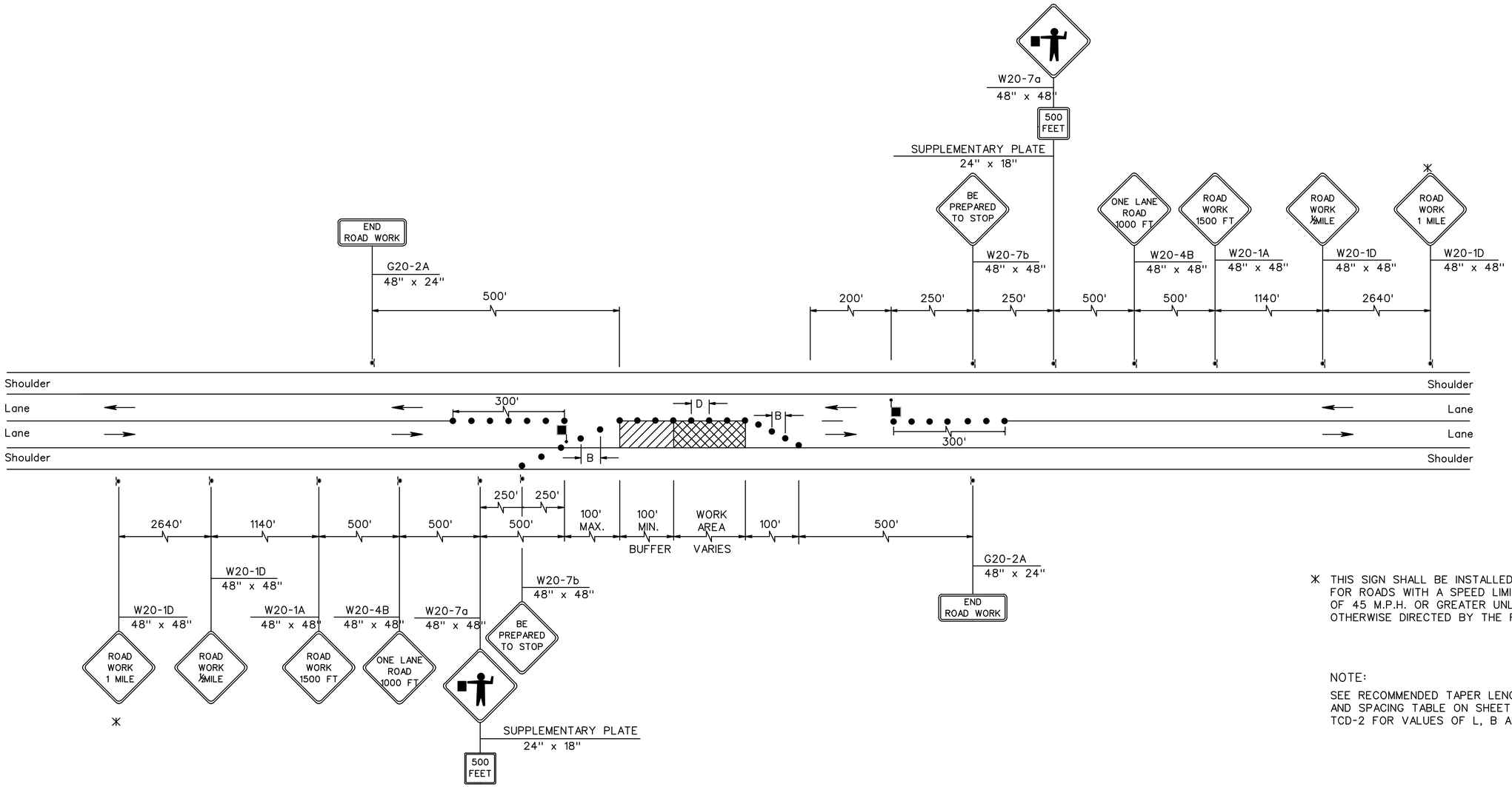
SEE RECOMMENDED TAPER LENGTH AND SPACING TABLE ON SHEET TCD-2 FOR VALUES OF L, B AND D.

N.T.S.

TCD-3

NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS



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

NOTE:

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

N.T.S.

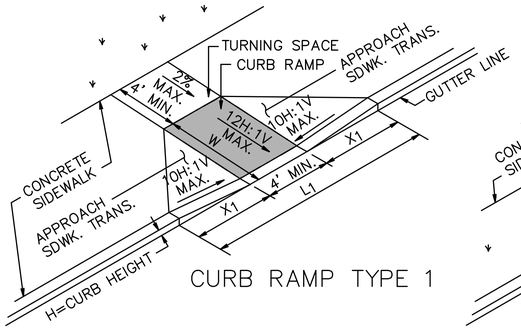
2 LANES, UNDIVIDED, LANE & SHOULDER CLOSING W/FLAGGING

TCD-4

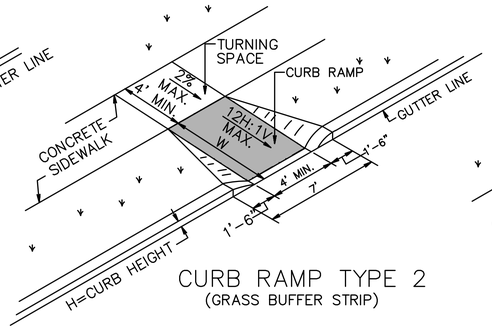
NEW JERSEY DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL DETAILS

