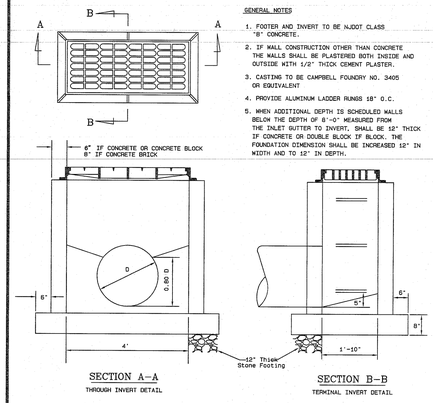


GENERAL NOTES

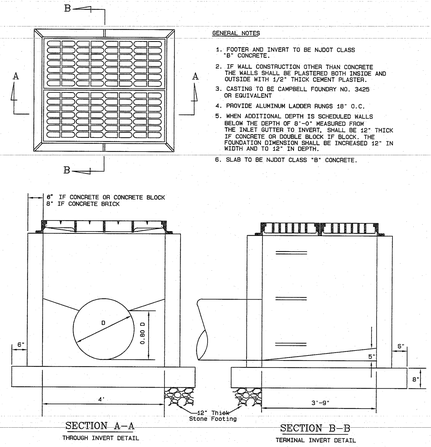
1. FOOTER AND INVERT TO BE NJDOT CLASS "B" CONCRETE.
2. IF WALL CONSTRUCTION OTHER THAN CONCRETE THE WALLS SHALL BE PLASTERED BOTH INSIDE AND OUTSIDE WITH 1/2" THICK CEMENT PLASTER.
3. CASTING TO BE CAMPBELL FOUNDRY NO. 3405 OR EQUIVALENT
4. PROVIDE ALUMINUM LADDER RUNGS 18" O.C.
5. WHEN ADDITIONAL DEPTH IS SCHEDULED WALLS BELOW THE DEPTH OF 8'-0" MEASURED FROM THE INLET GUTTER TO INVERT, SHALL BE 12" THICK IF CONCRETE OR DOUBLE BLOCK IF BLOCK. THE FOUNDATION DIMENSION SHALL BE INCREASED 12" IN WIDTH AND TO 12" IN DEPTH.

SECTION A–A
THROUGH INVERT DETAIL

SECTION B–B
TERMINAL INVERT DETAIL

TYPE "A" INLET

N.T.S.



GENERAL NOTES

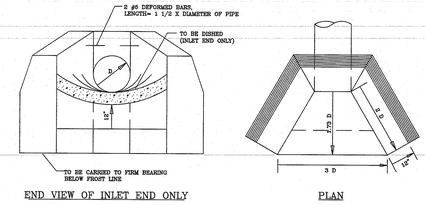
1. FOOTER AND INVERT TO BE NJDOT CLASS "B" CONCRETE.
2. IF WALL CONSTRUCTION OTHER THAN CONCRETE THE WALLS SHALL BE PLASTERED BOTH INSIDE AND OUTSIDE WITH 1/2" THICK CEMENT PLASTER.
3. CASTING TO BE CAMPBELL FOUNDRY NO. 3402 OR EQUIVALENT
4. PROVIDE ALUMINUM LADDER RUNGS 18" O.C.
5. WHEN ADDITIONAL DEPTH IS SCHEDULED WALLS BELOW THE DEPTH OF 8'-0" MEASURED FROM THE INLET GUTTER TO INVERT, SHALL BE 12" THICK IF CONCRETE OR DOUBLE BLOCK IF BLOCK. THE FOUNDATION DIMENSION SHALL BE INCREASED 12" IN WIDTH AND TO 12" IN DEPTH.
6. SLAB TO BE NJDOT CLASS "B" CONCRETE.

SECTION A–A
THROUGH INVERT DETAIL

SECTION B–B
TERMINAL INVERT DETAIL

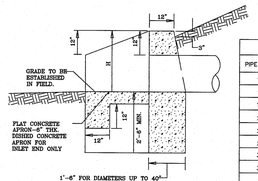
TYPE "E" INLET

N.T.S.



END VIEW OF INLET END ONLY

PLAN



OUTLET END

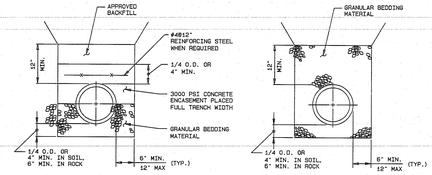
	HEADWALLS IN CUBIC YARDS		APRONS IN CUBIC YARDS
PIPE SIZE	CORR. METAL	REIN. CONC.	
12"	1.4 CY	1.4 CY	0.2 CY
15"	1.7	1.7	0.2
18	2.1	2.1	0.3
21"	2.5	2.5	0.4
24"	2.9	2.9	0.5
27"	3.3	3.4	0.6
30"	3.7	3.8	0.7
36"	4.7	4.8	0.9
42"	5.8	6.3	1.2
48"	7.6	8.4	1.5
54"	9.7	10.7	1.8
60"	12.2	13.4	2.1
66"	15.0	16.4	2.5
72"	18.1	19.9	3.0

GENERAL NOTES:

1. ALL EDGES TO BE CHAMFERED 1"
2. CONCRETE TO BE N.J.D.O.T. CLASS "C"
3. APRONS TO BE 6" THK. CONC., FLAT AT OUTLET END, DOWED AT INLET END
4. EXPOSED PORTIONS OF WALL TO BE RUBBED AND FLOATED.
5. FOR ARCH PIPE, THE SPAN SHALL BE SUBSTITUTED FOR D.

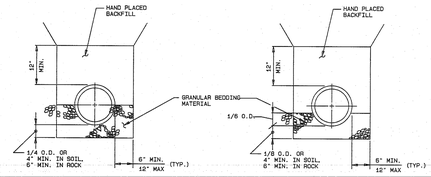
CONCRETE HEADWALL

N.T.S.



CLASS A
ARCH ENCASEMENT

CLASS B ALTERNATIVE
COMPACTED GRANULAR
BEDDING



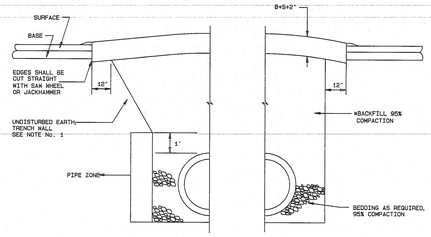
CLASS B
COMPACTED GRANULAR
BEDDING

CLASS C
COMPACTED GRANULAR
BEDDING

NOTES:
THERE SHALL BE A MINIMUM OF 30" OF BACKFILL OVER THE PIPE BEFORE HEAVY COMPACTION EQUIPMENT IS USED.

BEDDING DETAIL

N.T.S.



TYPICAL
SLOPED TRENCH

TYPICAL
VERTICAL TRENCH

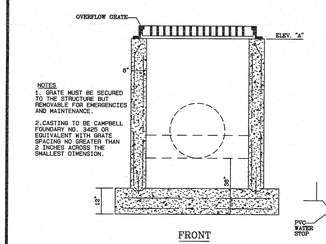
NOTES:

1. TRENCH TO BE SLOPED OR BRACED AND SHEETED AS NECESSARY FOR THE SAFETY OF THE WORKMEN AND THE PROTECTION OF OTHER UTILITIES.
2. TACK COAT ALL PAVEMENT SURFACES PRIOR TO INSTALLATION OF NEW PAVEMENT.
3. THE PATCH SHALL BE FULL DEPTH ASPHALT AND EXTEND 12" BEYOND THE EDGE OF TRENCH. DEPTH OF ASPHALT SHALL BE THE DEPTH OF EXISTING BASE PLUS THE DEPTH OF EXISTING SURFACE PLUS (2) INCHES.
4. PIPE ZONE OF TRENCH TO BE BACKFILLED IN SIX (6) INCH LIFTS. THESE SIX (6) INCH LIFTS ARE TO BE HAND TAMPED.
5. TRENCH TO BE BACKFILLED IN TWELVE (12) INCH LIFTS ABOVE PIPE ZONE.
6. BACKFILL TO BE COMPACTED TO 95% IN ACCORDANCE WITH AASHTO T180 AND AASHTO T99. COMPACTION TESTS TO BE PERFORMED EVERY 24" OF VERTICAL TRENCH HEIGHT. HORIZONTAL DISTANCES BETWEEN TESTS NOT TO EXCEED 200'. A MINIMUM OF TWO TESTS TO BE PERFORMED FOR EACH 24" OF VERTICAL TRENCH HEIGHT.

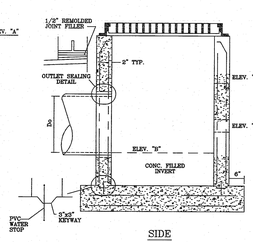
COMPACTION	SOIL (ASTM D2487)
AASHTO T180	ALL "G" & "S" SOILS
AASHTO T99	ML, CL, MH, CH

TYPICAL TRENCH DETAILS

N.T.S.



FRONT

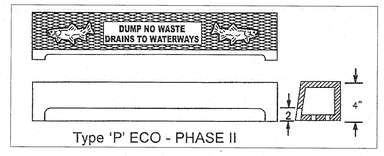


SIDE

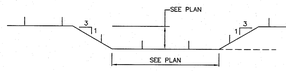
OUTLET STRUCTURE

N.T.S.

	ELEV. A	ELEV. B	ELEV. C	Do
O.S.–1	66.5	62.85	63.0(2–1/2")	24"
O.S.–3	65.0	62.21	63.0(2–1/2")	30"

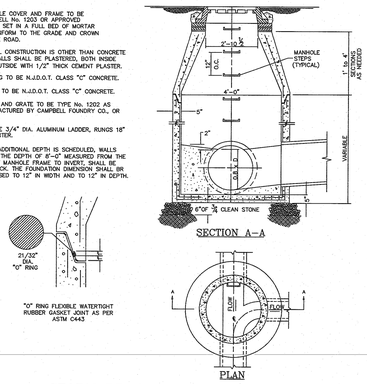


Type 'P' ECO - PHASE II



EMERGENCY SPILLWAY DETAIL

N.T.S.

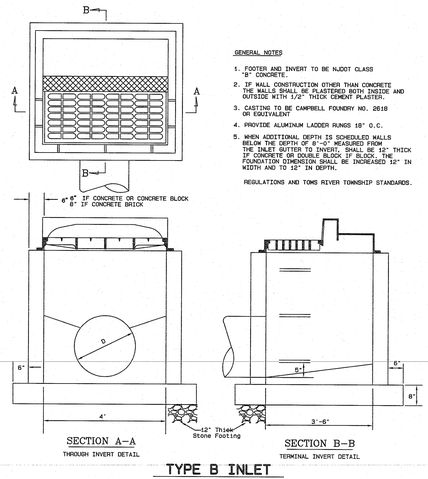


SECTION A–A

PLAN

STORM DRAINAGE MANHOLE

N.T.S.



SECTION A–A
THROUGH INVERT DETAIL

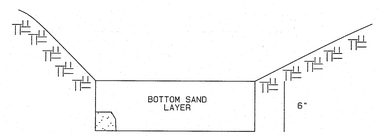
SECTION B–B
TERMINAL INVERT DETAIL

TYPE B INLET

GENERAL NOTES

1. FOOTER AND INVERT TO BE NJDOT CLASS "B" CONCRETE.
2. IF WALL CONSTRUCTION OTHER THAN CONCRETE THE WALLS SHALL BE PLASTERED BOTH INSIDE AND OUTSIDE WITH 1/2" THICK CEMENT PLASTER.
3. CASTING TO BE CAMPBELL FOUNDRY NO. 2618 OR EQUIVALENT
4. PROVIDE ALUMINUM LADDER RUNGS 18" O.C.
5. WHEN ADDITIONAL DEPTH IS SCHEDULED WALLS BELOW THE DEPTH OF 8'-0" MEASURED FROM THE INLET GUTTER TO INVERT, SHALL BE 12" THICK IF CONCRETE OR DOUBLE BLOCK IF BLOCK. THE FOUNDATION DIMENSION SHALL BE INCREASED 12" IN WIDTH AND TO 12" IN DEPTH.

REGULATIONS AND TOMS RIVER TOWNSHIP STANDARDS.

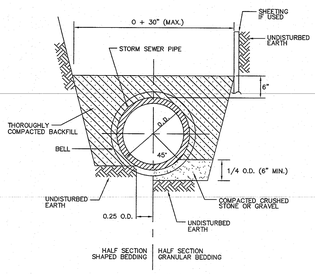


NOTES:

1. 6" THICK BOTTOM SAND LAYER SHALL CONSIST OF K5 SAND WITH NO MORE THAN 15% FINES AND SHALL HAVE A MINIMUM INFILTRATION RATE OF 20 INCHES PER HOUR.
2. BASIN CONSTRUCTION MUST NOT COMPACT SOILS BELOW BASIN BOTTOM.
3. THE BASIN BOTTOM IS NOT TO BE FULLY EXCAVATED TO ACCOMMODATE THE USE OF THE K-5 SAND UNTIL A MAJORITY OF THE CONTRIBUTING AREA IS PERMANENTLY STABILIZED.

INFILTRATION BASIN

N.T.S.



CLASS "C"
ORDINARY BEDDING

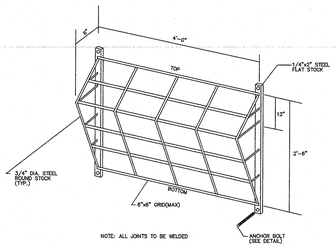
FIRST TWO LIFTS – SHOVEL TAMPED
REMAINING LIFTS – USE PELMATIC TAMPER
IF IN SAND USE VIBRATORY COMPACTOR

STORM SEWER PIPE BEDDING

N.T.S.

BASIN ACCESS DRIVE

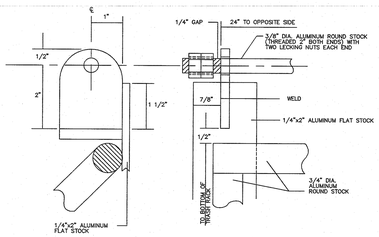
N.T.S.



NOTE: ALL JOINTS TO BE WELDED

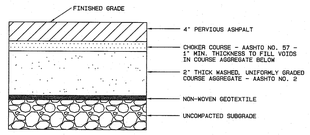
WEIR ORIFICE
TRASH RACK DETAIL

N.T.S.



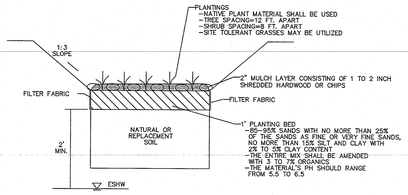
HINGE ASSEMBLY

N.T.S.



POROUS PAVING DETAIL

N.T.S.



RAIN GARDEN DETAIL

N.T.S.

NOTE: NO CONSTRUCTION EQUIPMENT PERMITTED IN THE AREA OF THE RAIN GARDEN BOTTOM.

DATE	REVISION	DRAWN.	CHECKED	RELEASED
11/30/20	REV. PER 10 UNIT RESIDENTIAL BUILDINGS	CSM	JS	BPM
11/7/18	REV PER CAFRA STORMWATER COMMENTS 10/31/18	SA	JS	

CONSTRUCTION DETAILS

PRELIMINARY AND FINAL MAJOR SITE PLAN & SUBDIVISION
LOT 15.01 ~ BLOCK 44

TAX MAP SHEET NO. 8
SITUATED IN
MANCHESTER TOWNSHIP, OCEAN COUNTY, NEW JERSEY

FWH ASSOCIATES, P.A.
Civil Engineers
Land Surveyors
Planners
Landscape Architects
Reserve Specialists
Architects
FWHassociates.com
1856 Rt. 9, Toms River, NJ 08755 T: 732.797.3100 F: 732.797.3223

Brian P. Murphy
PROFESSIONAL ENGINEER
N.J. LIC. NO. 42000

DRAWN BY CSM	DATE 8/10/18
DESIGNED BY JS	SCALE N.T.S.
CHECKED BY JS	DRAWER NO. PD–170
RELEASED BY BPM	PROJECT NO. 1423.0016
SHEET NO. 37	OF 49

L:\Jobs-projects\1423\1423001\Subset dwg\FWH-CONSTRUCTION DETAILS-SHEET.dwg, 3/3/2021 11:54:53 AM, ©2020 FWH Associates, P.A.

1. CHEEK WALLS

- CHEEK WALLS ARE PERMITTED WHEN ADJACENT TO NON-WALK AREAS OR ELEVATION DIFFERENCES CANNOT BE ACCOMMODATED BY FLARES OR GRADING.

- AVOID THE USE OF CHEEK WALLS IN SIDEWALK AND CURB DESIGN. APPROVAL FROM THE TOMS RIVER ENGINEERING DEPARTMENT IS REQUIRED.

2. CROSSWALKS

- FOR CURB RAMPS THAT LEAD TO A SINGLE CROSSWALK; THE RAMP (EXCLUDING FLARES) TO BE FULLY INSIDE OF MARKED CROSSWALK LINES.

- SHOULD BE PLACED A MINIMUM DISTANCE OF 4'-0" FROM STOP AND YIELD LINES.

- FOR UN-SIGNALIZED AREAS, CROSSWALKS SHOULD BE PLACED A MINIMUM DISTANCE OF 20'-0" AWAY FROM ON ROAD PARKING ZONES. FOR SIGNALIZED AREAS, CROSSWALKS SHOULD BE PLACED A MINIMUM DISTANCE OF 30'-0" FROM ON ROAD PARKING ZONES.

- PEDESTRIAN CROSSWALK IS 6'-0" MINIMUM MEASURED FROM INSIDE THE PAINTED EDGE TO INSIDE PAINTED EDGE AND THE INSIDE LINES MUST BE OUTSIDE THE PROJECTED CURB LINES.

- AVOID USING THE PARALLEL LINE CROSSWALK DESIGN. INSTEAD USE THE LONGITUDINAL LINES AT 6'-0" LONG AND 1'-2' WIDE WITH A SPACING OF 1'-2' APART. SPACING SHOULD BE DESIGNED SO THE PAINTED AREAS AVOID THE WHEEL PATHS.

3. CURB RAMPS

- CONSTRUCT CURB RAMPS WITH A MINIMUM 4'-0" X 4'-0" CLEAR SPACE BEFORE THE CURB FACE, WITHIN THE WIDTH OF THE CROSSWALK.

- SLOPES THAT EXCEED 1:12, WILL NOT BE ACCEPTED AND WILL BE RECONSTRUCTED.

- PROVIDE SLIP RESISTANT TEXTURE ON CURB RAMP BY COARSE BROOMING TRANSVERSE TO THE SLOPE OF THE RAMP. EXTEND TEXTURE THE FULL WIDTH AND LENGTH OF THE CURB RAMP INCLUDING FLARED SIDE RAMPS.

- TO AVOID CHASING GRADE INDEFINITELY WHEN TRAVERSING THE HEIGHT OF CURB, RAMP LENGTH NOT TO EXCEED 15'-0". ADJUST RAMP SLOPE AS NEEDED TO PROVIDE ACCESS TO THE MAXIMUM EXTENT FEASIBLE.

- FOR NEW CONSTRUCTION AND ALTERATIONS, CONSTRUCT CURB RAMP AND FLARE SLOPES WITH THE FLATTEST SLOPE POSSIBLE.

- FOR NEW CONSTRUCTION, ATTEMPT TO KEEP THE CROSS SLOPE AS FLAT AS POSSIBLE. DO NOT EXCEED 2.00% CROSS SLOPE ON THE CURB RAMP OR PEDESTRIAN ACCESSIBLE ROUTE (MEASURED PERPENDICULAR TO THE DIRECTION OF TRAVEL).

- CURB RAMP AND SIDE FLARE LENGTHS ARE VARIABLE AND BASED ON CURB HEIGHT AND THE SIDEWALK SLOPE.

- CURB RAMP WIDTH IS 4'-0" MINIMUM.

- AVOID CURB RAMP DESIGNS WHERE THE WIDTH OF THE CROSSWALK WILL NEED TO BE GREATER THAN 10'-0" WIDE.

- ALL SLOPES ARE MEASURED WITH RESPECT TO A LEVEL PLANE. THEREFORE, THE LENGTH OF RAMP IS NOT SOLELY DEPENDANT ON THE HEIGHT OF CURB. (FOR EXAMPLE, A 6" CURB DOES NOT NECESSARILY MEAN A RAMP LENGTH OF 6'-0" FOR A 12:1 SLOPE.

- THE CHANGE IN GRADE AT THE BOTTOM OF THE CURB RAMP AND ADJOINING ROAD SURFACE IS NOT TO EXCEED AN ALGEBRAIC DIFFERENCE OF 11.00%. THE COUNTER SLOPE OF THE GUTTER OR ROAD AT THE FOOT OF A CURB RAMP, TURNING SPACE OR BLENDED TRANSITION IS NOT TO EXCEED 8.00% AND IT IS NOT NECESSARY TO HAVE THE LENGTH GREATER THAN 15'-0".

- FOR BLENDED TRANSITION CURB RAMPS (TYPE 3), THE MAXIMUM RUNNING SLOPE IS 5% WITH A MAXIMUM 2% CROSS SLOPE. BLENDED TRANSITION CURB RAMPS REQUIRE THE OCEAN COUNTY ENGINEER'S APPROVAL.

4. FLUSH CURB

- CONSTRUCT TOP OF PLAIN CEMENT CONCRETE FLUSH CURB TO BE FLUSH WITH ADJACENT SURFACES (RAMPS, SIDEWALKS, FLARES).

- CONSTRUCT FLUSH CURB FOR CURB RAMPS 2 FLUSH TO ADJACENT ROADWAY. GRADE EDGE OF ROAD ELEVATIONS AT THE FLOW LINE TO ENSURE POSITIVE DRAINAGE AND PREVENT PONDING. WHEN BEHIND FLUSH CURB, ADJUST SLOPES TO PROVIDE POSITIVE DRAINAGE. THE VERTICAL ALIGNMENT OF A CURB RAMP, EXCLUDING FLARES, SHALL BE PLANAR. GRADE BREAKS SHALL BE FLUSH AND PERPENDICULAR TO THE DIRECTION OF THE RAMP RUN. RAMP TRANSITIONS BETWEEN WALKS, GUTTERS, TURNING SPACES, OR STREETS SHALL BE FLUSH AND FREE OF ABRUPT VERTICAL CHANGES (1/4" MAXIMUM).

- FOR TYPE 3 RAMPS AND BLENDED TRANSITIONS, THE FLUSH CURB MUST EXTEND FROM THE OUTER MOST EDGE OF EACH CROSSWALK.

5. DETECTABLE WARNING SURFACES

- NO SEPARATION BETWEEN DETECTABLE WARNING SURFACES FOR MEDIANS LESS THAN 4'-0" BETWEEN BACK OF CURBS.

- PROVIDE DETECTABLE WARNING SURFACES (DWS) 24" MINIMUM (IN THE DIRECTION OF PEDESTRIAN TRAVEL) ACROSS FULL WIDTH OF RAMP AT THE GRADE BREAK NEAR STREET EDGE. PROVIDE DWS THAT CONTRAST VISUALLY WITH ADJACENT WALKWAY SURFACES, EITHER LIGHT-ON-DARK OR DARK-ON-LIGHT FOR THE FULL WIDTH OF RAMP.

- ALIGN DETECTABLE WARNING SURFACE TRUNCATED DOMES ON A SQUARE GRID IN THE PREDOMINANT DIRECTION OF THE RAMP AND PERPENDICULAR TO CURB WHEN APPROPRIATE.

- THE PUBLIC SIDEWALK CURB RAMP, DETECTABLE WARNING SURFACES (SHADED AREA) SHALL BE SAFETY RED COLOR, EXCEPT IF THE MUNICIPALITIES HAVE ESTABLISHED AN ALTERNATIVE COLOR SCHEME.

- FOR TYPE 3 RAMPS AND BLENDED TRANSITIONS, THE DETECTABLE WARNING SURFACE MUST BE PLACED ALONG THE ENTIRE FLUSH CURB AND THE DOMES MUST BE PLACED IN SUCH A WAY THAT THE DIRECTION OF TRAVEL IS ORIENTED INTO THE CROSSWALK.

6. JOINTS

- PROVIDE EXPANSION JOINT MATERIAL 1/2" THICK WHERE CURB RAMP ADJOINS ANY RIGID PAVEMENT, SIDEWALK OR STRUCTURE WITH THE TOP OF JOINT FILLER FLUSH WITH ADJACENT CONCRETE SURFACE.

- SEAL JOINTS WITH AN APPROVED SEALING MATERIAL.

7. TURNING SPACES

- TURNING SPACE, APPROACH SIDEWALK TRANSITIONS, AND CURB RAMP SHALL BE KEPT CLEAR OF OBSTRUCTIONS, UNLESS AN EXCEPTION IS GRANTED.

- DO NOT EXCEED 2.00% SLOPE IN ANY DIRECTION.

- TURNING SPACE SHOULD BE 4'-0" X 4'-0" MINIMUM CLEAR SPACE. IF THE TURNING SPACE IS CONSTRAINED ON 2 OR MORE SIDES, IT MUST BE 4'x5' WITH THE 5' LENGTH ALONG THE UNOBSTRUCTED SIDE. FOR TYPE 3 RAMPS AND BLENDED TRANSITIONS, THE TURNING SPACE MUST HAVE A MINIMUM OF A 8'-0" DEPTH (INCLUDING THE DETECTABLE WARNING SURFACE) ALONG THE FLUSH CURB/ROADWAY.

- TOMS RIVER ENGINEERING DEPARTMENT APPROVAL REQUIRED IF TURNING SPACE FOR TURNING MANEUVER IS NOT ON THE SIDEWALK, I.E. IF THE TURNING SPACE "CLEAR SPACE" IS IN THE ROADWAY.