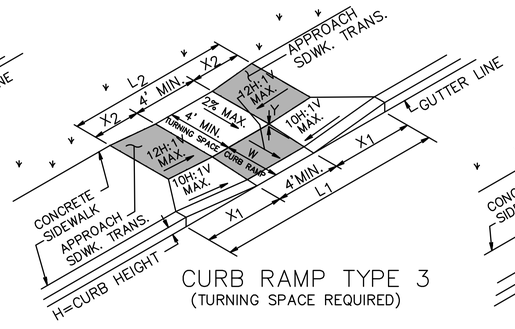
BDC07D-01- ORIGINAL SHEET



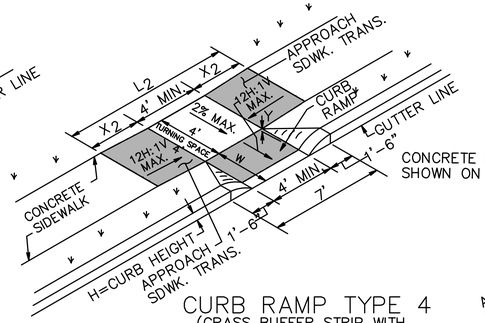
CURB RAMP TYPE 1



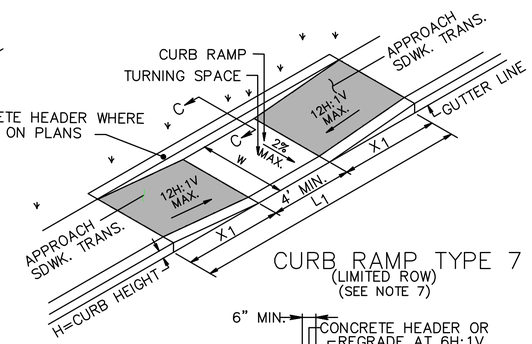
CURB RAMP TYPE 2
(GRASS BUFFER STRIP)



CURB RAMP TYPE 3
(TURNING SPACE REQUIRED)

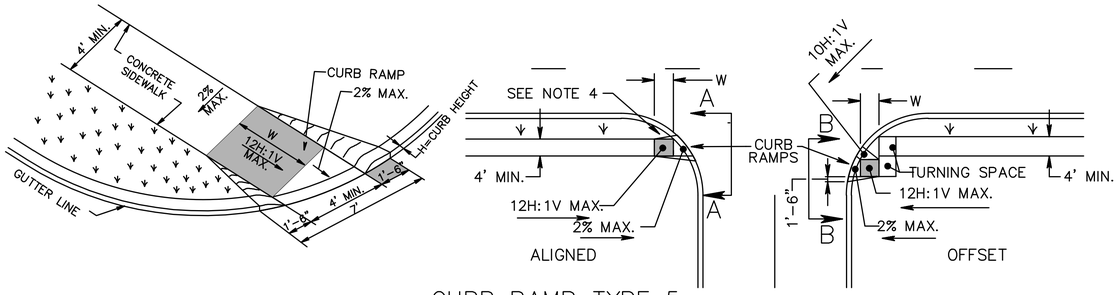


CURB RAMP TYPE 4
(GRASS BUFFER STRIP WITH TURNING SPACE REQUIRED)

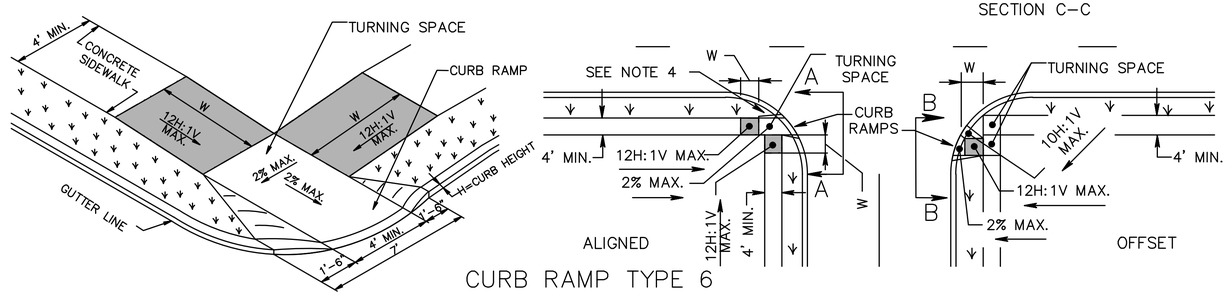


CURB RAMP TYPE 7
(LIMITED ROW)
(SEE NOTE 7)

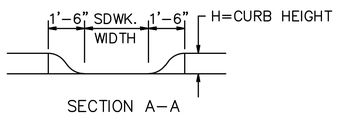
SECTION C–C



CURB RAMP TYPE 5

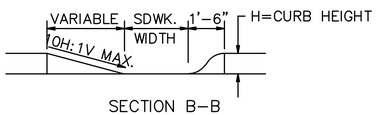


CURB RAMP TYPE 6

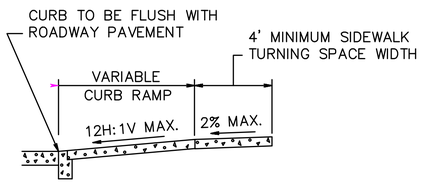


SECTION A–A

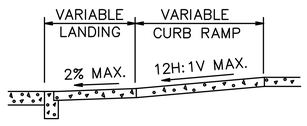
NOTE:
CURB RAMP OPENING TO BE FLUSH WITH ROADWAY PAVEMENT (CURB RAMP TYPES 5 & 6).



SECTION B–B



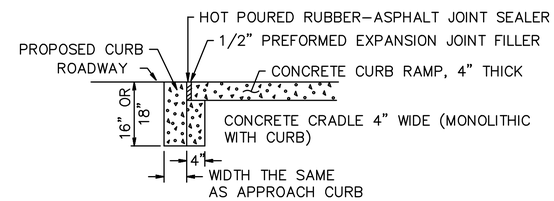
SECTION THROUGH CURB RAMPS 1 THROUGH 4



SECTION THROUGH CURB RAMPS 5 AND 6

NOTES:
1. KEEP TURNING SPACE, APPROACH SIDEWALK TRANSITIONS, AND CURB RAMP CLEAR OF OBSTRUCTIONS THAT PROTRUDE ABOVE THE SIDEWALK.
2. FOR DIMENSIONS SEE CD–606–1B AND CD–606–1C.
3. CURB (DROPPED CURB) GUTTERLINE TO BE FLUSH WITH ROADWAY PAVEMENT A MINIMUM OF 4 FEET AT ALL CURB RAMPS.
4. FOR CURB RAMP TYPES 5 AND 6, IF A GRASS BUFFER DOES NOT EXIST, SLOPE CURB TO EQUAL SLOPE OF ADJACENT CURB RAMP.
5. SIDEWALK AND CURB RAMP WITHIN AREA ENCLOSED BY HEAVY LINES INDICATES THE PAY LIMIT FOR CONCRETE SIDEWALK OF THE APPROPRIATE ADJACENT THICKNESS.
6. CURB AND HEADER WITHIN AREA ENCLOSED BY HEAVY LINES INDICATES THE PAY LIMIT FOR VERTICAL CURB OR SLOPING CURB OF THE APPROPRIATE ADJACENT SIZE AND KIND.
7. WHERE THE DISTANCE FROM THE GUTTER LINE TO THE OUTSIDE EDGE OF SIDEWALK IS 6 FEET OR LESS, USE CURB RAMP TYPE 7, INSTEAD OF CURB RAMP TYPE 1 THROUGH 4.
8. CROSSWALKS AND STOP LINES MAY BE MARKED OR UNMARKED. SEE PLANS.
9. DIMENSIONS SHOWN IN TABLES ARE FOR 3 INCH TO 9 INCH CURB HEIGHTS. WHERE THE CURB HEIGHTS ARE OTHER THAN WHAT IS PROVIDED IN THE TABLES, THE DIMENSIONS OF THE RAMPS WILL HAVE TO BE CALCULATED BASED ON CROSS SLOPES SHOWN.
10. THE 12H:1V MAX SLOPE IS THE RUNNING SLOPE FOR CURB RAMPS, BUT ONLY THE 12H:1V SLOPE MEASURED AS X_2 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.

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



DROPPED CURB AND CRADLE

CONCRETE SIDEWALK
(PUBLIC SIDEWALK CURB RAMP)

N.T.S.