- 4'x4' TURNING SPACES ARE REQUIRED AT EVERY ACCESSIBLE PEDESTRIAN SIGNAL/PUSHBUTTON LOCATION.

- TURNING SPACES SHALL BE CONSTRUCTED AT THE TOP OF EVERY PERPENDICULAR RAMP AND AT THE BOTTOM OF EVERY PARALLEL RAMP.

8. NON-WALK SURFACES

- NON-WALK AREA IS AN OBSTRUCTION OR GRASS/NON-PAVED AREA ADJACENT TO THE PEDESTRIAN ACCESS ROUTE THAT IS NOT USED BY THE PEDESTRIAN FOR ACCESS.

9. PEDESTRIAN PUSHBUTTONS

- THE DETAILS DEPICT PEDESTRIAN PUSHBUTTON POLES TO ILLUSTRATE THE RECOMMENDED PLACEMENT OF PEDESTRIAN PUSHBUTTONS. FOR ALTERATION PROJECTS, PROVIDE ACCESS TO EXISTING PEDESTRIAN PUSHBUTTONS TO THE MAXIMUM EXTENT FEASIBLE. INSTALL PEDESTRIAN PUSHBUTTON STUB POLES, WHERE APPLICABLE, SO AS NOT TO CREATE PEDESTRIAN OBSTRUCTIONS.

- NEW CONSTRUCTION MUST COMPLY WITH RECOMMENDED LOCATIONS FOR ALTERATION PROJECTS LOCATE PEDESTRIAN PUSHBUTTONS, TO THE MAXIMUM EXTENT FEASIBLE (SEE 2009 MUTCD FIG 4E-3)

- ADJACENT TO A LEVEL NON-SLIP SURFACE TO PROVIDE ACCESS FROM A WHEELCHAIR, AND WHERE THERE IS A NON-SLIP WHEELCHAIR ACCESSIBLE ROUTE TO THE RAMP.

- WITHIN 5'-0" OF THE CROSSWALK EXTENDED

- BETWEEN 1'-6" AND 10'-0" OF THE EDGE OF CURB, SHOULDER OR PAVEMENT

- PARALLEL TO THE CROSSWALK TO BE USED

- MOUNT PEDESTRIAN PUSHBUTTON 42" ABOVE THE SIDEWALK OR FINISHED GRADE TO THE CENTER OF THE PUSHBUTTON AND 10" MAXIMUM LATERALLY FROM TURNING SPACE. IN ADDITION, THE PEDESTRIAN PUSHBUTTON MUST ALSO BE 6'-0" MINIMUM DISTANCE FROM THE CURB RAMP AND 2'-0" MINIMUM DISTANCE BETWEEN A CATCH BASIN AND THE PEDESTRIAN PUSHBUTTON.

10. SIDE FLARES

- ALL SLOPES ARE MEASURED WITH RESPECT TO A LEVEL PLANE. THEREFORE, THE LENGTH OF RAMP IS NOT SOLELY DEPENDANT ON THE HEIGHT OF CURB. (FOR EXAMPLE, A 6" CURB DOES NOT NECESSARILY MEAN A RAMP LENGTH OF 6'-0" FOR A 12:1 SLOPE.

- SIDE FLARES 10.00% MAXIMUM SLOPE WHERE THE PEDESTRIAN PATH CROSSES THE CURB RAMP.

- SIDE FLARES MUST BE PARALLEL TO THE CURB LINE.

- CURB RAMP AND SIDE FLARE LENGTHS ARE VARIABLE AND BASED ON CURB HEIGHT AND THE SIDEWALK SLOPE.

- GRADE GRASS AREAS OR OTHER NON-WALK AREAS AT 3:1 (1:3) MAXIMUM. DO NOT INSTALL CHEEK WALLS THAT INTERSECT THE PEDESTRIAN ACCESS ROUTE.

- SIDE FLARE WIDTH IS TYPICALLY 24" AND A MINIMUM OF 12".

11. SIDEWALKS

- NOTES THE AREA CONSIDERED TO BE THE "PEDESTRIAN ACCESSIBLE ROUTE"

- THE MAXIMUM SIDEWALK CROSS SLOPE IS 2.00% (MEASURED PERPENDICULAR TO THE DIRECTION OF TRAVEL). THE MAXIMUM GRADE IS 5.00%. FOR SIDEWALKS ALONG STREETS; HOWEVER, THE LONGITUDINAL GRADE OF THE SIDEWALK SHOULD BE CONSISTENT WITH THE GRADE OF THE ADJACENT ROADWAY. IF THE 5.00% GRADE IS NOT FEASIBLE DUE TO TOPOGRAPHY AND OTHER PHYSICAL CONSTRAINTS, THE LOWEST PRACTICAL GRADE GREATER THAN 5.00% SHOULD BE USED.

- SIDEWALK WIDTH MAY BE REDUCED TO 4'-0", WHEN PASSING AREAS 5'-0" X 5'-0" ARE PROVIDED EVERY 200'.

12. TRAVEL LANES

- THE TRAVEL LANE IS DEFINED BY THE OUTSIDE EDGE OF THE WHITE PAVEMENT MARKING LINE. IF A WHITE PAVEMENT MARKING LINE DOES NOT EXIST, THE TRAVEL LANE IS DEFINED BY THE CONTRACT DOCUMENTS.

13. MODIFY CONSTRUCTION DETAILS TO ADAPT DIMENSIONS TO EXISTING CURB HEIGHTS WHERE THE CURB IS LESS OR MORE THAN THE STANDARD 6" HEIGHT.

14. CONSTRUCTION MUST MEET THE STANDARDS CONTAINED HEREIN UNLESS OTHERWISE NOTED OR DIRECTED.

15. PREFERRED AND ALTERNATE TREATMENTS SHOULD NOT BE INTERMIXED WITHIN THE SAME INTERSECTION.

16. ALL HANDICAP RAMPS CONSTRUCTED IN THIS CONTRACT SHALL MEET ACCESSIBILITY REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT AND THE PUBLIC RIGHTS-OF-WAY ACCESSIBILITY GUIDELINES.

17. THE CONTRACTOR IS REQUIRED TO CONTACT THE TOMS RIVER ENGINEERING TRAFFIC DEPARTMENT ABOUT THE CONSTRUCTION OF ALL HANDICAP CURB RAMPS AT SIGNALIZED INTERSECTIONS AND VERIFY THE STRIPING PLAN IS IN ACCORDANCE WITH THE MOST RECENT NO PASSING ZONE PLAN.

18. GRADE BREAKS

- GRADE BREAKS AT THE TOP AND BOTTOM OF THE CURB RAMP SHALL BE PERPENDICULAR TO THE DIRECTION OF THE RAMP RUN.

- GRADE BREAKS ARE NOT PERMITTED ON THE SURFACE OF RAMP RUNS OR TURNING SPACES.

- SURFACE SLOPES THAT MEET AT THE GRADE BREAKS SHALL BE FLUSH.

19. FOR NEW CONSTRUCTION AND ALTERATIONS, CONSTRUCT CURB RAMP AND FLARE SLOPES WITH THE FLATTEST SLOPE POSSIBLE.

20. ALL VERTICAL SURFACE DISCONTINUITIES SHALL NOT EXCEED ¼" IN HEIGHT. ANY VERTICAL SURFACE DISCONTINUITY BETWEEN ¼" AND ½" SHALL BE BEVELED AT A SLOPE NO GREATER THAN 50% ACROSS THE ENTIRE DISCONTINUITY.

21. HORIZONTAL OPENINGS IN GRATES AND JOINTS SHALL NOT EXCEED ½" IN DIAMETER AND THE GRATES SHALL BE PLACED SO THE LONG DIMENSION IS PERPENDICULAR TO THE DIRECTION OF TRAVEL.

22. THE CROSS SLOPE FOR CURB RAMPS, BLENDED TRANSITIONS, AND TURNING SPACES SHALL BE 2% MAXIMUM. AT PEDESTRIAN STREET CROSSINGS WITHOUT YIELD OR STOP CONTROL, THE CROSS SLOPE SHALL BE PERMITTED TO MATCH THE STREET GRADE. PEDESTRIAN STREET CROSSINGS WITHOUT YIELD OR STOP CONTROL, CROSSINGS WHERE THERE IS NO YIELD OR STOP SIGN, OR WHERE THERE IS A TRAFFIC SIGNAL THAT IS DESIGNED FOR THE GREEN PHASE.

INSTALLATION INSTRUCTIONS

1. SAW CUT EXISTING CURB RAMP SURFACE WHERE THE DWS WILL BE PLACED.
2. REMOVE EXISTING CONCRETE FROM THIS AREA.
3. REPLACE AND COMPACT ANY DISTURBED AGGREGATE SUBBASE.
4. PLACE NEW CEMENT CONCRETE AND LEVEL TO A 4 INCH DEPTH SO THAT THE TOP OF THE CONCRETE IS LOWER THAN THE ADJOINING SIDEWALK. EQUIVALENT TO THE EMBEDDING DEPTH OF THE DWS MATERIAL.
5. LAY OUT AND PROPERLY FIT EACH UNIT PRIOR TO SETTING IN WET CONCRETE.
6. CUT UNITS AS NECESSARY ALONG PERIMETER OF DETECTABLE WARNING SURFACE.
7. PLACE UNITS ACROSS THE ENTIRE WIDTH OF THE CURB RAMP SURFACE AND/OR WHERE THE CURB IS FLUSH.
8. PRESS UNITS INTO FULL CONTACT WITH THE FRESH CONCRETE.
9. ADJUST HEIGHT OF EACH UNIT EDGE TO BE LEVEL WITH ADJACENT RAMP SURFACES.
10. ONLY TRUNCATED DOMES SHOULD BE ABOVE THE ADJACENT FINISHED CONCRETE.
11. FILL ANY SAW CUT GAPS WITH APPROVED JOINT SEALANT MATERIAL.

DWS NOTES:

- THE DETAILS PROVIDED ARE NOT DRAWN TO SCALE. THE QUANTITY OF DOMES DEPICTED ON THE DETECTABLE WARNING UNIT (THE DOMES AND THE ENTIRE 24" LEVEL SURFACE) IS FOR ILLUSTRATION ONLY.

DETECTABLE WARNING UNIT DIMENSIONS:

- THE SIZE OF THE DETECTABLE WARNING FIELD SHALL BE 24" IN THE DIRECTION OF TRAVEL AND SHALL EXTEND THE FULL WIDTH OF THE CURB RAMP OR FLUSH SURFACE, EXCLUSIVE OF SIDE FLARES.

DOME ALIGNMENT:

- THE ROWS OF DOMES SHALL BE ALIGNED TO BE PERPENDICULAR OR RADIAL TO THE GRADE BREAK BETWEEN THE RAMP TURNING SPACE OR CURB RAMP AND THE STREET.
- WHERE DOMES ARE ARRAYED RADIALLY THEY MAY DIFFER IN DOME DIAMETER AND CENTER-TO-CENTER SPACING WITHIN THE RANGES SPECIFIED ON THIS SHEET.

COLOR REQUIREMENTS:

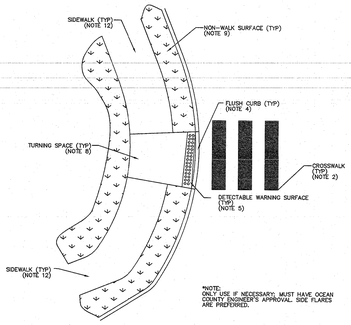
- THE DETECTABLE WARNING FIELD SHALL BE THE COLOR "SAFETY RED" UNLESS NOTED OTHERWISE IN THE CONTRACT DOCUMENTS AND MUST MEET THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS.

DETECTABLE WARNINGS LOCATIONS:

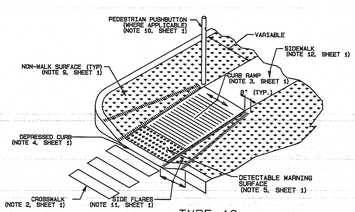
- DETECTABLE WARNINGS SHALL BE LOCATED SO THAT THE EDGE OR CORNER OF THE WARNING FIELD NEAREST TO THE ROADWAY IS 6" TO 9" FROM THE FRONT OF THE CURB OR THE ROADWAY EDGE (12" WHERE TRAVERSABLE CURB IS USED).
- THE EDGE OF THE DETECTABLE WARNING FIELD NEAREST TO A RAILROAD CROSSING SHALL BE 6'-0" MINIMUM AND 15'-0" MAXIMUM FROM THE CENTERLINE OF THE NEAREST RAIL.

EQUIVALENT SLOPES

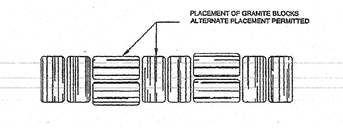
PERCENT SLOPE	EQUIVALENT SLOPE
10.00%	10:1
8.33%	12:1
7.14%	14:1
5.00%	20:1
2.00%	50:1
1.00%	100:1



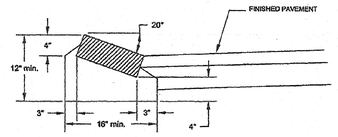
TYPE 1N CURB RAMP



TYPE 1C CURB RAMP



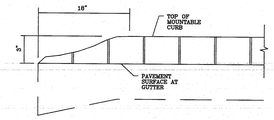
PLAN



SECTION

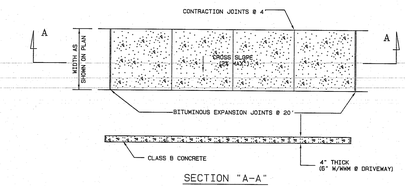
MOUNTABLE CURB DETAIL

N.T.S.



END OF GRANITE CURB DETAIL

N.T.S.



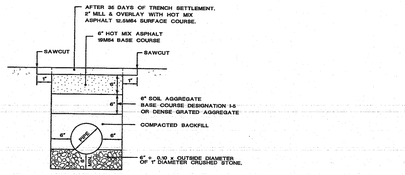
SECTION "A-A"

SIDEWALK NOTES:

1. A PREFORMED, BITUMINOUS EXPANSION JOINT 1/2" THICK, AS HERE AND EXTENDING THE FULL WIDTH OF THE WALK UNBROKEN, SHALL BE INSTALLED EVERY 20 FEET. CONTRACTION JOINTS SHALL BE INSTALLED EVERY MAXIMUM 4 FEET THE FULL WALK WIDTH
2. THERE SHALL BE A BROOM FINISH TO ENSURE A SLIP RESISTANT WEARING SURFACE IN ACCORDANCE WITH ADA.

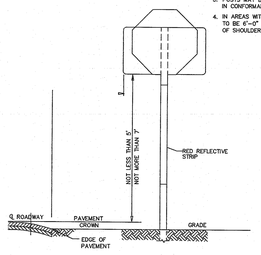
SIDEWALK DETAIL

N.T.S.



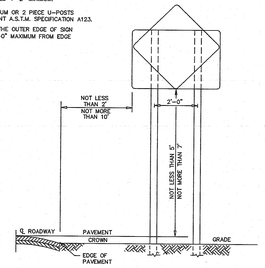
SURFACE REPAIR

NOT TO SCALE



SINGLE POST

30" X 30" OR SMALLER



TWIN POST

36" X 36" OR LARGER

TYPICAL SIGN MOUNTING DETAIL

N.T.S.

NOTES:

1. SIGN IS TO BE METAL WITH A WHITE BACKGROUND AND RED LETTERING.
2. LETTERING TO BE THE FOLLOWING SIZES:
   LINE ONE - THREE INCH LETTERS
   LINE TWO - THREE INCH LETTERS
   LINE THREE - THREE INCH LETTERS

NO PARKING FIRE LANE

N.T.S.

SPEED LIMIT 25 SIGN

N.T.S.

ONE WAY SIGN

R6-1
36"x 12"

DO NOT ENTER SIGN

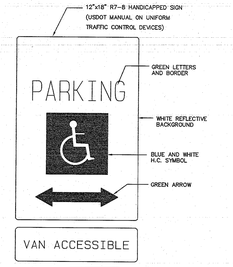
R5-1
30"x 30"

PEDESTRIAN CROSSING SIGN

R1-1
30"x 30"

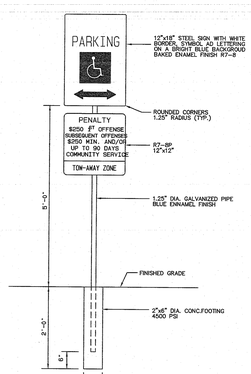
STOP SIGN DETAIL

N.T.S.



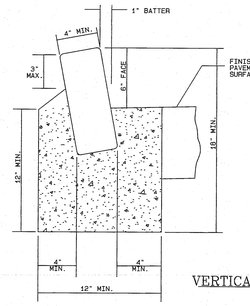
HANDICAPPED SIGN DETAIL

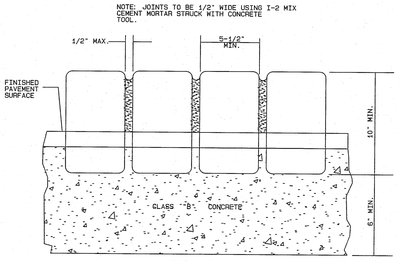
N.T.S.



HANDICAP SIGN MOUNTING DETAIL

N.T.S.

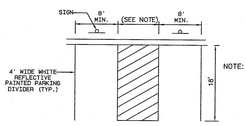




NOTE: JOINTS TO BE 1/2" WIDE USING 1-2 MIX CEMENT MORTAR STRUCK WITH CONCRETE TOOL.

VERTICAL GRANITE BLOCK CURB

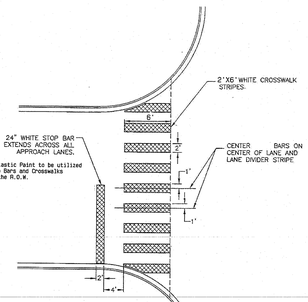
N.T.S.



NOTE: VAN ACCESSIBLE SPOTS TO HAVE AN 8 FOOT MINIMUM AISLE. ALL OTHER SPOTS SHALL HAVE A 5 FOOT MINIMUM AISLE

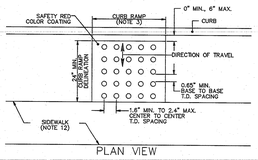
HANDICAP PARKING SPACE STRIPING DETAIL

N.T.S.

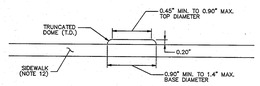


STOP BAR AND CROSSWALK DETAIL

N.T.S.

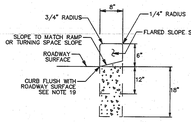


PLAN VIEW

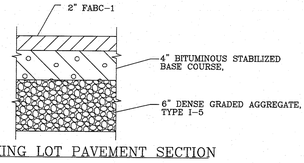


ELEVATION

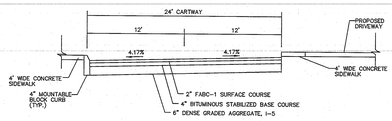
DETECTABLE WARNING SURFACE TRUNCATED DOME DETAILS



TYPICAL FLUSH CURB FOR CURB RAMPS

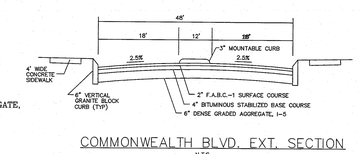


PARKING LOT PAVEMENT SECTION



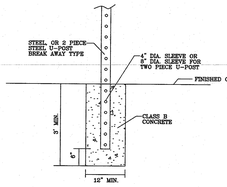
RESIDENTIAL ROAD CROSS-SECTION

N.T.S.



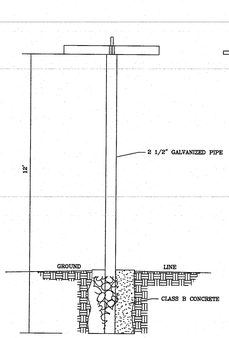
COMMONWEALTH BLVD. EXT. SECTION

N.T.S.



TYPICAL TRAFFIC SIGN FOOTING DETAIL

N.T.S.

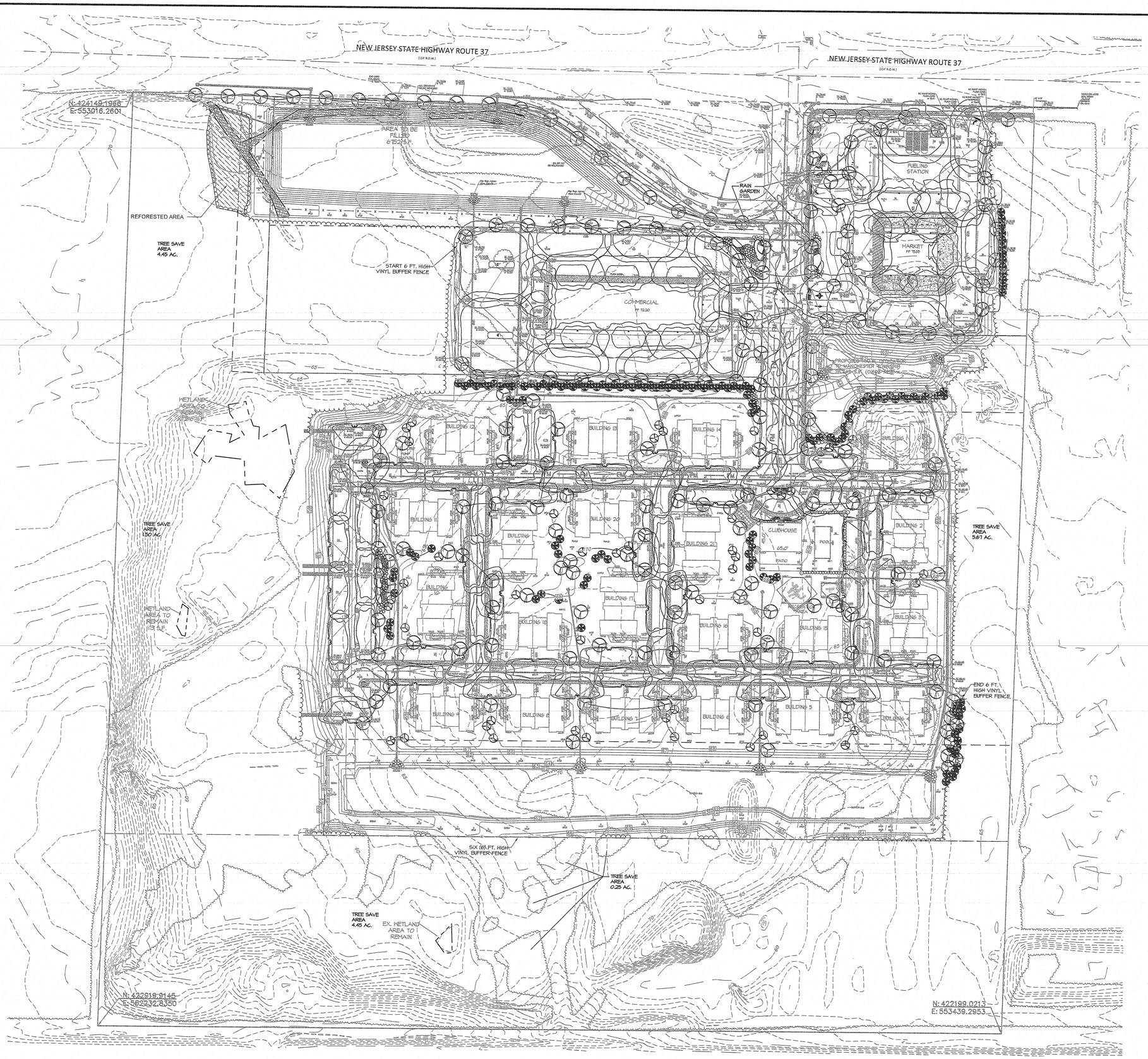


NOTE:

A. STREET NAME SIGNS SHALL BE REFLECTORIZED FOUR-WAY TYPE (TWO-HEAD), WITH ALUMINUM CONSTRUCTION KNOWN AS "CONCAT VANDAL-PROOF STREET NAME SIGN OR EQUIVALENT, WITH THE FOLLOWING FEATURES:

1. THE CONSTRUCTION OF THE "CONCAT VANDAL-PROOF STREET-NAME SIGN SHALL BE AS MANUFACTURED WITH ALL EXTENDERS TO BE MADE OF 6063-T5 ALUMINUM EXTRUSION, ALL FASTENERS TO BE STAINLESS STEEL, ALL THREADED CENTER STAFF, CONSISTING OF A CONTINUOUS STAINLESS STEEL AND LOCKING NUT FOR MOUNTING INSIDE THE HALL OF THE POST.

2. LETTERING ON STREET-NAME SIGNS SHALL BE AT LEAST FOUR INCHES WITH SUPPLEMENTARY LETTERING TO INDICATE SUFFIX (AVENUE, BOULEVARD, STREET, ETC.). SUFFIX SHALL BE IN SMALLER LETTERING AT LEAST TWO INCHES IN HEIGHT. CONVEN



GRAPHIC SCALE 1"= 60'

0 60 120 180

NOTES:

1. RESIDENTIAL PARKING LOT 1, 2, 3 & 4 TO HAVE POROUS PAVEMENT.
2. TREE SAVE AREA TO BE DEED RESTRICTED.

DATE	REVISION	DRAWN	CHECKED	RELEASED
01/14/21	REV. PARKING AND STORM	SA	JS	
11/30/20	REV. PER 10 UNIT RESIDENTIAL BUILDINGS	CSM	JS	
2/07/20	ADD STREET LIGHTING	CSM	JS	
9/24/19	REV. BUFFER FENCING PER NJDEP	CSM	JS	
3/18/19	REV PER CAFRA MEETING 2/14/19	CSM	JS	
11/7/18	REV PER CAFRA STORMWATER COMMENTS 10/31/18	SA	JS	

NON STRUCTURAL STRATEGIES PLAN

PRELIMINARY AND FINAL MAJOR SITE PLAN & SUBDIVISION

LOT 15.01 ~ BLOCK 44

TAX MAP SHEET NO. 8
SITUATED IN
MANCHESTER TOWNSHIP, OCEAN COUNTY, NEW JERSEY

FWH ASSOCIATES, P.A.

CIVIL ENGINEERS
LAND SURVEYORS
PLANNERS
LANDSCAPE ARCHITECTS
RESERVE SPECIALISTS
ARCHITECTS

FWHASSOCIATES.COM

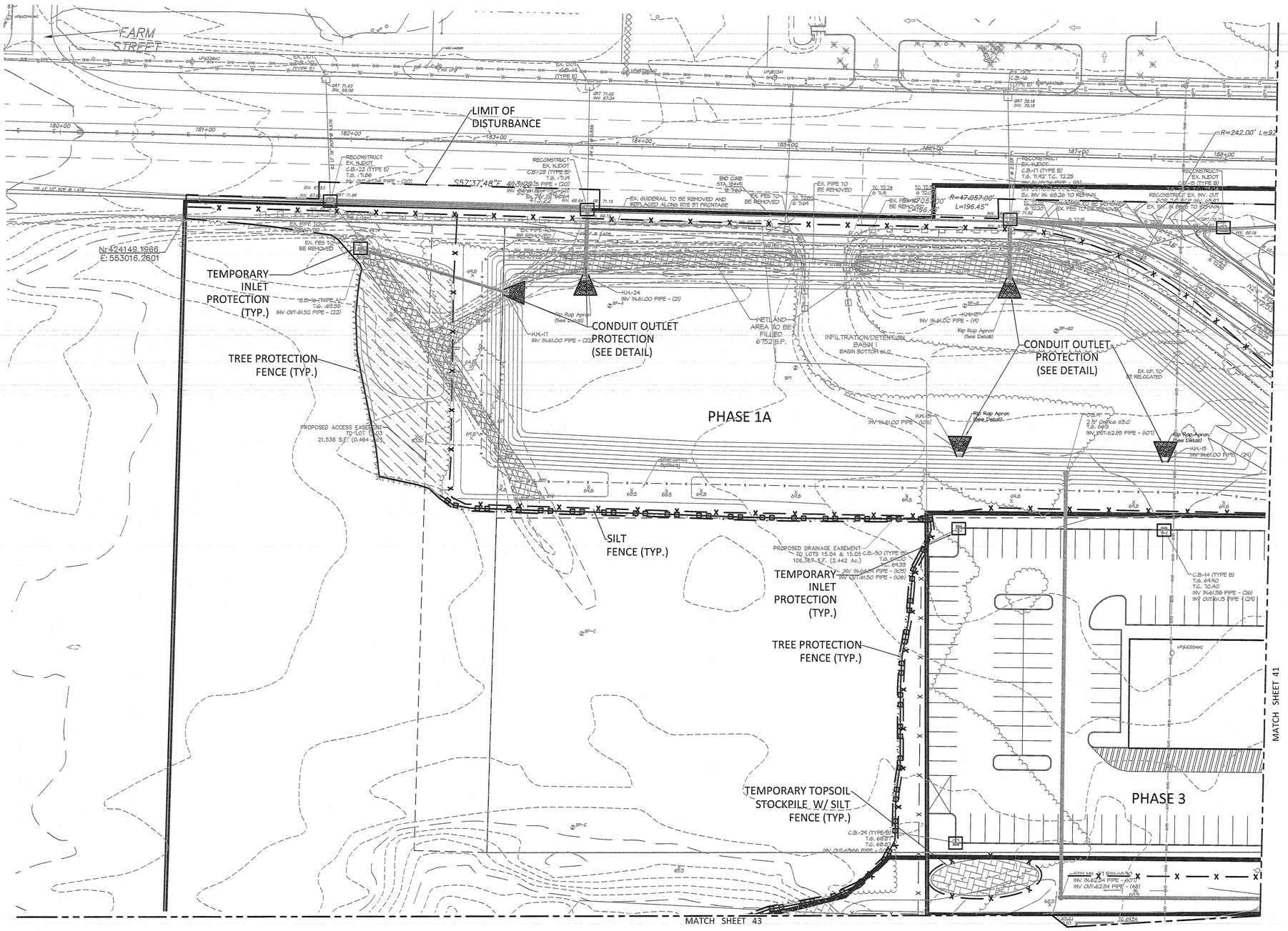
1856 Rt. 9, Toms River, NJ 08755 T: 732.797.3100 F: 732.797.3223

Brian P. Murphy

PROFESSIONAL ENGINEER
N.J. LIC. NO. 42000

DRAWN BY MVM	DATE 8/10/18
DESIGNED BY MVM	SCALE 1"=60'
CHECKED BY MVM	DRAWER NO.
RELEASED BY LGW	PROJECT NO. 1423.0016
SHEET NO. 39	OF 49

L:\FWH\Projects\1423\1423001\0\Sheet DWG\FWH-LAND\SC-FWH-PLAN-REVISED-10272020-SHEET.dwg, 2/12/2021 10:39:26 AM, ©2020 FWH Associates, P.A.



LEGEND

75	EXISTING CONTOUR
75	PROPOSED CONTOUR
x (87.5)	EXISTING SPOT ELEVATION
75.42 ×	PROPOSED SPOT ELEVATION
	PROPOSED STORM SEWER
F.F. 75.00	FINISH FLOOR ELEVATION
G.F. 75.00	GARAGE FLOOR ELEVATION
B.F. 75.00	BASEMENT FLOOR ELEVATION
	WOODSLINE
	LIMIT OF DISTURBANCE
X	SILT FENCE
	TREE PROTECTION FENCE
	INLET PROTECTION

GRAPHIC SCALE 1"=30'

0 30 60 90

DATE	REVISION	DRAWN	CHECKED	RELEASED
01/14/21	REV. PER PHASING LIMITS	SA	JS	BPM
11/30/20	REV. PER 10 UNIT RESIDENTIAL BUILDINGS	CSM	JS	BPM
5/20/2020	REVISED PER NJDOT LETTER 4-13-2020	CSM	JS	BPM

SOIL EROSION AND SEDIMENT CONTROL PLAN

PRELIMINARY AND FINAL MAJOR SITE PLAN & SUBDIVISION

LOT 15.01 ~ BLOCK 44

TAX MAP SHEET NO. 8
SITUATED IN
MANCHESTER TOWNSHIP, OCEAN COUNTY, NEW JERSEY

FWH ASSOCIATES, P.A.

Civil Engineers
Land Surveyors
Planners
Landscape Architects
Reserve Specialists
Architects

FWHassociates.com

1856 Rt. 9, Toms River, NJ 08755 T: 732.797.3100 F: 732.797.3223

Brian P. Murphy
PROFESSIONAL ENGINEER
N.J. LIC. NO. 42000

DRAWN BY CSM	DATE 3/20/20
DESIGNED BY JS	SCALE 1"=30'
CHECKED BY JS	DRAWING NO. PD-170
RELEASED BY BPM	PROJECT NO. 1423.0016
SHEET NO. 40	OF 49

L:\FWHProjects\1423\1423001\Office\DWG\FWH-SOIL EROSION PLAN-SHEET.dwg, 2/3/2021 1:17:24 PM, ©2003 FWH Associates, P.A.

FARM STREET

LIMIT OF DISTURBANCE

TEMPORARY INLET PROTECTION (TYP.)

TREE PROTECTION FENCE (TYP.)

CONDUIT OUTLET PROTECTION (SEE DETAIL)

CONDUIT OUTLET PROTECTION (SEE DETAIL)

PHASE 1A

SILT FENCE (TYP.)

TREE PROTECTION FENCE (TYP.)

TEMPORARY TOPSOIL STOCKPILE W/ SILT FENCE (TYP.)

PHASE 3

MATCH SHEET 41A

MATCH SHEET 43A

R=47057.00' L=157.91'
Δ=0°11'32"
CB=S57°43'34"E 157.91'

R=47057.00' L=196.45'

R=47057.00' L=38.54'
Δ=0°02'49"
CB=S57°50'44.49"E 38.54'

R=242.00' L=92

S57°37'48"E 49.90'

N59°08'26"W 769.03'

N32°30'34"E 430.69'

S32°30'34"W 430.81'

N32°30'34"E 430.81'

N57°29'26"W 50.00'

N59°08'26"W 773.37'

N:424149.1966
E:553016.2601

PROPOSED ACCESS EASEMENT TO LOT 15.03 21,538 S.F. (0.494 Ac.)

PROPOSED DRAINAGE EASEMENT TO LOTS 15.04 & 15.05 106,387 S.F. (2.442 Ac.)

WETLAND AREA TO BE FILLED 6752 S.F.

INFILTRATION/DETENTION BASIN I BASIN BOTTOM ±1.0

LEGEND

75	EXISTING CONTOUR
75	PROPOSED CONTOUR
x (87.5)	EXISTING SPOT ELEVATION
75.42 x	PROPOSED SPOT ELEVATION
	PROPOSED STORM SEWER
F.F. 75.00	FINISH FLOOR ELEVATION
G.F. 75.00	GARAGE FLOOR ELEVATION
B.F. 75.00	BASEMENT FLOOR ELEVATION
	WOODSLINE
	LIMIT OF DISTURBANCE
X	SILT FENCE
	TREE PROTECTION FENCE
	INLET PROTECTION

GRAPHIC SCALE 1"=30'

0 30 60 90

DATE	REVISION	DRAWN	CHECKED	RELEASED

SOIL EROSION AND SEDIMENT CONTROL PLAN-PHASE 1A

PRELIMINARY AND FINAL MAJOR SITE PLAN & SUBDIVISION

LOT 15.01 ~ BLOCK 44

TAX MAP SHEET NO. 8
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RELEASED BY BPM	PROJECT No. 1423.0016
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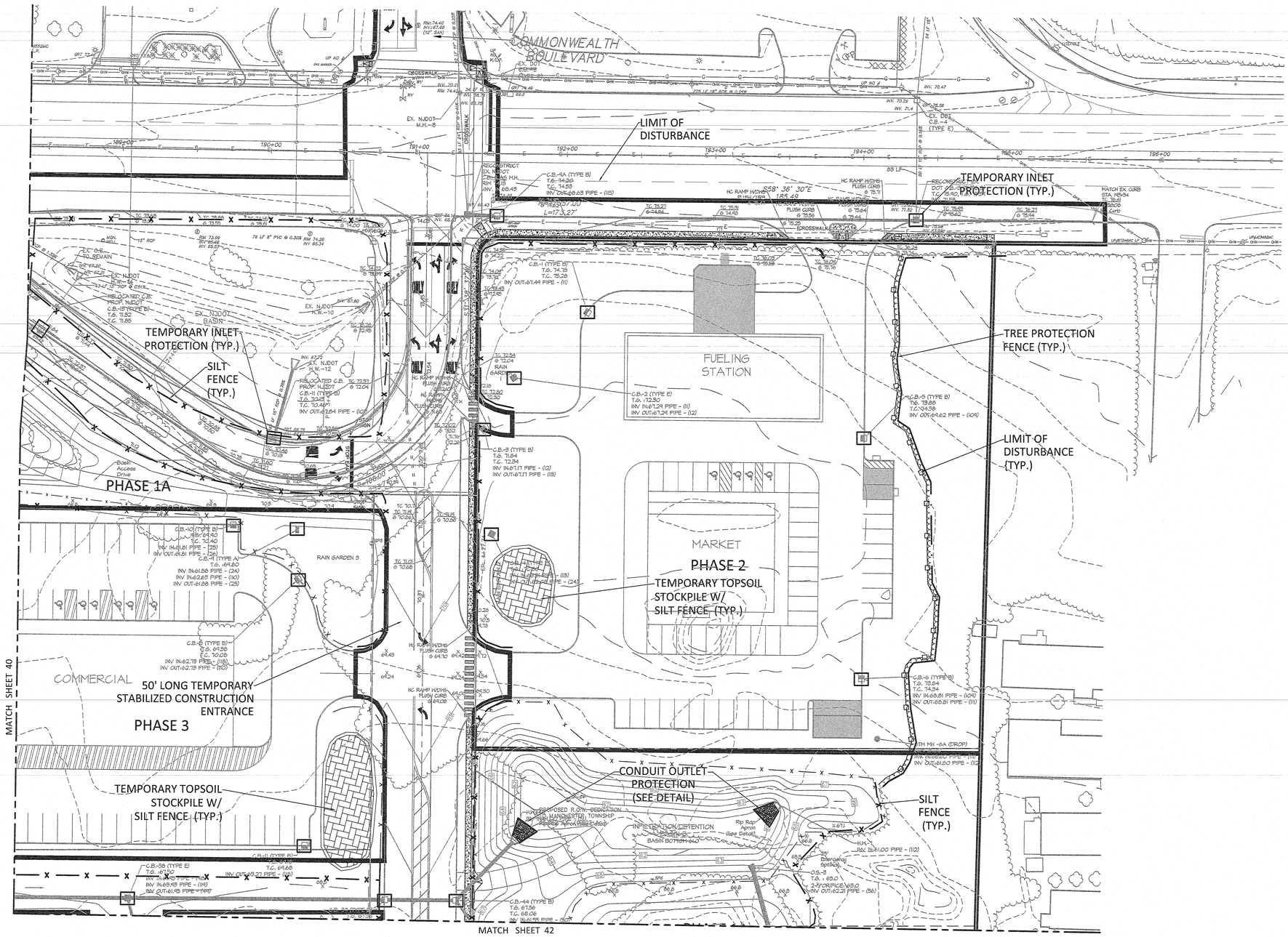

LEGEND

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	PROPOSED STORM SEWER
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	WOODSLINE
	LIMIT OF DISTURBANCE
x	SILT FENCE
	TREE PROTECTION FENCE
	INLET PROTECTION

GRAPHIC SCALE 1"=30'

0 30 60 90

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11/30/20	REV. PER 10 UNIT RESIDENTIAL BUILDINGS	CSM	JS	BPM
5/20/2020	REVISED PER NJDOT LETTER 4-13-2020	CSM	JS	BPM

SOIL EROSION AND SEDIMENT CONTROL PLAN

PRELIMINARY AND FINAL MAJOR SITE PLAN & SUBDIVISION

LOT 15.01 ~ BLOCK 44

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SHEET NO. 41	OF 49

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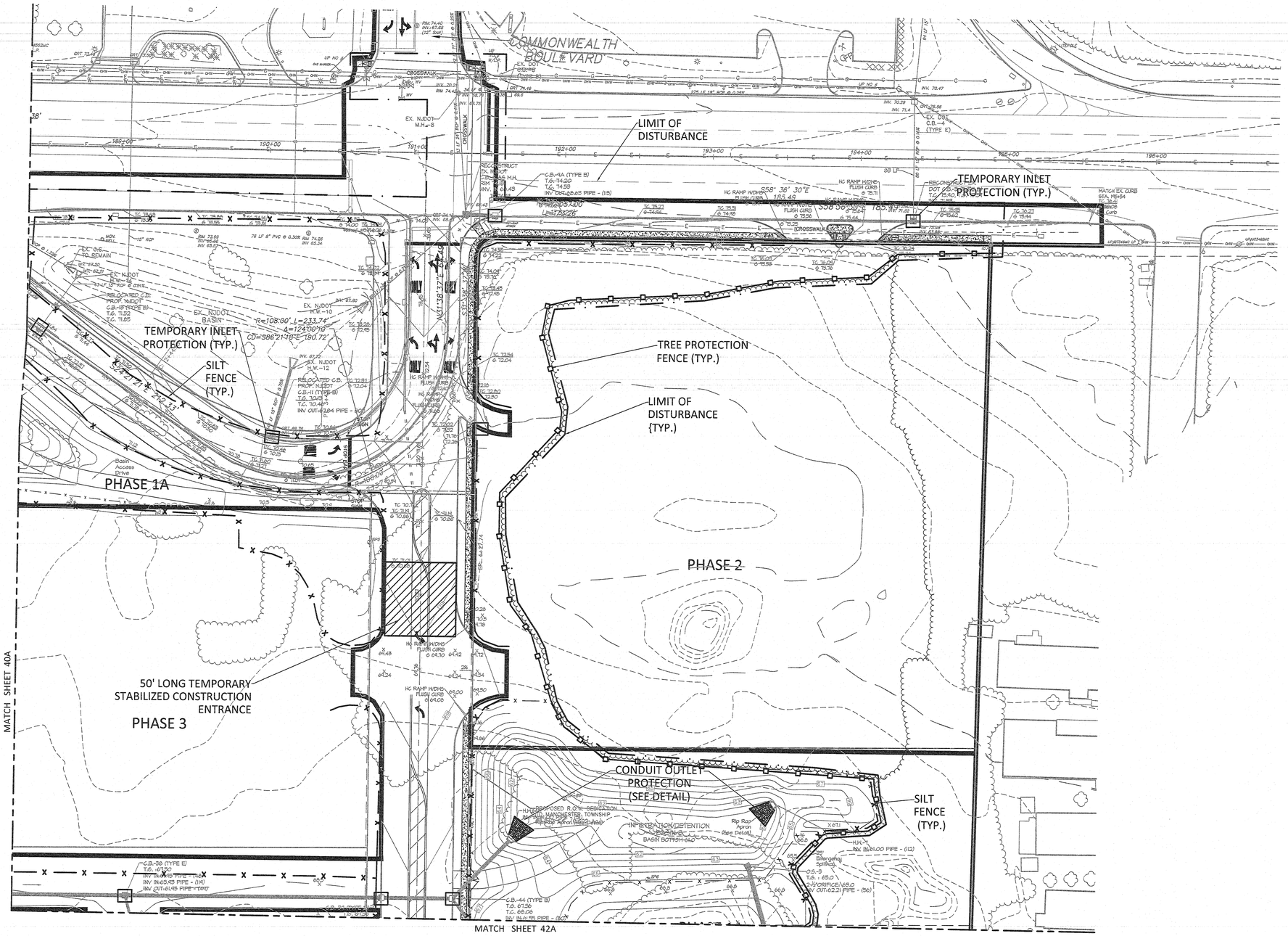

LEGEND

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75.42 ×	PROPOSED SPOT ELEVATION
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	LIMIT OF DISTURBANCE
X	SILT FENCE
	TREE PROTECTION FENCE
	INLET PROTECTION

GRAPHIC SCALE 1"=30'

0 30 60 90

DATE	REVISION	DRAWN	CHECKED	RELEASED

SOIL EROSION AND SEDIMENT CONTROL PLAN-PHASE 1A

PRELIMINARY AND FINAL MAJOR SITE PLAN & SUBDIVISION

LOT 15.01 ~ BLOCK 44

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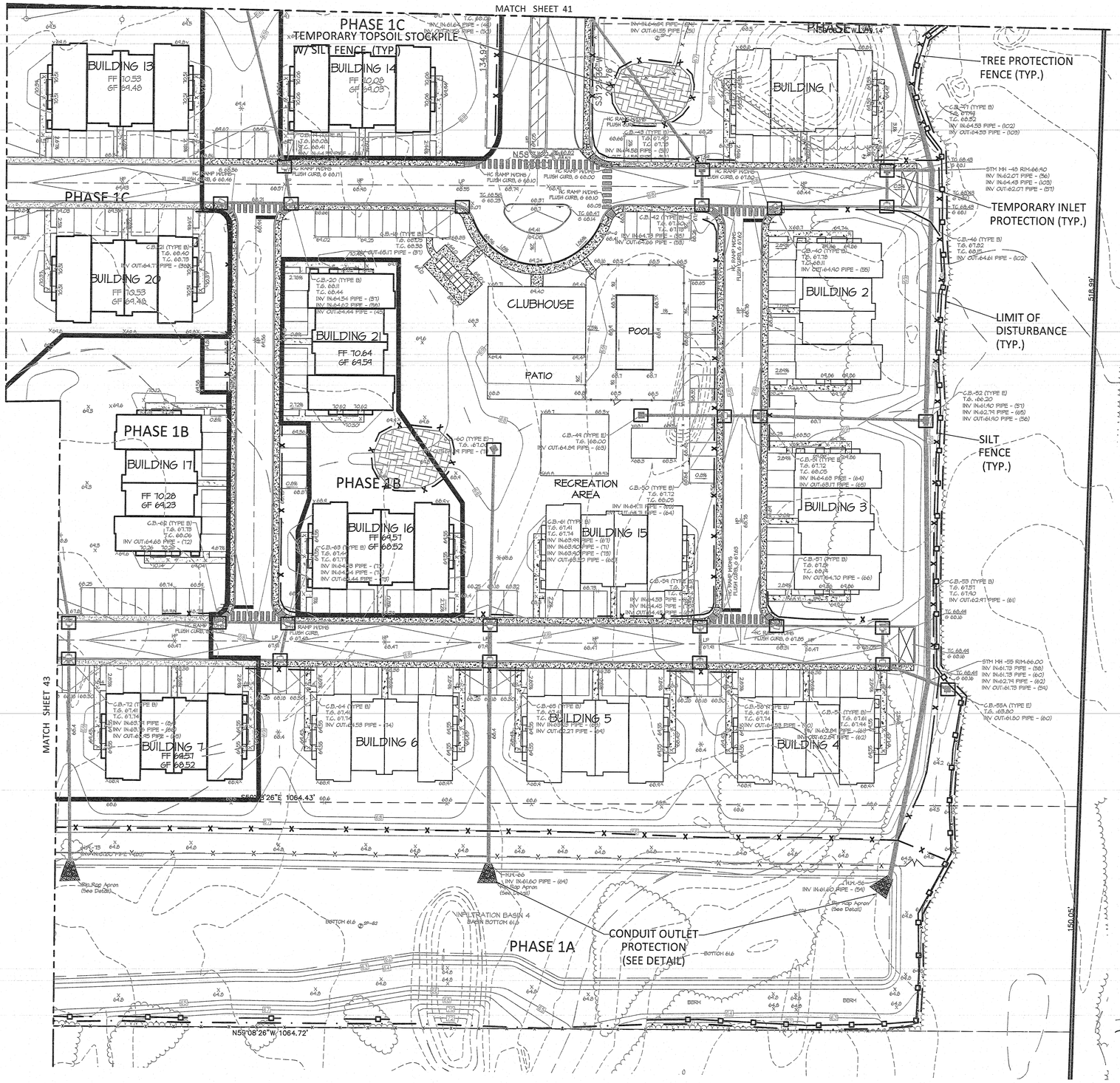

LEGEND

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75.42 ×	PROPOSED SPOT ELEVATION
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GRAPHIC SCALE 1"=30'

0 30 60 90

DATE	REVISION	DRAWN	CHECKED	RELEASED
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11/30/20	REV. PER 10 UNIT RESIDENTIAL BUILDINGS	CSM	JS	BPM

SOIL EROSION AND SEDIMENT CONTROL PLAN

PRELIMINARY AND FINAL MAJOR SITE PLAN & SUBDIVISION

LOT 15.01 ~ BLOCK 44

TAX MAP SHEET NO. 8
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CHECKED BY: JS	DRAWING NO.: PD-170
RELEASED BY: BPM	PROJECT NO.: 1423.0016
SHEET NO.: 42 OF 49	

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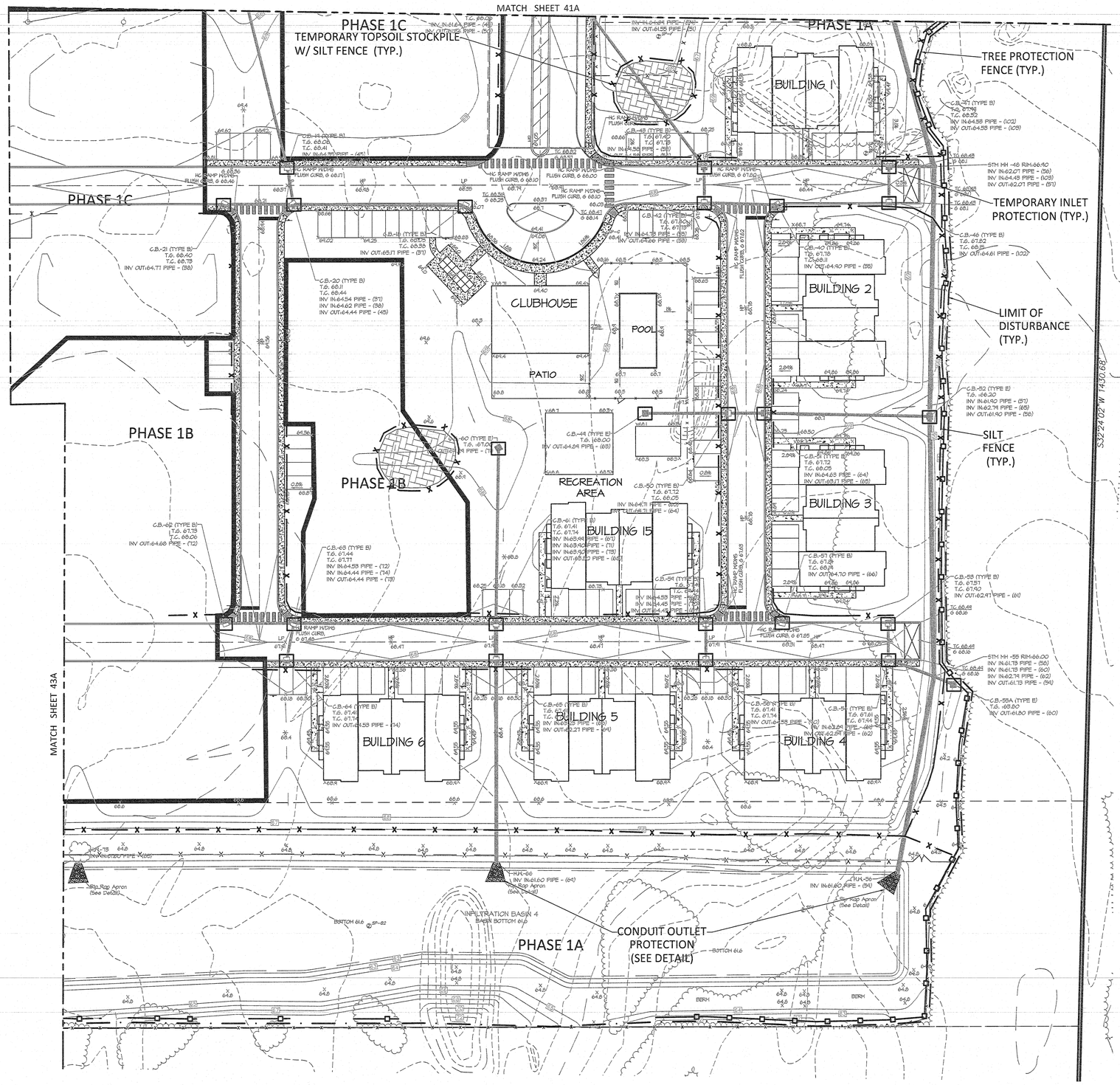