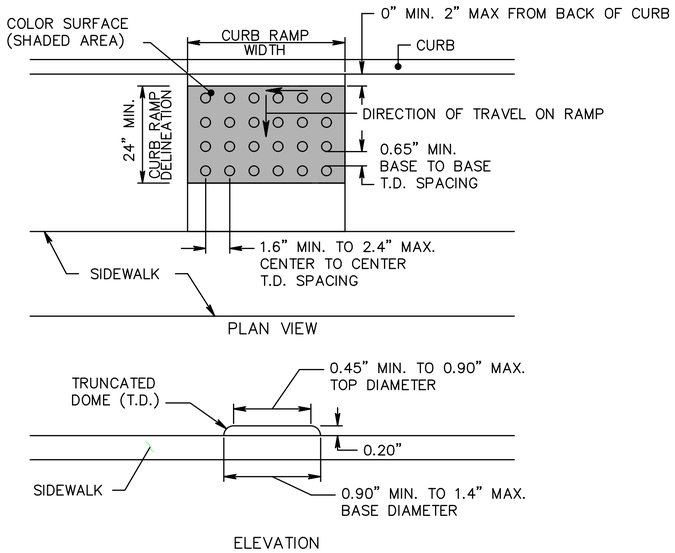
CURB RAMPS
CD–606–1.1

CD–606–1

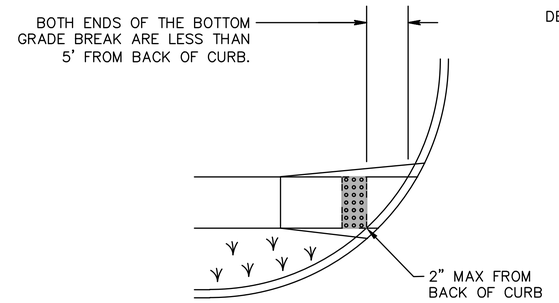
NEW JERSEY DEPARTMENT OF TRANSPORTATION

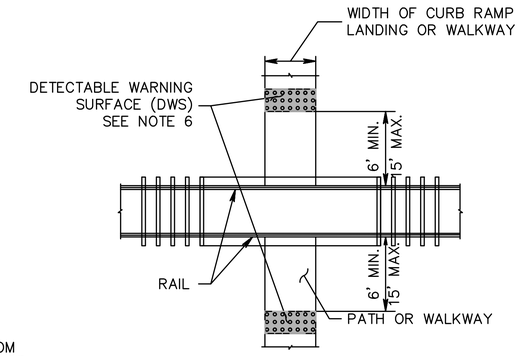
CONSTRUCTION DETAILS

BDC12D–05–MODIFICATION TO CURB RAMP DETAIL
BDC07D–01–ORIGINAL SHEET

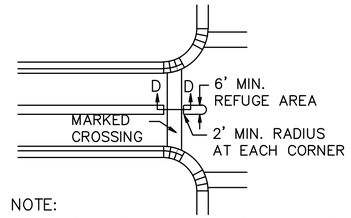


DETECTABLE WARNING SURFACE

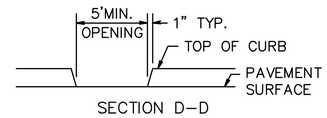




PEDESTRIAN RAILROAD CROSSING

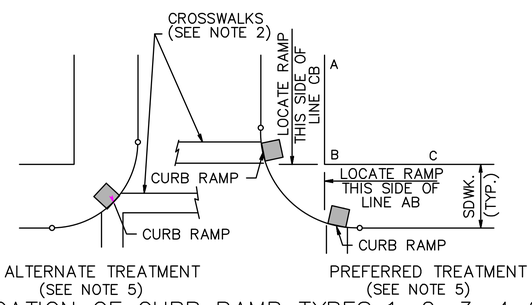


NOTE:
WHERE PRACTICAL, END LEFT TURN ISLAND OR DIVISIONAL ISLAND BEFORE CROSSWALK TO ELIMINATE CUT-THROUGH

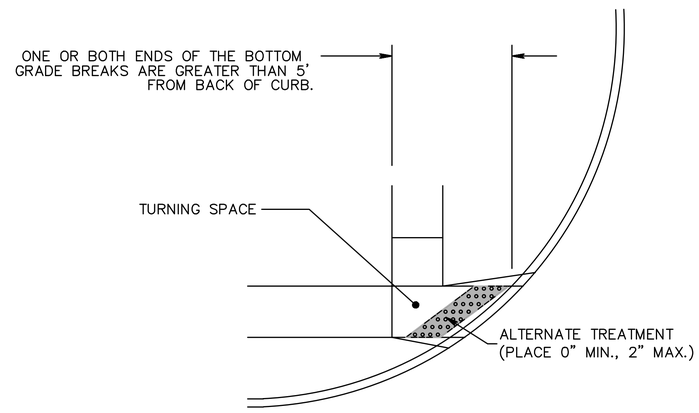


NOTE:
5'MIN. WIDE OPENING TO BE FLUSH WITH ROADWAY PAVEMENT

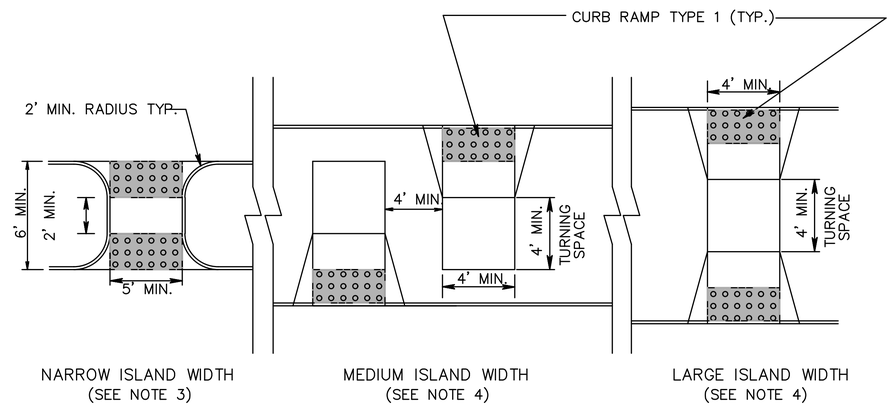
PEDESTRIAN REFUGE ISLAND WALKWAY OPENING AT INTERSECTIONS



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



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



PEDESTRIAN REFUGE ISLAND

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

DETECTABLE WARNING SURFACE

N.T.S.

CD-606-1A

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

CD-606-1.1A

BDC120-05-ORIGINAL SHEET

CURB RAMP TYPE 1

0.0% GUTTER LINE PROFILE

H INCHES	W FEET	X_{1U} FEET	X_{1L} 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	X_{1U} FEET	X_{1L} 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	X_{1U} FEET	X_{1L} FEET	Lz FEET
3	3	3.13	2.08	9.21
4	4	4.17	2.78	10.94
5	5	5.21	3.47	12.68
6	6	6.25	4.17	14.42
7	7	7.29	4.86	16.15
8	8	8.33	5.56	17.89
9	9	9.38	6.25	19.63

3.0% GUTTER LINE PROFILE

H INCHES	W FEET	X_{1U} FEET	X_{1L} FEET	Lz FEET
3	3	3.57	1.92	9.49
4	4	4.76	2.56	11.33
5	5	5.95	3.21	13.16
6	6	7.14	3.85	14.99
7	7	8.33	4.49	16.82
8	8	9.52	5.13	18.65
9	9	10.71	5.77	20.48

4.0% GUTTER LINE PROFILE

H INCHES	W FEET	X_{1U} FEET	X_{1L} 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	X_{1U} FEET	X_{1L} FEET	Lz FEET
3	3	5.00	1.67	10.67
4	4	6.67	2.22	12.89
5	5	8.33	2.78	15.11
6	6	10.00	3.33	17.33
7	7	11.67	3.89	19.56
8	8	13.33	4.44	21.78
9	9	15.00	5.00	24.00

6.0% GUTTER LINE PROFILE

H INCHES	W FEET	X_{1U} FEET	X_{1L} FEET	Lz FEET
3	3	6.25	1.56	11.81
4	4	8.33	2.08	14.42
5	5	10.42	2.60	17.02
6	6	12.50	3.13	19.63
7	7	14.58	3.65	22.23
8	8	15.00	4.17	23.17
9	9	15.00	4.69	23.69

0.0% GUTTER LINE PROFILE

H INCHES	W FEET	X_{1U} FEET	X_{1L} 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% GUTTER LINE PROFILE

H INCHES	W FEET	X_{1U} FEET	X_{1L} FEET	L_1 FEET	Y INCHES	X_{2U} FEET	X_{2L} FEET	L_2 FEET
3	2.5	2.50	2.50	9.00	2.5	1.10	1.10	6.20
4		3.33	3.33	10.67		2.10	2.10	8.20
5		4.17	4.17	12.33		3.10	3.10	10.20
6		5.00	5.00	14.00		4.10	4.10	12.20
7		5.83	5.83	15.67		5.10	5.10	14.21
8		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	3.0	*	*	*	3.0	*	*	*
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		5.00	5.00	14.00		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	3.5	*	*	*	3.5	*	*	*
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		5.00	5.00	14.00		3.34	3.34	10.69
7		5.83	5.83	15.67		4.34	4.34	12.69
8		6.67	6.67	17.33		5.34	5.34	14.69
9		7.50	7.50	19.00		6.34	6.34	16.69
3	4.0	*	*	*	4.0	*	*	*
4		*	*	*		*	*	*
5		4.17	4.17	12.33		1.96	1.96	7.92
6		5.00	5.00	14.00		2.96	2.96	9.93
7		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

1.0% GUTTER LINE PROFILE

H INCHES	W FEET	X_{1U} FEET	X_{1L} FEET	L_1 FEET	Y INCHES	X_{2U} FEET	X_{2L} FEET	L_2 FEET
3	2.5	2.78	2.27	9.05	2.5	1.25	0.98	6.24
4		3.70	3.03	10.73		2.39	1.18	8.27
5		4.63	3.79	12.42		3.53	2.77	10.30
6		5.56	4.55	14.10		4.66	3.66	12.33
7		6.48	6.06	15.78		5.80	4.56	14.36
8		7.41	6.06	17.47		6.94	5.45	16.39
9		8.33	6.82	19.15		8.07	6.34	18.42
3	3.0	2.78	2.27	9.05	3.0	0.82	0.64	5.46
4		3.70	3.03	10.73		1.96	1.54	7.49
5		4.63	3.79	12.42		3.09	2.43	9.52
6		5.56	4.55	14.10		4.23	3.32	11.55
7		6.48	6.06	15.78		4.23	4.22	13.58
8		7.41	6.06	17.47		5.37	5.11	15.61
9		8.33	6.82	19.15		7.64	6.00	17.64
33	3.5	*	*	*	3.5	*	*	*
4		3.70	3.03	10.73		1.53	1.20	6.72
5		4.63	3.79	12.42		2.66	2.09	8.75
6		5.56	4.55	14.10		3.80	2.98	10.78
7		6.48	6.06	15.78		4.94	3.88	12.81
8		7.41	6.06	17.47		6.07	4.77	14.84
9		8.33	6.82	19.15		7.21	5.66	16.87
33	4.0	*	*	*	4.0	*	*	*
4		3.70	3.03	10.73		1.09	0.86	5.95
5		4.63	3.79	12.42		2.23	1.75	7.98
6		5.56	4.55	14.10		3.37	2.65	10.01
7		6.48	6.06	15.78		4.50	3.54	12.04
8		7.41	6.06	17.47		5.64	4.43	14.07
9		8.33	6.82	19.15		6.78	5.32	16.01