LEGEND

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75.42 ×	PROPOSED SPOT ELEVATION
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	WOODSLINE
	LIMIT OF DISTURBANCE
X	SILT FENCE
	TREE PROTECTION FENCE
	INLET PROTECTION

GRAPHIC SCALE 1"=30'

0 30 60 90

DATE	REVISION	DRAWN	CHECKED	RELEASED

SOIL EROSION AND SEDIMENT CONTROL PLAN-PHASE 1A

PRELIMINARY AND FINAL MAJOR SITE PLAN & SUBDIVISION

LOT 15.01 ~ BLOCK 44

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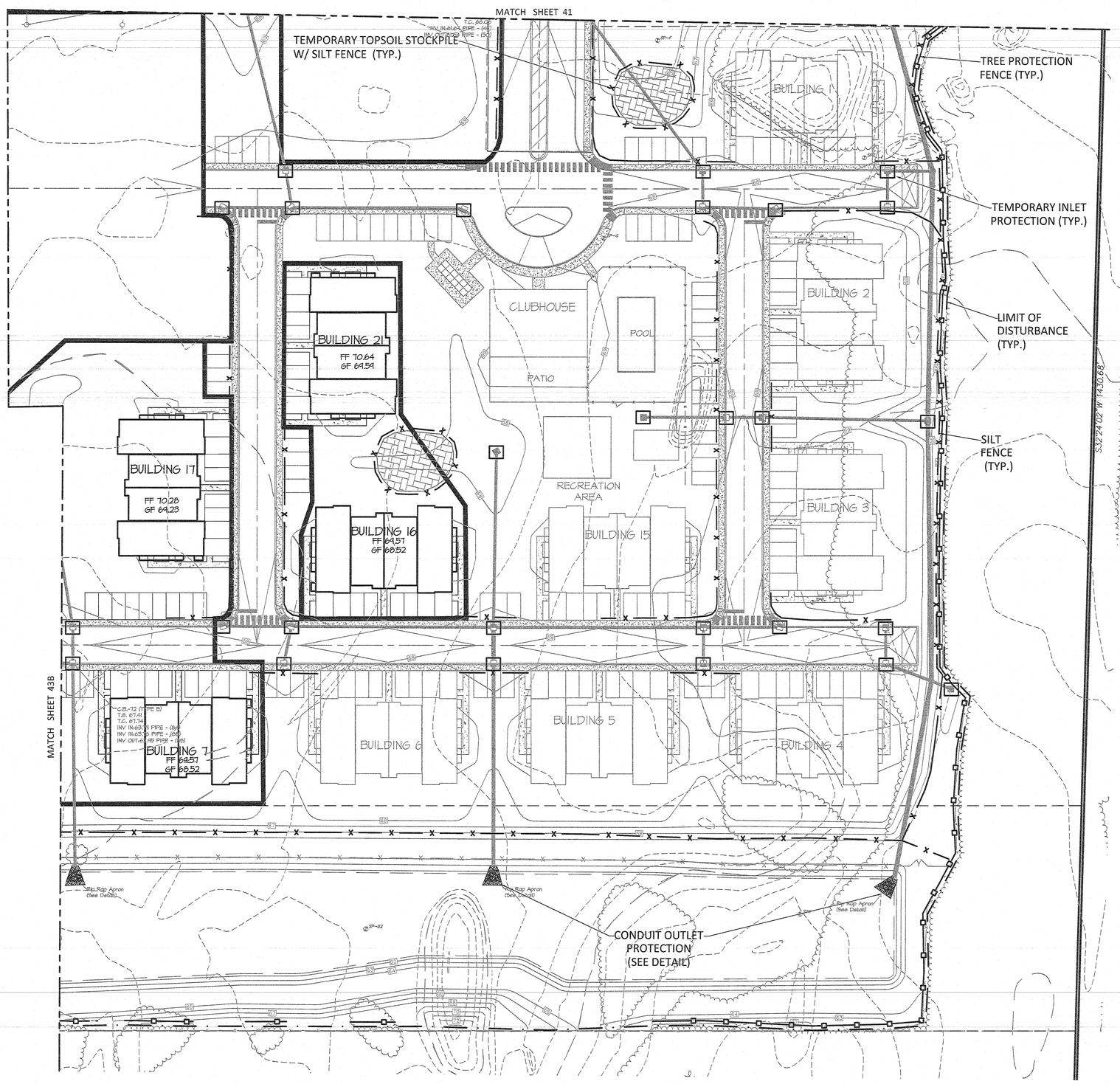

LEGEND

75	EXISTING CONTOUR
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x (87.5)	EXISTING SPOT ELEVATION
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	PROPOSED STORM SEWER
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	LIMIT OF DISTURBANCE
x	SILT FENCE
	TREE PROTECTION FENCE
	INLET PROTECTION

GRAPHIC SCALE 1"=30'

0 30 60 90

DATE	REVISION	DRAWN	CHECKED	RELEASED

SOIL EROSION AND SEDIMENT CONTROL PLAN-PHASE 1B

PRELIMINARY AND FINAL MAJOR SITE PLAN & SUBDIVISION

LOT 15.01 ~ BLOCK 44

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RELEASED BY BPM	PROJECT NO. 1423.0016
SHEET NO. 42B	OF 49

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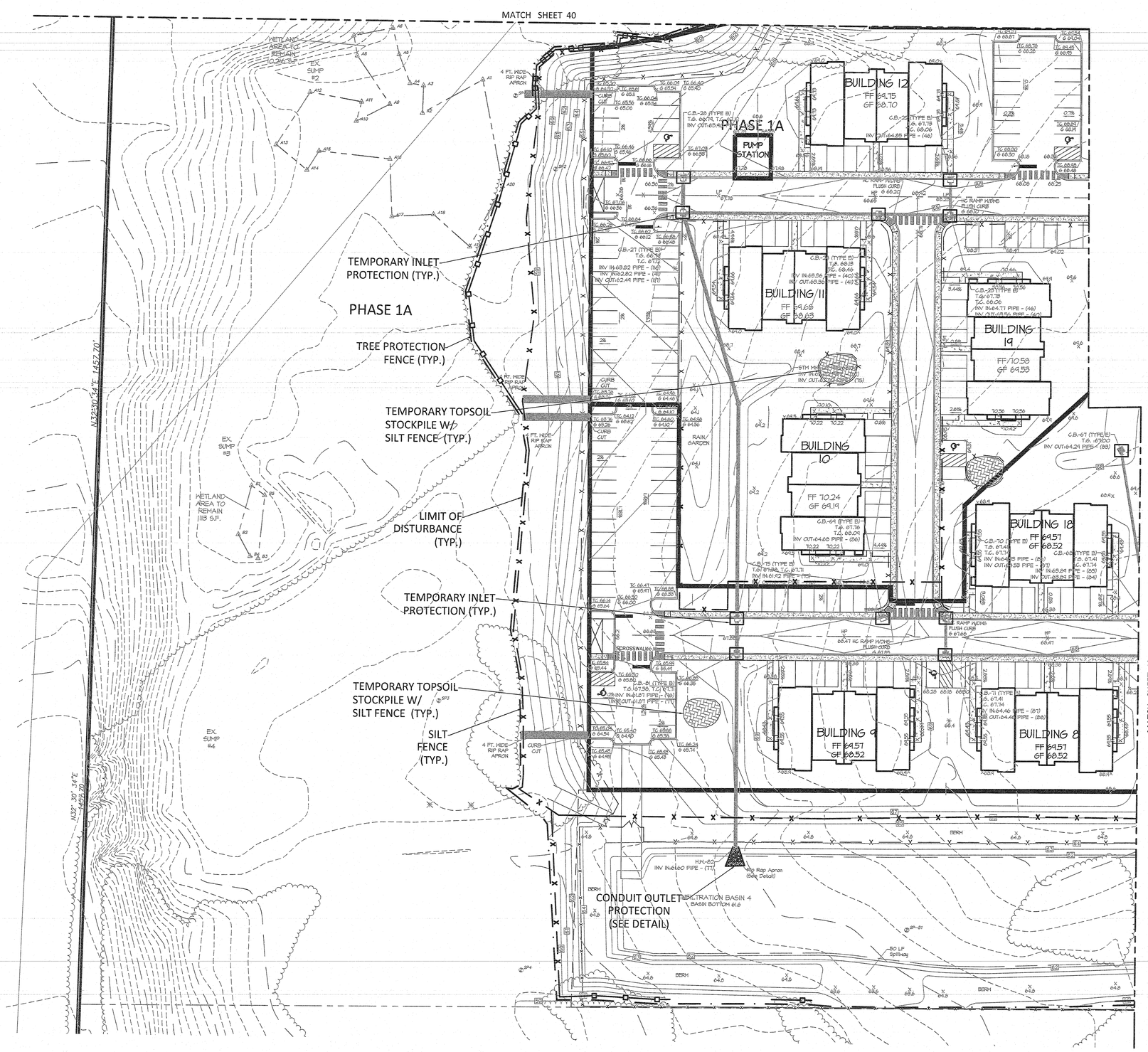

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	LIMIT OF DISTURBANCE
X	SILT FENCE
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	INLET PROTECTION

GRAPHIC SCALE 1"=30'

0 30 60 90

DATE	REVISION	DRAWN	CHECKED	RELEASED
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11/30/20	REV. PER 10 UNIT RESIDENTIAL BUILDINGS	CSM	JS	BPM

SOIL EROSION AND SEDIMENT CONTROL PLAN

PRELIMINARY AND FINAL MAJOR SITE PLAN & SUBDIVISION

LOT 15.01 ~ BLOCK 44

TAX MAP SHEET NO. 8
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SHEET NO. 43	OF 49

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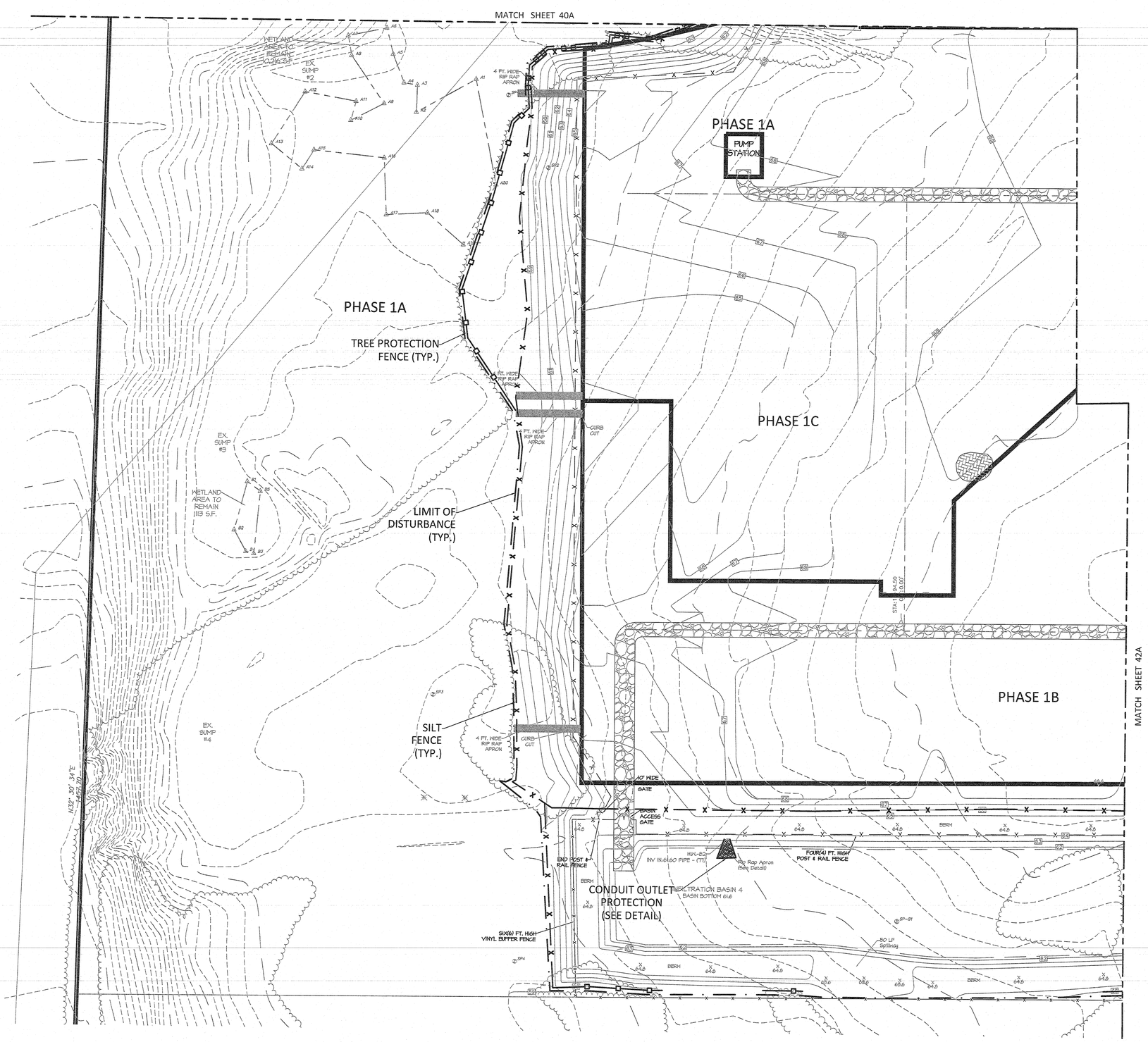

LEGEND

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GRAPHIC SCALE 1"=30'

0 30 60 90

DATE	REVISION	DRAWN	CHECKED	RELEASED

SOIL EROSION AND SEDIMENT CONTROL PLAN-PHASE 1A

PRELIMINARY AND FINAL MAJOR SITE PLAN & SUBDIVISION

LOT 15.01 ~ BLOCK 44

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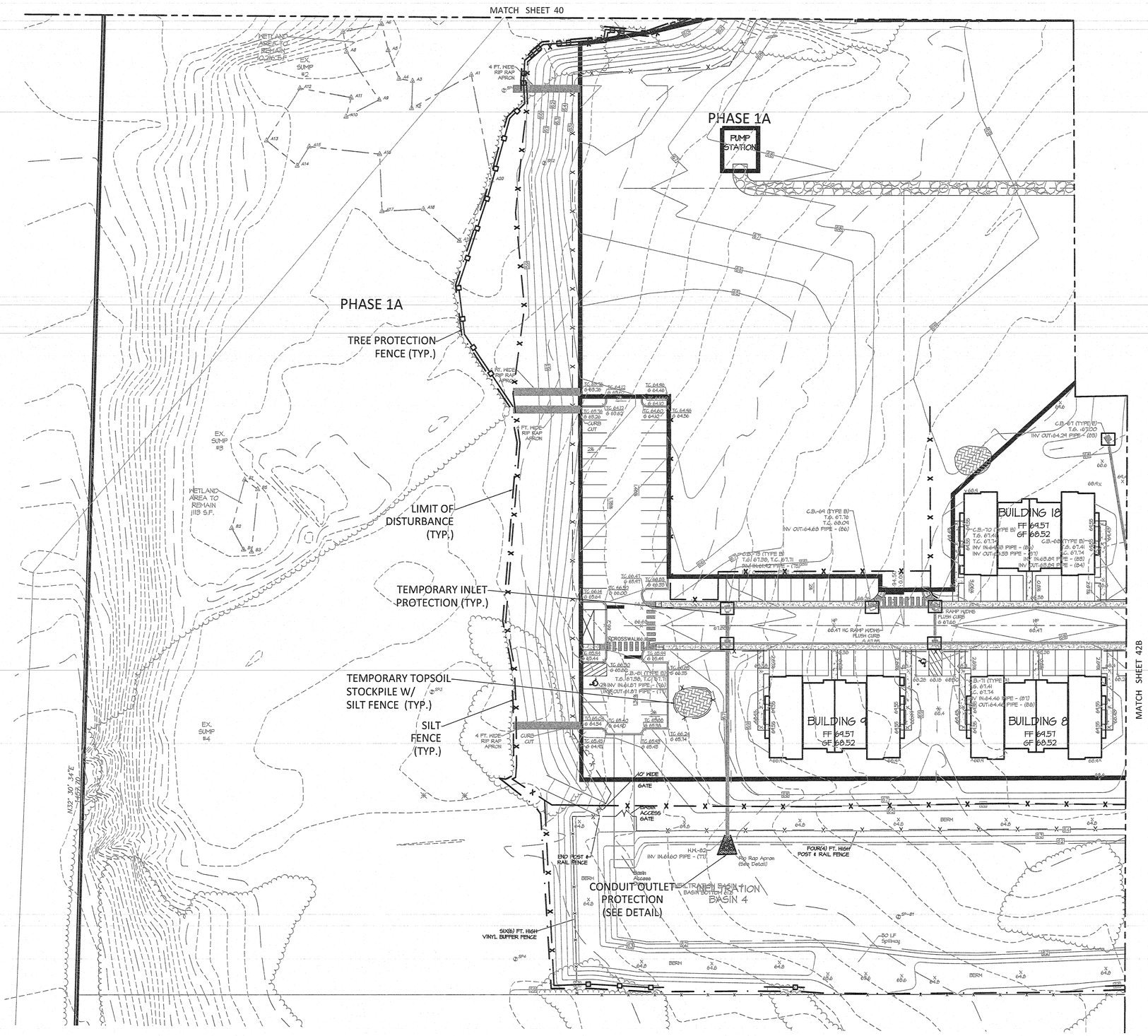

LEGEND

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GRAPHIC SCALE 1"=30'

0 30 60 90

DATE	REVISION	DRAWN	CHECKED	RELEASED

SOIL EROSION AND SEDIMENT CONTROL PLAN-PHASE 1B

PRELIMINARY AND FINAL MAJOR SITE PLAN & SUBDIVISION

LOT 15.01 ~ BLOCK 44

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SHEET NO.: 43B	OF: 49

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Permanent Vegetative Cover for Soil Stabilization

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 6 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 Co-operative Extension offices (http://njaes.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 soil as nearly as practical to a depth of 4 inches. Lime and fertilizer should be applied during seedbed preparation and repeat another one-half rate application of the same fertilizer within 3 to 6 weeks after seeding.

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 tilage until a reasonable uniform seedbed is prepared.

C. High Acid Producing Soil: Soils having a pH of 4 or less or containgt iron sulfide shall be covered with a minimum of 12 inches of soil having a pH of 5 or more before initiating seedbed preparation. See Standard for Management of High Acid Producing Soils for specific requirements.

3. SEEDING

A. Select a mixture from Table 4-2 or use 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 requesting a report of compliance. These rates apply to all methods of seeding. Establishing permanent vegetation means 80% vegetative coverage with the specified species and mowed once.

2. Warm season mixture are grasses and legumes which maximize growth at high temperatures, generally 85\179 F and above. See Table 4-3 (pg. 4-7), minimum 1 to 2. 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 85\179 F. Many grasses become active at 60\179 F. See Table 4-3, minimum 3 to 4. Adjustment of planting rates to compensate for the amount of Pure Live Seed 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 in coarse textured soil.

C. After seeding, firming the soil with a corrugated roller will assure good seed-to-soil contact, restore capillarity, and improve seeding 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 fiber may not be included in the tank with seed. Short fiber mulch may be applied with a hydroseeder following seeding. (also see Section IV Mulching below). Hydroseeded seed should be incorporated into the soil within 24 hours of seeding by raking the surface and not incorporated into the soil. Poor seed to soil contact causes 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.

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, or salt hay to be applied at the rate of 1 - 1/2 to 2 tons per acre (70 - 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 2 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 85% 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 cost:

1. Peg and Twine. Drive 8 to 10 inch wooded 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 oscillator tool) - A tractor-drawn implement, somewhat like a disc harrow, especially designed to push or cut stone 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. Application 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 membranes 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 material. 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 curring 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 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 mulch - shall be wood, plant fibers or paper containing no growth or germination inhibiting materials, used at the rate of 1,500 pounds per acre (or as recommended by the product manufacturer) and may be applied by a hydroseeder. This mulch shall not be mixed in the tank with seed. Use is limited to flatter slopes and duration optimum seeding periods in spring and fall.

C. Pelletized Mulch - Compressed and extruded paper and / or wood fiber product, which many contain co-plymers, tackifiers, fertilizers and coloring agents. The dry pellets, when applied to a seeded area and watered, forms mulch mat. Pelletized mulch shall be applied in accordance with the manufacturers recommendations. Mulch may be applied by hand or mechanical spreader at the rate of 60-70 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 when weed-seed free mulch is desired or on sites where straw mulch and tackifier agent are not practical or desired. 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, and mulch is not used, supply new seedings with adequate water (a minimum of 1/4 inch 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 500 pounds per acre or 7 pounds per 1,000 square feet every 2 to 6 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 Talbe 4-2 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.

Permanent Stabilization with sod.

Methods and Materials

1. High quality cultivated sod is preferred over native or pasture sod.
2. Sod should be free of broadleaf weeds and undesirable coarse and fine weed grasses.
3. Sod should be of uniform thickness, typically 5/8 inch, plus or minus 1/4 inch, at time of cutting (excludes top growth.)
4. Sod should be vigorous and dense and be able to retain its own shape and weight when suspended by its upper end. Sod that will tear or pull apart from the upper 1/3 percent of the strip, stretch and roll or turn and uneven ends will not be acceptable.
5. For droughty sites, a sod of turf-type tall fescue or turf-type tall fescue mixed with Kentucky bluegrass is preferred over a 100% Kentucky bluegrass sod. Although not widely available, a sod of fine fescue is also acceptable for droughty sites.
6. Only moist, fresh, unheated sod should be used. Sod should be harvested, delivered, and installed within a period of 24 hours or less during summer months.

1. Site Preparation

A. Grade as needed and feasible to permit the use of conventional equipment for lining, fertilizing, incorporation of organic matter, and other soil preparation procedures. All grading should be done in accordance with Standard for Land Grading.

B. Topsoil should be handled only when it is dry enough to work without damaging the soil structure. A uniform application to a depth of 6" (unsettled) is required on all sites. See the Standard for Topsoiling for topsoil and amendment requirements.

C. Install needed erosion control practices or facilities, such as diversion ditches, grade stabilization structures, channel stabilization measures, sediment basins, and waterways.

2. Soil Preparation

A. Uniformly 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. Soil sample mailers are available from the local Rutgers Cooperative Extension offices (http://njaes.rutgers.edu/county/). Fertilizer shall be applied at the rate of 500 pounds per acre or 11 pounds per 1,000 square feet using 10-10-10 or equivalent with 50% water insoluble nitrogen unless a soil test indicates otherwise and incorporated into the soil as nearly as practical to a depth of approximately 1/2" the rate described above during seedbed preparation and repeat another 1/2" rate application of the same fertilizer within 3 to 6 weeks after seeding. Apply limestone at the rate of 2 tons/acre unless soil testing indicates otherwise. Calcium carbonate is the equivalent and standard or measuring the ability of lining materials to neutralize soil acidity and supply calcium and magnesium to grasses and legumes. Table 6-1 is a general guideline for limestone application rates.

Table 6-1

Limestone 1/ Application Rate by Soil Texture

SOIL TEXTURE	TONS/ACRE	LBS./ 1000 SQ. FT.
Clay, clay loam, and high organic soil	3	135
Sandy loam, loam, silt loam	2	90
Loamy sand, sand	1	45

1. Pulverized dolomitic limestone is preferred for most soils south of New Brunswick-Trenton line; however, this should be confirmed by soil testing

B. Work lime and fertilizer into the topsoil 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 reasonably uniform, fine seedbed is prepared.

C. Remove from the surface all objects that would prevent good sod to topsoil contact and remove clods, debris, such as roots, stones, tree roots, pieces of concrete, clods, lumps, or other unsuitable material.

D. Inspect site just before seeding. If traffic has left the soil compacted, the area must be retilled and firmed in accordance with the above.

3. Sod Placement

A. Sod strips should be laid on the contour, never up and down the slope, starting at the bottom of the slope and working up. On steep slopes, the use of stakes will facilitate the work and prevent damage to the sod. During periods of high temperature, lightly irrigate the soil immediately prior to laying the sod.

B. Place sod strips with snug, even joints that are staggered. Open spaces invite erosion.

C. Roll or tamp sod immediately following placement to insure solid contact of root mat and soil surface. Do not overlap sod. All joints should be butted tightly in order to prevent voids which would cause drying of the roots.

D. On slopes greater than 3 to 1, secure sod to surface soil with wood pegs, wire staples biodegradable plastic spikes, or eight staples per 1 to 10 inches long by 3/4 inch wide.

E. Surface water cannot always be diverted from flowing over the face of the slope, but a capping strip of heavy jute or plastic netting, properly secured, along the crown of the slope and edges will provide extra protection against lifting and undercutting of sod. The same technique can be used to anchor sod in water-carrying channels and other drilled areas. Wire staples must be used to anchor netting (staples) work.

F. Immediately following installation, sod should be watered until moisture penetrates the soil layer beneath sod to a depth of 4 inch. Maintain adequate moisture for at least two weeks.

4. Topdressing - Since soil organic matter and slow release nitrogen fertilizer (water insoluble) are prescribed in Sections 1 and 2 in this Standard, a follow-up topdressing is not mandatory, except where gross nitrogen deficiency exists in the soil to the extent that turf failure may develop. topdressing shall then be applied. Topdress with 10-0-10 or equivalent at 400 pounds per acre or 7 pounds per 1,000 square feet every 5 to 6 weeks until the gross nitrogen deficiency in the turf is ameliorated.

Topsoiling

Methods and Materials

1. Materials

A. Topsoil should be friable', loamy', free of debris, objectionable weeds and stones, and contain no toxic substance or adverse chemical or physical condition that may be harmful to plant growth. Soluble salts should not be excessive (electrolytic conductivity less than 0.5 millimhos per centimeter. More than 0.5 millimhos may desiccate seedlings and adversely impact growth). Imported topsoil shall have a minimum organic matter content of 2.7% percent. Organic matter content may be raised by additives.

B. Topsoil substitute is a soil material which may have been amended with sand, silt, clay organic matter, fertilizer or lime and has the appearance of topsoil. Topsoil substitutes may be utilized on sites with insufficient topsoil for establishing permanent vegetation. All topsoil substitute materials shall meet the requirements of topsoil noted above. Soil tests shall be performed to determine the components of sand, silt, clay organic matter, soluble salts and pH level.

2. Stripping and Stockpiling

A. Field exploration should be made to determine whether quantity and or quality of surface soil justifies stripping.

B. Stripping shall be confined to the immediate construction area.

C. Where feasible, lime may be applied before stripping at a rate determined by soil tests to bring the soil pH to approximately 6.5.

D. A 4-6 inch stripping depth is common, but may vary depending on the particular soil.

E. Stockpiles of topsoil should be situated so as not to obstruct natural drainage or cause off-site environmental damage.

F. Stockpiles should be vegetated in accordance with standards previously described herein; see standards for Permanent (pg. 4-1) or Temporary (pg. 7-1) Vegetative Cover for Soil Stabilization. Weeds should not be allowed to grow on stockpiles.

3. Site Preparation

A. Grade at the onset of the optimal seeding period so as to minimize the duration and area of exposure of disturbed soil to erosion. Immediately proceed to establish vegetative cover in accordance with the specified seed mixture. Time is of the essence.

B. Grade as needed and feasible to permit the use of conventional equipment for seedbed preparation, seeding, mulch application, and mulch anchoring and maintenance.
See the Standard for Land Grading, pg. 19-1.

C. As guidance for ideal conditions, subsoil should be tested for lime requirement. Limestone, if needed should be applied to bring soil to a pH of approximately 6.5 and incorporated into the soil as nearly as practical to a depth of 4 inches.

D. Prior to topsoiling, the subsoil shall be in compliance with the Standard for Land Grading, pg. 19-1.

E. Employ needed erosion control practices such as diversions, grade stabilization structures, channel stabilization measures, sedimentation basins, and waterways. See Standards 11 through 42.

4. Applying Topsoil

A. Topsoil should be handled only when it is dry enough to work without damaging soil structures; i.e., less than field capacity (see glossary).

B. A uniform application to an average depth of 5.0 inches, minimum of 4 inches, firmed in place is required. Alternative depths may be considered where special regulatory and/or industry design standards are appropriate such as on golf courses, sports fields, landfill capping, etc. Soils with a pH of 4.0 and less or containing iron sulfide shall be covered with a minimum depth of 12 inches of soil having a pH of 5.0 or more, in accordance with the Standard for Management of High Acid Producing Soil (pg. 1-1).

C. Pursuant to the requirements in Section 7 of the Standard for Permanent Vegetative Stabilization, the contractor is responsible to ensure that permanent vegetative cover becomes established on at least 80% of the soils to be stabilized with vegetation. Failure to achieve the minimum coverage may require additional work to be performed by the contractor to include some or all of the following: supplemental seeding, re-application of lime and fertilizers, and/or the addition of organic matter (i.e. compost) as a top dressing. Such additional measures shall be based on soil tests such as those offered by Rutgers Cooperative Extension Service or other approved laboratory facilities qualified to test soil samples for agronomic properties.

*Friable means easily crumbles in the fingers, as defined in most soils tests
'Loamy means texture groups consisting of coarse loamy sands, sandy loam, fine and very fine sandy loam, loam, silt loam, clay loam, sandy clay loam and silty clay loam textures and having less than 35% coarse fragments (particles less than 2mm in size) as defined in the Glossary of Soil Science Terms, 1986, Soil Science Society of America.

SOIL EROSION AND SEDIMENT CONTROL NOTES

REV: FEBRUARY 19, 2019

1. The Ocean County Soil Conservation District shall be notified forty-eight (48) hours in advance of any land disturbance.
2. All work is to be done in accordance with the State Standards for Soil Erosion and Sediment Control in New Jersey.
3. All Soil Erosion and Sediment Control practices are to be installed prior to any major soil disturbance or in their proper sequence and maintained until permanent protection is established.
4. Any changes to the Certified Soil Erosion and Sediment Control Plans will require the submission of revised Soil Erosion and Sediment Control Plans to the District. The revised plans must meet all current "The Standards for Soil Erosion and Sediment Control in New Jersey, 7th Edition, January 2014, Revised July 2017, Link to 2014 Standards: http://www.njeis.org/pages/chapter6/stormwaterpractices.html
5. N.J.S.A 4:24-39 et seq. requires that no Certificates of Occupancy be issued before there has been compliance with provisions of a certified plan for permanent stabilization. All soil work, and all work around individual lots in subdivisions, must be completed prior to the District issuing a Report of Compliance for the issuance of a Certificate of Occupancy by the Municipality.
6. Any disturbed areas that will be left exposed more than sixty (60) days, and not subject to construction traffic, will immediately receive a temporary seeding. If the season prevents the establishment of temporary cover, the disturbed areas will be mulched with straw, or equivalent material within 14 days, at a rate of 2 to 2 ½ tons per acre, according to State Standard for Stabilization with Mulch Only.
7. Immediately following initial disturbance or rough grading, all critical areas subject to erosion (i.e. steep slopes and roadway embankments) will receive temporary seeding in combination with straw mulch or a suitable equivalent, at a rate of 1 ½ to 2 tons per acre, according to State Standards.
8. A sub-base course will be applied immediately following rough grading and installation of improvements to stabilize streets, roads, driveways, and parking areas. In areas where no utilities are present, the sub-base shall be installed within fifteen (15) days of the preliminary grading.
9. Any stone (type 2) or gravel or any existing roadways receiving pipeline installation will be backfilled and stabilized daily; as the installation continues.
10. The Standard for Stabilized Construction Access requires the installation of a stone pad using clean crushed angular stone (ASTM C-33, size No. 2 or 3) at all construction driveways where vehicles will access paved roadways from unpaved areas of the site.
11. All sediment washed, dropped, spilled, or tracked onto roadways (public or private) or other impervious surfaces will be removed immediately.
12. Permanent vegetation is to be seeded or sodded on all exposed areas within ten (10) days after final grading. At the time of the final inspection, you are required to provide confirmation that the proper type and amount of seed, lime and fertilizer have been used for permanent stabilization with a minimum of 80% vegetative coverage.
13. At the time that 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 and replaced with a soil that it 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 a suitable environment for adequate vegetative growth or permanent ground cover, vegetation will have to be employed.
14. In accordance with the Standard for Management of High Acid Producing Soils, any soil having a pH of 4 or less or containing iron sulfides shall be covered with a minimum of twelve (12) inches of soil having a pH of 5 or more prior to the seed preparation. A pH test shall be conducted and verified with a minimum of twenty-four (24) inches of soil having a pH of 5 or more.
15. Conduit Outlet Protection must be installed at all required outfalls prior to the drainage system becoming operational. Conduit outlet protection is not required in basins acting as sediment basins during construction.
16. Unforeseen drainage problems may develop. Necessary precautions must be taken during all dewatering operations to minimize sediment transfer. Any dewatering methods used must be in accordance with the Standard for Dewatering.
17. Should the control of dust at the site be necessary, the site will be sprinkled until the surface is wet, temporary vegetative cover shall be established or applied as required by the Standard for Dust Control.
18. Stockpile and staging locations established in the field shall be placed within the limit of disturbance according to the certified plan. Staging and stockpiles not located within the limit of disturbance will require certification of a new Soil Erosion and Sediment Control Plan. The District reserves the right to determine when certification of a new and separate Soil Erosion and Sediment Control Plan will be required for these activities.
19. All soil stockpiles are to be temporarily stabilized in accordance with Soil Erosion and Sediment Control note #6. Stockpiles should be located so as not to obstruct natural drainage or cause off-site environmental damage.
20. The property owner shall be responsible for any erosion or sedimentation that may occur below stormwater outfalls or offsite as a result of construction of the project.

TEMPORARY VEGETATIVE MATERIALS COVER FOR SOIL STABILIZATION

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. (SEE MULCHING NOTES UNDER PERMANENT VEGETATIVE COVER FOR SOIL STABILIZATION FOR MULCHING AND MULCH ANCHORING REQUIREMENTS)

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 the soil has been left compaction. The process is plowless and 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 should 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 lining 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 RATE (pounds)		OPTIMUM SEEDING DATE Based on Hardiness Zones 1		
	Per Acre	Per 1,000 Sq. Ft.	ZONE 5a,6a	ZONE 6b	ZONE 7a,b
COOL SEASON GRASSES					
1. Perennial ryegrass	300	1.0	3/15-6/1 8/1-9/15	3/15-6/1 8/15-10/1	3/15-5/1 8/15-10/15	0.5
2. Spring oats	86	2.0	3/15-6/1 8/1-9/15	3/1-5/15 8/15-9/15	2/15-5/15 8/15-10/15	1.0
3. Winter Barley	96	2.2	8/1-9/15	8/15-10/1	8/15-10/15	1.0
4. Annual ryegrass	100	1.0	3/15-6/1 8/1-9/15	3/15-6/1 8/15-10/1	3/15-5/1 8/15-10/15	0.5
5. Winter Cereal Rye	112	2.8	8/1-11/15	8/1-11/15	8/1-12/15	1.0
WARM SEASON GRASSES						
6. Pearl millet	20	0.5	6/5-6/15	5/15-8/15	5/15-6/5	1.0
7. Millet (German or Hungarian)	30	0.7	6/5-6/15	5/15-8/15	5/15-6/5	1.0

1 Seeding rate for warm season grass selections 5 - 7 shall be adjusted to reflect the amount of Pure Live 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 zones can be irrigated.
3 Plant Hardiness Zone (see figure 7-4, pg. 7-8.)
4 Twice the depth for sandy soils

Land Grading

Erosion control measures shall be designed and installed in accordance with the applicable standard contained herein.

The development and establishment of the plan shall include the following:

1. The cut face of earth excavations and fills shall be no steeper than the safe angle of repose for the materials encountered and flat enough for proper maintenance.

2. The permanently exposed faces of earth cuts and fills shall be vegetated or otherwise protected from erosion.

3. Provisions shall be made to safely conduct surface water to storm drains or suitable water courses and to prevent surface runoff from damaging cut faces and fill slopes

4. Subsurface drainage is to be provided in areas having a high-water table, to intercept seepage that would adversely affect slope stability, building foundations or create undesirable wetness. See Standard for Subsurface Drainage, pg. 32-1

5. Adjoining property shall be protected from excavation and filling operations.

6. Fill shall not be placed adjacent to the bank of a stream or channel, unless provisions are made to protect the hydraulic, biological, aesthetic and other environmental functions of the stream.

TABLE 4-3

FERMANENT VEGETATIVE MIXTURES, PLANTING RATES AND PLANTING DATES[1]

SEED MIXTURE [2]	PLANTING RATE [3]	PLANTING DATES. O = Optimal Planting period A = Acceptable Planting period. PLANT HARDINESS ZONES (see Figure 4-1) Zone 5b,6a				Zone 6b,7a				Zone 7b,7b				SOIL DRAINAGE SUITABILITY	REMARKS
	lb/ac	lb/1000 sf/ft	3/15-5/15	4/1-7/31	8/1-8/31	3/1-4/30	5/1-8/14	8/15-9/15	9/16-10/15	2/1-4/20	5/1-8/14	8/15-10/31			
WARM SEASON SEED MIXTURES															
1A. For Piedmont National Reserve Seed mixtures see Table 6-a page 6-17			O			O				O					
1. Switchgrass and Little Bluestem	15 10	.35 .25	O			O				O				C-D	Use Deertongue if pH < 6.0. Switchgrass is superior wildlife plant. Use for waterways. Rodeo provides quick cover.
2. Switchgrass and Big Bluestem plus Partridge pea	15 20 5 10	.35 .45 .10 .25	O			O				O				C-D	
3. Switchgrass and Little Bluestem and Indian grass plus Partridge pea	15 10 4 10	.35 .25 .10 .25	O			O				O				C-D	Warranda mixture.
4. Switchgrass and Big Bluestem and Indian grass	10 20 4	.25 .45 .10	O			O				O				C-D	Native warm-season mixture.
5. Germagrass (Lampugrass cuter) Zoysiagrass (zenja)	12 20	0.10 0.75	O			O				O				A-D	Bermudagrass has superior cold tolerance. Zoysia has greater wear tolerance
6. Pearlmillet and Sudangrass	30 40	.75 1.0	O			O				O				B-D	Sudan grass best drought tolerant.
7. Switchgrass and Big Bluestem and Indian grass	15 20 10 25	.35 .45 .25 .60	O			O				O				B-D	Use Rodeo for increased drought tolerance.
8. Tall fescue (turf type) or Strong Creeping red Fescue or Perennial ryegrass Flatpea	30 30 10 25	.75 .75 .25 .60	O			O				O				B-D	Tall fescue best selected for droughty conditions. Use Creeping red fescue in heavy shade. Use Flatpea to suppress weeds vegetation.
9. Deertongue Bushclover Wild rye (Elymus) Switchgrass	20 2 10 25	.45 .05 .25 .60	O			O				O				C-D	Native cool mix.
COOL SEASON SEED MIXTURES	130	3	A	A[5]	O	A	A[5]	O	A	A[5]	O				
10. Tall fescue (turf type) Perennial ryegrass White clover (see note at right)	265 20 2 5	6 .45 .05 .10	O	A	A[5]	O	A	A[5]	O	A	A[5]	O		C-D	white clover can be excluded on lawn sites
11. Kentucky bluegrass Turftype Tall fescue	60 65 25	0.60 1.5 .5	A	A	A[5]	O	A	A[5]	O	A	A[5]	O		C-D	Filter strip use for nutrient uptake.
12. Turfrype Tall fescue (Blend of 3 cultivars)	130	3	A	A[5]	O	A	A[5]	O	A	A[5]	O			C-D	Use in a managed filter strip for nutrient uptake.
13. Hard Fescue and/or Chewing fescue and/or Strong Creeping red fescue Perennial ryegrass	(75) 5 5 5	1 .1 .1 .1	A	A	A[5]	O	A	A[5]	O	A	A[5]	O		A-C	General lawnfescue.
14. Tall fescue Ky. bluegrass (blend) Perennial ryegrass (blend)	260 20 25	6 0.50 .5	O	A	A[5]	O	A	A[5]	O	A	A[5]	O		A-B	Athletic field 3 cultivar mix of Kentucky bluegrass.
15. Hard fescue Chewings fescue Strong Creeping red fescue Perennial ryegrass	(20 45 45 10	3 1 1 .25	A	A	A[5]	O	A	A[5]	O	A	A[5]	O		C-D	Low-maintenance fine fescue lawn mix.
16. Bentgrass Strong Creeping red fescue	90 130	2.0 3	A	A	A[5]	O	A	A[5]	O	A	A[5]	O		C-D	Shade shady.
17. Creeping bentgrass Creeping red fescue Allaki ardagrass	45 45 45	1 1 1	A	A	A[5]	O	A	A[5]	O	A	A[5]	O		B-D	Use bentgrass under variant conditions. Ardagrass will outlast persistent under saline conditions.
18. Hard or Sheep fescue N. E. wildflower mixture	25 12	0.60 0.25	O	A	O	O	A	O	A	O	A	O		C-D	Regional Wildflower mix. Hydroseeding not recommended.
19. a. Smooth ryegrass b. Schreader ryegrass	9kg 9kg	9kg 9kg				O	Before July 1			O	Before July 1			D	Annual in the northfall zone. Plant in late August high rate.
20. American Deertongue Coastal Panicgrass	7kg 20	.6lb				Before April 1				O				D	Coastal Panicgrass may be imposoded under warm season or bentgrass
21. a. Perpiennial wilfrey b. Dwarf wilfrey c. Indiana sheprood d. Silky sheprood	7kg 7kg 7kg 7kg		Before May 10			Before May 10				Before May 1				D	Also refer to Chapters 14 and 18 of USDA NRCS Engineering Field Handbook

Table 4-3 Footnotes:

1. See Appendix B for descriptions of turf grass mixtures and cultivars. The actual amount of warm-season grass mixture seed in (table 1 seed mix 1-7) shall be adjusted to reflect the amount of PLS as determined by germination testing results. No adjustment is required for cool-season grasses (seed mixtures 8-21).
2. Seeding mixtures and/or rates not listed above may be used if recommended by the local Soil Conservation District, Natural Resources Conservation Service, or representative of Rutgers Cooperative Extension may be used if approved by the Soil Conservation District. Legumes (white clover, flatpea, lespedeza) should be mixed with grass mixtures prior to planting.
3. 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 of the seeded area and mowed once. Grass seed mixtures checked by the State Seed Analyst, New Jersey Department of Agriculture, Trenton, New Jersey, shall be considered acceptable if the mixture contains the mixture indicated, pursuant to the N.J. State Seed Law, N.J.S.A. 4:5-27.12 et. seq.

O = optimal planting period A = acceptable planting period

4. Maintenance Level:

A: Intensive mowing, (2-4 days), fertilization, lime, pest control and irrigation (Examples – high-maintenance lawns, commercial and recreation areas, public facilities).

B: Frequent mowing, (4-7 days), occasional fertilization, lime and weed control (Examples – home lawns, commercial sites, school sites).

C: Periodic mowing (7-14 days), occasional fertilization and lime (Examples - home lawns, parks).

D: Infrequent or no mowing, fertilization and lime the first year of establishment (Examples - roadsides, recreation areas, public open space)

5. Summer seedings should only be conducted when the site is irrigated. Mixes including white clover require that at least six weeks of growing season remain after seeding to ensure establishment before freezing conditions.

TEMPORARY VEGETATIVE MATERIALS COVER FOR SOIL STABILIZATION WHEN NECESSARY

Table 4-2
Permanent Stabilization Mixtures for Various Uses

Application	PLANTING MIXTURES BY SOIL DRAINAGE CLASS[1] (see Table 4-3)		
	Excessively Drained	Well to Moderately Well Drained	Somewhat Poorly to Poorly Drained
Residential/commercial lots	99, 11, 17	6, 99, 17, 11, 14, 15	14
Yard and channel banks, ditch, berms, and dikes	2, 3, 6, 10	6, 2, 3, 6, 10	2, 5, 10, 17
Drainage ditches, swales, irrigation ponds	2, 5, 14	2, 5, 14, 15, 16, 17	2, 5, 14, 17
Other berms	11	11, 17	11, 17
Grassed waterways, spillways	2, 3, 9, 10, 12	4, 5, 7, 10, 11, 12	5, 7, 11, 12
Recreation areas, athletic fields	5, 12, 11, 17	12, 11, 17, 15, 16	14
Special Problem Sites			
Steep slopes and banks, roadsides, interim areas	2, 3, 4, ø	2, 3, 4, 7, 8, 9, 10, 11, 17	2, 9, 10, 11, 12
Sand and gravel pits, borrow borrow areas	1, 2, 3, 4, 6, 7, 10	1, 2, 3, 4, 5, 6, 8, 10, 17	2, 9
Dredged material, landfills, fly-ash areas	2, 3, 6, 10	2, 3, 6, 11	3, 6
Intermittently wet areas[2]	2, 6, 7, 10	2, 6, 7, 10, 17	2, 6, 7, 10, 17
Utility rights-of-way	3,7,100	3,7	6, 9, 17

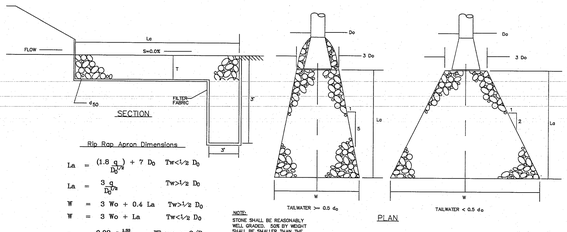
1. Refer to Soil Surveys for drainage class descriptors.
2. Refer to Soil Hydrogeometry Handbook for additional soil mixtures.
3. Spillways only.
4. See Appendix B for description of turf grasses and cultivars.

Construction Specifications for Infiltration Structures

A back-up drainage system must be provided in case infiltration capacity fails or is exhausted.

The area planned for the structure should be roped off to prevent heavy equipment from compacting the underlying soils before the development site is graded.

To prevent compaction of the subsoil which will reduce its infilt



SECTION

PLAN

Rip Rap Apron Dimensions

$L_a = (1.8\,q_1)/D_o^{1/2} + 7\,D_o$ Tw<½ D_o

$L_a = 3\,q_1/D_o$ Tw>½ D_o

$W = 3\,W_o + 0.4\,L_a$ Tw>½ D_o

$W = 3\,W_o + L_a$ Tw<½ D_o

$D_{50} = 0.02\,q^{1.85}/TW$ Where q=Q/D_o

Where Tw cannot be computed Tw=0.2D_o

NOTE:
STONE SHALL BE REASONABLY WELL GRADED. 50% BY WEIGHT SHALL BE LARGER THAN THE MEDIAN ROCK STONE DESIGNATED AS d50. LARGEST STONE SIZE SHALL BE 1.5 d50. THERE SHALL BE ENOUGH STONE TO COVER THE AREA AND THE APRON WITH AT LEAST 2 LAYERS OF STONE.

CONDUIT OUTLET PROTECTION

N.T.S.

Outlet No.	D_o (ft.)	Q (cfs.)	T_w (ft.)	L_a (ft.)	W (ft.)	Calc. D_{50} (ft.)	Design D_{50} (in.)	Comments
HW 8	1.25	6.46	0.64	13.9	9.3		3.3	With fabric Thk 6"
* HW 9	1.25	0.16	0.25	9.0	12.7		3	With fabric Thk 6"

*L_a and W should be rounded up to closest half foot measurement.

Design in accordance with Standards for Soil Erosion and Sediment Control in N.J.

D_o = Inside Culvert height (ft.)
W_o = Inside culvert width (ft.)
Q = design storm discharge (25-year storm, c.f.s) *Design storm discchrge (100--year storm, cfs)
T_w = tail water depth of the 2-year storm elevation in the basin above the invert of the culvert (ft.)
Y = depth of scour hole below the culvert invert (ft.)
Q = unit discharge = Q/W_o
L_a = apron length (ft.) = $(1.6q/D_o^{1/2}) + 7D_o$ for $T_w < ½\,D_o$; or $L_a = (3q/D_o^{1/2})$ for $T_w > ½\,D_o$
W = apron width (ft.) = $3\,W_o + 0.4\,L_a$ for $T_w < ½\,D_o$; or $W = 3\,W_o + L_a$ for $T_w < ½\,D_o$

Rip Rap:

D_{50} = median stone diameter = $\frac{0.020}{T_w}(q^{1.85})$ where q = Q/D_o

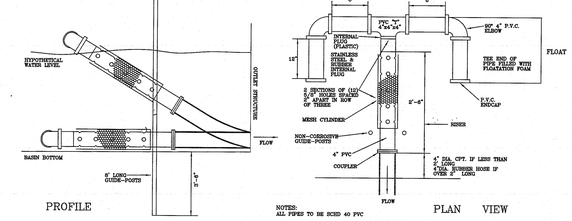
Where T_w cannot be computed, use $T_w = 0.2\,D_o$.

Scour Hole:

$D_{50} = \frac{0.0125}{T_w}(q^{1.39})$ where Y = ½ D_o

$D_{50} = \frac{0.0082}{T_w}(q^{1.39})$ where Y = D_o

CONDUIT OUTLET PROTECTION DESIGN CHART



NOTED:
ALL PIPES TO BE SCHD 40 PVC

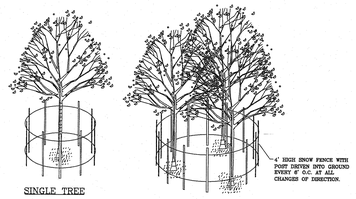
TAPE OR CEMENT ALL WATERTIGHT CONNECTIONS AS PER MANUFACTURERS RECOMMENDATIONS

CONTRACTOR IS TO CONSTRUCT A CYLINDER MADE OF GALVANIZED HARDWARE CLOTH OVER THE PERFORATED PIPE. THE CYLINDER SHALL HAVE A COVERAGE OF THE HOLES FROM BEHIND THE FLOAT UP TO 12 GAUGE MESH OR APPROVED EQUAL. PROVIDE 2" CLEAR BETWEEN PERFORATED HOLES AND MESH ITSELF

FLOATING RISER IS TO BE REMOVED AFTER CONSTRUCTION OF PROJECT SUCH THAT BASIN CAN FUNCTION PROPERLY FOR DETENTION PURPOSES.