2.0% GUTTER LINE PROFILE

H INCHES	W FEET	X_{1U} FEET	X_{1L} FEET	L_1 FEET	Y INCHES	X_{2U} FEET	X_{2L} FEET	L_2 FEET
3	2.5	3.13	2.08	9.21	2.5	1.45	0.89	6.34
4		4.17	2.78	10.94		2.77	1.69	8.46
5		5.21	3.47	12.68		4.08	2.50	10.58
6		6.25	4.17	14.42		5.40	3.31	12.71
7		7.29	4.86	16.15		6.72	4.12	14.83
8		8.23	5.56	17.89		8.03	4.92	16.95
9		9.38	6.25	19.63		9.35	5.73	19.08
3	3.0	3.13	2.08	9.21	3.0	0.95	0.58	5.53
4		4.17	2.78	10.94		2.27	1.39	7.65
5		5.21	3.47	12.68		3.58	2.20	9.78
6		6.25	4.17	14.42		4.90	3.00	11.90
7		7.29	4.86	16.15		6.22	3.81	14.02
8		8.23	5.56	17.89		7.53	4.62	16.15
9		9.38	6.25	19.63		8.85	5.42	18.27
33	3.5	*	*	*	3.5	*	*	*
4		4.17	2.78	10.94		1.77	1.08	6.85
5		5.21	3.47	12.68		3.08	1.89	8.97
6		6.25	4.17	14.42		4.40	2.70	11.09
7		7.29	4.86	16.15		5.72	3.50	13.22.
8		8.23	5.56	17.89		7.03	4.31	15.34
9		9.38	6.25	19.63		8.35	5.12	17.46
33	4.0	*	*	*	4.0	*	*	*
4		4.17	2.78	10.94		1.27	0.78	6.04
5		5.21	3.47	12.68		2.58	1.58	8.16
6		6.25	4.17	14.42		3.90	2.39	10.29
7		7.29	4.86	16.15		5.22	3.20	12.41
8		8.23	5.56	17.89		6.53	4.00	14.53
9		9.38	6.25	19.63		7.85	4.81	16.66

3.0% GUTTER LINE PROFILE

H INCHES	W FEET	X_{1U} FEET	X_{1L} FEET	L_1 FEET	Y INCHES	X_{2U} FEET	X_{2L} FEET	L_2 FEET
3	2.5	3.57	1.92	9.49	2.5	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		7.14	3.85	14.99		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	3.0	3.57	1.92	9.49	3.0	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		7.14	3.85	14.99		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	3.5	*	*	*	3.5	*	*	*
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		7.14	3.85	14.99		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	4.0	*	*	*	4.0	*	*	*
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		7.14	3.85	14.99		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% GUTTER LINE PROFILE

H INCHES	W FEET	X_{1U} FEET	X_{1L} FEET	L_1 FEET	Y INCHES	X_{2U} FEET	X_{2L} FEET	L_2 FEET
3	2.5	4.17	1.79	9.95	2.5	2.12	0.74	6.86
4		5.56	2.38	11.94		4.04	1.42	9.46
5		6.94	2.98	13.92		4.85	2.28	11.13
6		8.33	3.57	15.90		6.41	3.02	13.43
7		9.72	4.17	17.89		7.98	3.75	15.73
8		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	3.0	4.17	1.79	9.95	3.0	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		8.33	3.57	15.90		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	3.5	*	*	*	3.5	*	*	*
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		8.33	3.57	15.90		6.43	2.26	12.69
7		9.72	4.17	17.89		8.36	2.93	15.29
8		11.11	4.76	19.87		10.28	3.61	17.89
9		12.50	5.36	21.86		12.20	4.29	20.49
3	4.0	*	*	*	4.0	*	*	*
4		5.56	2.38	11.94		1.85	0.65	6.50
5		6.94	2.98	13.92		3.78	1.33	9.10
6		8.33	3.57	15.90		5.70	2.00	11.70
7		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

5.0% GUTTER LINE PROFILE

H INCHES	W FEET	X_{1U} FEET	X_{1L} FEET	L_1 FEET	Y INCHES	X_{2U} FEET	X_{2L} FEET	L_2 FEET
3	2.5	5.00	1.67	10.67	2.5	2.76	0.69	7.44
4		6.67	2.22	12.89		5.26	1.31	10.57
5		8.33	2.78	15.11		7.76	1.94	13.57
6		10.00	3.33	17.33		10.26	2.56	16.83
7		11.67	3.89	19.56		12.77	3.19	19.95
8		13.33	4.44	21.78		15.00	3.81	22.81
9		15.00	5.00	24.00		15.00	4.44	23.44
3	3.0	5.00	1.67	10.67	3.0	1.80	0.45	6.26
4		6.67	2.22	12.89		4.31	1.08	9.38
5		8.33	2.78	15.11		6.81	1.70	12.51
6		10.00	3.33	17.33		9.31	2.33	15.64
7		11.67	3.89	19.56		11.81	2.95	18.77
8		13.33	4.44	21.78		14.32	3.58	21.89
9		15.00	5.00	24.00		15.00	4.20	23.20
3	3.5	*	*	*	3.5	*	*	*
4		6.67	2.22	12.89		3.36	0.84	8.20
5		8.33	2.78	15.11		5.86	1.46	11.32
6		10.00	3.33	17.33		8.36	2.09	14.45
7		11.67	3.89	19.56		10.86	2.71	17.58
8		13.33	4.44	21.78		13.37	3.34	20.71
9		15.00	5.00	24.00		15.00	3.96	22.96
3	4.0	*	*	*	4.0	*	*	*
4		6.67	2.22	12.89		2.41	0.60	7.01
5		8.33	2.78	15.11		4.91	1.23	10.14
6		10.00	3.33	17.33		7.41	1.85	13.26
7		11.67	3.89	19.56		9.91	2.48	16.39
8		13.33	4.44	21.78		12.42	3.10	19.52
9		15.00	5.00	24.00		11.92	3.73	22.65