FLOATING RISER DETAIL

N.T.S.



SINGLE TREE

MULTIPLE TREES

NOTES:

1. NO CONSTRUCTION ACTIVITY IS PERMITTED WITHIN THE PROTECTIVE FENCING.
2. AS CONSTRUCTION NEARS COMPLETION THE FENCING WILL BE REMOVED AS DIRECTED BY THE LANDSCAPE ARCHITECT.
3. AT THE COMPLETION OF CONSTRUCTION ALL TREES WILL BE PRUNED AS NECESSARY TO CORRECT ANY DAMAGE RESULTING FROM CONSTRUCTION ACTIVITY.

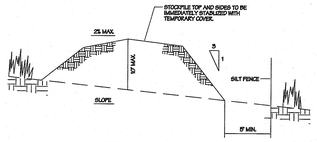
TREES TO BE PROTECTED DURING CONSTRUCTION WILL BE TAGGED

THE FINAL DETERMINATION OF THOSE TO BE PROTECTED WILL BE MADE BY THE LANDSCAPE ARCHITECT IN THE FIELD.

PROTECTIVE FENCING IS TO BE ERECTED PRIOR TO CONSTRUCTION AND MAINTAINED DURING CONSTRUCTION AS DIRECTED BY THE LANDSCAPE ARCHITECT.

TEMPORARY TREE PROTECTION DETAIL

N.T.S.



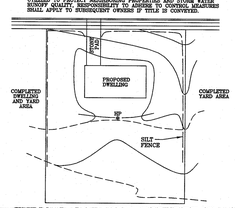
NOTES:

1. STOCKPILES TO BE PLACED AS DETERMINED IN THE FIELD
2. STOCKPILES NOT TO BE PLACED IN AREA WITH CONCENTRATED FLOW, WETLANDS, EXTREME SLOPE OR WITHIN 100' OF A NATURAL STREAM.

TEMPORARY TOPSOIL STOCKPILE DETAIL

N.T.S.

IN THE EVENT A NEWLY PROPOSED DWELLING IS TO BE CONSTRUCTED IN AN AREA AROUND "COMPLETED" RESIDENCES AND YARD AREAS, THE SILT FENCE AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED ON THE NEWLY PROPOSED DWELLING. THE OWNER OR HIS NONPROFIT ASSIGNEE, RESPONSIBILITY TO ADHERE TO CONTROL MEASURES SHALL APPLY TO SUBSEQUENT OWNERS IF TITLE IS CONVEYED.



TYPICAL LOT CONTROL DETAIL

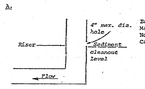
N.T.S.

METHODS OF DEWATERING SEDIMENT BASINS

The dewatering methods shown here are inexpensive and operate automatically.

METHOD — COMMENTS

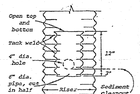
A:



Easy to construct
May clog with trash
Non-clogging
Capable of draining down to sediment clean-out level

CROSS-SECTION

B: same as "A" except for skimming device, detailed below:

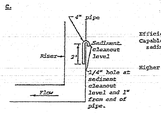


Efficient skimmer
Non-clogging
Fairly easy to construct
Capable of draining down to sediment cleanout level

ELEVATION

METHOD — COMMENTS

C:



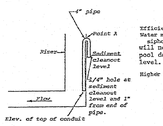
Efficient skimmer
Capable of always draining down to sediment cleanout level and below

Higher discharge rate than "A" or "B".

1/4" hole at sediment cleanout level and 1" from end of pipe.

CROSS-SECTION

D:



Efficient skimmer
Water must inundate point A to prime siphon. Therefore, small stems will not prime siphon and drain pool down to sediment cleanout level.

Higher discharge rate than "C"

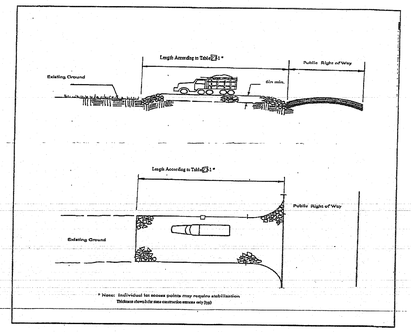
CROSS-SECTION

Table 27-1: Lengths of Construction Exits on Sloping Roadbeds

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 Hot Mix Asphalt Base Course, Mix I-2[1]	

1. As prescribed by local ordinance or other governing authority.

STONE SIZE – NO. 2 (2–1/2" TO 1–1/2") OR NO. 3 (2 TO 1 INCH) CLEAN, CRUSHED, ANGULAR STONE



Individual lot entrance and egress- After interior roadways are paved, individual lot ingress/egress points may require a stabilized construction entrance consisting of no. 3 stone (1" to 2") to prevent or minimize tracking of sediments. Width of the stone ingress/egress shall be equal to lot entrance width and shall be a minimum of ten feet in length.

Tire washing - If space is limited, vehicle tires may be washed with clean water before entering a paved area. A wash station must be located such that wash water will not flow onto paved roadways or into unprotected storm drainage systems.

When the construction access exits onto a major roadway, a paved transition area may be installed between the major roadway and the stoned entrance to prevent loose stones from being transported out onto the roadway by heavy equipment entering or leaving the site.

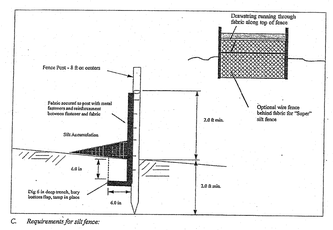
Maintenance

The entrance shall be maintained in a condition which will prevent tracking or flowing of sediment onto roadways. This may require periodic top dressing with additional stone or additional length as conditions demand and repair and/or cleanout of any measures used to trap sediment. All sediment spilled, dropped, washed, or tracked onto roadways (public or private) or other impervious surfaces must be removed immediately.

Where accumulation of dust/sediment is inadequately cleaned or removed by conventional methods, a power broom or street sweeper will be required to clean paved or impervious surfaces. All other access points which are not stabilized shall be blocked off.

STABILIZED CONSTRUCTION ACCESS

N.T.S.



C. *Requirements for silt fence:*

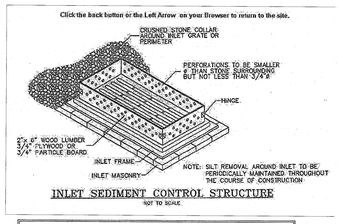
1. *Fence posts shall be spaced 8 feet center-to-center or closer. They shall extend at least 2 feet into the ground and extend at least 2 feet above ground (Fig. 23-2). Posts shall be constructed of hardwood with a minimum diameter thickness of 1 ½ inches.*
2. *"Super" silt fence - A metal fence with 6 inch or smaller mesh openings and at least 2 feet high may be utilized, fastened to the fence posts, to provide reinforcement and support to the geotextile fabric. Posts may be spaced less than 8 feet on center and may be constructed of heavier wood or metal as needed to withstand heavier sediment loading. This practice is appropriate where space for other practices is limited and heavy sediment loading is expected. "Super" silt fence is not to be used in place of properly designed diversions (pg. 15-1) which may be needed to control surface runoff rates and velocities.*
3. *A geotextile fabric, recommended for such use by the manufacturer, shall be buried at least 6 inches deep in the ground. The fabric shall extend at least 2 feet above the ground. The fabric must be securely fastened to the posts using a system consisting of metal fasteners (nails or staples) and a high strength reinforcement material (nylon webbing, grommets, washers etc.) placed between the fastener and the geotextile fabric. The fastening system shall resist tearing away from the post. The fabric shall incorporate a drawstring in the top portion of the fence for added strength.*

Maintenance

1. *Sediment shall be removed from the upstream face of the barrier when it has reached a depth of ½ the barrier height.*
2. *Repair or replace barrier (fabric, posts, bales etc.) when damaged.*
3. *Barriers shall be inspected daily for signs of deterioration and sediment removal.*

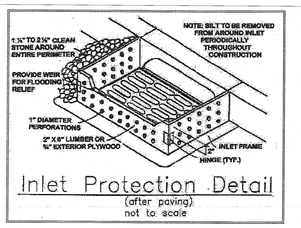
SILT FENCE

N.T.S.

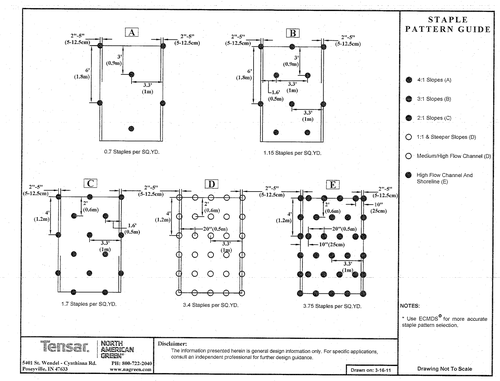


INLET SEDIMENT CONTROL STRUCTURE

NOT TO SCALE



Inlet Protection Detail
(after paving)
not to scale



STAPLE PATTERN GUIDE

- 4:1 Slopes (A)
- 3:1 Slopes (B)
- 2:1 Slopes (C)
- 1:1 & Steeper Slopes (D)
- Medium/High Flow Channel (D)
- High Flow Channel And Shoreline (E)

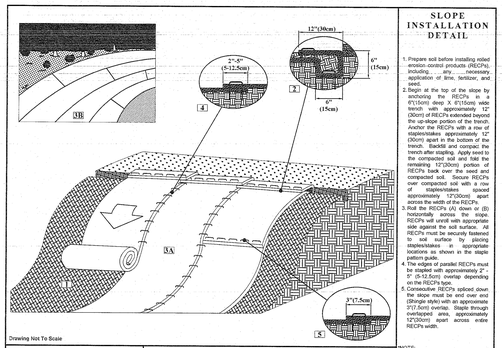
NOTES:
* Use ECMDS® for more accurate staple pattern selection.

Tensar. NORTH AMERICAN GREEN® 5401 St. Wendel - Cynthiana Rd. Poseyville, IN 47633 PH: 800-722-2040 www.nagreen.com

Disclaimer: The information presented herein is general design information only. For specific applications, consult an independent professional for further design guidance.

Drawn on: 3-16-11

Drawing Not To Scale



SLOPE INSTALLATION DETAIL

1. Prepare soil before installing erosion control products (RECPs), including any necessary application of lime, fertilizer, and seed.
2. Begin at the top of the slope by anchoring the RECPs in a 6"(15cm) deep X 6"(15cm) wide trench with approximately 12" (30cm) of RECPs extended beyond the up-slope portion of the trench. Anchor the RECPs with a row of staples/stakes approximately 12" (30cm) apart in the bottom of the trench. Backfill and compact the trench after stapling. Apply seed to the soil. Fold the end flap of the remaining 12" (30cm) portion of RECPs back on itself and seed and compacted soil. Secure RECPs over compacted soil with a row of staples/stakes spaced approximately 12"(30cm) apart across the width of the RECPs.
3. Roll the RECPs (A) down or (B) across the slope. Anchor the RECPs will check with appropriate staples as described in step 5. RECPs must be securely fastened to soil surface by placing staples/stakes in appropriate locations as shown in the staple pattern guide.
4. The edges of parallel RECPs must be stapled approximately 2" - 5" (5-12.5cm) overlap depending on the RECPs type.
5. Consecutive RECPs spliced down the slope must be end over end (Shingle style) with an approximate 3"(7.5cm) overlap. Staple through overlapped area, approximately 12"(30cm) apart across entire RECPs width.

NOTE:
In loose soil conditions, the use of staples or stakes lengths greater than 6"(15cm) may be necessary to properly secure the RECPs.

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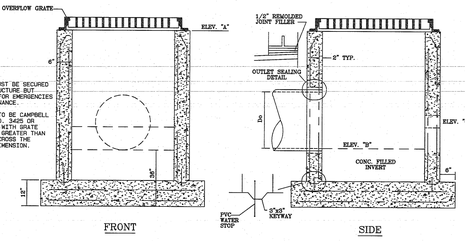
Drawn on: 3-16-11

Drawing Not To Scale



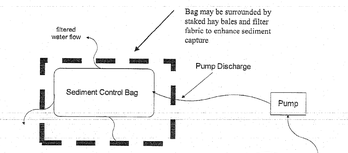
NOTES:
1. GRATE MUST BE SECURED TO THE STRUCTURE BUT REMOVABLE FOR EMERGENCIES AND MAINTENANCE.

2. CASTING TO BE CAMPBELL FOUNDARY NO. 3425 OR EQUIVALENT WITH GRATE SPACING NO GREATER THAN 2 INCHES ACROSS THE SMALLEST DIMENSION.

OUTLET STRUCTURE

N.T.S.

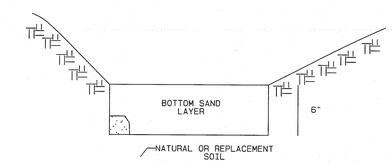
O.S.	ELEV. A 103.8	ELEV. B 101.2	ELEV. C 101.2	Do 15"



Bags must be disposed of according to manufacturer's instructions. Bags may not be reused.

SEDIMENT CONTROL BAG FOR DEWATERING

N.T.S.

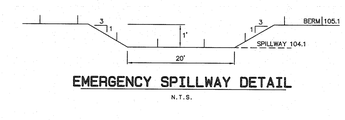


NOTES:

1. 6" THICK BOTTOM SAND LAYER SHALL CONSIST OF KS SAND WITH NO MORE THAN 15% FINES AND SHALL HAVE A MINIMUM INFILTRATION RATE OF 20 INCHES PER HOUR.
2. BASIN CONSTRUCTION MUST NOT COMPACT SOILS BELOW BASIN BOTTOM.
3. THE BASIN BOTTOM IS NOT TO BE FULLY EXCAVATED TO ACCOMMODATE THE USE OF THE K-5 SAND UNTIL A MAJORITY OF THE CONTRIBUTING AREA IS PERMANENTLY STABILIZED.

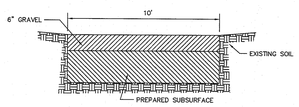
INFILTRATION BASIN

N.T.S.



EMERGENCY SPILLWAY DETAIL

N.T.S.



BASIN ACCESS DRIVE

N.T.S.

DATE	REVISION	DRAWN	CHECKED	RELEASED

SOIL EROSION AND SEDIMENT CONTROL DETAILS

PRELIMINARY AND FINAL MAJOR SITE PLAN & SUBDIVISION

LOT 15.01 ~ BLOCK 44

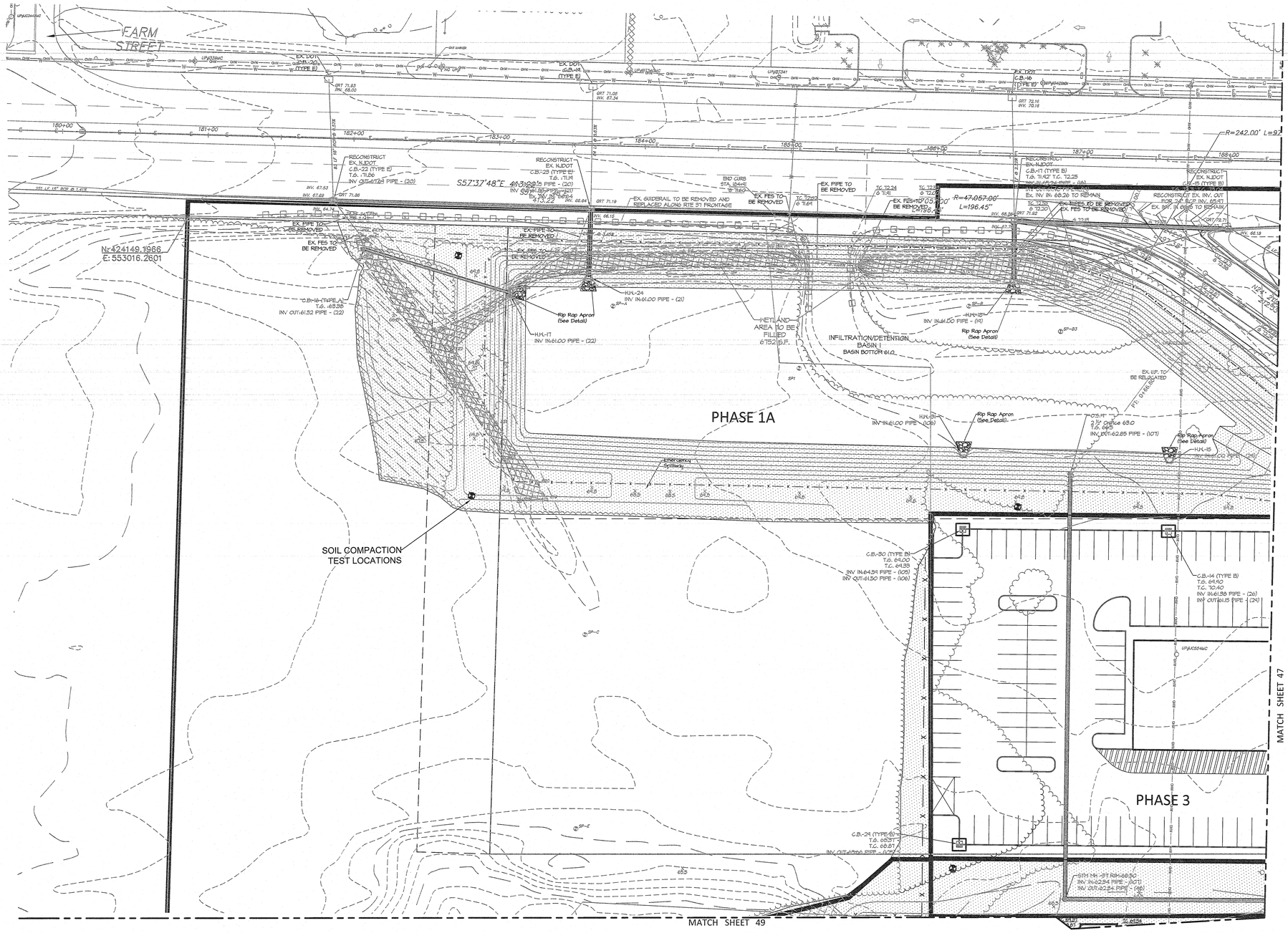
TAX MAP SHEET NO. 8
SITUATED IN
MANCHESTER TOWNSHIP, OCEAN COUNTY, NEW JERSEY

FWH ASSOCIATES, P.A.
CIVIL ENGINEERS
LAND SURVEYORS
PLANNERS
LANDSCAPE ARCHITECTS
RESERVE SPECIALISTS
ARCHITECTS
FWHASSOCIATES.COM
1856 Rt. 9, Toms River, NJ 08755 T: 732.797.3100 F: 732.797.3223

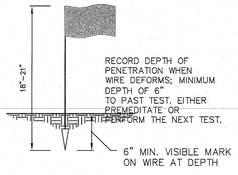
Brian P. Murphy
PROFESSIONAL ENGINEER
N.J. LIC. NO. 42000

DRAWN BY CSM	DATE 3/20/20
DESIGNED BY JS	SCALE N.T.S.
CHECKED BY JS	DRAWING NO. PD-170
RELEASED BY BPM	PROJECT NO. 1423.0016
SHEET NO. 45	OF 49

U:\Projects\1423\1423001\Sheets dwg\FWH-SOIL EROSION DETAILS - SHEET.dwg, 2/3/2021 12:28:33 PM, ©2020 FWH Associates, P.A.

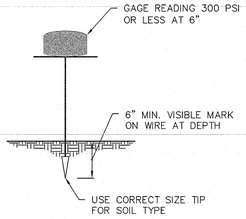


NOTE: SOIL SHOULD BE MOIST BUT NOT SATURATED. DO NOT TEST WHEN SOIL IS EXCESSIVELY DRY OR SUBJECT TO FREEZING TEMPERATURES. SLOW, STEADY DOWNWARD PRESSURE USED TO ADVANCE THE WIRE.
* WIRE MAY BE RE-INSERTED IF/WHEN AN OBSTRUCTION (ROCK, ROOT, DEBRIS) IS ENCOUNTERED



PROBING WIRE TEST
15.5 GA. STEEL WIRE (SURVEY FLAG) N.T.S.

NOTE: SOIL SHOULD BE MOIST BUT NOT SATURATED. DO NOT TEST WHEN SOIL IS EXCESSIVELY DRY OR SUBJECT TO FREEZING TEMPERATURES. SLOW, STEADY DOWNWARD PRESSURE USED TO ADVANCE THE PROBE. MEASURE DEPTH WHEN GAGE READING REACHES 300 PSI OR DEPTH OBSTRUCTION (ROCK, ROOT, DEBRIS) IS ENCOUNTERED.
* PENETROMETER MAY BE RE-INSERTED IF/WHEN AN OBSTRUCTION (ROCK, ROOT, DEBRIS) IS ENCOUNTERED.



HANDHELD SOIL PENETROMTERE TEST

LEGEND

SOIL COMPACTION TESTING AREAS

RECOMMENDED SOIL COMPACTION TEST LOCATION (APPROX. 1 PER/.5 ACRE)

LEGEND

75	EXISTING CONTOUR
75	PROPOSED CONTOUR
x (87.5)	EXISTING SPOT ELEVATION
75.42 x	PROPOSED SPOT ELEVATION
	PROPOSED STORM SEWER
F.F. 75.00	FINISH FLOOR ELEVATION
G.F. 75.00	GARAGE FLOOR ELEVATION
B.F. 75.00	BASEMENT FLOOR ELEVATION
	WOODSLINE

GRAPHIC SCALE 1"=30'
0 30 60 90

SOIL DE-COMPACTION AND TESTING REQUIREMENTS

A. SOIL COMPACTION TESTING REQUIREMENTS

1. SUBGRADE SOILS PRIOR TO THE APPLICATION OF TOPSOIL (SEE PERMANENT SEEDING AND STABILIZATION NOTES FOR TOPSOIL REQUIREMENTS) SHALL BE FREE OF EXCESSIVE COMPACTION TO A DEPTH OF 6.0 INCHES TO ENHANCE THE ESTABLISHMENT OF PERMANENT VEGETATIVE COVER.

2. AREAS OF THE SITE WHICH ARE SUBJECT 3O COMPACTION TESTING AND/OR MITIGATION ARE GRAPHICALLY DENOTED ON THE CERTIFIED SOIL EROSION CONTROL PLAN.

3. COMPACTION TESTING LOCATIONS ARE DENOTED ON THE PLAN. LOCATION ID'S SHALL BE USED TO COMPLETE THE COMPACTION REMEDIATION FORM, AVAILABLE FROM THE LOCAL SOIL CONSERVATION DISTRICT. THIS FORM MUST BE FILLED OUT AND SUBMITTED PRIOR TO RECEIVING A CERTIFICATE OF COMPLIANCE FROM THE DISTRICT.

4. IN THE EVENT THAT TESTING INDICATES COMPACTION IN EXCESS OF THE MAXIMUM THRESHOLDS INDICATED FOR THE SIMPLIFIED TESTING METHODS (SEE DETAILS BELOW). THE CONTRACTOR/OWNER SHALL HAVE THE OPTION TO PERFORM EITHER (1) COMPACTION MITIGATION OVER THE ENTIRE MITIGATION AREA DENOTED ON THE PLAN (EXCLUDING EXEMPT AREAS), OR (2) PERFORM ADDITIONAL, MORE DETAILED TESTING TO ESTABLISH THE LIMITS OF EXCESSIVE COMPACTION WHEREUPON ONLY THE EXCESSIVELY COMPACTED AREAS WOULD REQUIRE COMPACTION MITIGATION. ADDITIONAL DETAILED TESTING SHALL BE PERFORMED BY A TRAINED, LICENSED PROFESSIONAL.

B. COMPACTION TESTING METHODS

1. PROBING WIRE TEST (SEE DETAIL)

2. HAND-HELD PENETROMETER (SEE DETAIL)

3. TUBE BULK DENSITY TEST (LICENSED PROFESSIONAL REQUIRED)

4. NUCLEAR DENSITY TEST (LICENSED PROFESSIONAL REQUIRED)

5. NOTE: ADDITIONAL TESTING METHODS WHICH CONFORM TO ASTM STANDARDS AND SPECIFICATIONS, AND WHICH PRODUCE A DRY WEIGHT, SOIL BULK DENSITY MEASUREMENT MAY BE ALLOWED SUBJECT TO DISTRICT APPROVAL.

6. DETAILED REQUIREMENTS FOR EACH COMPACTION TESTING METHOD CAN BE FOUND IN SECTION 19 "STANDARD FOR LAND GRADING" OF THE NJ STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL, LATEST EDITION.

7. SOIL COMPACTION TESTING IS NOT REQUIRED IF/WHEN SUBSOIL COMPACTION REMEDIATION (SCARIFICATION/TILLAGE (6" MINIMUM DEPTH) OR SIMILAR) IS PROPOSED AS PART OF THE SEQUENCE OF CONSTRUCTION.

C. PROCEDURES FOR SOIL COMPACTION MITIGATION

1. PROCEDURES SHALL BE USED TO MITIGATE EXCESSIVE SOIL COMPACTION PRIOR TO PLACEMENT OF TOPSOIL AND ESTABLISHMENT OF PERMANENT VEGETATIVE COVER.

2. RESTORATION OF COMPACTED SOILS SHALL BE THROUGH DEEP SCARIFICATION/ TILLAGE (6" MINIMUM DEPTH) WHERE THERE IS NO DANGER TO UNDERGROUND UTILITIES (CABLES, IRRIGATION SYSTEMS, ETC.). IN THE ALTERNATIVE, ANOTHER METHOD AS SPECIFIED BY A NEW JERSEY LICENSED PROFESSIONAL ENGINEER MAY BE SUBSTITUTED SUBJECT TO DISTRICT APPROVAL.

DATE	REVISION	DRAWN	CHECKED	RELEASED
01/14/21	REV. PER PHASING LIMITS	SA	JS	BPM
11/30/20	REV. PER 10 UNIT RESIDENTIAL BUILDINGS	CSM	JS	BPM
5/20/2020	REVISED PER NJDOT LETTER 4-13-2020	CSM	JS	BPM

SOIL MITIGATION PLAN

PRELIMINARY AND FINAL MAJOR SITE PLAN & SUBDIVISION
LOT 15.01 ~ BLOCK 44
TAX MAP SHEET NO. 8
SITUATED IN
MANCHESTER TOWNSHIP, OCEAN COUNTY, NEW JERSEY

FWH ASSOCIATES, P.A.
Civil Engineers
Land Surveyors
Planners
Landscape Architects
Reserve Specialists
Architects
FWHassociates.com
1856 Rt. 9, Toms River, NJ 08755 T: 732.797.3100 F: 732.797.3223

Brian P. Murphy
PROFESSIONAL ENGINEER
N.J. LIC. NO. 42000

DRAWN BY CSM	DATE 3/20/20
DESIGNED BY JS	SCALE 1"=30'
CHECKED BY JS	DRAWER NO. PD-170
RELEASED BY BPM	PROJECT NO. 1423.0016
SHEET NO. 46 OF 49	

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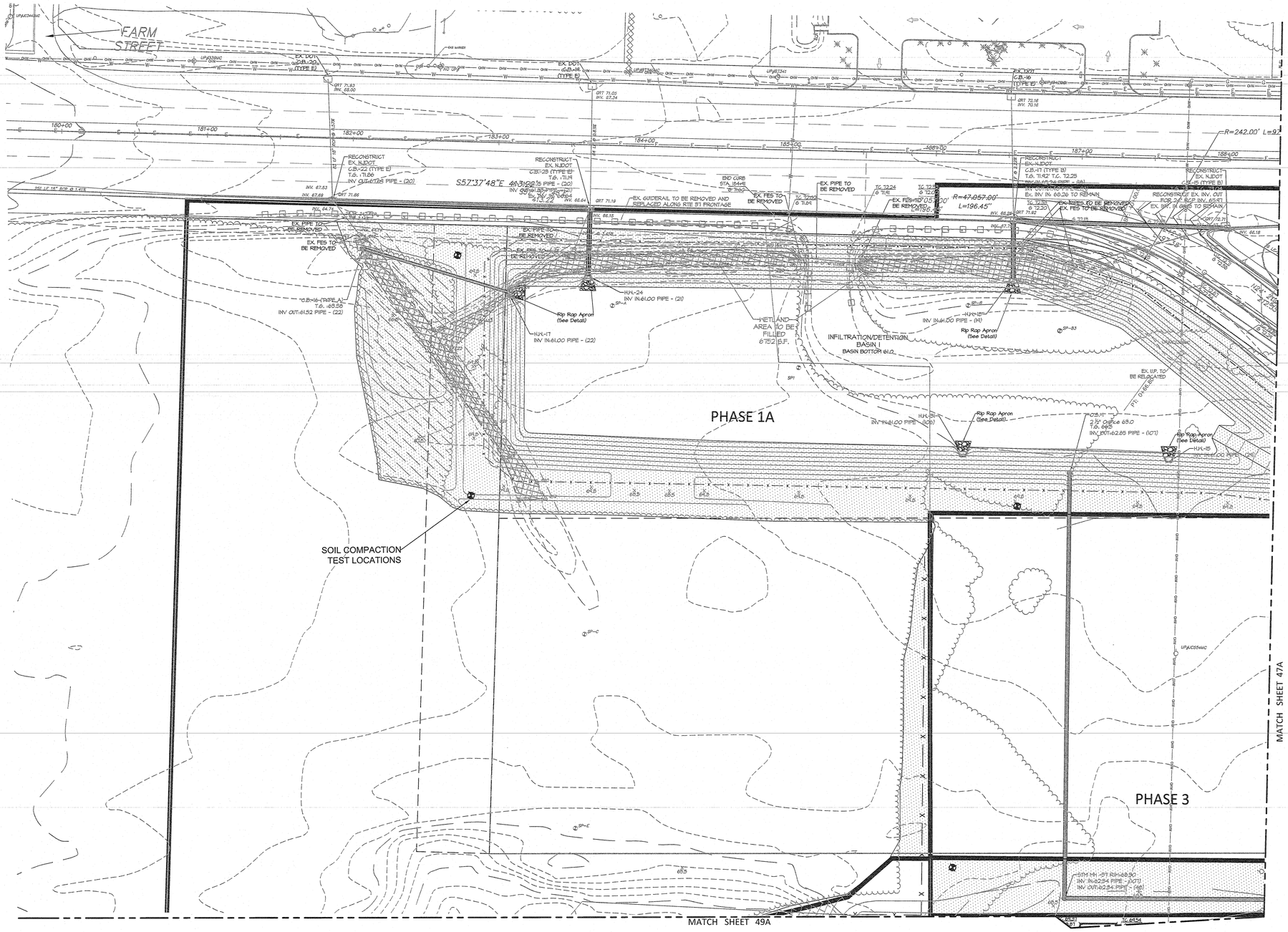

SOIL DE-COMPACTION AND TESTING REQUIREMENTS

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2. AREAS OF THE SITE WHICH ARE SUBJECT TO COMPACTION TESTING AND/OR MITIGATION ARE GRAPHICALLY DENOTED ON THE CERTIFIED SOIL EROSION CONTROL PLAN.

3. COMPACTION TESTING LOCATIONS ARE DENOTED ON THE PLAN. LOCATION ID'S SHALL BE USED TO COMPLETE THE COMPACTION REMEDIATION FORM, AVAILABLE FROM THE LOCAL SOIL CONSERVATION DISTRICT. THIS FORM MUST BE FILLED OUT AND SUBMITTED PRIOR TO RECEIVING A CERTIFICATE OF COMPLIANCE FROM THE DISTRICT.

4. IN THE EVENT THAT TESTING INDICATES COMPACTION IN EXCESS OF THE MAXIMUM THRESHOLDS INDICATED FOR THE SIMPLIFIED TESTING METHODS (SEE DETAILS BELOW), THE CONTRACTOR/OWNER SHALL HAVE THE OPTION TO PERFORM EITHER (1) COMPACTION MITIGATION OVER THE ENTIRE MITIGATION AREA DENOTED ON THE PLAN (EXCLUDING EXEMPT AREAS), OR (2) PERFORM ADDITIONAL, MORE DETAILED TESTING TO ESTABLISH THE LIMITS OF EXCESSIVE COMPACTION WHEREUPON ONLY THE EXCESSIVELY COMPACTED AREAS WOULD REQUIRE COMPACTION MITIGATION. ADDITIONAL DETAILED TESTING SHALL BE PERFORMED BY A TRAINED, LICENSED PROFESSIONAL.

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5. NOTE: ADDITIONAL TESTING METHODS WHICH CONFORM TO ASTM STANDARDS AND SPECIFICATIONS, AND WHICH PRODUCE A DRY WEIGHT, SOIL BULK DENSITY MEASUREMENT MAY BE ALLOWED SUBJECT TO DISTRICT APPROVAL.

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C. PROCEDURES FOR SOIL COMPACTION MITIGATION

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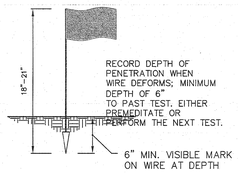
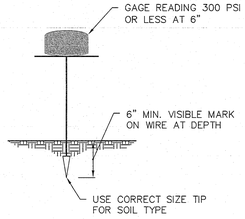
NOTE: SOIL SHOULD BE MOIST BUT NOT SATURATED. DO NOT TEST WHEN SOIL IS EXCESSIVELY DRY OR SUBJECT TO FREEZING TEMPERATURES. SLOW, STEADY DOWNWARD PRESSURE USED TO ADVANCE THE WIRE.
* WIRE MAY BE RE-INSERTED IF/WHEN AN OBSTRUCTION (ROCK, ROOT, DEBRIS) IS ENCOUNTERED



PROBING WIRE TEST
15.5 GA. STEEL WIRE (SURVEY FLAG) N.T.S.

NOTE: SOIL SHOULD BE MOIST BUT NOT SATURATED. DO NOT TEST WHEN SOIL IS EXCESSIVELY DRY OR SUBJECT TO FREEZING TEMPERATURES. SLOW, STEADY DOWNWARD PRESSURE USED TO ADVANCE THE PROBE.
* MEASURE DEPTH WHEN GAGE READING REACHES 300 PSI. RE-INSERT IF/WHEN OBSTRUCTION (ROCK, ROOT, DEBRIS) IS ENCOUNTERED.



HANDHELD SOIL PENETROMTERE TEST

LEGEND

SOIL COMPACTION TESTING AREAS

RECOMMENDED SOIL COMPACTION TEST LOCATION (APPROX. 1 PER/.5 ACRE)

LEGEND

75	EXISTING CONTOUR
75	PROPOSED CONTOUR
x (87.5)	EXISTING SPOT ELEVATION
75.42 ×	PROPOSED SPOT ELEVATION
	PROPOSED STORM SEWER
F.F. 75.00	FINISH FLOOR ELEVATION
G.F. 75.00	GARAGE FLOOR ELEVATION
B.F. 75.00	BASEMENT FLOOR ELEVATION
	WOODSLINE

GRAPHIC SCALE 1"=30'
0 30 60 90

DATE	REVISION	DRAWN	CHECKED	RELEASED

SOIL MITIGATION PLAN-PHASE 1A

PRELIMINARY AND FINAL MAJOR SITE PLAN & SUBDIVISION
LOT 15.01 ~ BLOCK 44
TAX MAP SHEET NO. 8
SITUATED IN
MANCHESTER TOWNSHIP, OCEAN COUNTY, NEW JERSEY

FWH ASSOCIATES, P.A.
CIVIL ENGINEERS
LAND SURVEYORS
PLANNERS
LANDSCAPE ARCHITECTS
RESERVE SPECIALISTS
ARCHITECTS
FWHASSOCIATES.COM
1858 Rt. 9, Toms River, NJ 08755 T: 732.797.3100 F: 732.797.3223

Brian P. Murphy
PROFESSIONAL ENGINEER
N.J. LIC. NO. 42000

DRAWN BY: SA	DATE: 01/14/21
DESIGNED BY: JS	SCALE: 1"=30'
CHECKED BY: JS	DRAWING NO.: PD-170
RELEASED BY: BPM	PROJECT NO.: 1423.0016
SHEET NO.: 46A	OF: 49

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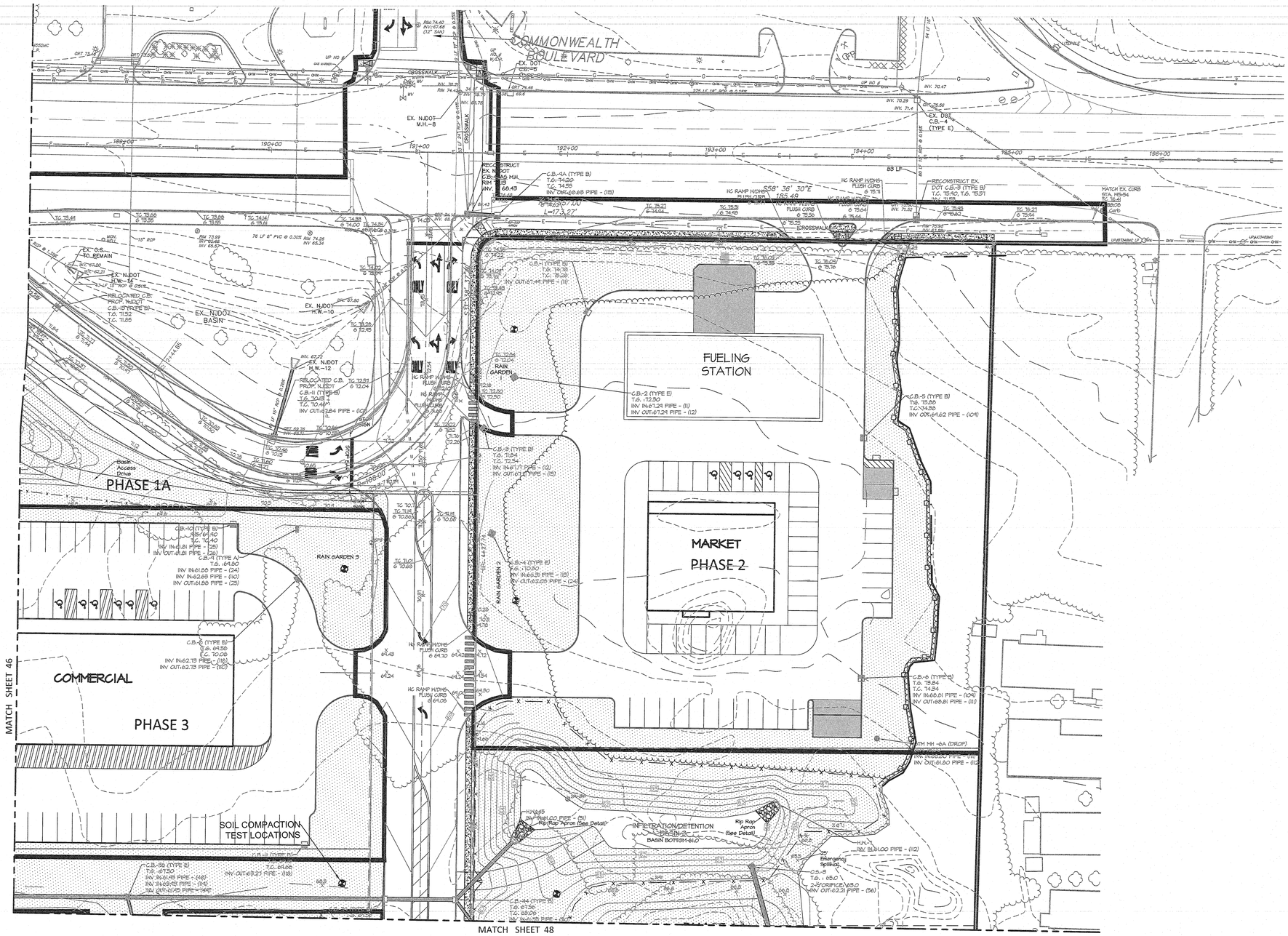

LEGEND

SOIL COMPACTION TESTING AREAS

RECOMMENDED SOIL COMPACTION TEST LOCATION (APPROX. 1 PER/.5 ACRE)

LEGEND

75	EXISTING CONTOUR
75	PROPOSED CONTOUR
x (87.5)	EXISTING SPOT ELEVATION
75.42 x	PROPOSED SPOT ELEVATION
	PROPOSED STORM SEWER
F.F. 75.00	FINISH FLOOR ELEVATION
G.F. 75.00	GARAGE FLOOR ELEVATION
B.F. 75.00	BASEMENT FLOOR ELEVATION
	WOODSLINE

GRAPHIC SCALE 1"=30'

0 30 60 90

DATE	REVISION	DRAWN	CHECKED	RELEASED
01/14/21	REV. PER PHASING LIMITS	SA	JS	BPM
11/30/20	REV. PER 10 UNIT RESIDENTIAL BUILDINGS	CSM	JS	BPM
5/20/2020	REVISED PER NJDOT LETTER 4-13-2020	CSM	JS	BPM

SOIL MITIGATION PLAN

PRELIMINARY AND FINAL MAJOR SITE PLAN & SUBDIVISION

LOT 15.01 ~ BLOCK 44

TAX MAP SHEET NO. 8
SITUATED IN
MANCHESTER TOWNSHIP, OCEAN COUNTY, NEW JERSEY

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Brian P. Murphy
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DESIGNED BY JS	SCALE 1"=30'
CHECKED BY JS	DRAWER NO. PD-170
RELEASED BY BPM	PROJECT NO. 1423.0016
SHEET NO. 47	OF 49

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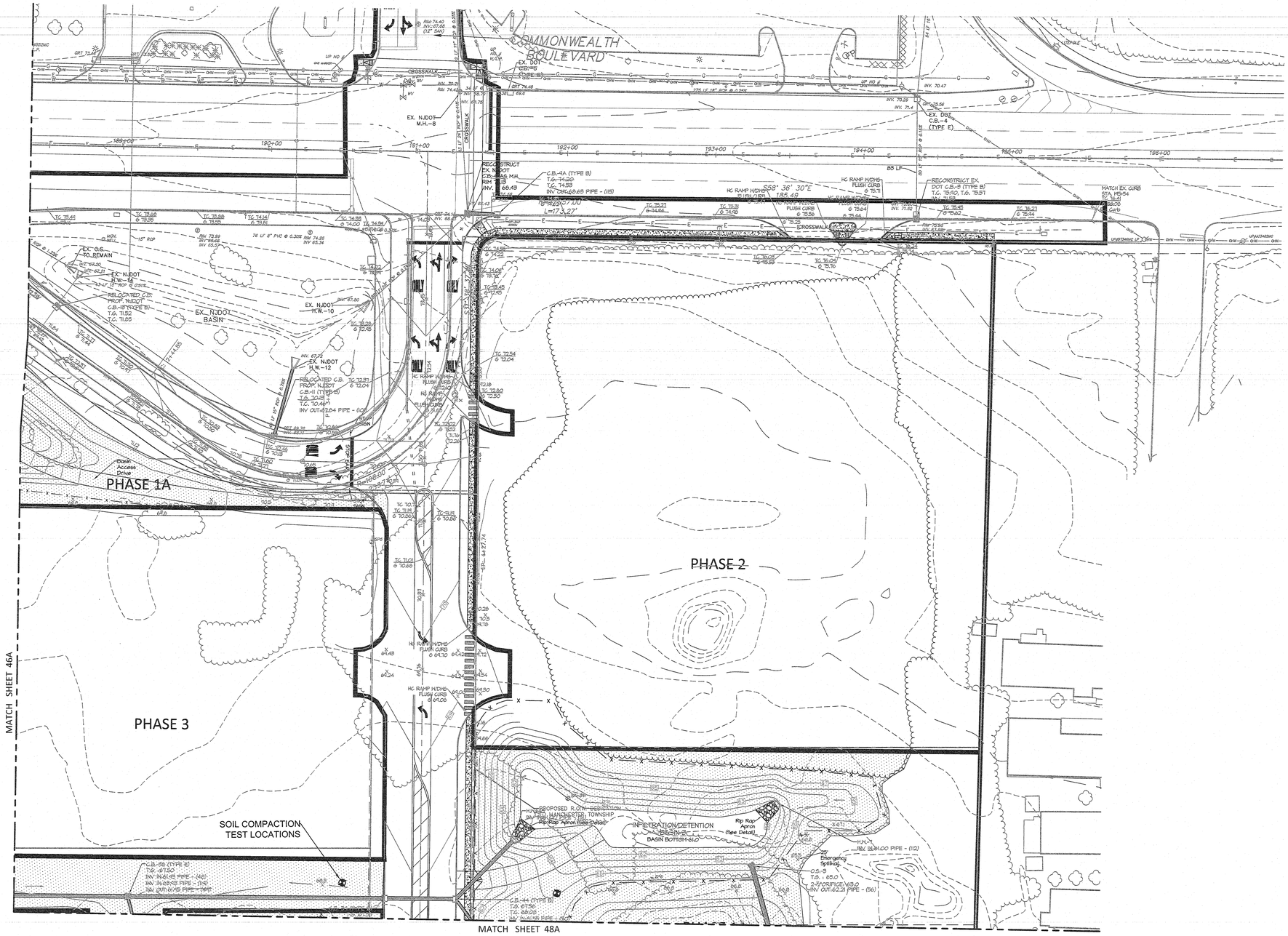

LEGEND

SOIL COMPACTION TESTING AREAS

RECOMMENDED SOIL COMPACTION TEST LOCATION (APPROX. 1 PER/.5 ACRE)

LEGEND

75	EXISTING CONTOUR
75	PROPOSED CONTOUR
x (87.5)	EXISTING SPOT ELEVATION
75.42 x	PROPOSED SPOT ELEVATION
	PROPOSED STORM SEWER
F.F. 75.00	FINISH FLOOR ELEVATION
G.F. 75.00	GARAGE FLOOR ELEVATION
B.F. 75.00	BASEMENT FLOOR ELEVATION
	WOODSLINE

GRAPHIC SCALE 1"=30'

0 30 60 90

DATE	REVISION	DRAWN	CHECKED	RELEASED

SOIL MITIGATION PLAN-PHASE 1A

PRELIMINARY AND FINAL MAJOR SITE PLAN & SUBDIVISION

LOT 15.01 ~ BLOCK 44

TAX MAP SHEET NO. 8
SITUATED IN
MANCHESTER TOWNSHIP, OCEAN COUNTY, NEW JERSEY

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Brian P. Murphy
PROFESSIONAL ENGINEER
N.J. LIC. NO. 42000

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DESIGNED BY: JS	SCALE: 1"=30'
CHECKED BY: JS	DRAWING NO.: PD-170
RELEASED BY: BPM	PROJECT NO.: 1423.0016
SHEET NO.: 47A	OF: 49

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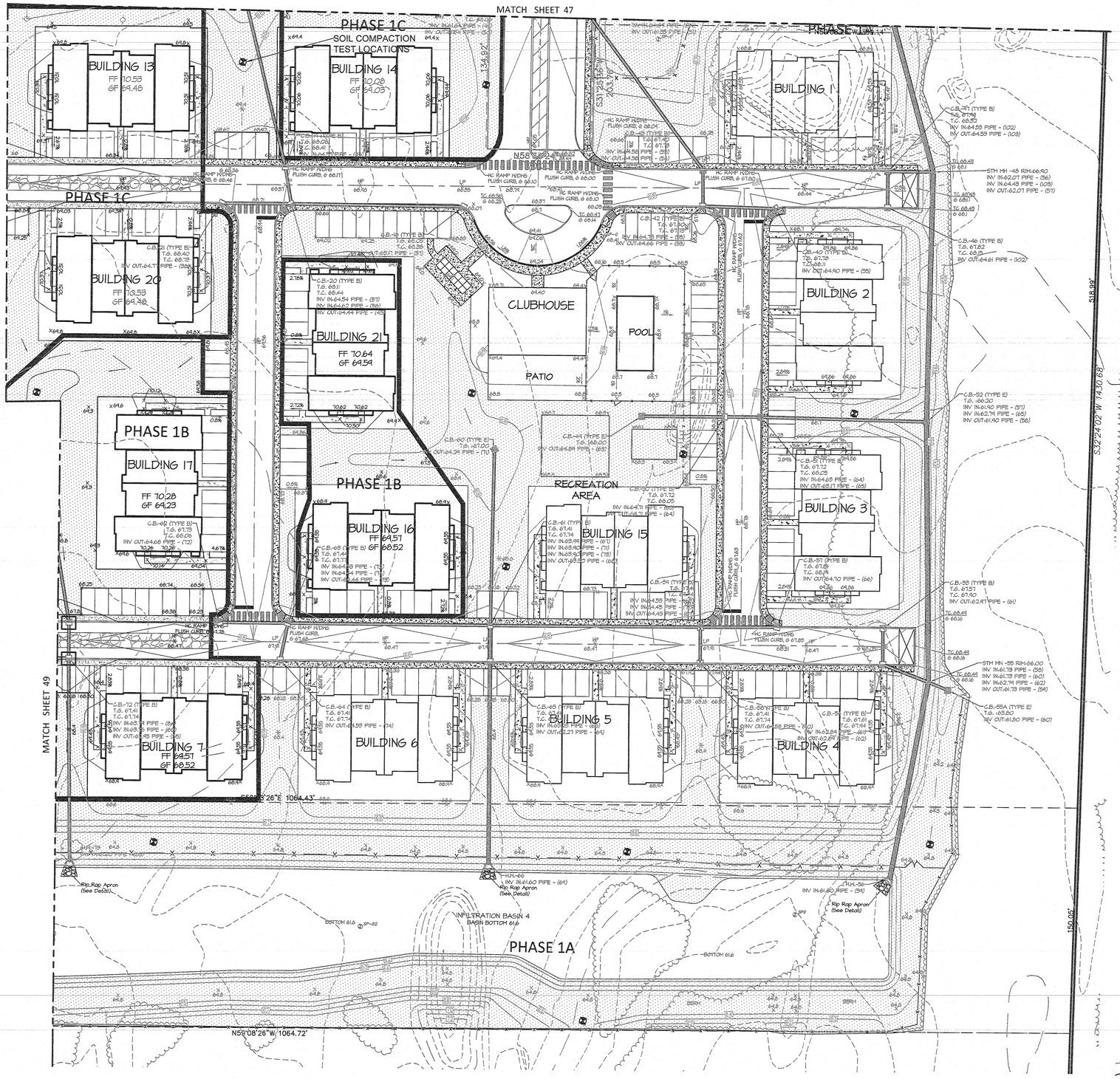

DATE	REVISION	DRAWN	CHECKED	RELEASED
01/14/21	REV. PER PHASING LIMITS.	SA	JS	BPM
11/30/20	REV. PER 10 UNIT RESIDENTIAL BUILDINGS	CSM	JS	BPM

SOIL MITIGATION PLAN

PRELIMINARY AND FINAL MAJOR SITE PLAN & SUBDIVISION

LOT 15.01 ~ BLOCK 44

TAX MAP SHEET NO. 8
SITUATED IN
MANCHESTER TOWNSHIP, OCEAN COUNTY, NEW JERSEY

FWH ASSOCIATES, P.A.