6.0% GUTTER LINE PROFILE

H INCHES	W FEET	X_{1U} FEET	X_{1L} FEET	L_1 FEET	Y INCHES	X_{2U} FEET	X_{2L} FEET	L_2 FEET
3	2.5	6.25	1.56	11.81	2.5	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		12.50	3.13	19.63		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	3.0	6.25	1.56	11.81	3.0	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		12.50	3.13	19.63		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	3.5	*	*	*	3.5	*	*	*
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		12.50	3.13	19.63		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	4.0	*	*	*	4.0	*	*	*
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		12.50	3.13	19.63		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

7.0% GUTTER LINE PROFILE

H INCHES	W FEET	X_{1U} FEET	X_{1L} FEET	L_1 FEET	Y INCHES	X_{2U} FEET	X_{2L} FEET	L_2 FEET
3	2.5	8.33	1.47	13.80	2.5	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		15.00	2.94	21.94		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	3.0	8.33	1.47	13.80	3.0	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		15.00	2.94	21.94		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	3.5	*	*	*	3.5	*	*	*
4		11.11	1.96	17.07		8.40	0.73	13.13
5		13.89	2.45	20.34		14.67	1.27	19.94
6		15.00	2.94	21.94		15.00	1.82	20.82
7		15.00	3.43	22.43		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	4.0	*	*	*	4.0	*	*	*
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		15.00	2.94	21.94		15.00	1.61	20.61
7		15.00	3.43	22.43		15.00	2.15	21.15
8		15.00	3.92	22.92		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	X_{1U} FEET	X_{1L} 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.

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

CD–606–1.1B

CONCRETE SIDEWALK
(PUBLIC SIDEWALK CURB RAMP TABLES)

N.T.S.

CD–606–1B

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

BDC12D–05–ORIGINAL SHEET

CURB RAMP TYPE 4

0.0% GUTTER LINE PROFILE

H INCHES	W FEET	Y INCHES	Xzu FEET	X2L FEET	Lz FEET
3	2.5	2.5	1.10	1.10	6.20
4			2.10	2.10	8.20
5			3.10	3.10	10.20
6			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	3.0	3.0	**	**	**
4			1.72	1.72	7.44
5			2.72	2.72	9.44
6			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	3.5	3.5	**	**	**
4			1.34	1.34	6.68
5			2.34	2.34	8.68
6			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	4.0	4.0	**	**	**
4			**	**	**
5			1.96	1.96	7.92
6			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% GUTTER LINE PROFILE

H INCHES	W FEET	Y INCHES	Xzu FEET	X2L FEET	Lz FEET
3	2.5	2.5	1.25	0.98	6.24
4			2.39	1.88	8.27
5			3.53	2.77	10.30
6			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	3.0	3.0	0.82	0.64	5.46
4			1.96	1.54	7.49
5			3.09	2.43	9.52
6			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	3.5	3.5	0.39	0.30	4.69
4			1.53	1.20	6.72
5			2.66	2.09	8.75
6			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	4.0	4.0	**	**	**
4			1.09	0.86	5.95
5			2.23	1.75	7.98
6			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	2.5	2.5	1.45	0.89	6.34
4			2.77	1.69	8.46
5			4.08	2.50	10.58
6			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	3.0	3.0	0.95	0.58	5.53
4			2.27	1.39	7.65
5			3.58	2.20	9.78
6			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	3.5	3.5	0.45	0.28	4.72
4			1.77	1.08	6.85
5			3.08	1.89	8.97
6			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	4.0	4.0	**	**	**
4			1.27	0.78	6.04
5			2.58	1.58	8.16
6			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	2.5	2.5	1.72	0.81	6.53
4			3.28	1.55	8.83
5			4.85	2.28	11.13
6			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	3.0	1.13	0.53	5.66
4			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	3.5	3.5	0.53	0.25	4.78
4			2.10	0.99	7.08
5			3.66	1.72	9.38
6			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	4.0	4.0	**	**	**
4			1.50	0.71	6.21
5			3.07	1.44	8.51
6			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	2.5	2.5	2.12	0.74	6.86
4			4.04	1.42	9.46
5			5.97	2.10	12.06
6			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	3.0	3.0	1.39	0.49	5.88
4			3.31	1.16	8.48
5			5.24	1.84	11.08
6			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	3.5	3.5	0.66	0.23	4.89
4			2.58	0.91	7.49
5			4.51	1.58	10.09
6			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	4.0	4.0	**	**	**
4			1.85	0.65	6.50
5			3.78	1.33	9.10
6			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	X2L FEET	Lz FEET
3	2.5	2.5	2.76	0.69	7.44
4			5.26	1.31	10.57
5			7.76	1.94	13.70
6			10.26	2.56	16.83
7			12.77	3.19	19.95
8			15.00	3.81	22.81
9			15.00	4.44	23.44
3	3.0	3.0	1.80	0.45	6.26
4			4.31	1.08	9.38
5			6.81	1.70	12.51
6			9.31	2.33	15.64
7			11.81	2.95	18.77
8			14.32	3.58	21.89
9			15.00	3.87	23.20
3	3.5	3.5	0.85	0.21	5.07
4			3.36	0.84	8.20
5			5.86	1.46	11.32
6			8.36	2.09	14.45
7			10.86	2.71	17.58
8			13.37	3.34	20.71
9			15.00	3.96	22.96
3	4.0	4.0	**	**	**
4			2.41	0.60	7.01
5			4.91	1.23	10.14
6			7.41	1.85	13.26
7			9.91	2.48	16.39
8			12.42	3.10	19.52
9			14.92	3.73	22.65