CIVIL ENGINEERS
LAND SURVEYORS
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Brian P. Murphy

PROFESSIONAL ENGINEER
N.J. LIC. NO. 42000

DRAWN BY: CSM	DATE: 3/20/20
DESIGNED BY: JS	SCALE: 1"=30'
CHECKED BY: JS	DRAWING NO.: PD-170
RELEASED BY: BPM	PROJECT NO.: 1423.0016
SHEET NO.: 48	OF: 49

LEGEND

75	EXISTING CONTOUR
75	PROPOSED CONTOUR
x (87.5)	EXISTING SPOT ELEVATION
75.42 x	PROPOSED SPOT ELEVATION
	PROPOSED STORM SEWER
F.F. 75.00	FINISH FLOOR ELEVATION
G.F. 75.00	GARAGE FLOOR ELEVATION
B.F. 75.00	BASEMENT FLOOR ELEVATION
	WOODSLINE

LEGEND

SOIL COMPACTION TESTING AREAS

RECOMMENDED SOIL COMPACTION TEST LOCATION (APPROX. 1 PER/.5 ACRE)

GRAPHIC SCALE 1"=30'

0 30 60 90

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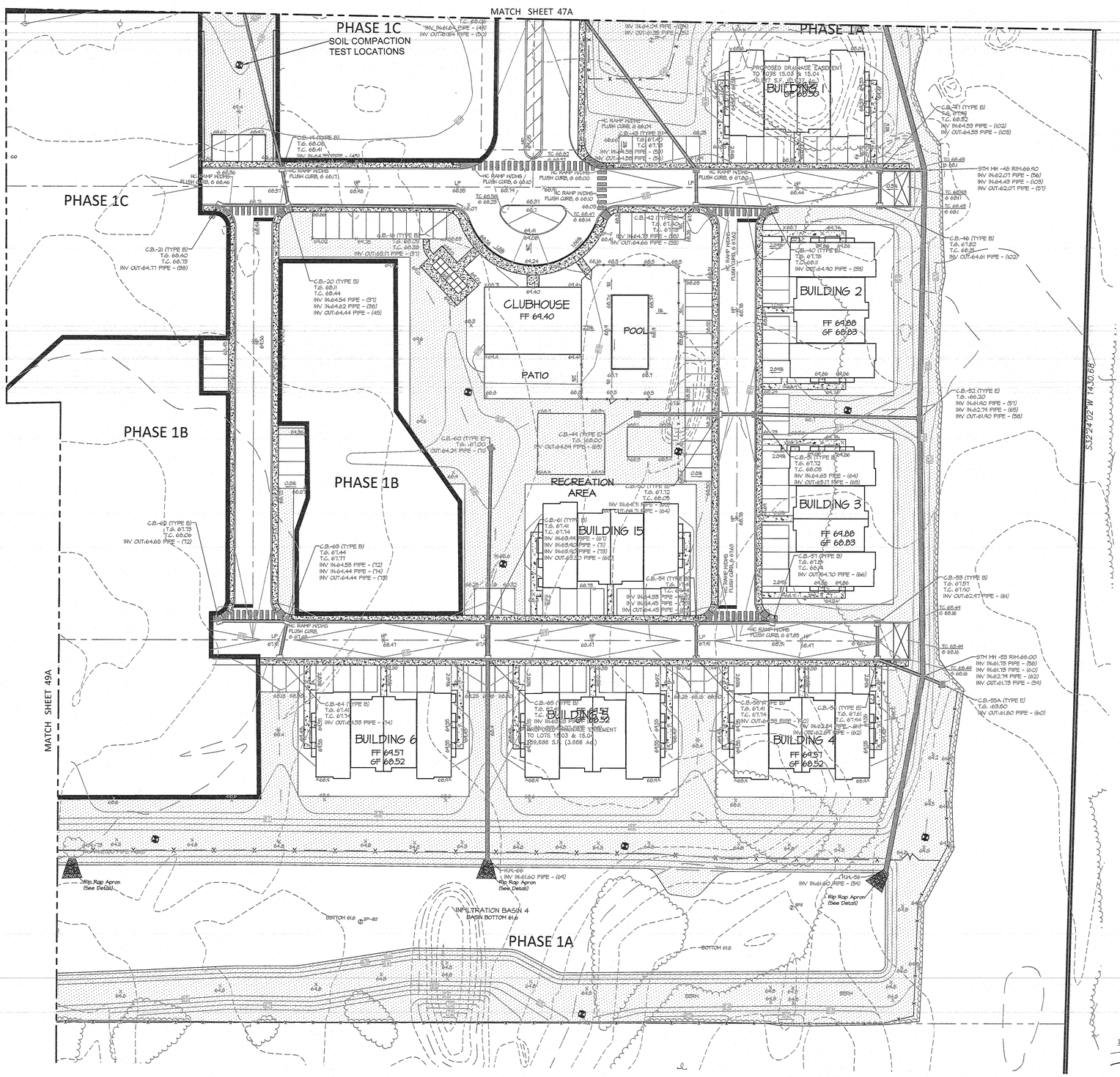

LEGEND

SOIL COMPACTION TESTING AREAS

RECOMMENDED SOIL COMPACTION TEST LOCATION (APPROX. 1 PER/.5 ACRE)

LEGEND

75	EXISTING CONTOUR
75	PROPOSED CONTOUR
x (87.5)	EXISTING SPOT ELEVATION
75.42 x	PROPOSED SPOT ELEVATION
	PROPOSED STORM SEWER
F.F. 75.00	FINISH FLOOR ELEVATION
G.F. 75.00	GARAGE FLOOR ELEVATION
B.F. 75.00	BASEMENT FLOOR ELEVATION
	WOODSLINE

GRAPHIC SCALE 1"=30'

0 30 60 90

DATE	REVISION	DRAWN	CHECKED	RELEASED

SOIL MITIGATION PLAN-PHASE 1A

PRELIMINARY AND FINAL MAJOR SITE PLAN & SUBDIVISION

LOT 15.01 ~ BLOCK 44

TAX MAP SHEET NO. 8
SITUATED IN
MANCHESTER TOWNSHIP, OCEAN COUNTY, NEW JERSEY

FWH ASSOCIATES, P.A.

Civil Engineers
Land Surveyors
Planners
Landscape Architects
Reserve Specialists
Architects

FWHASSOCIATES.COM

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DRAWN BY SA	DATE 01/14/21
DESIGNED BY JS	SCALE 1"=30'
CHECKED BY JS	DRAWING NO. PD-170
RELEASED BY BPM	PROJECT NO. 1423.0016
SHEET NO. 48A	OF 49

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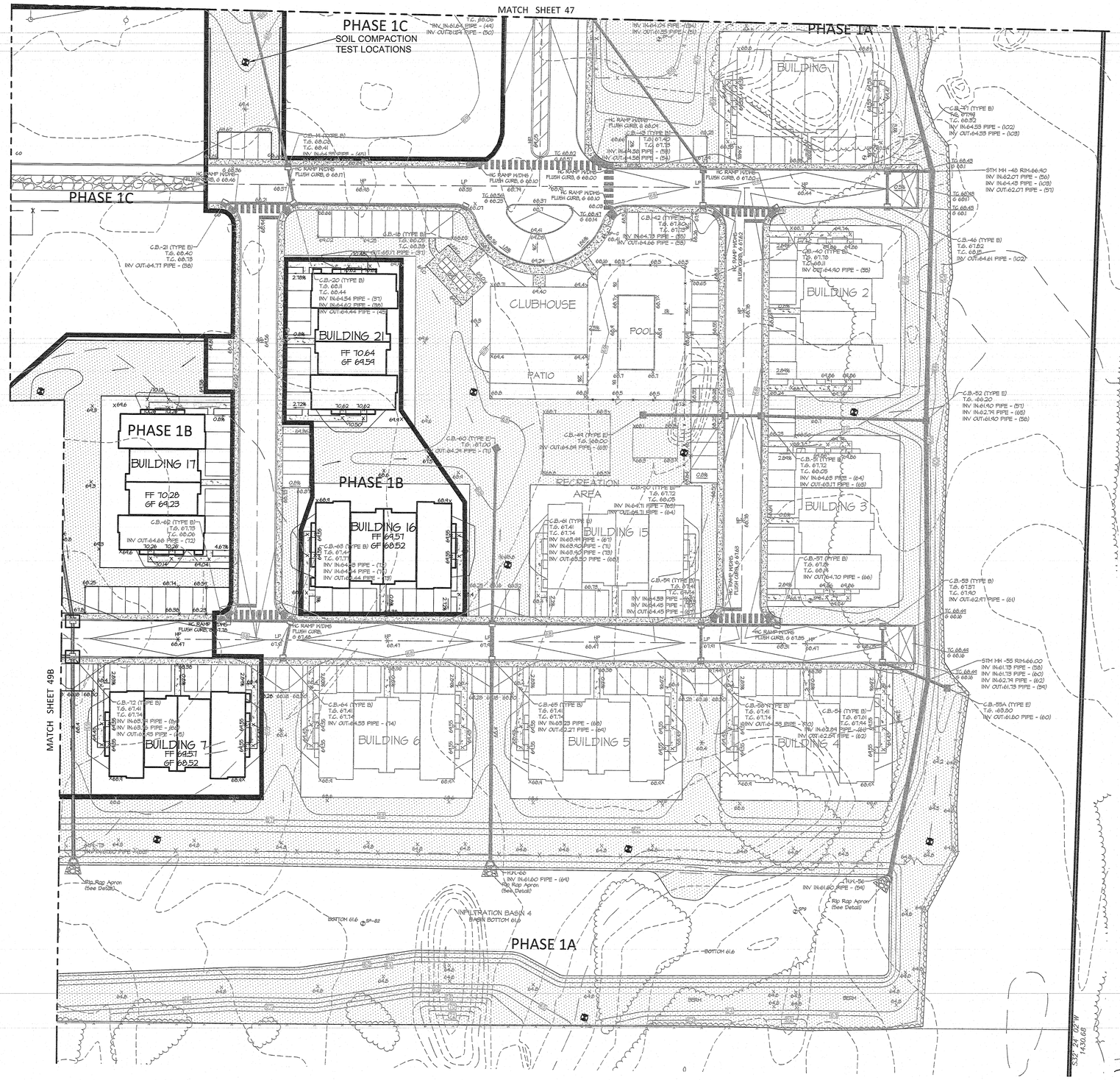

LEGEND

SOIL COMPACTION TESTING AREAS

RECOMMENDED SOIL COMPACTION TEST LOCATION (APPROX. 1 PER/.5 ACRE)

LEGEND

75	EXISTING CONTOUR
75	PROPOSED CONTOUR
x (87.5)	EXISTING SPOT ELEVATION
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F.F. 75.00	FINISH FLOOR ELEVATION
G.F. 75.00	GARAGE FLOOR ELEVATION
B.F. 75.00	BASEMENT FLOOR ELEVATION
	WOODSLINE

GRAPHIC SCALE 1"=30'

0 30 60 90

DATE	REVISION	DRAWN	CHECKED	RELEASED

SOIL MITIGATION PLAN-PHASE 1B

PRELIMINARY AND FINAL MAJOR SITE PLAN & SUBDIVISION

LOT 15.01 ~ BLOCK 44

TAX MAP SHEET NO. 8
SITUATED IN
MANCHESTER TOWNSHIP, OCEAN COUNTY, NEW JERSEY

FWH ASSOCIATES, P.A.

CIVIL ENGINEERS
LAND SURVEYORS
PLANNERS
LANDSCAPE ARCHITECTS
RESERVE SPECIALISTS
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FWHASSOCIATES.COM

1855 Rt. 9, Toms River, NJ 08755 T: 732.797.3100 F: 732.797.3223

Brian P. Murphy

PROFESSIONAL ENGINEER
N.J. LIC. NO. 42000

DRAWN BY: SA	DATE: 01/14/21
DESIGNED BY: JS	SCALE: 1"=30'
CHECKED BY: JS	DRAWING NO.: PD-170
RELEASED BY: BPM	PROJECT NO.: 1423.0016
SHEET NO.: 48B	OF 49

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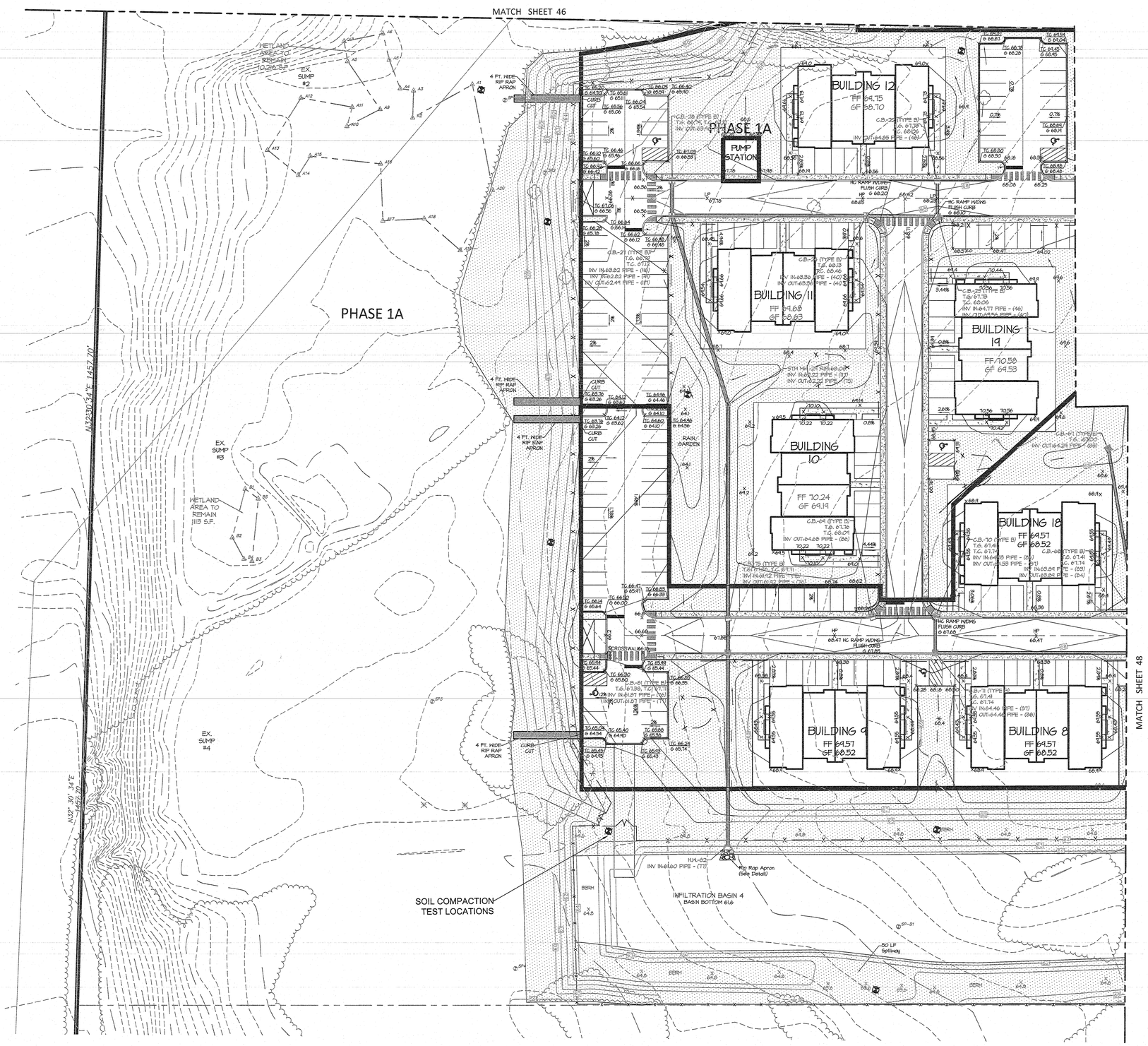

LEGEND

SOIL COMPACTION TESTING AREAS

RECOMMENDED SOIL COMPACTION TEST LOCATION (APPROX. 1 PER/.5 ACRE)

LEGEND

75	EXISTING CONTOUR
75	PROPOSED CONTOUR
x (87.5)	EXISTING SPOT ELEVATION
75.42 x	PROPOSED SPOT ELEVATION
	PROPOSED STORM SEWER
F.F. 75.00	FINISH FLOOR ELEVATION
G.F. 75.00	GARAGE FLOOR ELEVATION
B.F. 75.00	BASEMENT FLOOR ELEVATION
	WOODSLINE

GRAPHIC SCALE 1"=30'

0 30 60 90

DATE	REVISION	DRAWN	CHECKED	RELEASED
01/14/21	REV. PER PHASING LIMITS	SA	JS	BPM
11/30/20	REV. PER 10 UNIT RESIDENTIAL BUILDINGS	CSM	JS	BPM

SOIL MITIGATION PLAN

PRELIMINARY AND FINAL MAJOR SITE PLAN & SUBDIVISION

LOT 15.01 ~ BLOCK 44

TAX MAP SHEET NO. 8
SITUATED IN
MANCHESTER TOWNSHIP, OCEAN COUNTY, NEW JERSEY

FWH ASSOCIATES, P.A.

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DESIGNED BY JS	SCALE 1"=30'
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RELEASED BY BPM	PROJECT NO. 1423.0016
SHEET NO. 49	OF 49

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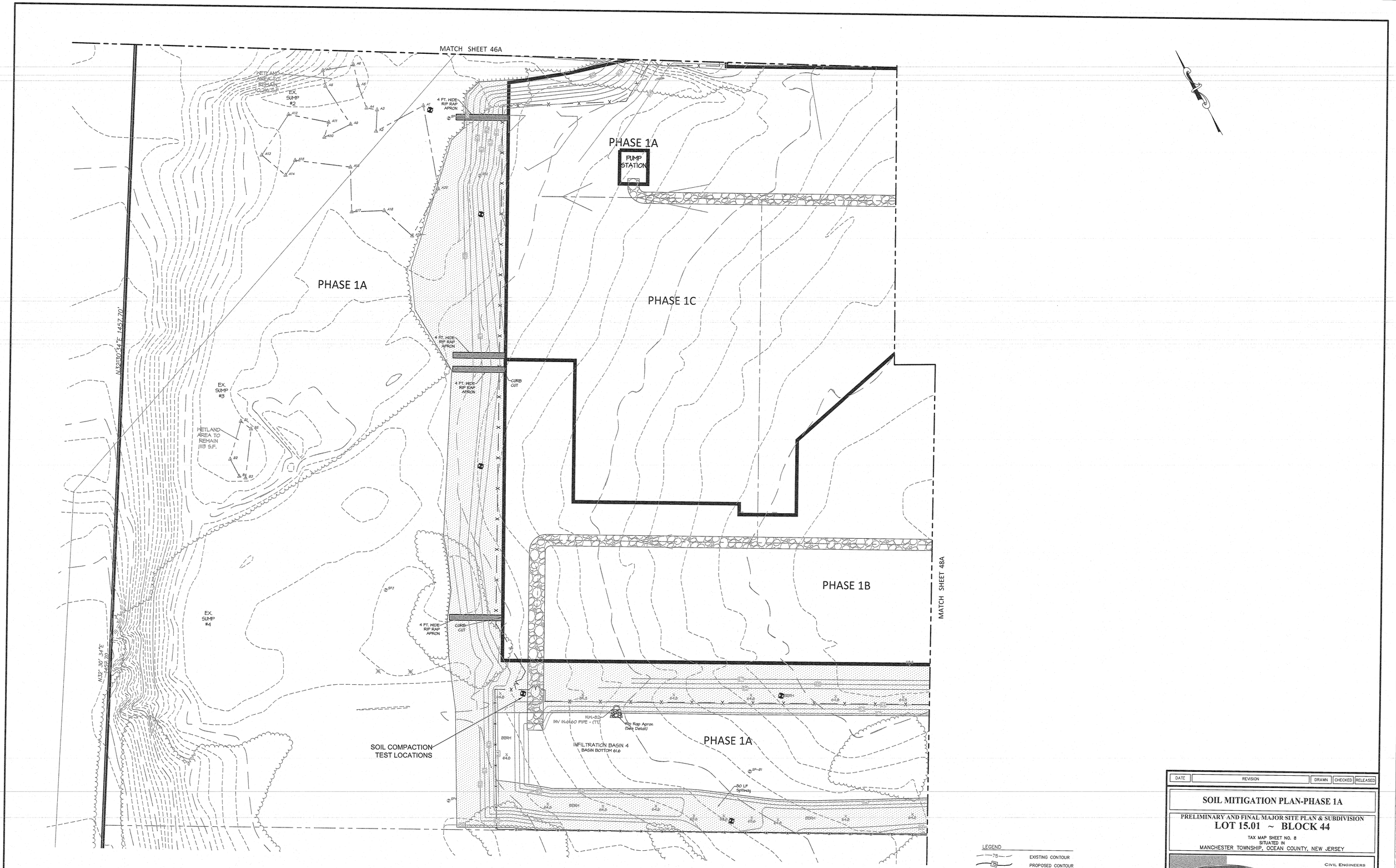

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SOIL MITIGATION PLAN-PHASE 1A

PRELIMINARY AND FINAL MAJOR SITE PLAN & SUBDIVISION

LOT 15.01 ~ BLOCK 44

TAX MAP SHEET NO. 8
SITUATED IN
MANCHESTER TOWNSHIP, OCEAN COUNTY, NEW JERSEY

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RELEASED BY: BPM	PROJECT NO.: 1423.0016
SHEET NO.: 49A	OF: 49

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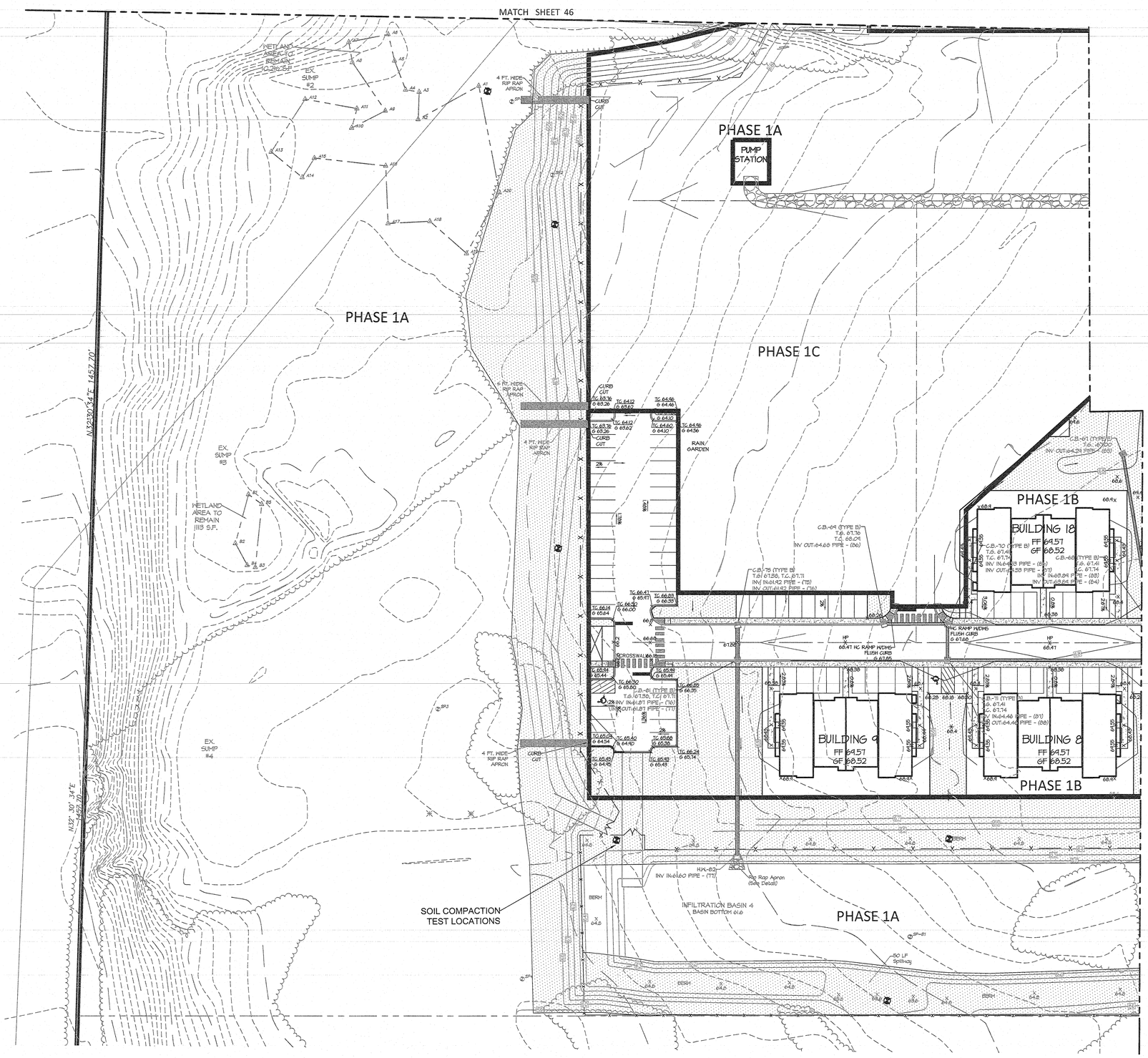

LEGEND

SOIL COMPACTION TESTING AREAS

RECOMMENDED SOIL COMPACTION TEST LOCATION (APPROX. 1 PER/.5 ACRE)

LEGEND

75	EXISTING CONTOUR
75	PROPOSED CONTOUR
x (87.5)	EXISTING SPOT ELEVATION
75.42 x	PROPOSED SPOT ELEVATION
	PROPOSED STORM SEWER
F.F. 75.00	FINISH FLOOR ELEVATION
G.F. 75.00	GARAGE FLOOR ELEVATION
B.F. 75.00	BASEMENT FLOOR ELEVATION
	WOODSLINE

GRAPHIC SCALE 1"=30'

0 30 60 90

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SOIL MITIGATION PLAN-PHASE 1B

PRELIMINARY AND FINAL MAJOR SITE PLAN & SUBDIVISION

LOT 15.01 ~ BLOCK 44

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