6.0% GUTTER LINE PROFILE

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

7.0% GUTTER LINE PROFILE

H INCHES	W FEET	Y INCHES	Xzu FEET	X2L FEET	Lz FEET
3	2.5	2.5	6.90	0.60	11.50
4			13.16	1.14	18.31
5			15.00	1.69	20.69
6			15.00	2.23	21.23
7			15.00	2.77	21.77
8			15.00	3.32	22.32
9			15.00	3.86	22.86
3	3.0	3.0	4.52	0.39	8.91
4			10.78	0.94	15.72
5			15.00	1.48	20.48
6			15.00	2.02	21.02
7			15.00	2.57	21.57
8			15.00	3.11	22.11
9			15.00	3.65	22.65
3	3.5	3.5	2.14	0.19	6.32
4			8.40	0.73	13.13
5			14.67	1.27	19.94
6			15.00	1.82	20.82
7			15.00	2.36	21.36
8			15.00	2.90	21.90
9			15.00	3.45	22.45
3	4.0	4.0	**	**	**
4			6.03	0.52	10.55
5			12.29	1.07	17.36
6			15.00	1.61	20.61
7			15.00	2.15	21.15
8			15.00	2.70	21.70
9			15.00	3.24	22.24

CURB RAMP TYPE 7

0.0% GUTTER LINE PROFILE

H INCHES	W FEET	X1u FEET	X1L FEET	Lz FEET
3	3	3.00	3.00	10.00
4	4	4.00	4.00	12.00
5	5	5.00	5.00	14.00
6	6	6.00	6.00	16.00
7	7	7.00	7.00	18.01
8	8	8.00	8.00	20.01
9	9	9.00	9.00	22.01

1.0% GUTTER LINE PROFILE

H INCHES	W FEET	X1u FEET	X1L FEET	Lz FEET
3	3	3.41	2.68	10.09
4	4	4.55	3.57	12.12
5	5	5.68	4.47	14.15
6	6	6.82	5.36	16.18
7	7	7.96	6.25	18.21
8	8	9.10	7.15	20.24
9	9	10.23	8.04	22.27

2.0% GUTTER LINE PROFILE

H INCHES	W FEET	X1u FEET	X1L FEET	Lz FEET
3	3	3.95	2.42	10.37
4	4	5.27	3.23	12.49
5	5	6.58	4.03	14.62
6	6	7.90	4.84	16.74
7	7	9.22	5.65	18.86
8	8	10.53	6.45	20.99
9	9	11.85	7.26	23.11

3.0% GUTTER LINE PROFILE

H INCHES	W FEET	X1u FEET	X1L FEET	Lz FEET
3	3	4.69	2.21	10.90
4	4	6.25	2.94	13.20
5	5	7.82	3.68	15.49
6	6	9.38	4.41	17.79
7	7	10.94	5.15	20.09
8	8	12.51	5.88	22.38
9	9	14.07	6.62	24.69

4.0% GUTTER LINE PROFILE

H INCHES	W FEET	X1u FEET	X1L FEET	Lz FEET
3	3	5.77	2.03	11.80
4	4	7.70	2.70	11.40
5	5	9.62	3.38	17.00
6	6	11.55	4.06	19.60
7	7	13.47	4.73	22.20
8	8	15.40	5.41	24.80
9	9	17.32	6.08	27.40

5.0% GUTTER LINE PROFILE

H INCHES	W FEET	X1u FEET	X1L FEET	Lz FEET
3	3	7.51	1.88	13.38
4	4	10.01	2.50	16.51
5	5	12.51	3.13	19.64
6	6	15.00	3.75	22.75
7	7	15.00	4.38	23.38
8	8	15.00	5.00	24.00
9	9	15.00	5.63	24.63

6.0% GUTTER LINE PROFILE

H INCHES	W FEET	X1u FEET	X1L FEET	Lz FEET
3	3	10.73	1.74	16.47
4	4	14.31	2.33	20.63
5	5	15.00	2.91	21.91
6	6	15.00	3.49	22.49
7	7	15.00	4.07	23.07
8	8	15.00	4.65	23.65
9	9	15.00	5.23	24.23

7.0% GUTTER LINE PROFILE

H INCHES	W FEET	X1u FEET	X1L FEET	Lz FEET
3	3	15.00	1.63	20.63
4	4	15.00	2.17	20.17
5	5	15.00	2.72	21.72
6	6	15.00	3.26	22.26
7	7	15.00	3.81	22.81
8	8	15.00	4.35	23.35
9	9	15.00	4.89	23.89

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.

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

CD–606–1.1C

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

CD–606–1C

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS