

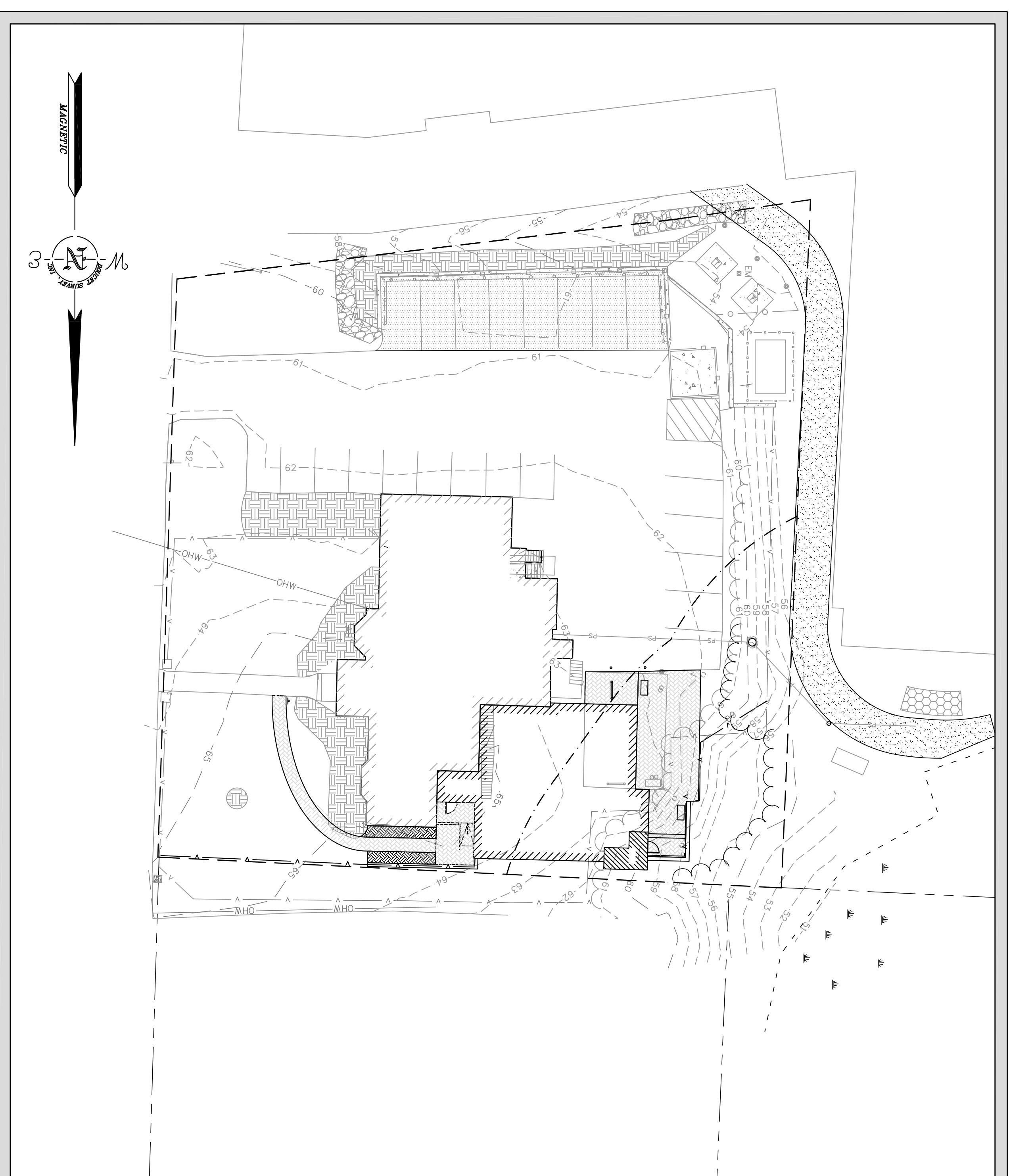
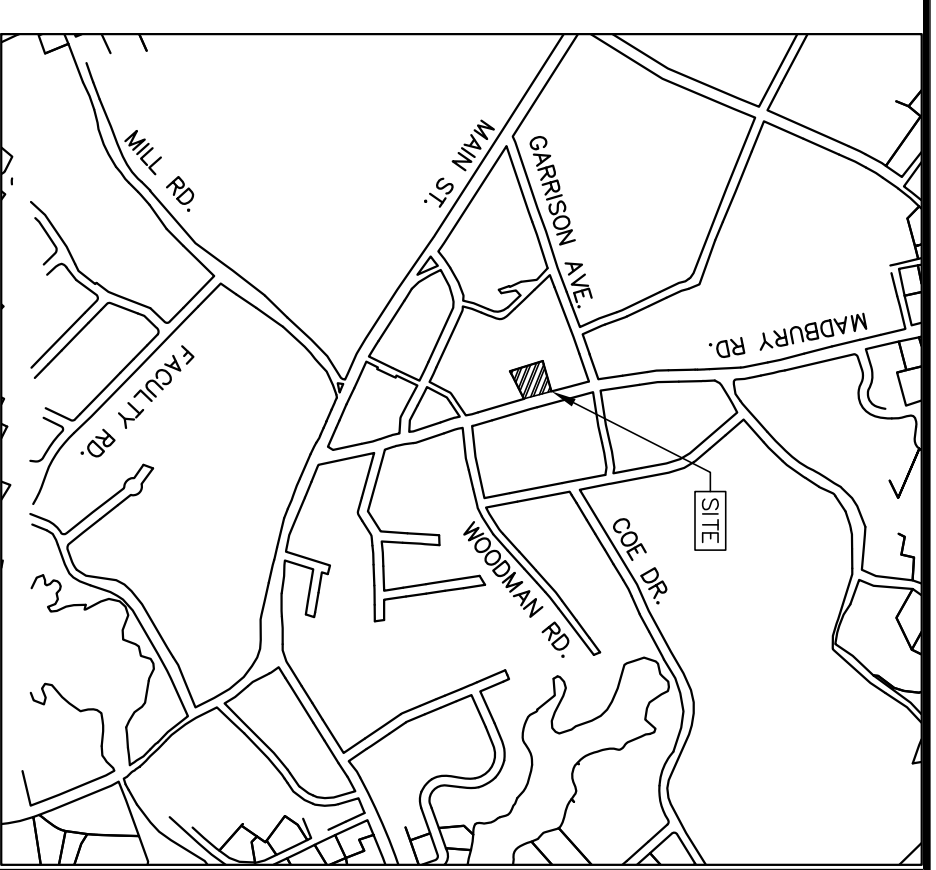
# SITE PLAN

for

## KAPPA DELTA

25 MADBURY DRIVE  
DURHAM, NH

REVISED FEBRUARY 28, 2019



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**OWNER**

ALPHA SIGMA HOUSE CORP. OF  
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C/O IN DEMAND REALTY  
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S.C.R.D. 1989, PAGE 0632

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NO.	REVISIONS	DATE	INT.
4.	REVISIONS PER UPDATED FOUNDATION	2/28/19	EHK
3.	LANDSCAPING PLAN ADDED	1/24/19	MCS
2.	DESIGN REVISIONS UPDATED THRU 12/18/18	12/18/18	MCS
1.	DESIGN REVISIONS	11/29/18	MCS
0.	INITIAL SUBMISSION TO DURHAM PLANNING BOARD	11/19/18	EHK

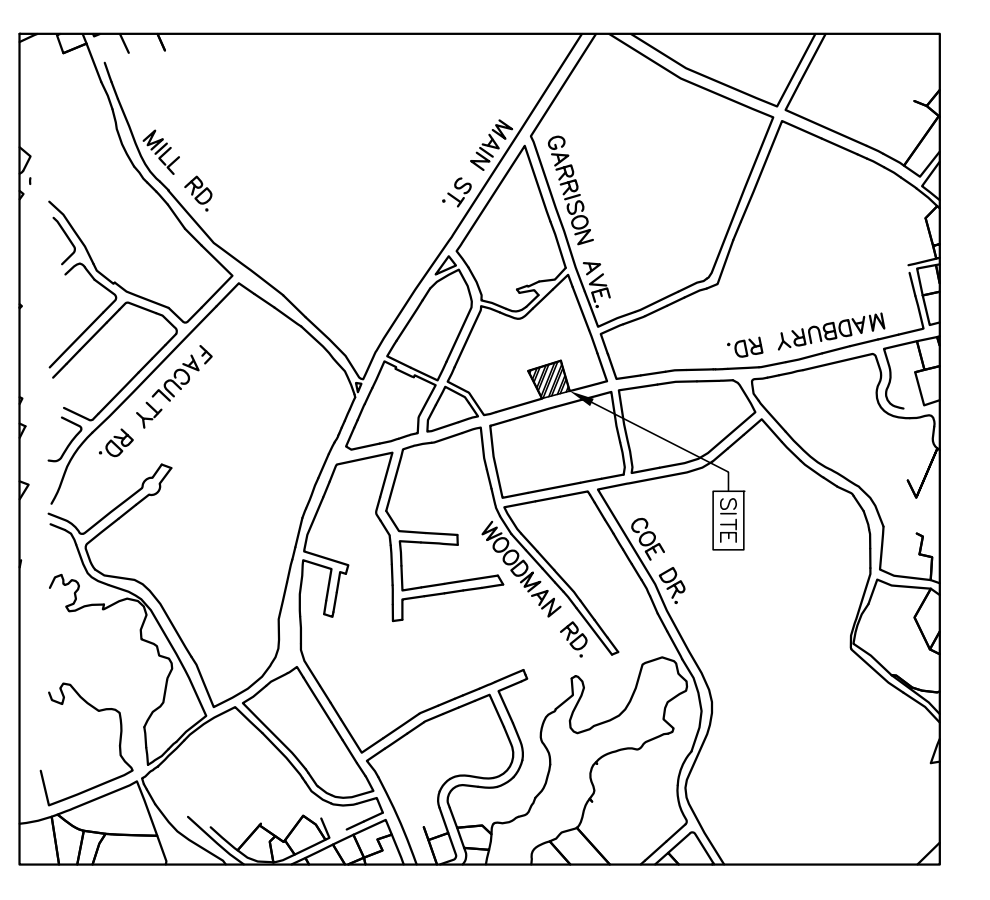
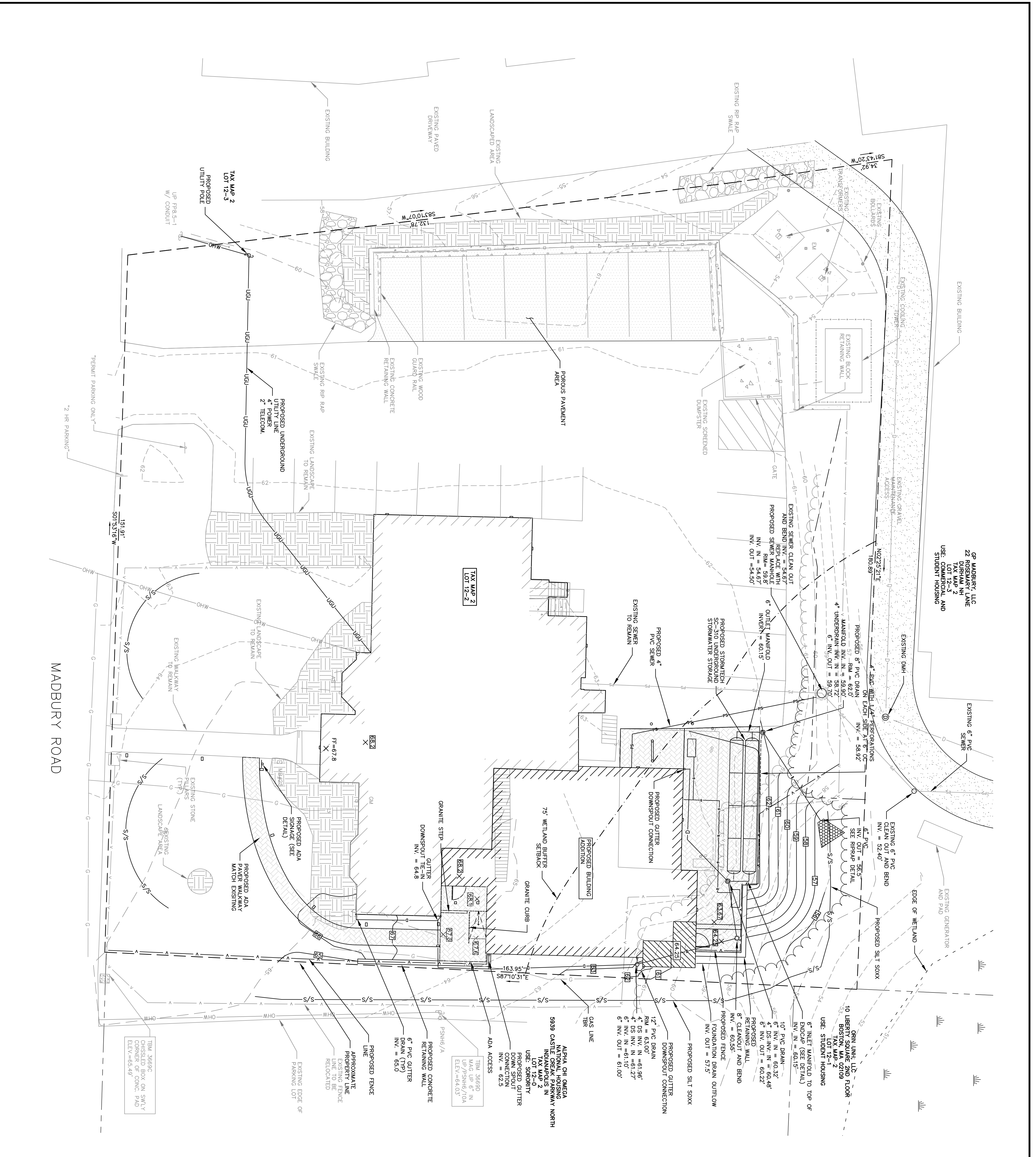




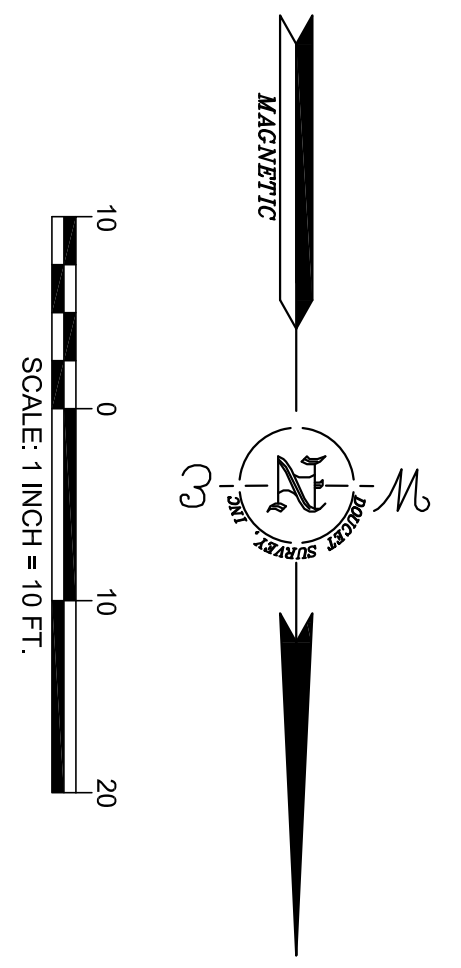








- GRADING, DRAINAGE, UTILITY & EROSION CONTROL NOTES:**
1. ALL EROSION AND SEDIMENTATION CONTROL STRUCTURES SHALL REMAIN IN PLACE AND BE MAINTAINED UNTIL THE VEGETATION IS ESTABLISHED AND THE GROUND SURFACE IS STABILIZED. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE MONITORED DURING CONSTRUCTION AND AS SOON AS POSSIBLE AFTER COMPLETION AND ANY DEFICIENCIES SHALL BE CORRECTED AS SOON AS POSSIBLE.
  2. REFER TO CONSTRUCTION AND STRENGTHENING AND EROSION CONTROL NOTES ON SHEET 18-067 FOR NEW HANDSHAKE DEPARTMENT OF TRANSPORTATION, AS PUBLISHED BY THE STATE OF NEW HAMPSHIRE.
  3. ALL DRIVEWAY AND PARKING AREA WORK SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, AS PUBLISHED BY THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION, RECEIVE 4" OF LOAM, SEED AND MULCH AS SPECIFIED IN THE NOTES ON SHEET 01.
  4. MINIMUM COMPACTION:
    - LOCATION: 95%
    - BELOW PAVED OR CONCRETE AREAS: 95%
    - BELOW SAND, GRAVEL, AND SAND BLANKET BACKFILL: 95%
    - BELOW LOAM AND SEED AREAS: 90%
  5. ALL PERCENTAGES OF COMPACTION SHALL BE OF THE MAXIMUM PROCTOR DENSITY.
  6. GRADE SHALL BE MAINTAINED WITHIN THE TOLERANCES SPECIFIED IN THE NOTES.
  7. EROSION CONTROL DEVICES SHALL BE INSPECTED AFTER EACH RAIN STORM OF 0.25 INCHES OR GREATER. DAMAGED EROSION CONTROL DEVICES SHALL BE REPAIRED OR REPLACED AS SOON AS POSSIBLE.
  8. ALL TEMPORARY LOAM STOCKPILES SHALL RECEIVE TEMPORARY EROSION CONTROL MEASURES.



FINAL APPROVAL BY DURHAM PLANNING BOARD  
 CERTIFIED BY MICHAEL BEHRENDT, TOWN PLANNER  
 DATE \_\_\_\_\_

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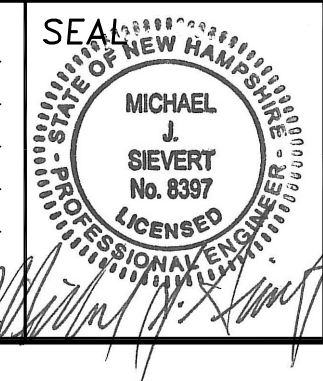
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**JOB: 18-067**

**C2**

**PROPOSED GRADING, DRAINAGE AND UTILITY PLAN**  
 prepared for  
**KAPPA DELTA**  
 TAX MAP 2, LOT 12-2  
 25 MADBURY ROAD  
 DURHAM, NH

DATE: 11/19/18  
 SCALE: 1" = 10'  
 DESIGNED BY: MJS  
 DRAWN BY: MCS  
 APPROVED BY: MJS  
 DWG FILE: 18-067 Civil S.dwg



NO.	REVISIONS	DATE	INT.
6.	REVISIONS PER UPDATED FOUNDATION	2/28/19	EHK
5.	REVISIONS PER NOTICE OF DECISION DATED 1/23/19	2/11/19	EHK
4.	LIGHTING AND BIKE RACK REVISIONS	1/3/19	MCS
3.	STORMWATER DRAINAGE REVISION	12/16/18	MCS
2.	DESIGN REVISION FOR CONSERVATION COMMISSION	12/17/18	MCS
1.	DESIGN REVISION	11/29/18	MCS







**CONSTRUCTION SEQUENCING AND EROSION CONTROL NOTES:**

- AREA OF DISTURBANCE/STABILIZATION**
- A. THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION, BUT IN NO CASE SHALL THE AREA OF UNSTABILIZED SOIL EXCEED 5 ACRES AT ANY ONE TIME.
  - B. IN AREAS TO BE PAVED, BASE COURSE GRAVELS MEETING THE GRADATION REQUIREMENTS OF NHDOT STANDARD SPECIFICATION FOR ROAD AND BRIDGE IN AREAS NOT TO BE PAVED, NO. 304.1 OR 304.2 HAVE BEEN INSTALLED.
  - B.2.1. A MINIMUM OF 85% VEGETATIVE GROWTH HAS BEEN ESTABLISHED.
  - B.2.2. A MINIMUM OF 5' OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP.
  - B.2.3. EROSION CONTROL BLANKETS HAVE BEEN INSTALLED IN ACCORDANCE WITH EN-A40 1506.03.
  - C. ALL OPEN AREAS SHALL BE TEMPORARILY STABILIZED WITHIN 46 DAYS AND PERMANENTLY STABILIZED NO LATER THAN 3 DAYS AFTER FINAL GRADING.

- EROSION CONTROL PROVISIONS**
- A.1. INSTALL ALL EROSION CONTROLS AS SHOWN ON THE GRADING PLAN, TYPICAL DETAILS, AND IN CONFORMANCE WITH THE EROSION AND SEDIMENT CONTROL NOTES ON THIS PAGE. MANUFACTURER'S SPECIFICATIONS SHALL BE FOLLOWED.
  - B.1. INSPECT ALL EROSION CONTROLS WEEKLY AND AFTER EVERY RAIN EVENT OF 0.25 INCHES OR GREATER UNLESS OTHERWISE NOTED.
  - B.2. INSPECT ALL EROSION CONTROL MEASURES SHOULD BE REMOVED ONCE 85% VEGETATIVE COVER HAS BEEN ESTABLISHED.
  - D.2. AFTER REMOVAL, ALL DISTURBED AREAS SHALL BE REGRADED, FERTILIZED, AND RESEEDED. MONITOR TO ENSURE VEGETATIVE COVER MEETS THE SPECIFICATIONS AS NOTED ON THIS PAGE.

- COLD WEATHER SITE STABILIZATION**
- A. UNSTABILIZED SOIL SHALL BE LIMITED TO 1 ACRE AND SHALL BE PROTECTED AGAINST EROSION BY THE FOLLOWING METHODS PRIOR TO ANY THAW OR SPRING MELT EVENT.
  - B. NOT EXCEED A MINIMUM OF 65% VEGETATIVE GROWTH BY NOVEMBER 30TH, OR WHICH ARE DISTURBED AFTER NOVEMBER 30TH, SHALL BE SEEDING AND COVERED WITH 3-4 TONS OF HAY OR STRAW MULCH PER ACRE SECURED WITH ANCHORED NETTING OR TYPICAL EROSION CONTROL MATS.
  - B.1. THE MIX SHALL HAVE AN ORGANIC PORTION BETWEEN 25% AND 65% OF THE WEIGHT BASIS, AND BE PERVIOUS AND ELONGATED SUCH AS FROM SHEEPDED BARK, WOOD AND BARK CHIPS, GROUND CONSTRUCTION DEBRIS, OR REPROCESSED WOOD PRODUCTS SHALL NOT BE USED AS THE ORGANIC MATERIAL.
  - B.2. THE MIX SHALL NOT CONTAIN SILTS, CLAYS OR THE SANDS.
  - B.3. THE MIX SHALL PASS A 1/4" SCREEN, 90% TO 100% PASSING A 3/8" SCREEN, 50% TO 100% PASSING A 1/2" SCREEN, 20% TO 100% PASSING A 3/4" SCREEN, 10% TO 100% PASSING A 1" SCREEN, 10% TO 100% PASSING A 1 1/2" SCREEN, 10% TO 100% PASSING A 2" SCREEN, 10% TO 100% PASSING A 2 1/2" SCREEN, 10% TO 100% PASSING A 3" SCREEN, 10% TO 100% PASSING A 4" SCREEN, 10% TO 100% PASSING A 6" SCREEN, 10% TO 100% PASSING A 8" SCREEN, 10% TO 100% PASSING A 12" SCREEN, 10% TO 100% PASSING A 18" SCREEN, 10% TO 100% PASSING A 24" SCREEN, 10% TO 100% PASSING A 36" SCREEN, 10% TO 100% PASSING A 48" SCREEN, 10% TO 100% PASSING A 60" SCREEN, 10% TO 100% PASSING A 72" SCREEN, 10% TO 100% PASSING A 96" SCREEN, 10% TO 100% PASSING A 120" SCREEN, 10% TO 100% PASSING A 144" SCREEN, 10% TO 100% PASSING A 168" SCREEN, 10% TO 100% PASSING A 192" SCREEN, 10% TO 100% PASSING A 216" SCREEN, 10% TO 100% PASSING A 240" SCREEN, 10% TO 100% PASSING A 264" SCREEN, 10% TO 100% PASSING A 288" SCREEN, 10% TO 100% PASSING A 312" SCREEN, 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SEASON	APPLICATION DATE	MIXTURE TYPE	QUANTITY (lb./Ac.)
EARLY SPRING	NO LATER THAN 5/15	OATS	30
LATE SPRING/ FALL	4/1 TO 6/1 & 8/15 TO 9/15	PERENNIAL RYE	80
EARLY SPRING/ FALL	4/1 TO 5/15 & 8/15 TO 9/15	ANNUAL RYE	40
FALL	8/15 TO 9/15	WINTER RYE	112

- TEMPORARY VEGETATION**
- A. SITE PREPARATION AND SEEDING CONTROL MEASURES AS SPECIFIED ABOVE.
  - A.1. INSTANT EROSION IS DISTURBED FROM SEEDING AREAS.
  - A.2. ON SLOPES OF 4:1 OR STEEPER, CREATE HORIZONTAL GROOVES PERPENDICULAR TO THE DIRECTION OF THE SLOPE TO CATCH SEED AND PREVENT RAINFALL.
  - B. SEEDING
  - B.1. REMOVE STONES AND TRASH FROM AREA TO BE SEEDING.
  - B.2. COMPACTED SOIL SHALL BE LOOSENED TO A DEPTH OF 2 INCHES BEFORE SEEDING.
  - B.3. LOW PHOSPHATE FERTILIZER NITROGEN OR LIMESTONE SHALL BE USED. APPLY 10-0-10 LOW PHOSPHATE FERTILIZER AT A RATE OF 600 LBS PER ACRE. APPLY LIMESTONE (EQUIVALENT TO 50 PERCENT CALCIUM FLUORIDE) AT A RATE OF 3 TONS PER ACRE.
  - C.1. SEED PER THE FOLLOWING RECOMMENDATIONS

- SOIL STOCKPILES**
- A. GENERAL
  - A.1. BE LOCATED 50 FEET FROM DITCHES AND CULVERT INLETS.
  - B. PROTECTION OF STOCKPILES
  - B.1. BARRIER SUCH AS CONCRETE STOCKPILES WITH TEMPORARY PERIMETER SEDIMENT BARRIER SUCH AS SILT SOCK OR SILT SOCK.
  - B.2. COVER ACTIVE STOCKPILES WITH ANCHORED PROTECTIVE COVERING PRIOR TO EXPECTED STORM EVENTS.
  - B.3. SEEDS AND MULCH TO BE COVERED WITH ANCHORED TAPES OR TEMPORARILY ANCHORED MATS.
  - B.4. STOCKPILES THAT ARE A SOURCE OF DUST SHALL BE COVERED.
  - DUST CONTROL
  - D.1. DUST SHALL BE CONTROLLED ON SITE DURING CONSTRUCTION BY IMPLEMENTING THE FOLLOWING MEASURES:
  - A.1. MECHANICAL SWEEPERS AND FINE WATER SPRAYS.
  - A.2. MECHANICAL SWEEPERS AND FINE WATER SPRAYS.
  - A.3. COVER SURFACES WITH CRUSHED STONE OR COARSE GRAVEL.

**PERMANENT VEGETATION**

- A. SITE PREPARATION FOR TEMPORARY SEEDING.
- B. SEEDING
- B.1. WORK AREA WITH A DISC SPRING TOOTH HARROW OR OTHER SIMILAR EQUIPMENT. CONTINUE TILLAGE UNTIL A REASONABLY UNIFORM FINE SEEDBED IS PREPARED. ALL BUTT CUTS ON SILTY SOILS AND COARSE SANDS SHOULD BE RELOADED FROM THE SEEDBED WHENEVER POSSIBLE TO PREVENT SOIL LOSS.
- B.2. CONCRETE CLOSURE, TUBES, TRAPS OR OTHER UNSUITABLE MATERIAL SHALL BE REMOVED FROM THE SEEDBED WHENEVER POSSIBLE TO PREVENT SOIL LOSS.
- B.3. WHERE THE SOIL HAS BEEN COMPACTED BY CONSTRUCTION OPERATIONS, LOOSEN SOIL TO A DEPTH OF 2 INCHES.
- B.4. SOW PROGRAMMABLE SLOW RELEASE FERTILIZER AT A RATE OF 600 LBS PER ACRE. APPLY LIMESTONE (EQUIVALENT TO 50 PERCENT CALCIUM FLUORIDE) AT A RATE OF 3 TONS PER ACRE.
- C. SEEDING
- C.1. UNLESS OTHERWISE NOTED, GRASS SEED MIXTURE 'C' SHALL BE APPLIED AT THE SPECIFIED RATE AS NOTED IN THE SEED MIXTURES FOR PERMANENT VEGETATION.
- C.2. SEEDING SHALL BE DONE BY HAND, CYCLOPE SEEDER, DRILL, CULTRIPACKER TYPE SEEDER OR HYDROSEEDING (SLURRY INCLUDING SEED AND FERTILIZER). NORMAL SEEDING DEPTH IS FROM 1/2 TO 3/4 INCH. HYDROSEEDING THAT INCLUDES MULCHING SHALL BE LEFT ON SOIL SURFACE. SEEDING OPERATIONS SHOULD BE ON THE SOIL SURFACE, EXCEPT WHERE EITHER A CULTRIPACKER TYPE SEEDER OR HYDROSEEDER IS USED. THE SEEDING SHOULD BE FINISHED FOLLOWING SEEDING OPERATIONS.
- C.3. WHEN HYDROSEEDING (HYDRALIC APPLICATION), PREPARE THE SEEDS AS SPECIFIED ABOVE OR BY HAND MAKING TO LOOSEN AND SMOOTH THE SOIL AND REMOVE SURFACE STONES LARGER THAN 2 INCHES IN DIAMETER.
- C.4. LIME AND FERTILIZER MAY BE APPLIED SIMULTANEOUSLY WITH THE SEED TO HOLD STRAW IN PLACE. BETTER PROTECTION IS GAINED BY USING STRAW MULCH WITH MULCHING MATERIALS OR 500 POUNDS PER ACRE OF WOOD FIBER MULCH.
- C.5. SEEDING RATES MUST BE INCREASED 10% WHEN HYDROSEEDING.
- D. MAINTENANCE
- D.1. PERMANENTLY SEEDS AREAS SHOULD BE INSPECTED MONTHLY.
- D.2. MOW SEEDS AREAS AS NECESSARY AND REPAIRED AND/OR RESEED TO MAINTAIN 85% OF THE SOIL SURFACE IS COVERED BY VEGETATION.
- D.3. ENSURE 85% OF THE SOIL SURFACE IS COVERED BY VEGETATION.

**MULCHING & EROSION CONTROL MATTING**

- A. GENERAL
- A.1. ADEQUATE WARNING OF SIGNIFICANT STORMS.
- A.2. MULCHING WITHIN A SPECIFIED TIME PERIOD FROM ORIGINAL SOIL EXPOSURE SHALL BE COMPLETED BY 7/15/20.
- B.1.1. ORGANIC MULCHES INCLUDING HAY AND STRAW SHALL BE AIR-DRIED, FREE OF UNDESIRABLE SEEDS AND COARSE MATERIALS.
- B.1.2. UNDESIRABLE SEEDS AND COARSE MATERIALS SHALL BE 2 BASKETS/TON (70-90 POUNDS) OR 1.5-2.0 BASKETS/TON OVER 75-90% OF THE STRAW.
- B.1.3. MULCHING SHALL BE APPLIED TO ALL EXPOSED AREAS.
- B.1.4. MULCHING SHALL BE APPLIED TO ALL EXPOSED AREAS.
- B.1.5. MULCHING SHALL BE APPLIED TO ALL EXPOSED AREAS.
- B.2.1. REFER TO PLANS FOR TYPICAL EROSION CONTROL MATTING DETAIL. INSTALL MULCHING MATTING AS SHOWN.
- B.2.2. APPLICATION OF MULCHING MATTING SHALL BE COMPLETED PRIOR TO THE END OF THE GROWING SEASON (APRIL 15 - SEPTEMBER 15) USE ON THE BASE OF GRADED WATERWAYS, STEEP SLOPES (15% OR GREATER), ANY OTHER EXPOSED ARE

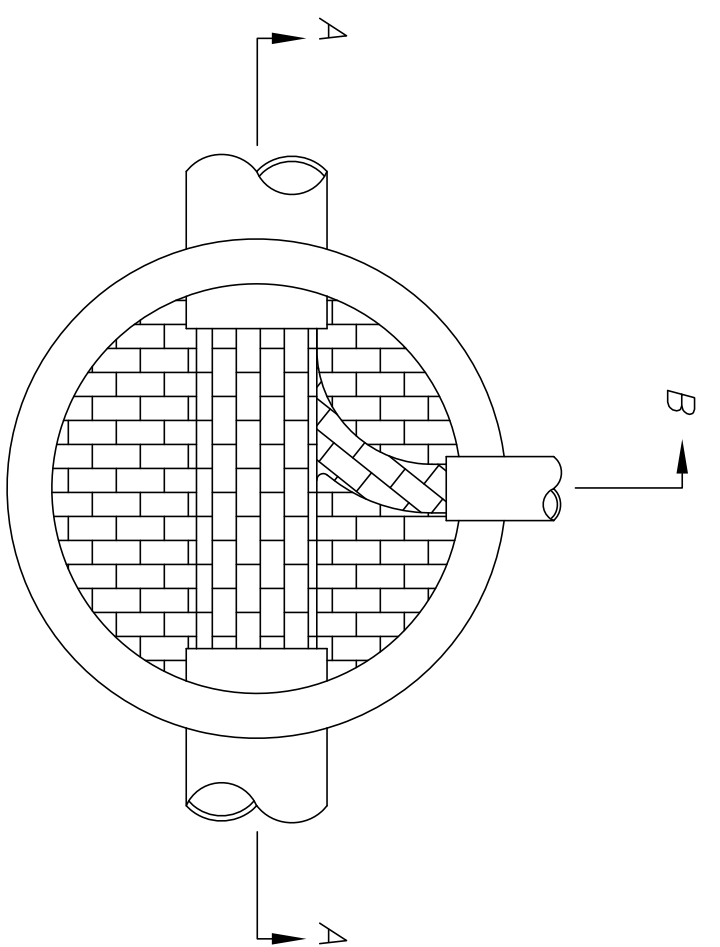


### MANHOLE CONSTRUCTION MATERIAL REQUIREMENTS (PER ENY-Wq 704.10 NUMERATION)

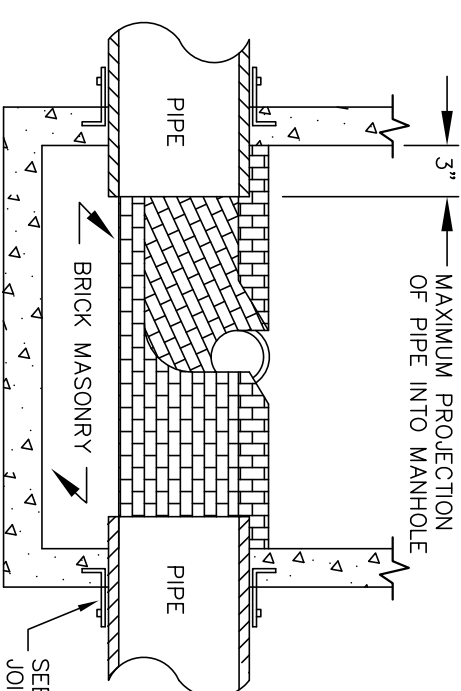
- (A) ALL COMPONENT PARTS OF MANHOLE STRUCTURES SHALL HAVE THE STRENGTH, LEAK RESISTANCE AND DURABILITY TO PERFORM FOR A DESIGN LIFE OF 25 YEARS.
- (B) MANHOLE STRUCTURES SHALL HAVE A LIFE EXPECTANCY IN EXCESS OF 25 YEARS.
- (C) MANHOLE STRUCTURES SHALL BE DESIGNED TO WITHSTAND H-20 LOADING AND SHALL NOT LEAK IN EXCESS OF 1 GPD PER VERTICAL FOOT OF MANHOLE FOR THE LIFE OF THE MANHOLE.
- (D) BARRELS AND CONE SECTIONS SHALL BE CONSTRUCTED OF PRECAST REINFORCED CONCRETE.
- (E) BASE SECTIONS SHALL BE MONOLITHIC CONSTRUCTION TO A POINT AT LEAST SIX INCHES ABOVE THE TOP OF THE PRECAST CONCRETE BARRELS.
- (F) HORIZONTAL JOINTS BETWEEN SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE OF AN OVERLAPPING TYPE, SEALED FOR WATER TIGHTNESS USING A DOUBLE ROW OF AN ELASTOMERIC OR MASTIC-LIKE SEALANT WHICH FOLLOWS:
  - (1) ELASTOMERIC RUBBER SHEET WITH WATER TIGHT JOINTS AT THE MANHOLE OPENING AND PIPE SURFACES;
  - (2) ELASTOMERIC RUBBER SHEET WITH WATER TIGHT JOINTS AT THE MANHOLE OPENING AND PIPE SURFACES;
  - (3) ELASTOMERIC RUBBER SHEET WITH WATER TIGHT JOINTS AT THE MANHOLE OPENING AND PIPE SURFACES;
  - (4) NON-SHRINK GROUTED JOINTS WHERE WATER-TIGHT BONDING TO THE MANHOLE AND PIPE CAN BE OBTAINED.
- (G) MANHOLE CONE SECTIONS SHALL BE EXCEPTIVE IN SHAPE.
- (H) MANHOLE CONE SECTIONS SHALL BE EXCEPTIVE IN SHAPE.
- (I) MANHOLE CONE SECTIONS SHALL BE EXCEPTIVE IN SHAPE.
- (J) MANHOLE CONE SECTIONS SHALL BE EXCEPTIVE IN SHAPE.
- (K) MANHOLE CONE SECTIONS SHALL BE EXCEPTIVE IN SHAPE.
- (L) MANHOLE CONE SECTIONS SHALL BE EXCEPTIVE IN SHAPE.
- (M) MANHOLE CONE SECTIONS SHALL BE EXCEPTIVE IN SHAPE.
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- (P) MANHOLE CONE SECTIONS SHALL BE EXCEPTIVE IN SHAPE.
- (Q) MANHOLE CONE SECTIONS SHALL BE EXCEPTIVE IN SHAPE.
- (R) MANHOLE CONE SECTIONS SHALL BE EXCEPTIVE IN SHAPE.
- (S) MANHOLE CONE SECTIONS SHALL BE EXCEPTIVE IN SHAPE.
- (T) MANHOLE CONE SECTIONS SHALL BE EXCEPTIVE IN SHAPE.
- (U) MANHOLE CONE SECTIONS SHALL BE EXCEPTIVE IN SHAPE.
- (V) MANHOLE CONE SECTIONS SHALL BE EXCEPTIVE IN SHAPE.
- (W) MANHOLE CONE SECTIONS SHALL BE EXCEPTIVE IN SHAPE.
- (X) MANHOLE CONE SECTIONS SHALL BE EXCEPTIVE IN SHAPE.
- (Y) MANHOLE CONE SECTIONS SHALL BE EXCEPTIVE IN SHAPE.
- (Z) MANHOLE CONE SECTIONS SHALL BE EXCEPTIVE IN SHAPE.

### MANHOLE TESTING REQUIREMENTS (ENY-Wq 704.10)

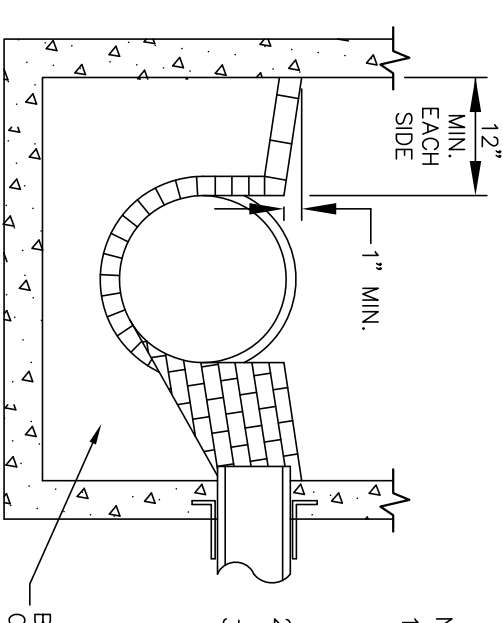
- (X) MANHOLES SHALL BE TESTED FOR LEAKAGE USING A VACUUM TEST.
- (Y) THE MANHOLE VACUUM TEST SHALL CONFORM TO THE FOLLOWING:
  - (1) THE MINIMUM VACUUM TEST PRESSURE SHALL BE 10 INCHES HG. AND TO 9 INCHES HG. SHALL BE TEST HOLD TIME FOR A 1-INCH HG PRESSURE DROP.
  - (A) NOT LESS THAN 25 MINUTES FOR MANHOLES LESS THAN 10 FEET DEEP.
  - (B) THE MANHOLE SHALL BE TESTED FOR LEAKAGE USING A VACUUM TEST HOLD TIME FOR A 1-INCH HG PRESSURE DROP.
- (Z) MANHOLE TESTING MUST BE CONDUCTED PRIOR TO INVERT AND SHELF PLACEMENT.



PLAN



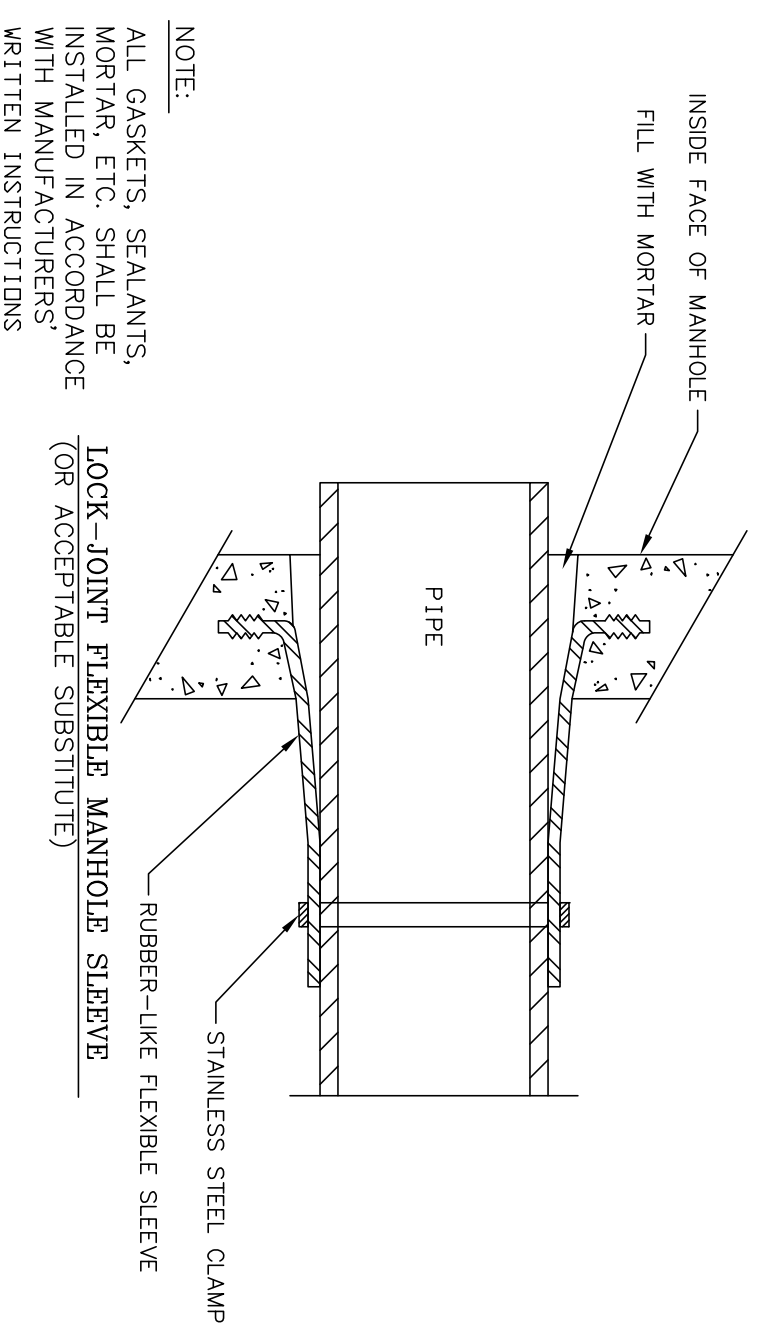
SECTION A-A



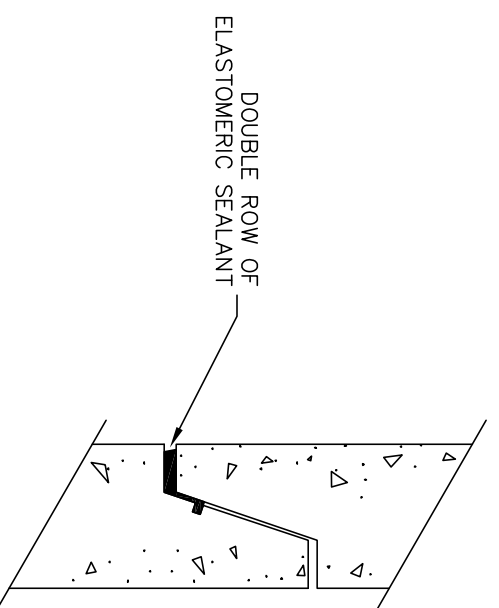
SECTION B-B

### TYPICAL SEWER MANHOLE INVERT N.T.S.

- NOTE:
- 1. CARE SHALL BE TAKEN TO INSURE THE BRICK INVERT IS SMOOTH CONTINUATION OF THE SEWER INVERT.
- 2. INVERT AND SHELF TO BE PLACED AFTER LEAKAGE TESTS.
- 3. REINFORCE INVERT DETAILS WITH CAST-IN-PLACE CONCRETE.

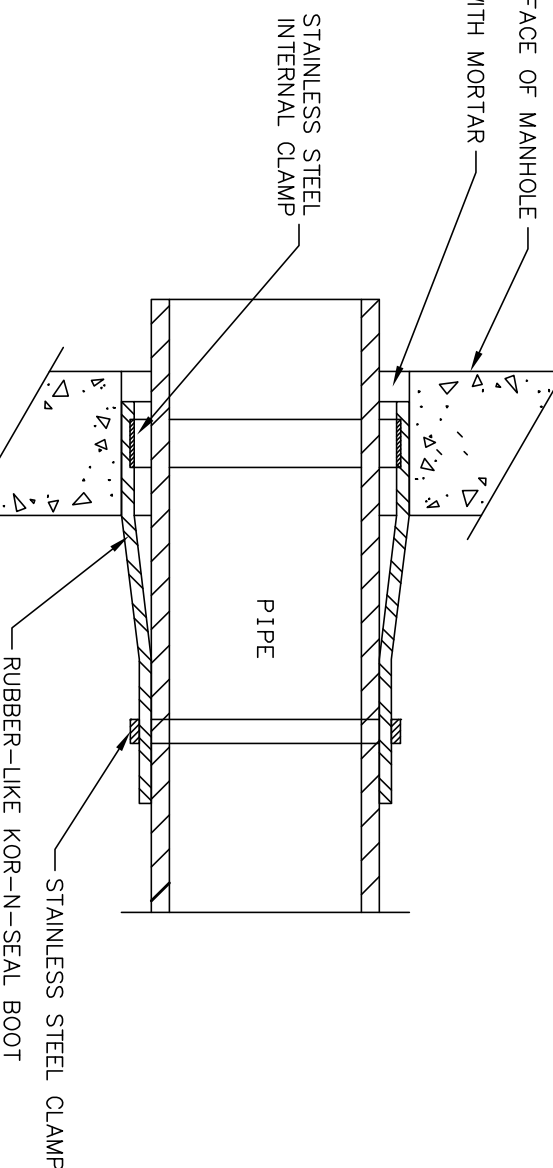


DETAIL "A" - PIPE TO MANHOLE JOINTS  
N.T.S.

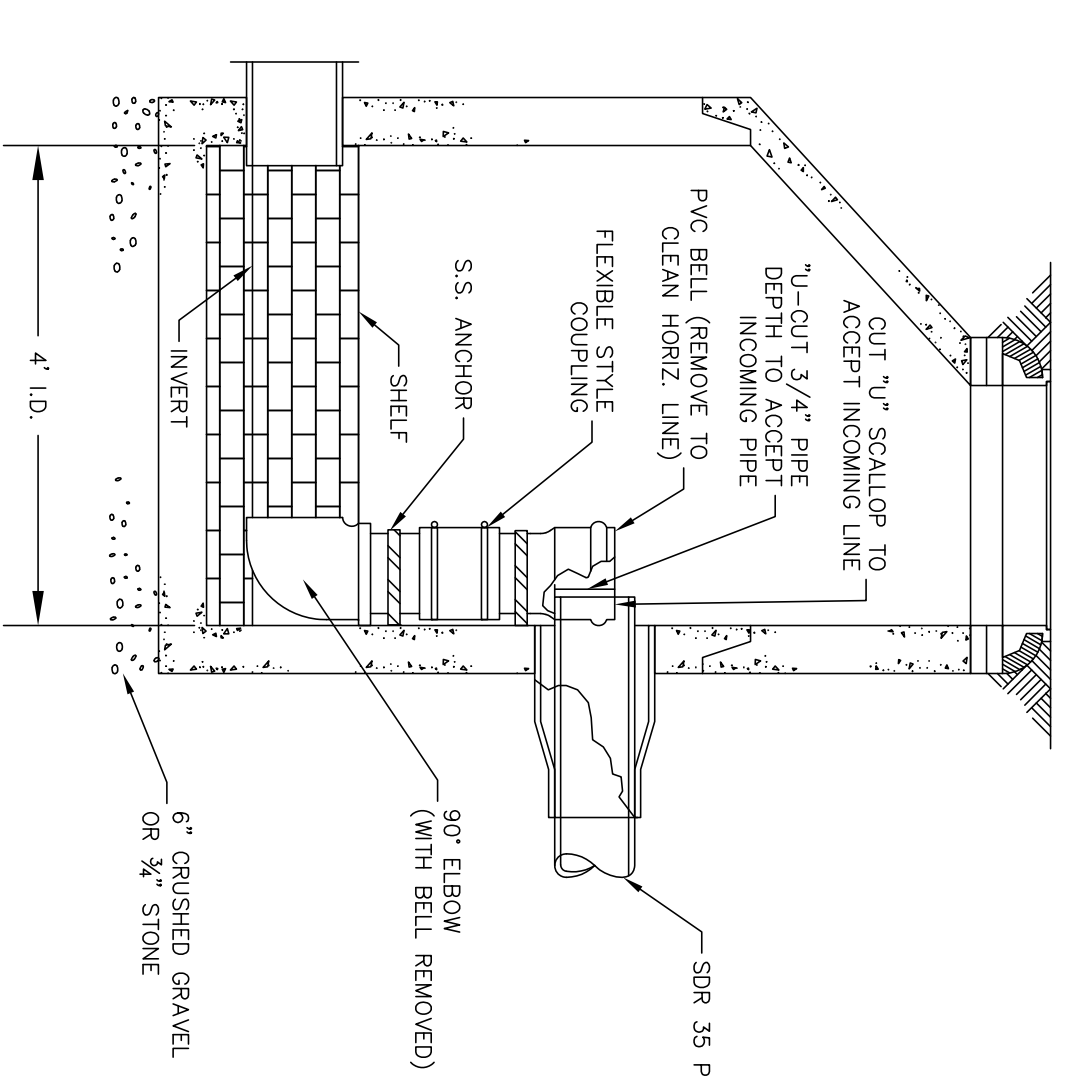
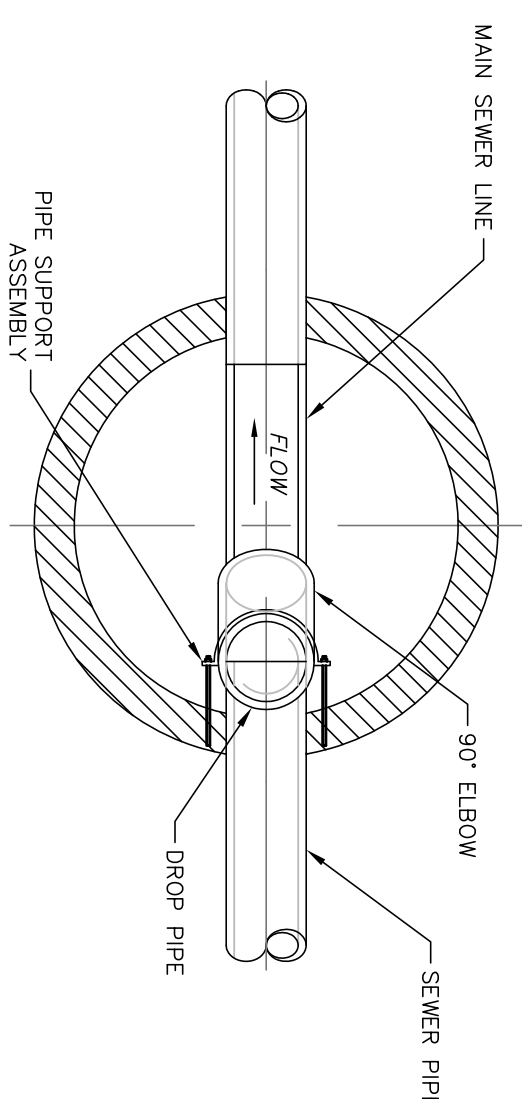


DETAIL "B" - HORIZONTAL JOINTS  
N.T.S.

### DETAIL "A" - PIPE TO MANHOLE JOINTS N.T.S.



- NOTES:
- 1. USE LOCK-JOINT FLEXIBLE MANHOLE SLEEVE FOR FACTORY INSTALLED APPLICATIONS AND KOR-N-SEAL SLEEVE FOR IN FIELD INSTALLATIONS.



SECTION VIEW

### INSIDE DROP MANHOLE DETAIL N.T.S.

- NOTES:
- 1. 4" SERVICES REQUIRE A 6" DIAMETER DROP. OTHERWISE, DROP DIAMETER SHALL BE 8" OR LARGER.
- 2. A MINIMUM OF TWO ANCHOR STRAPS SHALL BE USED. ANCHOR STRAPS AND BOLTS TO BE STAINLESS STEEL AND NOT MORE THAN 3' ON CENTER.
- 3. STRAPS SHALL BE 1" WIDE AND BOLTS 3/8" x 2-1/2" LONG.
- 4. THERE SHALL BE NO STEPS INSTALLED WITHIN THE MANHOLES.

### SEWER NOTES:

PER THE REQUIREMENTS OF DESIGN AND CONSTRUCTION FOR SEWERAGE AND WASTEWATER TREATMENT FACILITIES.

### GRAVITY SEWER CONSTRUCTION MATERIALS (ENY-Wq 704.05)

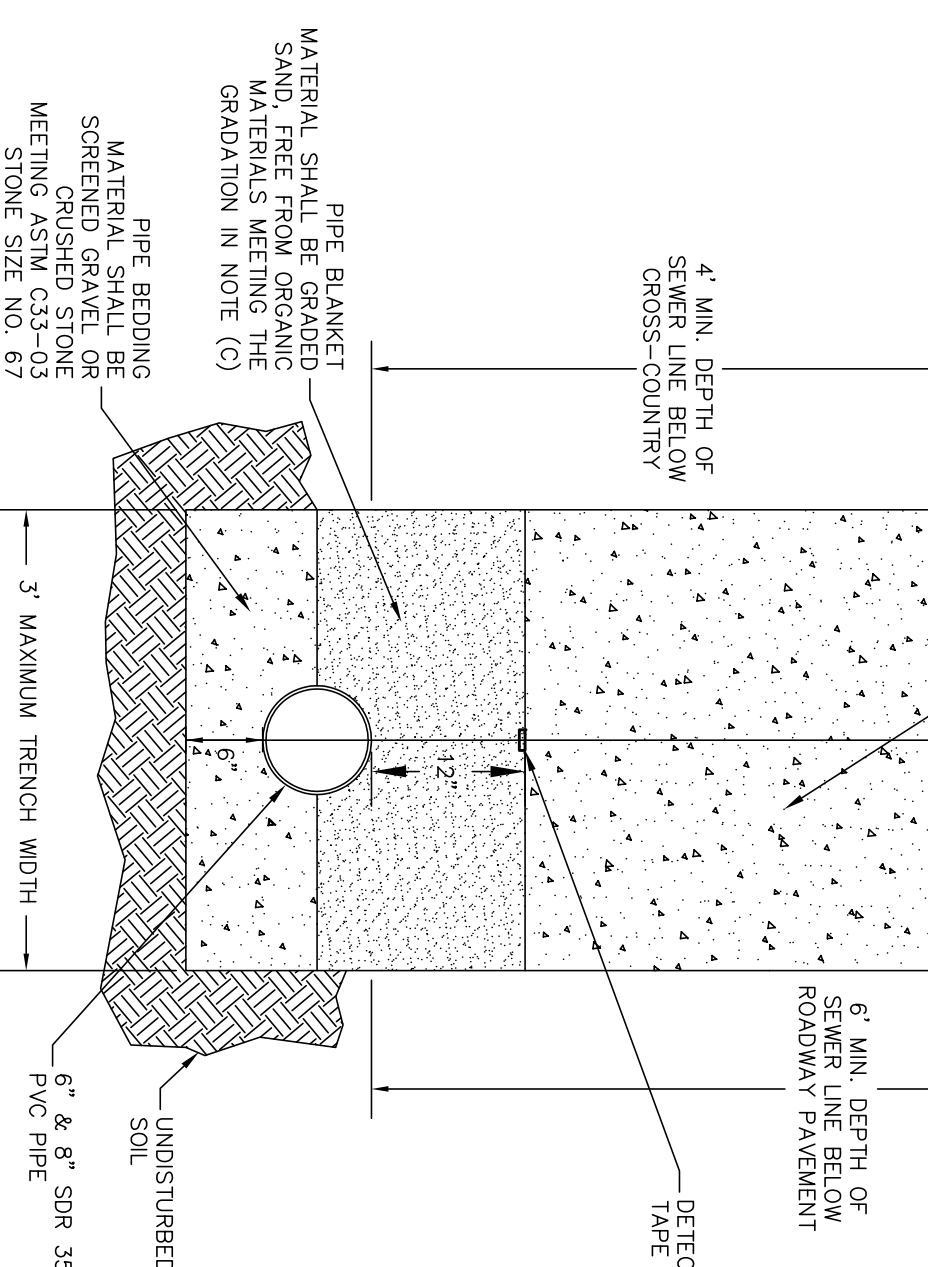
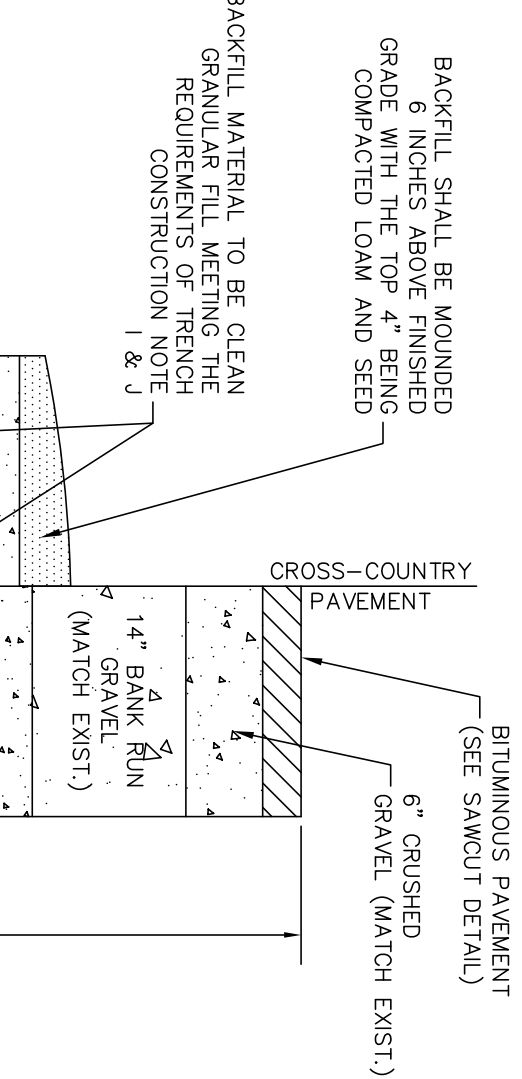
- (A) PLASTIC GRAVITY SEWER PIPE AND FITTINGS SHALL BE 8" MIN. PVC SDR 35 SEWER PIPE (EXCEPT SEWER SERVICE SHALL BE 6" SDR 35 PVC WHERE NOTED) AND SHALL COMPLY WITH ASTM D3034-04.
- (B) PLASTIC GRAVITY SEWER PIPE SHALL HAVE A PIPE STIFFNESS RATING OF AT LEAST AG 100 WITH A MINIMUM OF 15% STIFFNESS THROUGHOUT THE LENGTH OF THE PIPE.
- (C) JOINT SEALS FOR PVC PIPE SHALL BE OIL RESISTANT COMPRESSION RINGS OF ELASTOMERIC MATERIAL CONFORMING TO ASTM D3212-96(G)/2003(J) AND SHALL BE 1/8"-ON, BELL AND SPIGOT TYPE.

### GRAVITY SEWER PIPE TESTING REQUIREMENTS (ENY-Wq 704.07)

- (A) ALL NEW SEWERS SHALL BE TESTED FOR WATER TIGHTNESS BY THE USE OF LOW-PRESSURE AIR TESTING. TESTING SHALL BE IN CONFORMANCE WITH: (1) ASTM F417-92(2009) "STANDARD TEST METHOD FOR INSTALLATION ACCEPTANCE OF PLASTIC GRAVITY SEWER LINES USING LOW-PRESSURE AIR;" OR (2) UNL-BELL PVC PIPE ASSOCIATION UNI-9-6, "LOW-PRESSURE AIR TESTING OF INSTALLED SEWER PIPE" (1998).
- (B) ALL NEW GRAVITY SEWERS SHALL BE CLEANED AND VISUALLY INSPECTED AND SHALL BE FREE TO LINE AND GRADE FOLLOWING INSTALLATION AND PRIOR TO ANY OTHER WORK.
- (C) ALL PLASTIC SEWER PIPE SHALL BE DEFLECTION TESTED NOT LESS THAN 30 DAYS FOLLOWING INSTALLATION.
- (D) THE MAXIMUM ALLOWABLE DEFLECTION OF FLEXIBLE SEWER PIPE SHALL BE 7% PERCENT OF AVERAGE INSIDE DIAMETER.

### PROTECTION OF WATER SUPPLIES (ENY-Wq 704.12)

- (A) SEWERS SHALL BE LOCATED AT LEAST 10 FEET HORIZONTALLY FROM ANY WATER SUPPLY.
- (B) A DEVIATION FROM THE SEPARATION REQUIREMENTS OF (A) ABOVE SHALL BE ALLOWED WHERE NECESSARY TO AVOID CONFLICT WITH SUBSURFACE STRUCTURES, UTILITY CHAMBERS, AND BUILDING FOUNDATIONS, PROVIDED THAT THE SEWER IS PROTECTED BY AN APPROVED METHOD.
- (C) WHENEVER SEWERS MUST CROSS WATER MAINS, THE SEWER SHALL BE CONSTRUCTED AS FOLLOWS:
  - (1) SEWER PIPE SHALL BE LOCATED AT LEAST 18 INCHES BELOW WATER MAIN.
  - (2) SEWER PIPE JOINTS SHALL BE LOCATED AT LEAST 6 FEET HORIZONTALLY FROM THE WATER MAIN.

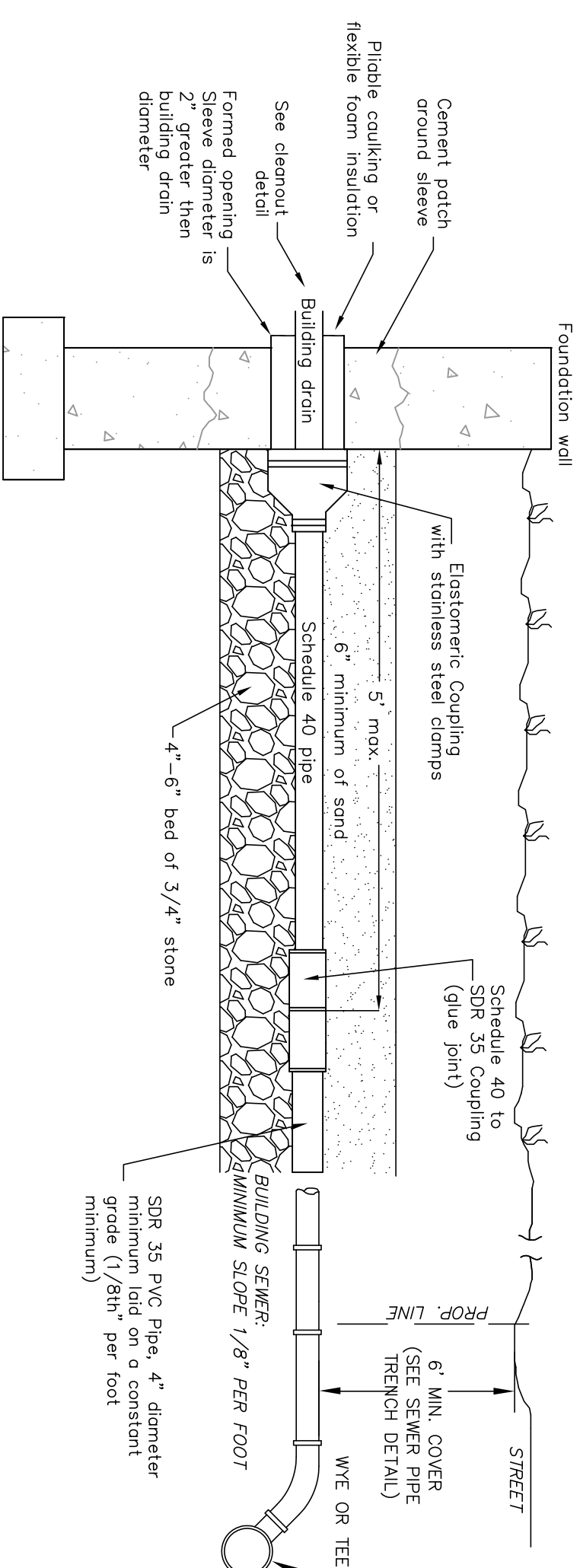


SECTION VIEW

### STANDARD SEWER PIPE TRENCH N.T.S.

### TRENCH CONSTRUCTION (PER ENY-Wq 704.09 NUMERATION)

- (A) TRENCH DIMENSIONS SHALL BE AS FOLLOWS:
  - (1) FOR SEWER PIPE LESS THAN 15" IN DIAMETER, THE ALLOWABLE TRENCH WIDTH AT A PLANE 12 INCHES ABOVE THE PIPE SHALL BE NO MORE THAN 36 INCHES.
  - (2) FOR SEWER PIPE 15" TO 30" IN DIAMETER, THE ALLOWABLE TRENCH WIDTH AT A PLANE 12 INCHES ABOVE THE PIPE SHALL BE NO MORE THAN 48 INCHES.
  - (3) FOR SEWER PIPE 30" TO 48" IN DIAMETER, THE ALLOWABLE TRENCH WIDTH AT A PLANE 12 INCHES ABOVE THE PIPE SHALL BE NO MORE THAN 60 INCHES.
- (B) PIPE BEDDING SHALL BE GRADED SAND, FREE FROM BERRS, PEICES OF PAVERMENT, ORGANIC MATTER, TOP SOIL, ALL WET OR SOFT MATERIALS EXCAVATED FROM THE TRENCH DURING CONSTRUCTION, EXCLUDING SIX INCHES IN LARGEST DIMENSION, OR ANY MATERIAL WHICH AS DETERMINED BY THE ENGINEER WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE TRENCH BACKLOGGING CROSS-SECTION. BEDDING CONDITIONS SHALL BE AS DESCRIBED IN (1) ABOVE, EXCEPT THAT TOP SOIL, LOAM, WICK OR FEAT, MAY BE USED PROVIDED THE COMPLETED CONSTRUCTION WILL BE STABLE, AND PROVIDED THAT BACKLOGGING SHALL BE HINDERED 6 INCHES ABOVE ORIGINAL GROUND AT CROSS-COUNTRY LOCATIONS.
- (C) BASE COURSE FOR TRENCH REPAIR SHALL MEET THE REQUIREMENTS OF DIVISION 509 OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
- (D) PRECAUTIONS SHALL BE TAKEN TO AVOID GROUNDWATER POOLING AT THE SURFACE BY PROVIDING DRAINAGE TO A SUITABLE OUTLET AT CATCH BASINS OR RUNOFF SWALES.

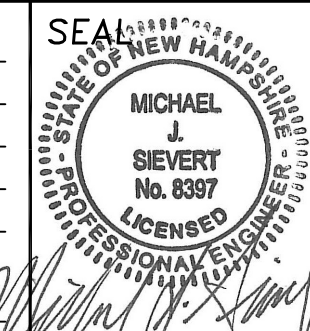


TYPICAL BUILDING SEWER CONNECTION  
N.T.S.

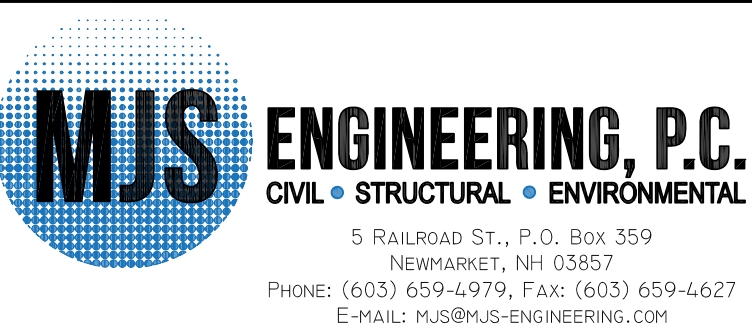
### SEWER DETAILS

prepared for  
**KAPPA DELTA**  
TAX MAP 2, LOT 12-2  
25 MADBURY ROAD  
DURHAM, NH

DATE: 11/19/18  
SCALE: 1" = 10'  
DESIGNED BY: MJS  
DRAWN BY: MCS  
APPROVED BY: MJS  
DWG FILE: 18-067 Civil S.dwg



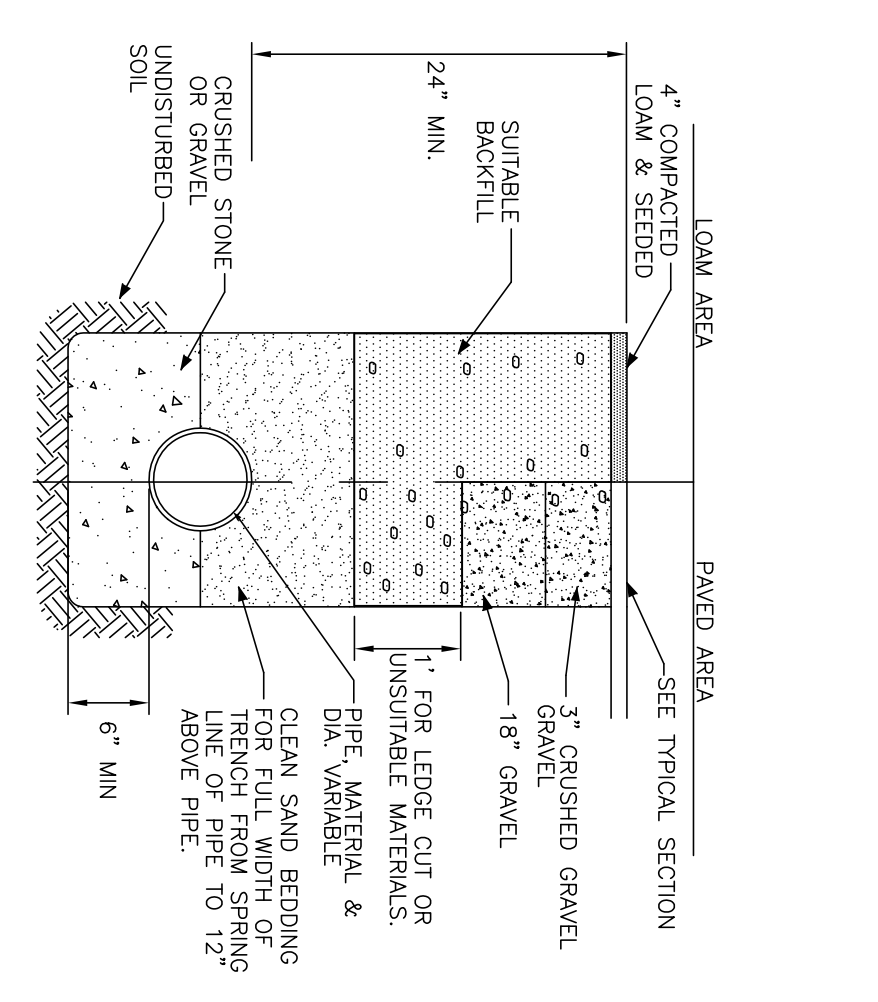
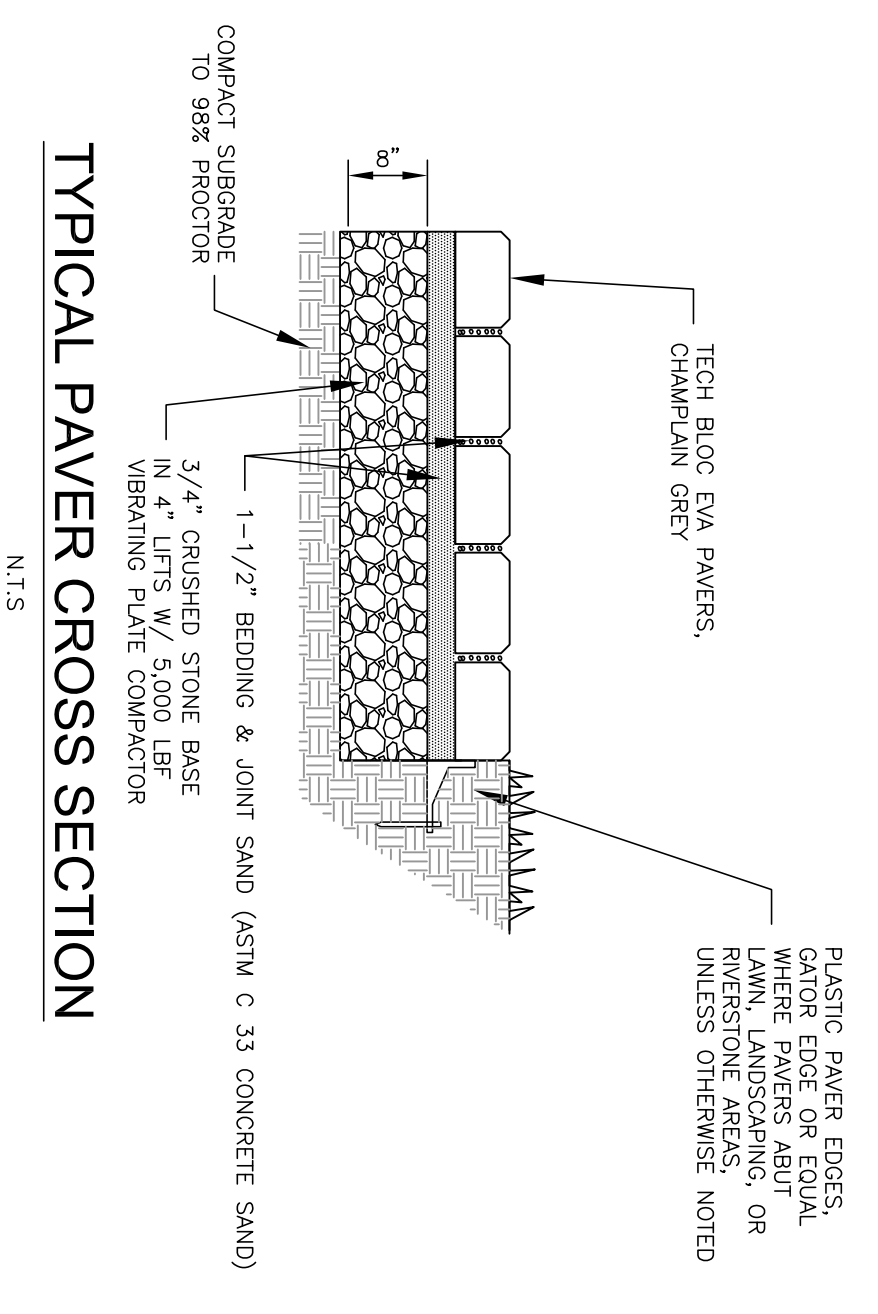
NO.	REVISIONS	DATE	INT.
	UPDATED THRU 12/18/18	12/18/18	MCS
	INITIAL SUBMISSION TO DURHAM PLANNING BOARD	11/19/18	EHK



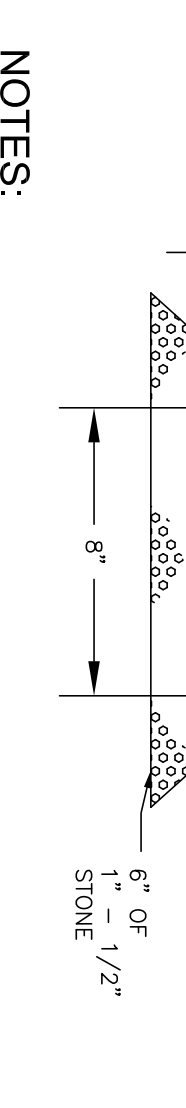
JOB: 18-067

D2

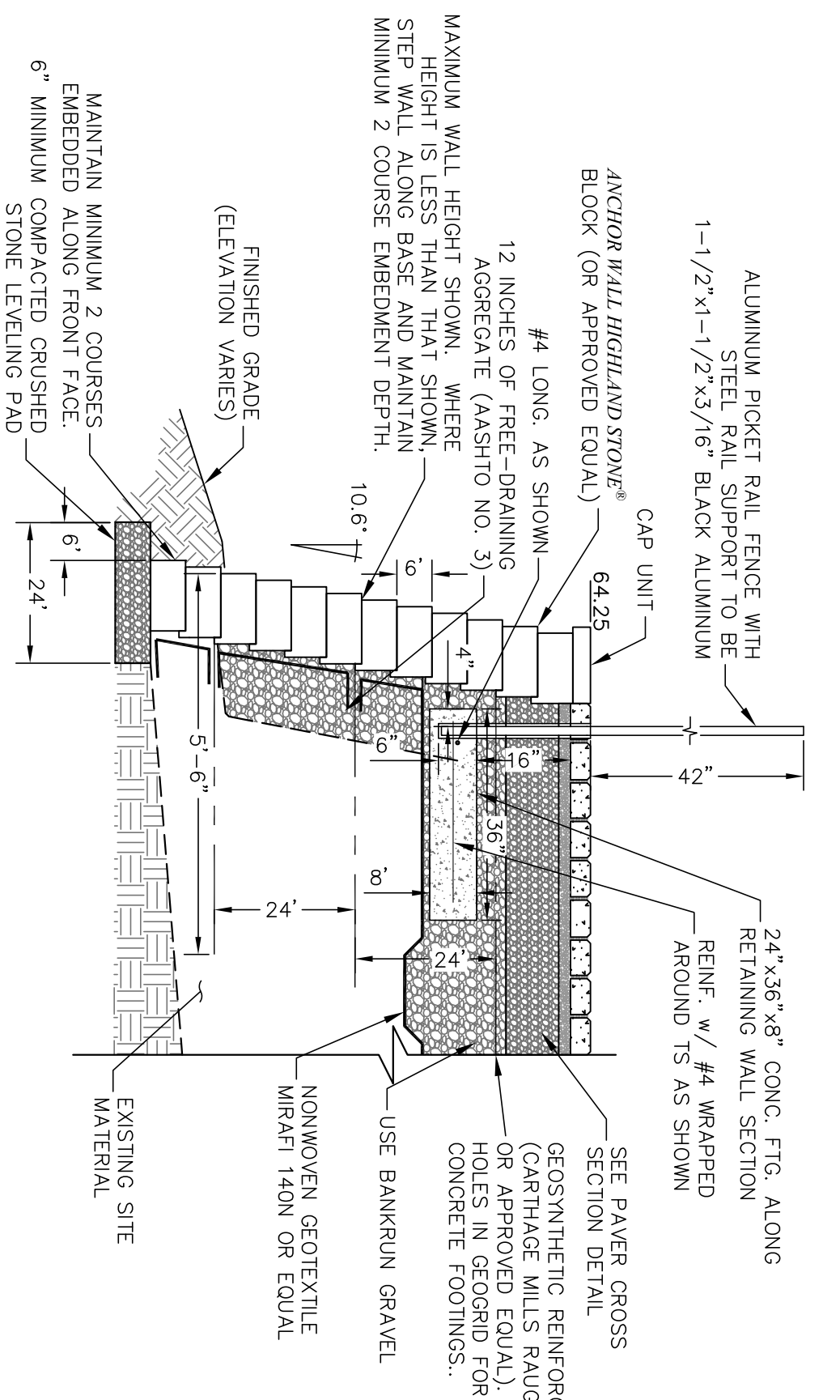




**TYP. INLINE DRAIN DETAIL**  
 N.T.S.



FINAL APPROVAL BY THE DURHAM PLANNING BOARD  
 CERTIFIED BY \_\_\_\_\_  
 DATE \_\_\_\_\_



**PRECAST CONCRETE BLOCK RETAINING WALL & CONCRETE PAVEMENT CROSS SECTION**  
 N.T.S.

- PRECAST CONCRETE RETAINING WALL & STAIR NOTES:**
1. RETAINING WALL AND STAIRS TO BE ANCHOR WALL HIGHLAND STONE PRECAST CONCRETE (GRANITE BLEND)
  2. CONSTRUCTED WITH STANDARD BLOCKS.
  3. SELF-CLEANING AND STAIRS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS
  3. CONCRETE FOOTINGS TO BE INSTALLED IN CONJUNCTION WITH PATIO SURGRADE AND GEORGRID PLACEMENT.
  4. GEORGRID TO BE RAISED GEORGRID 4/2 OR APPROVED EQUAL DISTRIBUTED BY CARTRIDGE MATS.

**STORMTECH CHAMBER SPECIFICATIONS**

1. CHAMBERS SHALL BE MANUFACTURED FROM VIRSIPOL POLYPROPYLENE OR POLYETHYLENE RESINS.
2. CHAMBERS SHALL BE MANUFACTURED FROM VIRSIPOL POLYPROPYLENE OR POLYETHYLENE RESINS.
3. CHAMBERS SHALL PROVIDE CONTINUOUS UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORT FRAMES THAT WOULD IMPEDER FLOW OR LIMIT ACCESS FOR MAINTENANCE.
4. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION SPECIFICATIONS SECTION 12.12, THE NET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE ASHRO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENTENCES.
5. CHAMBERS SHALL MEET ASTM F2922 FOR POLYETHYLENE OR ASTM F1461-16 FOR POLYPROPYLENE. STANDARD SPECIFICATIONS FOR THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS.
6. CHAMBERS SHALL BE REDESIGNED AND ALLOWABLE LOADS DETERMINED IN ACCORDANCE WITH ASTM F2922. MANUFACTURERS SHALL SUBMIT THE FOLLOWING INFORMATION TO THE SITE DESIGN ENGINEER FOR APPROVAL:
  - a. A STRUCTURAL EVALUATION SEALLED BY A REGISTERED PROFESSIONAL ENGINEER THAT DEMONSTRATES THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.50 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD. THE MINIMUM REQUIRED BY ASTM F2922 AND BY ASHRO FOR THERMOPLASTIC PIPE.
  - b. A STRUCTURAL EVALUATION SEALLED BY A REGISTERED PROFESSIONAL ENGINEER THAT DEMONSTRATES ARE MET. THE 50-YEAR GROUND MOTION DATA SPECIFIED IN ASTM F2922 OR ASHRO F2922 MUST BE USED AS PART OF THE ASHRO STRUCTURAL EVALUATION TO VERIFY LONG-TERM PERFORMANCE.
  - c. STRUCTURAL CROSS SECTION DETAIL ON WHICH THE STRUCTURAL EVALUATION IS BASED.
7. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. THE CHAMBER MANUFACTURER SHALL SUBMIT THE FOLLOWING INFORMATION TO THE SITE DESIGN ENGINEER FOR APPROVAL:
  - a. A STRUCTURAL EVALUATION SEALLED BY A REGISTERED PROFESSIONAL ENGINEER THAT DEMONSTRATES BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE.
  - b. THE MINIMUM REQUIRED BY ASTM F2922 AND BY ASHRO FOR THERMOPLASTIC PIPE.
  - c. A STRUCTURAL EVALUATION SEALLED BY A REGISTERED PROFESSIONAL ENGINEER THAT DEMONSTRATES ARE MET. THE 50-YEAR GROUND MOTION DATA SPECIFIED IN ASTM F2922 OR ASHRO F2922 MUST BE USED AS PART OF THE ASHRO STRUCTURAL EVALUATION TO VERIFY LONG-TERM PERFORMANCE.
8. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

**IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF THE SC-310/SC-740 SYSTEM**

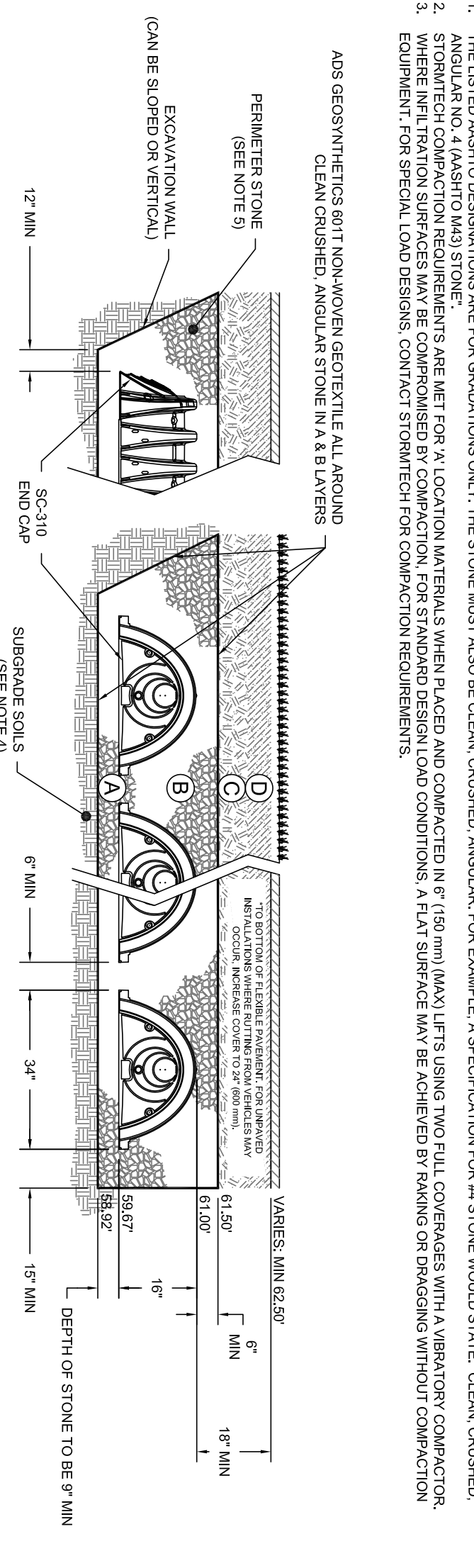
1. STORMTECH SC-310 & SC-740 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED THE FOLLOWING:
  - a. STORMTECH SC-310 & SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE STORMTECH SC-310/SC-740C-780 CONSTRUCTION GUIDE.
  - b. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOCKER OR AN EXCAVATOR STUMPED OVER THE CHAMBERS. STONESHOOTER LOCATED OFF THE CHAMBER BED.
  - c. BACKFILL FROM EXISTING THE EXCAVATION USING A DIGGER SHOULD BE ON ROUND SURFACE.
2. THE FOUNDATION STONE SHALL BE LEVELLED AND COMPACTED PRIOR TO PLACING CHAMBERS.
3. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEALED PRIOR TO PLACING STONE.
4. MAINTAIN MINIMUM 6" (150 mm) SPACING BETWEEN THE CHAMBER ROWS.
5. EMBEDDING STONE SURROUNDING CHAMBERS MUST BE A CLEAN CRUSHED ANGULAR STONE 3/4" (20-50 mm).
6. THE CONTRACTOR MUST REPORT ANY DISPENSANCES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
7. SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.
8. SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.
9. SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

**NOTES FOR CONSTRUCTION EQUIPMENT**

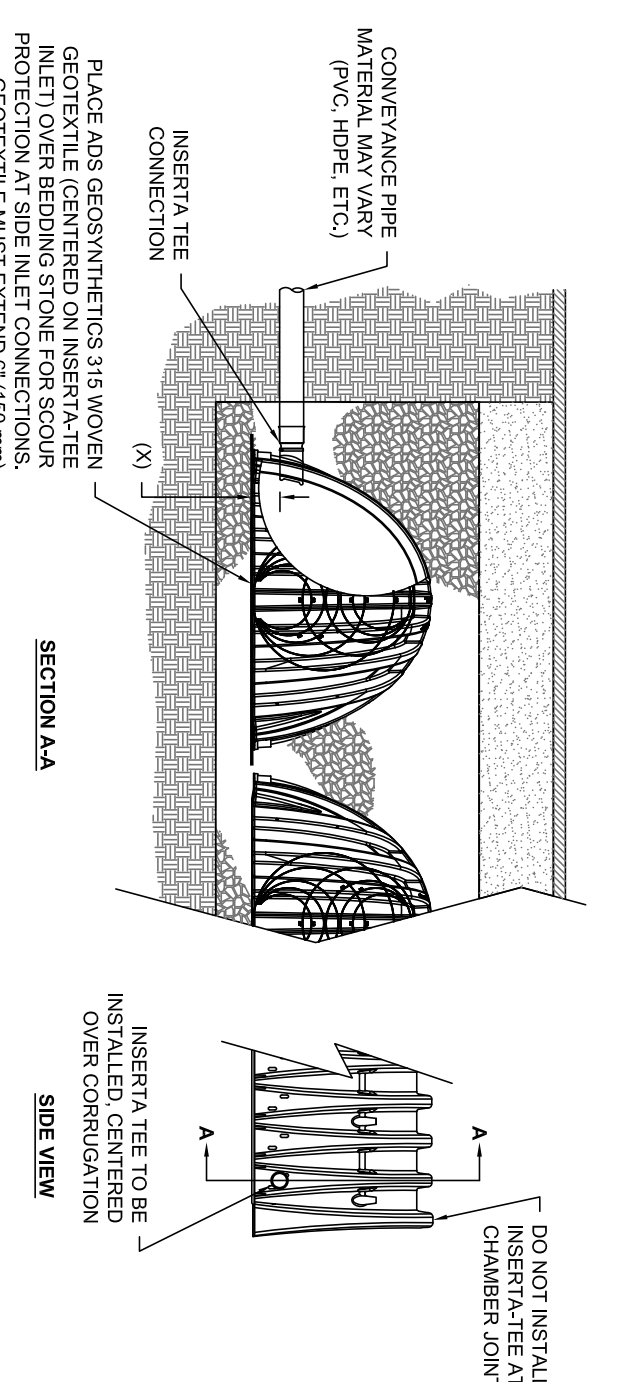
1. STORMTECH SC-310 & SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE STORMTECH SC-310/SC-740C-780 CONSTRUCTION GUIDE.
2. THE USE OF CONSTRUCTION EQUIPMENT OVER SC-310 & SC-740 CHAMBERS IS LIMITED.
  - NO RUBBER TIRE LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE STORMTECH SC-310/SC-740C-780 CONSTRUCTION GUIDE.
  - LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE STORMTECH SC-310/SC-740C-780 CONSTRUCTION GUIDE.
3. FILL 3" (80 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DRIVING.

**ACCEPTABLE FILL MATERIALS: STORMTECH SC-310 CHAMBER SYSTEMS**

MATERIAL LOCATION	DESCRIPTION	ASHRO MATERIAL CLASSIFICATIONS	COMPACTION/ DENSITY REQUIREMENT
<b>A</b> FINAL FILL MATERIAL FOR LAYER D STARTS GRADE ABOVE. NOTE THAT PAVEMENT FINISHED MAY BE PART OF THE D LAYER	ANY SOIL ABOVE MATERIALS. NATIVE SOILS OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PAVED AREAS PER SITE DESIGN REQUIREMENTS. BEGIN CONSTRUCTION AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX WELLS GRABED MATERIAL AND 85% RELATIVE DENSITY FOR PROCESSED AGGREGATE. (NOT TO EXCEED 12,000 PSI MAX DYNAMIC FORCE NOT TO EXCEED 20,000 PSI (891 kN).
<b>B</b> INITIAL FILL MATERIAL FOR LAYER C TOP OF LAYER TO 6" (150 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBGRADE MAY BE A PART OF THE C LAYER.	GRANULAR WELLS-GRADED SOIL/AGGREGATE MIXTURES, 35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBGRADE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	ASHRO M45 A1, A2, A3 OR ASHRO M47 5, 6, 7, 8, 9, 10	NO COMPACTION REQUIRED.
<b>C</b> EMBEDDING STONE (E) FILL SURROUNDING THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBGRADE MAY BE A PART OF THE C LAYER.	CLEAN, CRUSHED, ANGULAR STONE FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	ASHRO M43 3, 3.57, 4, 4.67, 5, 5.67	PLATE COMPACT FOR ROLL TO ACHIEVE A FLAT SURFACE.



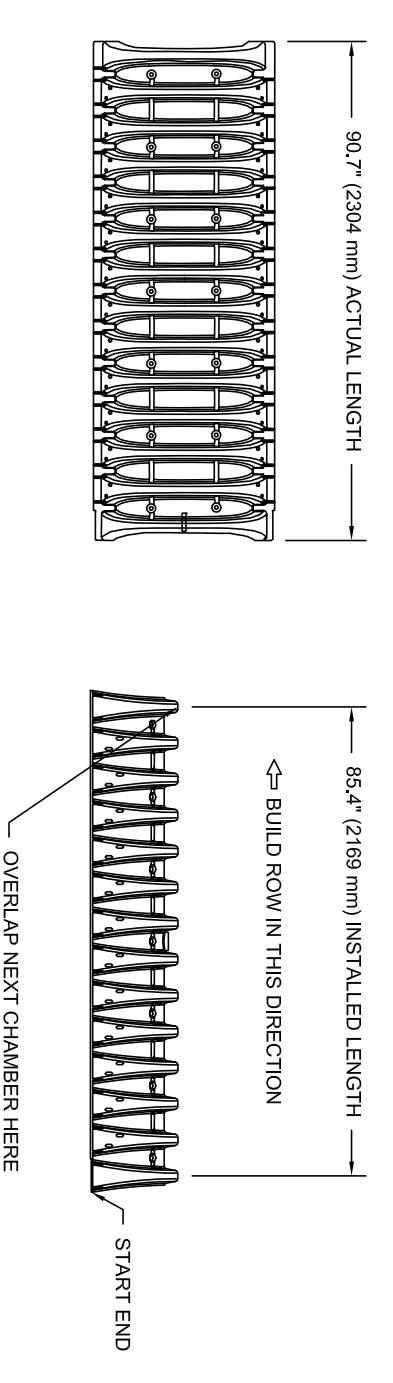
**UNDERDRAIN DETAIL**



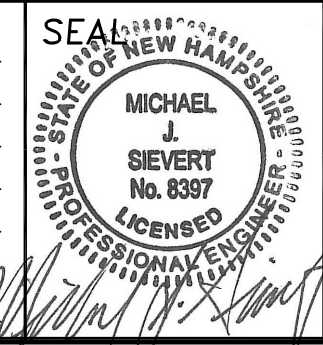
**INSPECTION & MAINTENANCE**

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL, BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT SETTING AND WATCHING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

**CONSTRUCTION DETAILS**



DATE: 11/19/18  
 SCALE: 1" = 10'  
 DESIGNED BY: MJS  
 DRAWN BY: MCS  
 APPROVED BY: MJS  
 DWG FILE: 18-067 Civil S.dwg



NO.	REVISIONS	DATE	INT.
2.	UPDATED THRU 12/18/18	12/18/18	MCS
1.	DESIGN REVISION	11/29/18	MCS
0.	INITIAL SUBMISSION TO DURHAM PLANNING BOARD	11/19/18	EHK

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 PHONE: (603) 659-4979, FAX: (603) 659-4627  
 E-MAIL: MJS@MJS-ENGINEERING.COM

prepared for  
**KAPPA DELTA**  
 TAX MAP 2, LOT 12-2  
 25 MADBURY ROAD  
 DURHAM, NH

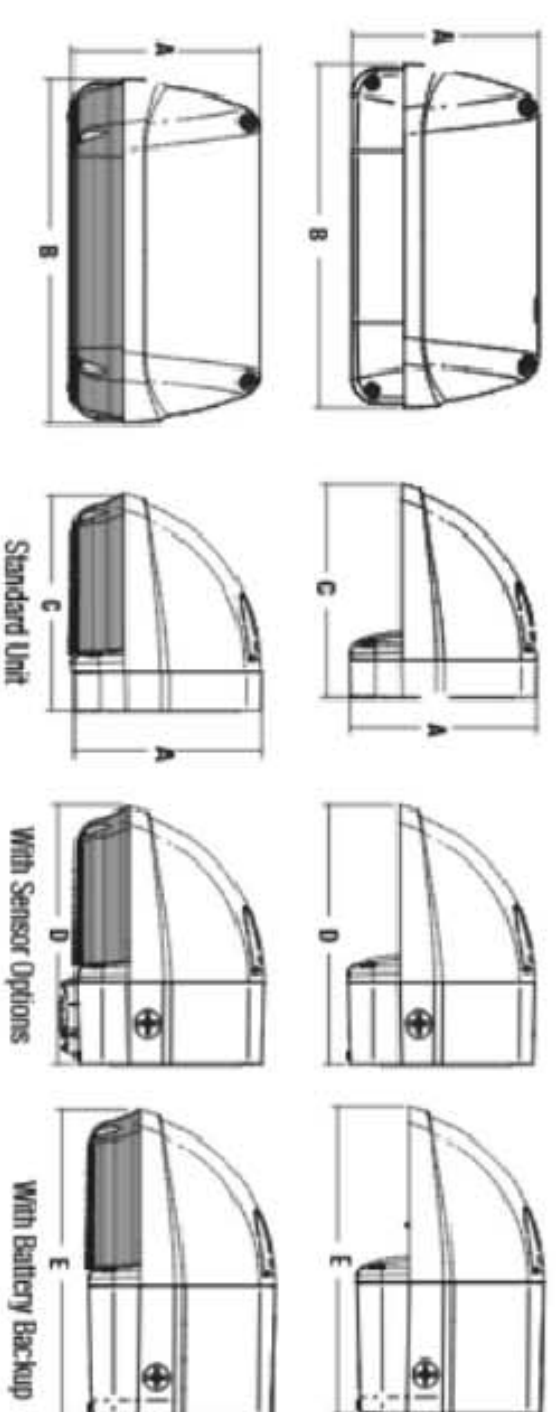
**D3**  
 JOB: 18-067



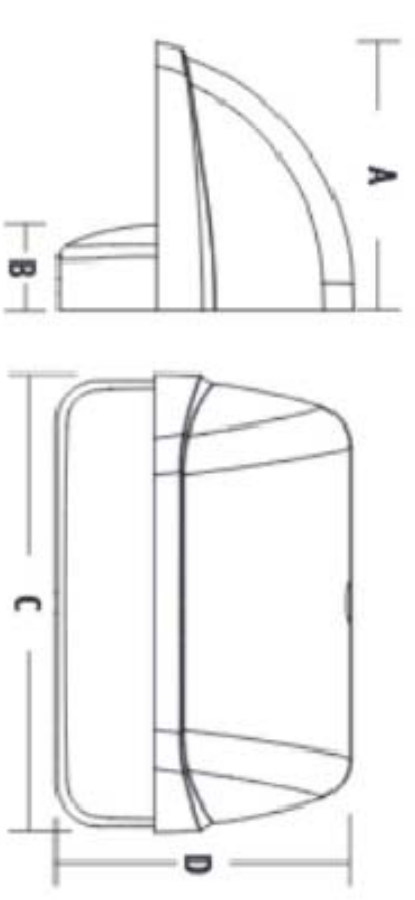
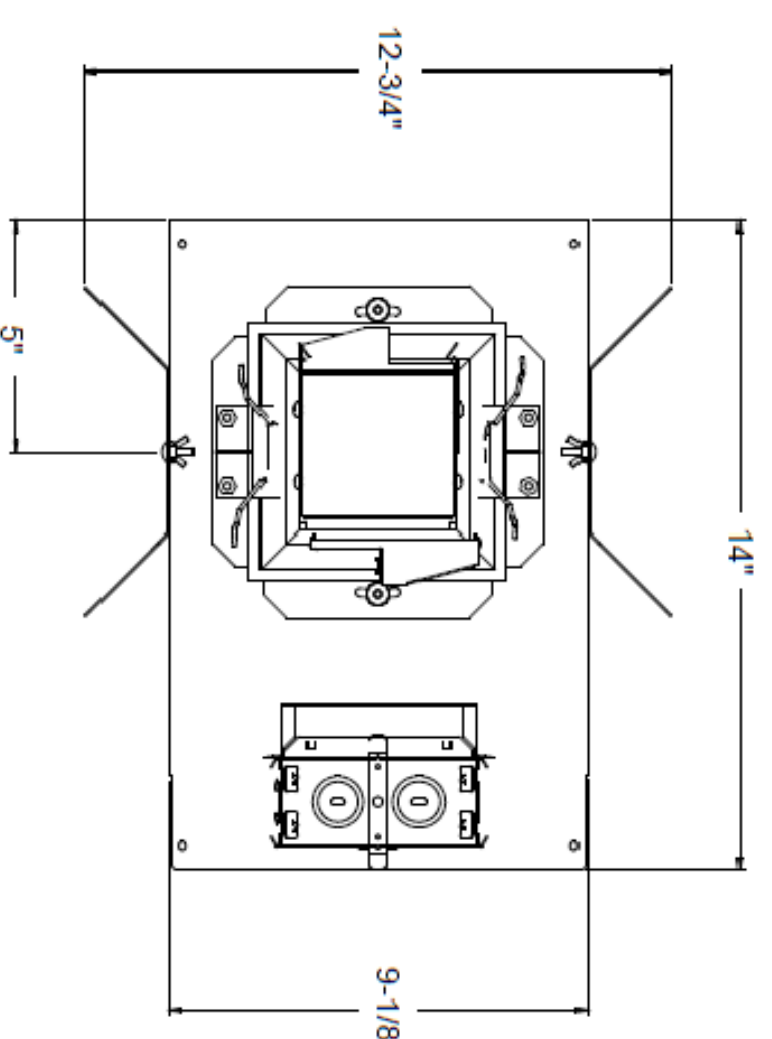
<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>
5.54"	10.16"	6.33"	7.64"	9.10"
40.7 mm	258 mm	160.7 mm	194 mm	231 mm
<b>Base Model</b>		<b>PC Sensor Model</b>	<b>BBU Models</b>	
7.0 lbs.		7.5 lbs.	9.5 lbs.	
3.2 kg		3.4 kg	4.3 kg	
<b>WEIGHT</b>				

**WALL PACK LIGHT DETAIL, W1**

N.T.S.



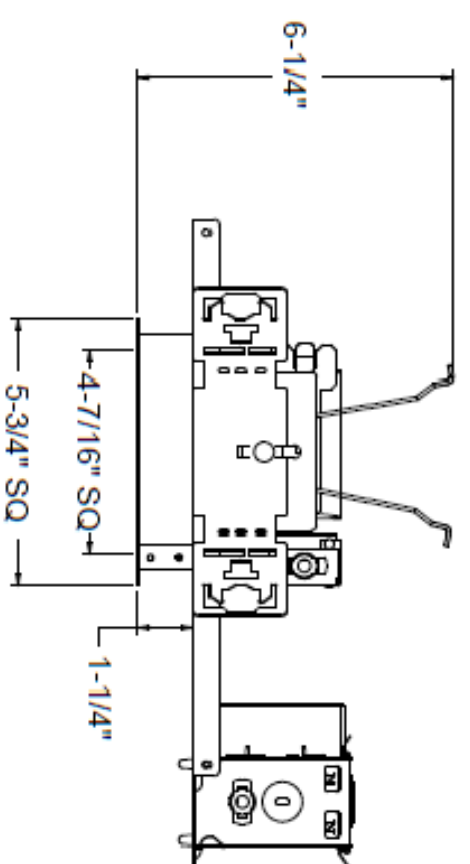
FINAL APPROVAL BY THE DURHAM PLANNING BOARD.  
 CERTIFIED BY \_\_\_\_\_  
 DATE \_\_\_\_\_



<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
4.8"	1.6"	8.2"	5.3"
122 mm	39 mm	209 mm	133 mm

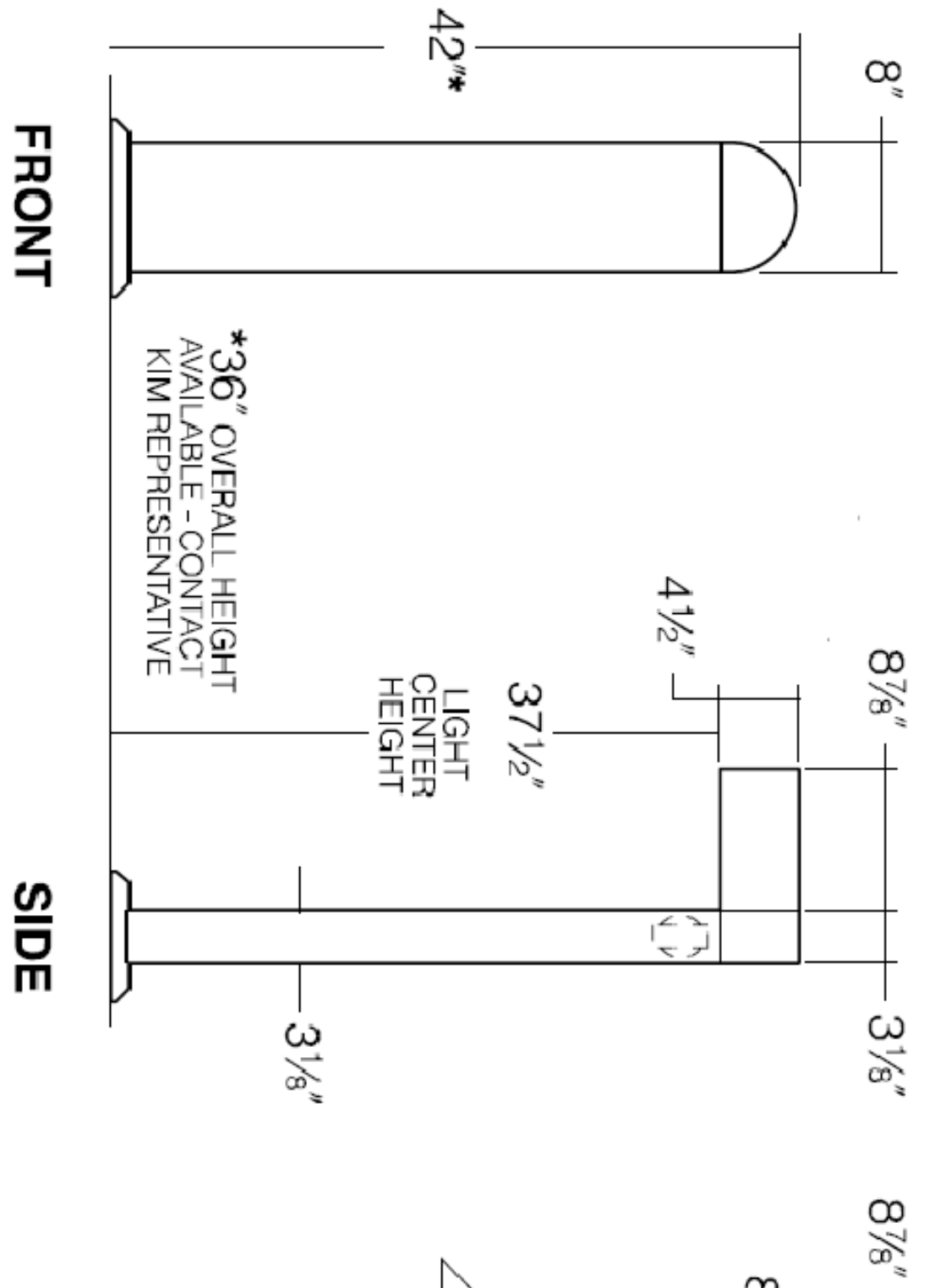
**WALL PACK LIGHT DETAIL, W2 AND W3**

N.T.S.

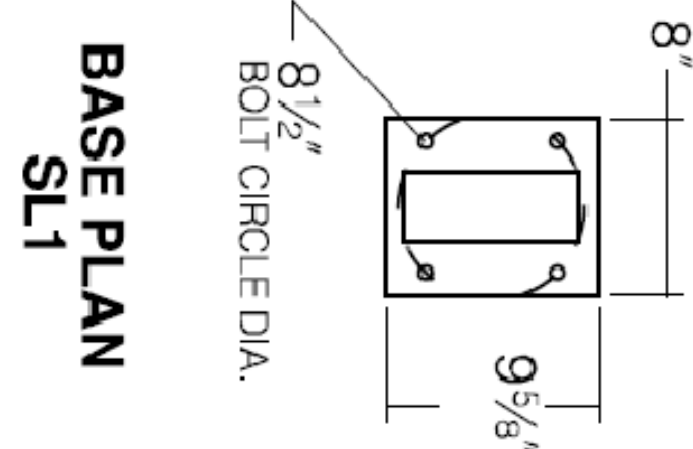


**CEILING SOFFIT LIGHT DETAIL, TYP C**

N.T.S.



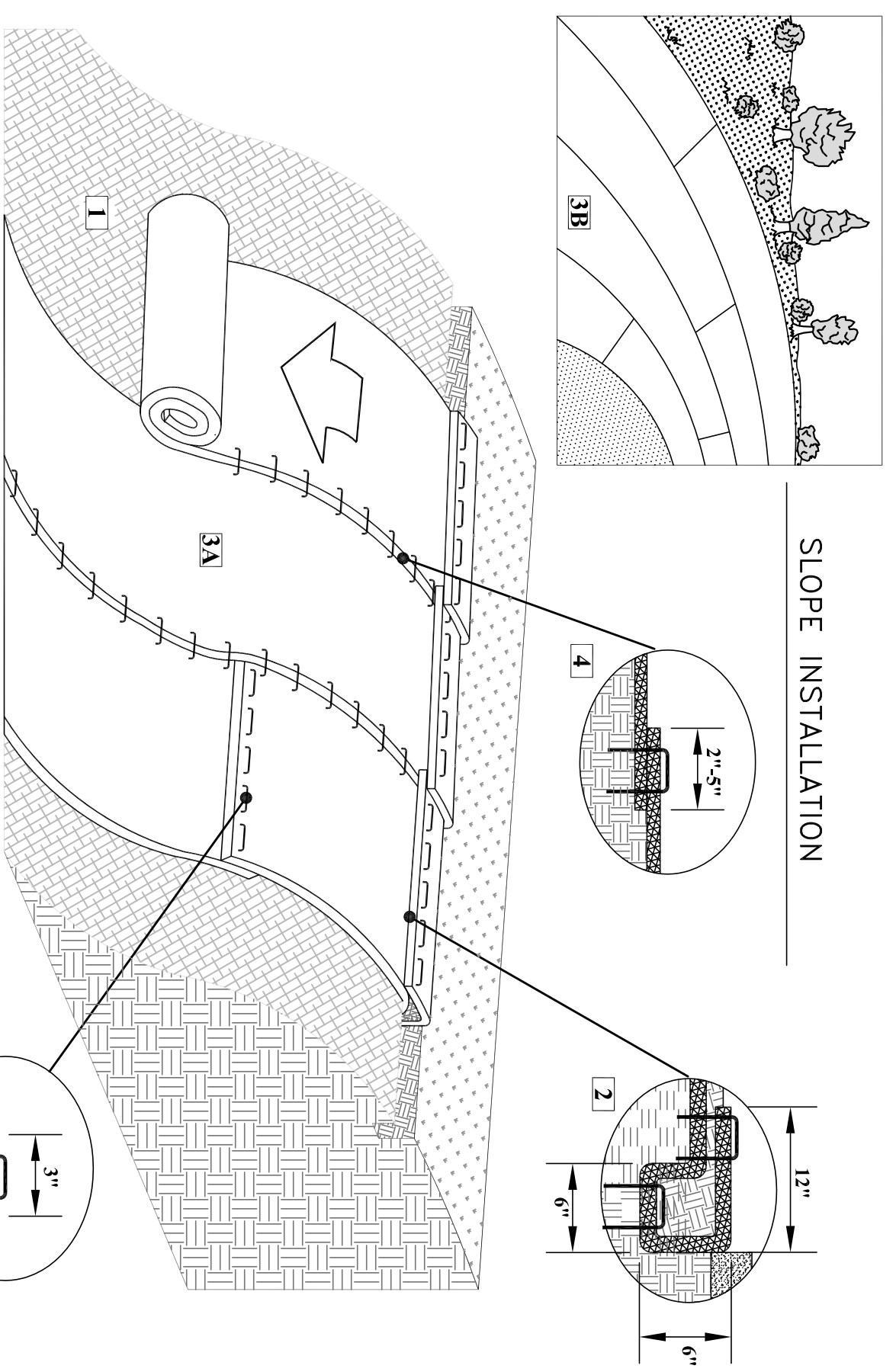
\*36" OVERALL HEIGHT AVAILABLE CONTACT KIMI REPRESENTATIVE



**BASE PLAN SL1**

**BOLLARD LIGHT DETAIL, B1**

N.T.S.

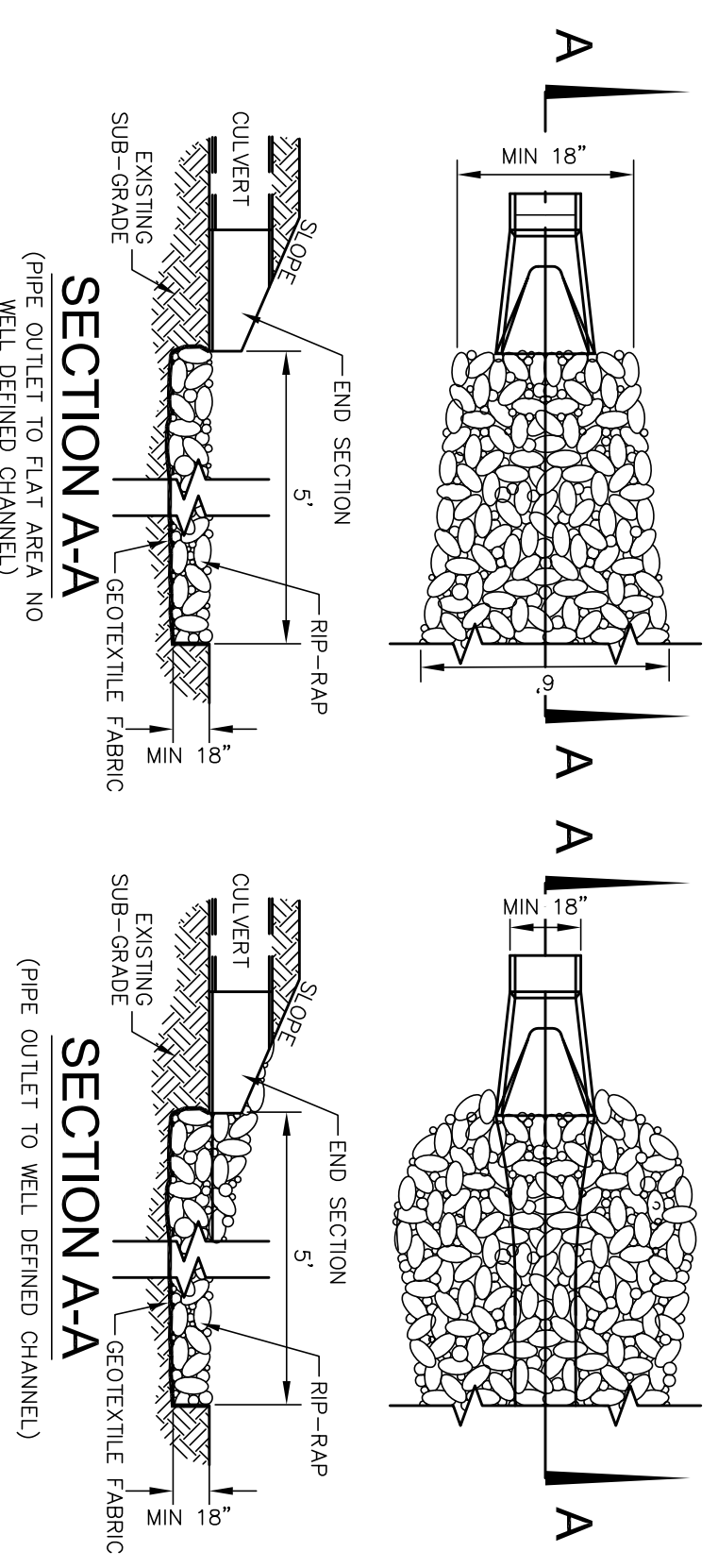


**SLOPE INSTALLATION**

1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECS), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
2. RENTRIZE AND SEED THE SLOPE BY ANCHORING THE RECS IN A 3"(750M) DEEP X 6"(150M) WIDE TRENCH WITH APPROXIMATELY 12" (300M) OF RECS EXTENDED BEHIND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECS WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (300M) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO THE COMPACTED SOIL AND FOLD THE REMAINING 12"(300M) PORTION OF RECS BACK OVER THE SEED AND COMPACTED SOIL. SECURE RECS OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12"(300M) APART ACROSS THE WIDTH OF THE TRENCH.
3. ROLL THE RECS (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE. RECS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE BE STAPLED WITH APPROXIMATELY 2" - 5" (51-1250M) OVERLAP DEPENDING ON THE RECS TYPE.
4. CONSECUTIVE RECS SPUNGED DOWN THE SLOPE MUST BE END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3"(750M) OVERLAP- STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12"(300M) APART ACROSS ENTIRE RECS WIDTH.

**TYPICAL TURF REINFORCEMENT MATTING DETAIL**

N.T.S.



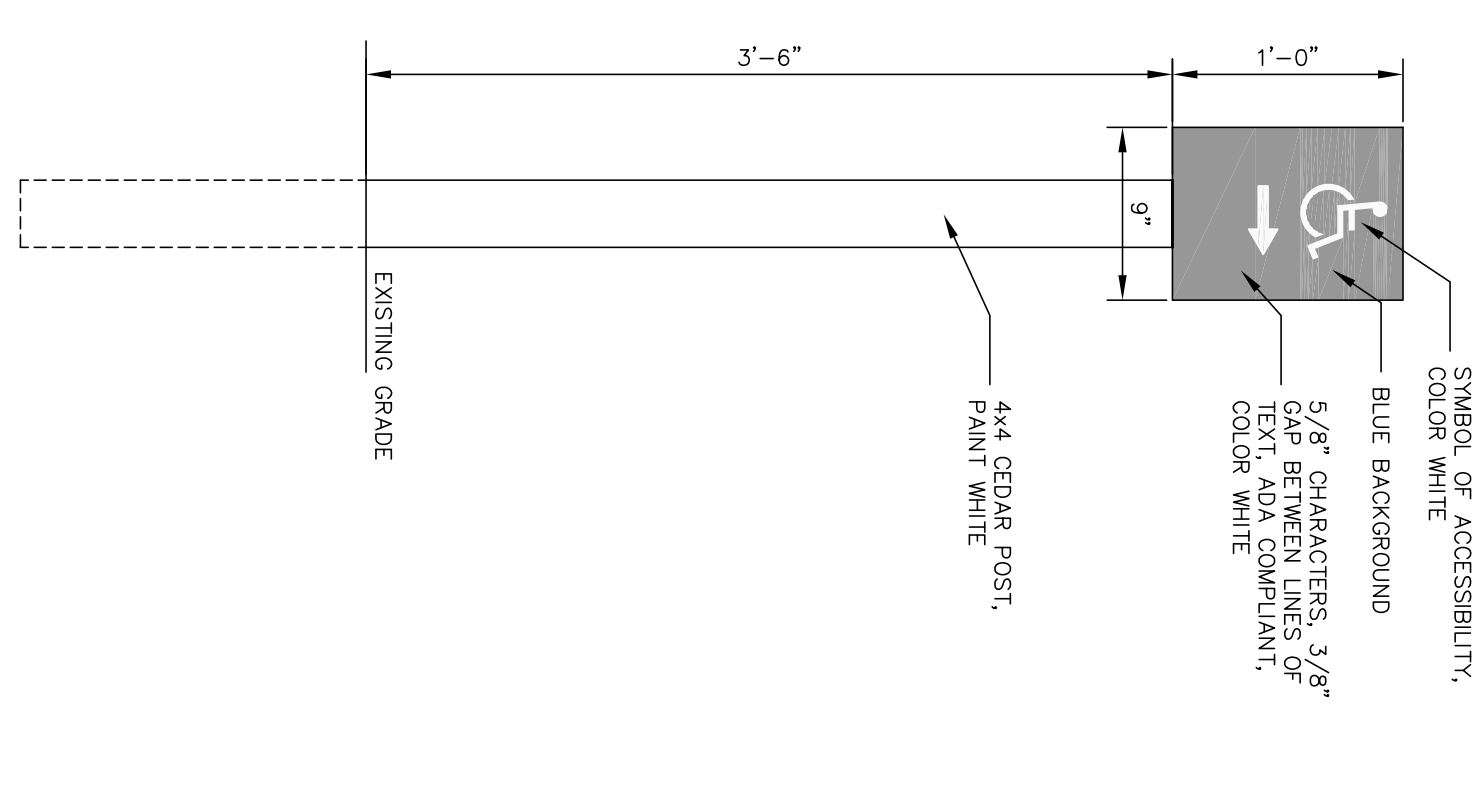
**RIP-RAP GRADATION**

% OF WEIGHT SMALLER THAN THE GIVEN SIZE (INCHES)	SIZE OF STONE (INCHES)
100	10
85	8
65	6
45	4
25	3
15	2

- CONSTRUCTION SPECIFICATIONS:**
1. ON THE PLANS.
  2. MINIMUM 6" SAND/GRAVEL BEDDING OR GEOTEXTILE FABRIC REQUIRED UNDER ALL ROCK RIP-RAP.
  3. THE ROCK OR GRAVEL USED FOR FILTER OR RIP-RAP SHALL CONFORM TO THE SPECIFIED GRADATION.
  4. THE CHANNEL IMMEDIATELY DOWNSTREAM FROM THE OUTLET SHOULD BE CHECKED TO SEE THAT NO EROSION IS OCCURRING. IF EROSION IS OCCURRING, THE CHANNEL SHOULD BE REPAIRED IMMEDIATELY.
  5. DAMAGED AREAS IN THE FABRIC SHALL BE REPAIRED BY PLACING A PIECE OF FABRIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACEMENT OF THE FABRIC. ALL OVERLAPS REQUIRED FOR REPAIRS OR JOINING TWO (2) PIECES OF FABRIC SHALL BE A MINIMUM OF 12 INCHES CONSTRUCTED TO THE FULL LAYER THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO PREVENT SEGREGATION OF THE STONE SIZES.
- MAINTENANCE NOTES:**
1. OUTLETS SHALL BE INSPECTED AND CLEANED ANNUALLY AND AFTER ANY MAJOR STORM EVENT. ANY EROSION OR DAMAGE TO THE RIP-RAP SHALL BE REPAIRED IMMEDIATELY.
  2. THE CHANNEL IMMEDIATELY DOWNSTREAM FROM THE OUTLET SHOULD BE CHECKED TO SEE THAT NO EROSION IS OCCURRING. IF EROSION IS OCCURRING, THE CHANNEL SHOULD BE REPAIRED IMMEDIATELY.
  3. DAMAGED AREAS IN THE FABRIC SHALL BE REPAIRED IMMEDIATELY.
  4. SEDIMENT THAT COULD CHANGE FLOW PATTERNS AND/OR TAKE WATER DEPTHS ON THE PIPES, REPAIRS MUST BE CARRIED OUT IMMEDIATELY TO AVOID ADDITIONAL DAMAGE TO THE OUTLET PROTECTION APRON.

**PIPE OUTLET PROTECTION DETAIL**

NOT TO SCALE



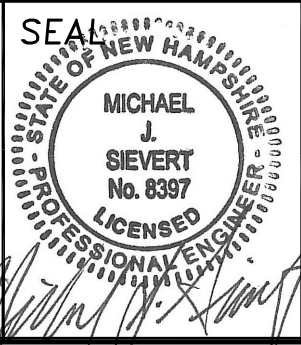
**ADA ENTRANCE SIGNAGE DETAIL**

N.T.S.

**CONSTRUCTION DETAILS**

prepared for  
**KAPPA DELTA**  
 TAX MAP 2, LOT 12-2  
 25 MADBURY ROAD  
 DURHAM, NH

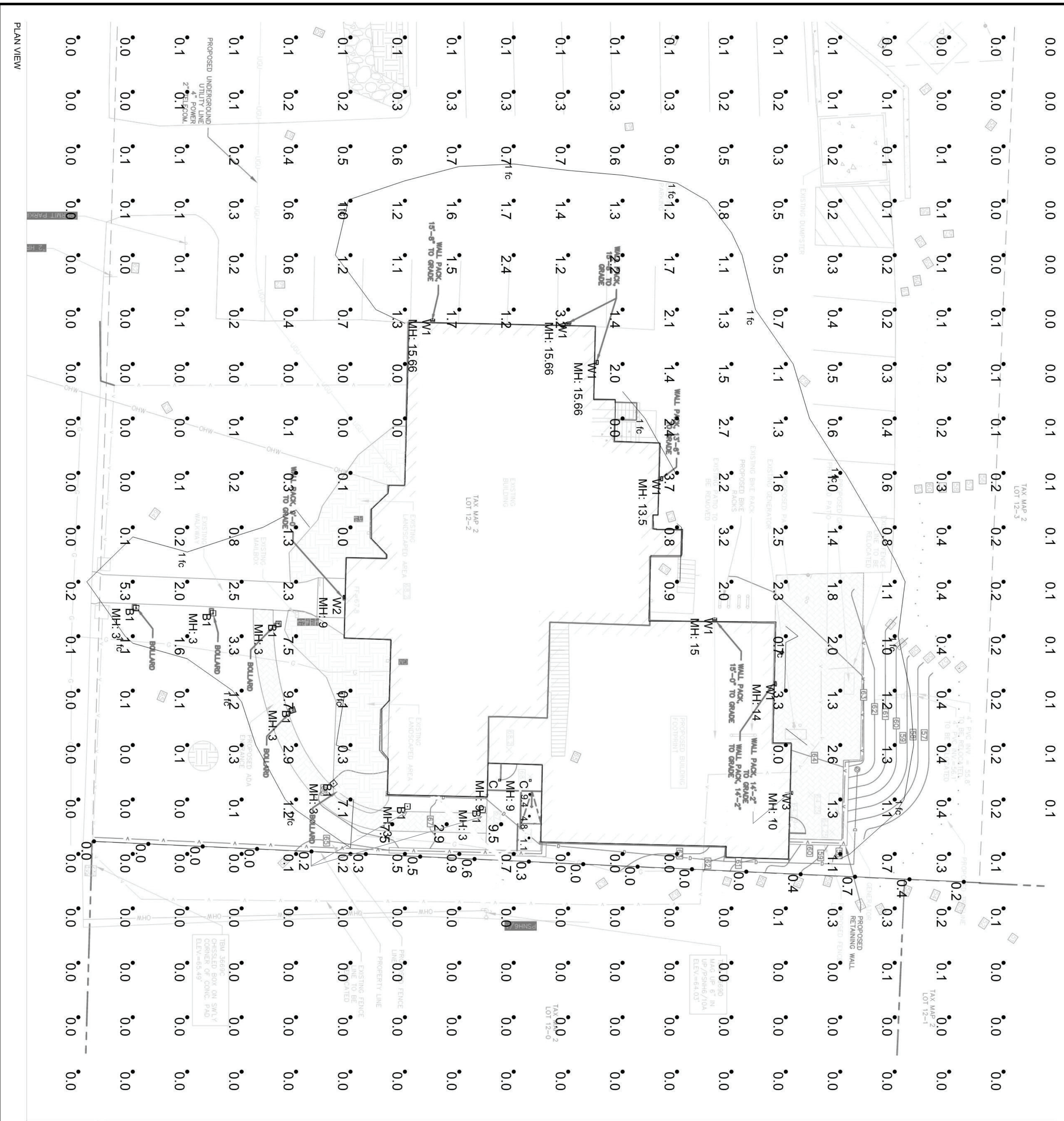
DATE: 12/18/18  
 SCALE: 1" = 10'  
 DESIGNED BY: MJS  
 DRAWN BY: MCS  
 APPROVED BY: MJS  
 DWG FILE: 18-067 Civil S.dwg



NO.	REVISIONS	DATE	INT.
1	LIGHTING AND BIKE RACK REVISIONS	12/28/18	MCS
0	INITIAL SUBMISSION	12/18/18	MCS

**MJS ENGINEERING, P.C.**  
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 E-MAIL: MJS@MJS-ENGINEERING.COM





Calculation Summary

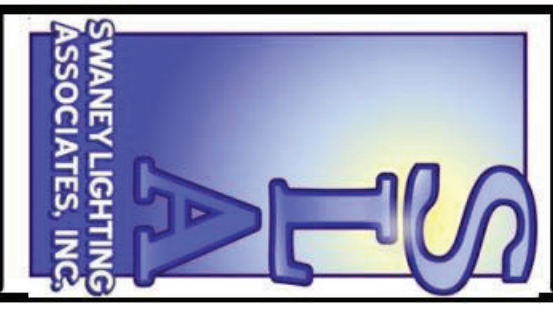
Label	Avg	Max	Min	Avg/Min	Max/Min
Property line	0.21	0.7	0.0	N/A	N/A
RAMP	5.10	9.4	1.1	4.6	8.6
SITE	0.47	9.7	0.0	N/A	N/A
Walk	6.63	9.5	2.9	2.3	3.3

Luminaire Schedule (note fixture catalogue numbers are not complete)

Type	Qty	Lum. Lumens Lf	Lum. Watts	Description
B1	7	1679	20.4	SL1-181.3K
C	2	1080	12.7	LF4SQSL-4SQSL111.30K8
W1	6	2588	28.6	LNC2-12L-3K-070-4
W2	1	1680	22.2	LNC-9LU-3K-4
W3	1	849	13	LNC-5LU-3K-4-X

- NOTES:
- 1) EXACT MOUNTING DETAILS TO BE DETERMINED AT JOBSITE BY OTHERS.
  - 2) CALCULATIONS MAY OR MAY NOT SHOW THE EFFECT OF SHADOWING CAUSED BY BUILDINGS AND OBJECTS WITHIN THE CALCULATED SPACE OR IN THE SITE AREA.
  - 3) READINGS SHOWN ARE INITIAL HORIZONTAL FOOTCANDLES ON A FLAT SITE WITHOUT REFLECTIONS OR OBSTRUCTIONS UNLESS OTHERWISE INDICATED.
  - 4) THIS CALCULATION IS BASED ON LIMITED INFORMATION SUPPLIED BY OTHERS TO SWANEY LIGHTING ASSOCIATES. SWANEY LIGHTING ASSOCIATES AND/OR SITE ARE THE RESPONSIBILITY OF THE OWNER AND/OR LOCAL REQUIREMENTS AS DETERMINED BY THE AHJ.
  - 5) CORRESPONDENCE TO COPIES AND OTHER LOCAL REQUIREMENTS AS DETERMINED BY THE AHJ.
  - 6) THIS LAYOUT DRAWING MUST BE COORDINATED WITH THE SITE LOCATION FOR CORRECT FIXTURE ORIENTATION.
  - 7) DOCUMENTS PRINTED OR PLOTTED FROM ELECTRONIC FILES MAY APPEAR AT OTHER THAN THE DESIRED OR ASSUMED GRAPHIC SCALES.
  - 8) THE RESPONSIBILITY FOR THE ACCURACY OF THE INFORMATION SHOWN ON THIS OR PLOTTED 10-SHALE DRAWING IS PRINTED TO SCALE.

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**AG ARCHITECTS**  
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 Page 1 of 1

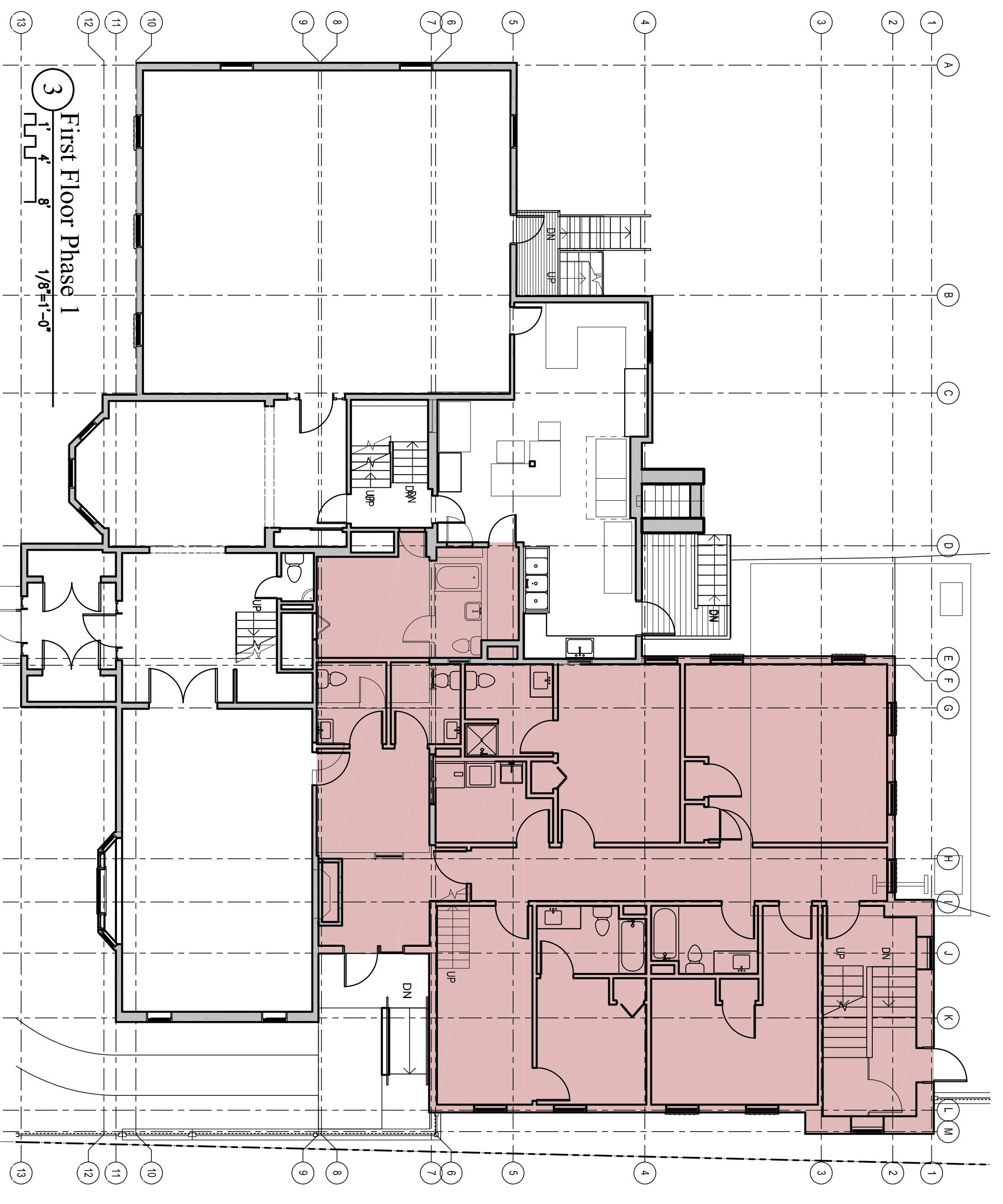
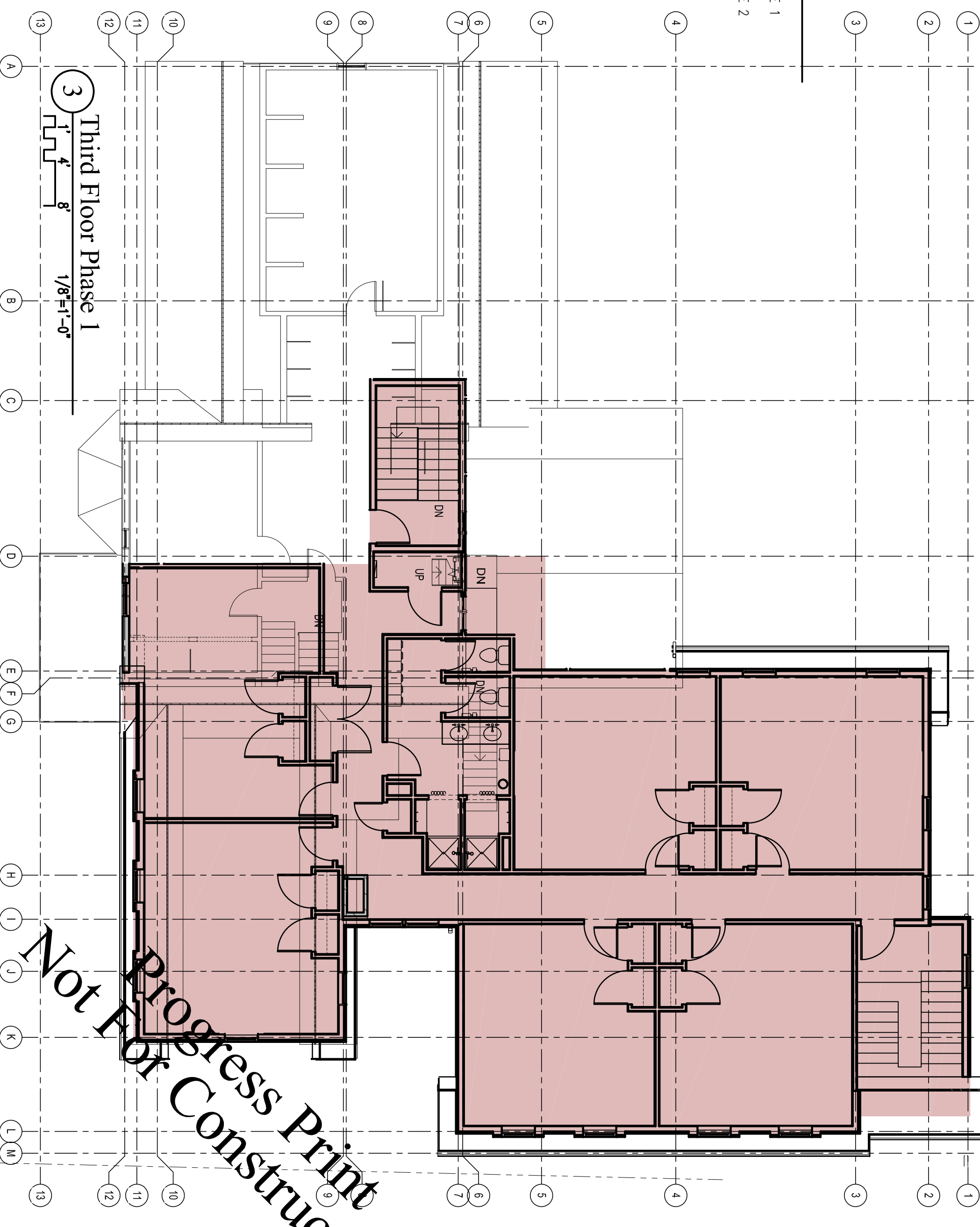
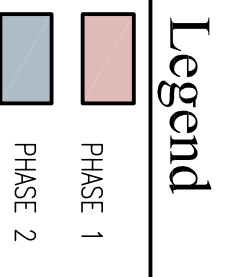
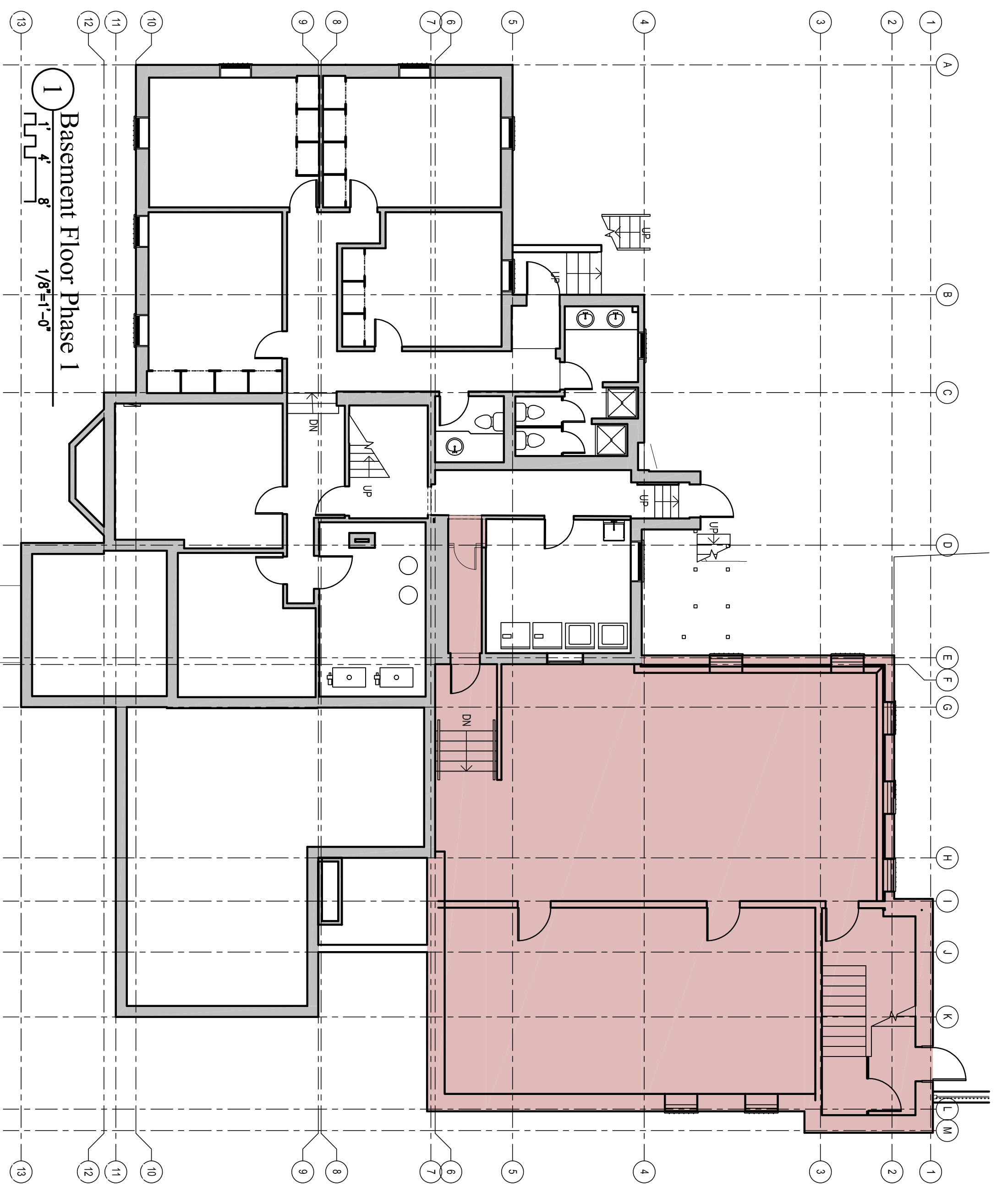
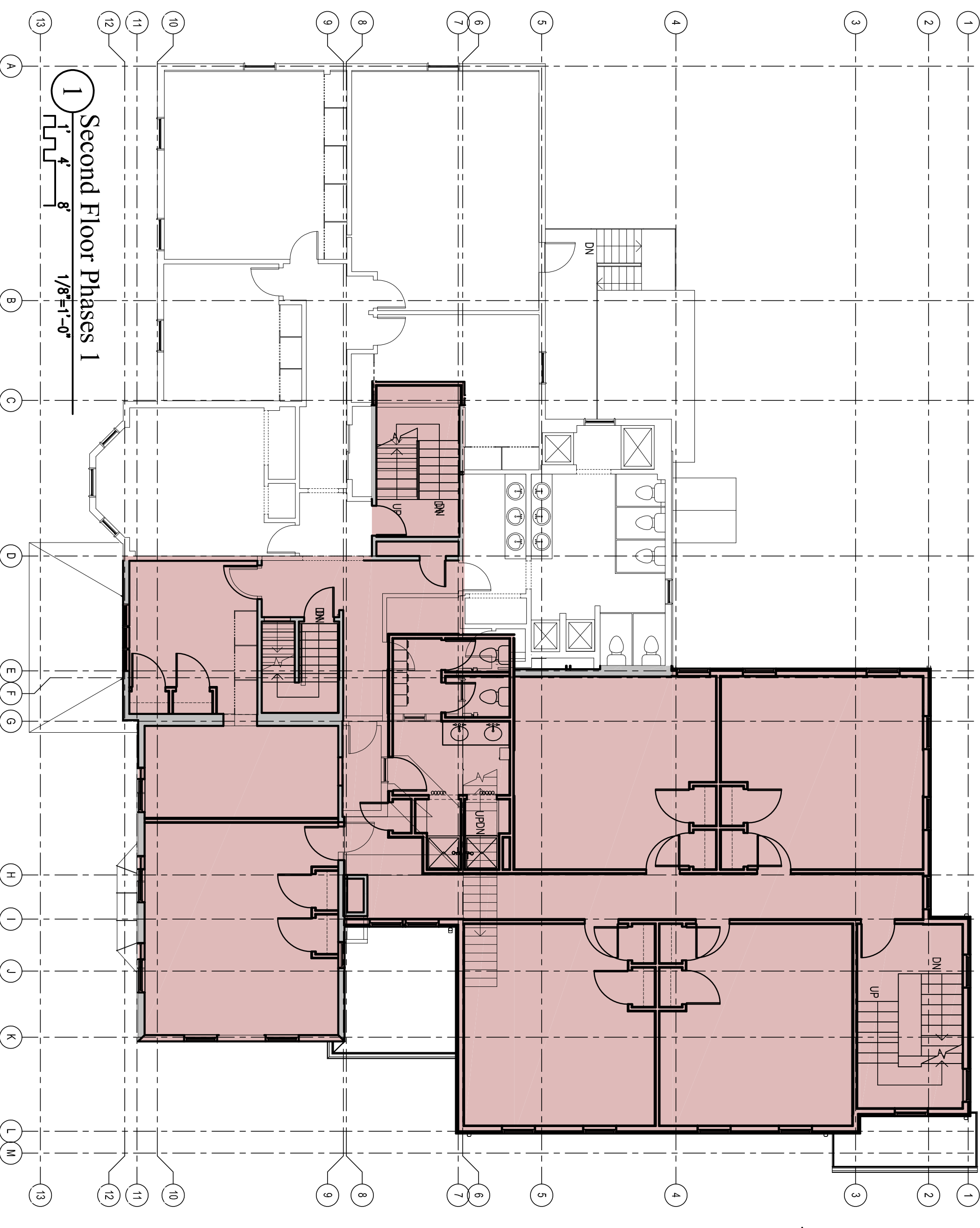
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**SITE LIGHTING LAYOUT**  
 Date: 1/31/2019  
 GENERATED BY SWANEY LIGHTING, SCARBOROUGH ME - 207-883-7100 - swaneylighting.com

SITE 1-31-19.AGI



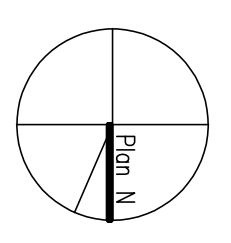






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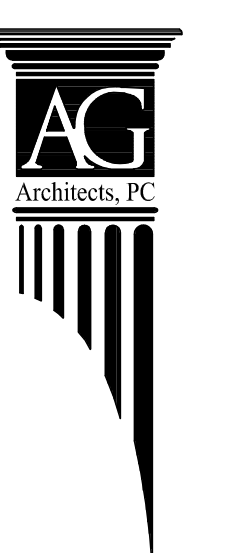
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Date:	18 December 2018
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Drawn By:	JG
Checked By:	AG
Sheet:	5 of 17
File:	18728.LA201-01
Sheet Title:	Phasing Plan
Sheet Number:	A2.1b



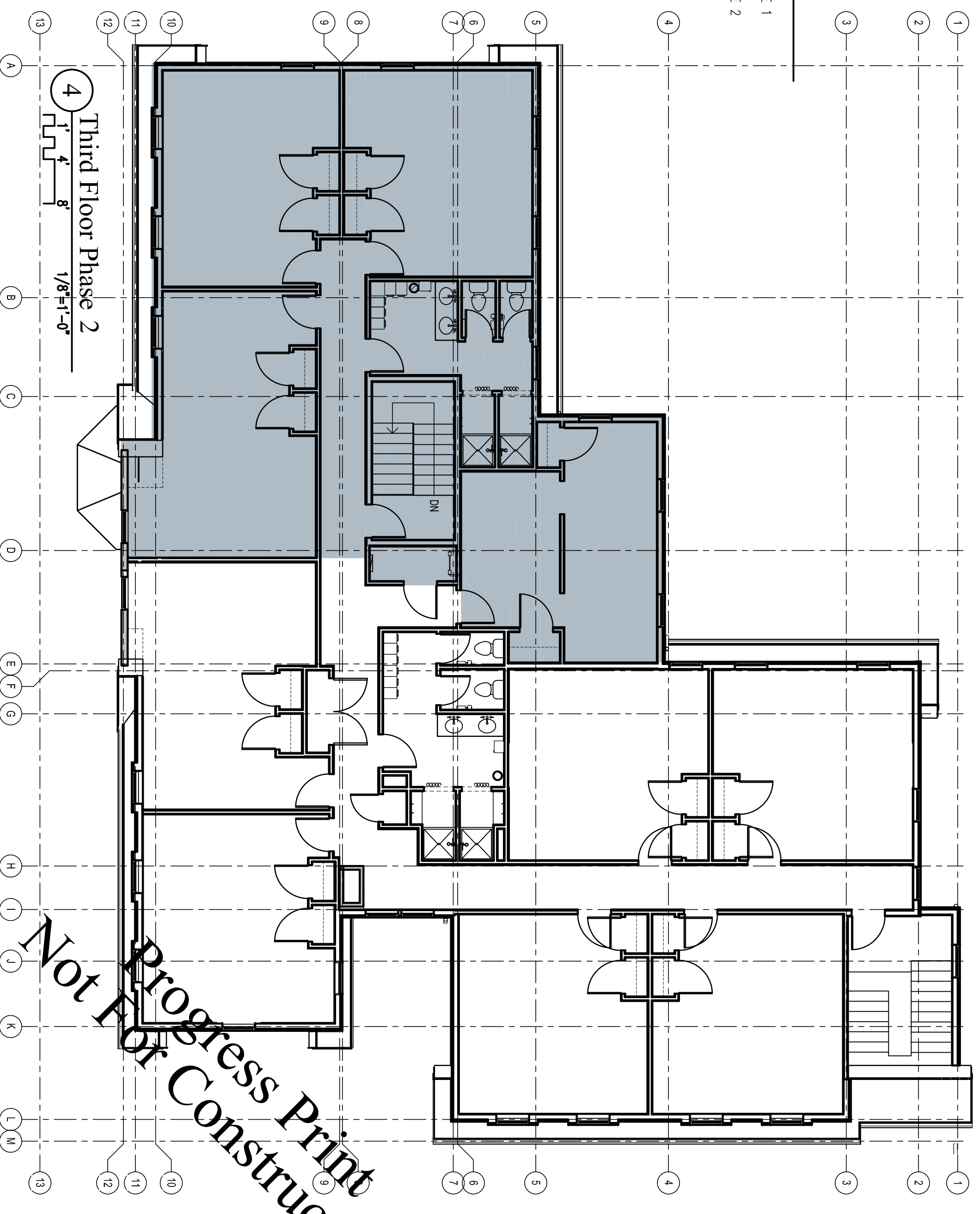
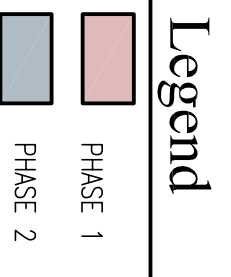
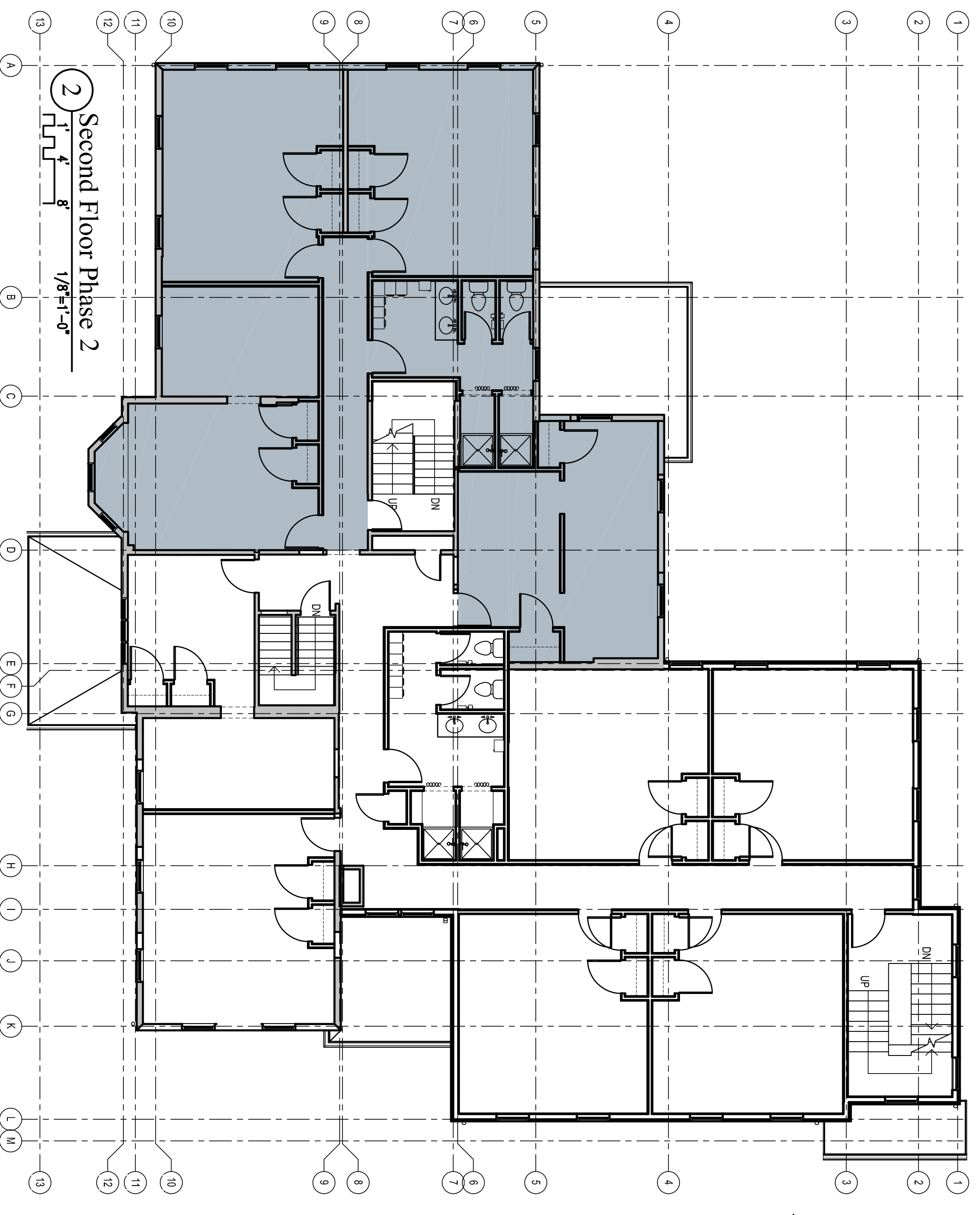
# Kappa Delta Expansion

## Durham, New Hampshire

AG Architects, PC  
 634 Central Avenue, Dover, NH 03820  
 E-Mail: [aga@agarchitects.com](mailto:aga@agarchitects.com)  
[www.agarchitects.com](http://www.agarchitects.com)  
 Phone: 603-743-3700  
 Fax: 603-743-3777

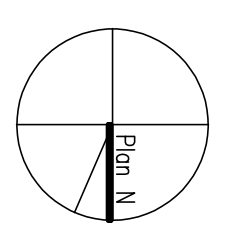






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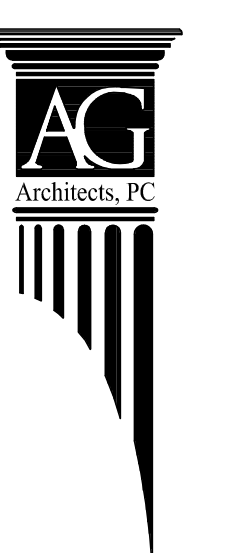
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Drawn By:	JG	Checked By:
Sheet:	6 of 17	File:
Sheet Title:	Phasing Plan	
Sheet Number:	A2.1c	



# Kappa Delta Expansion

## Durham, New Hampshire

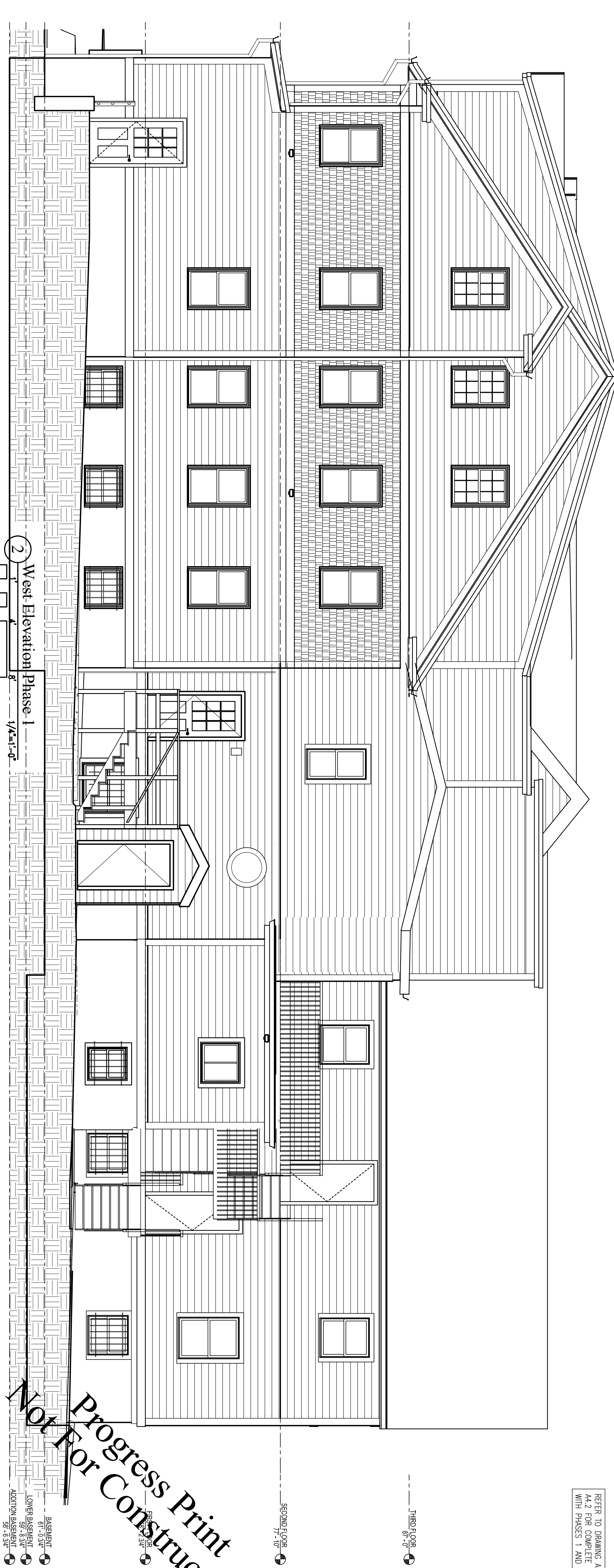
**AG Architects, PC**  
 634 Central Avenue, Dover, NH 03820  
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 Phone: 603-743-3700  
 Fax: 603-743-3777







THIRD FLOOR  
 67'-0"  
 SECOND FLOOR  
 77'-0"  
 FIRST FLOOR  
 68'-2 3/4"  
 67'-9 5/8"  
 LOWER BASEMENT  
 69'-3 3/4"  
 ADDITION BASEMENT  
 58'-8 3/4"  
 BASEMENT  
 67'-0 3/4"  
 REFER TO DRAWING A4.1 AND A4.2 FOR COMPLETE BUILDINGS WITH PHASES 1 AND 2

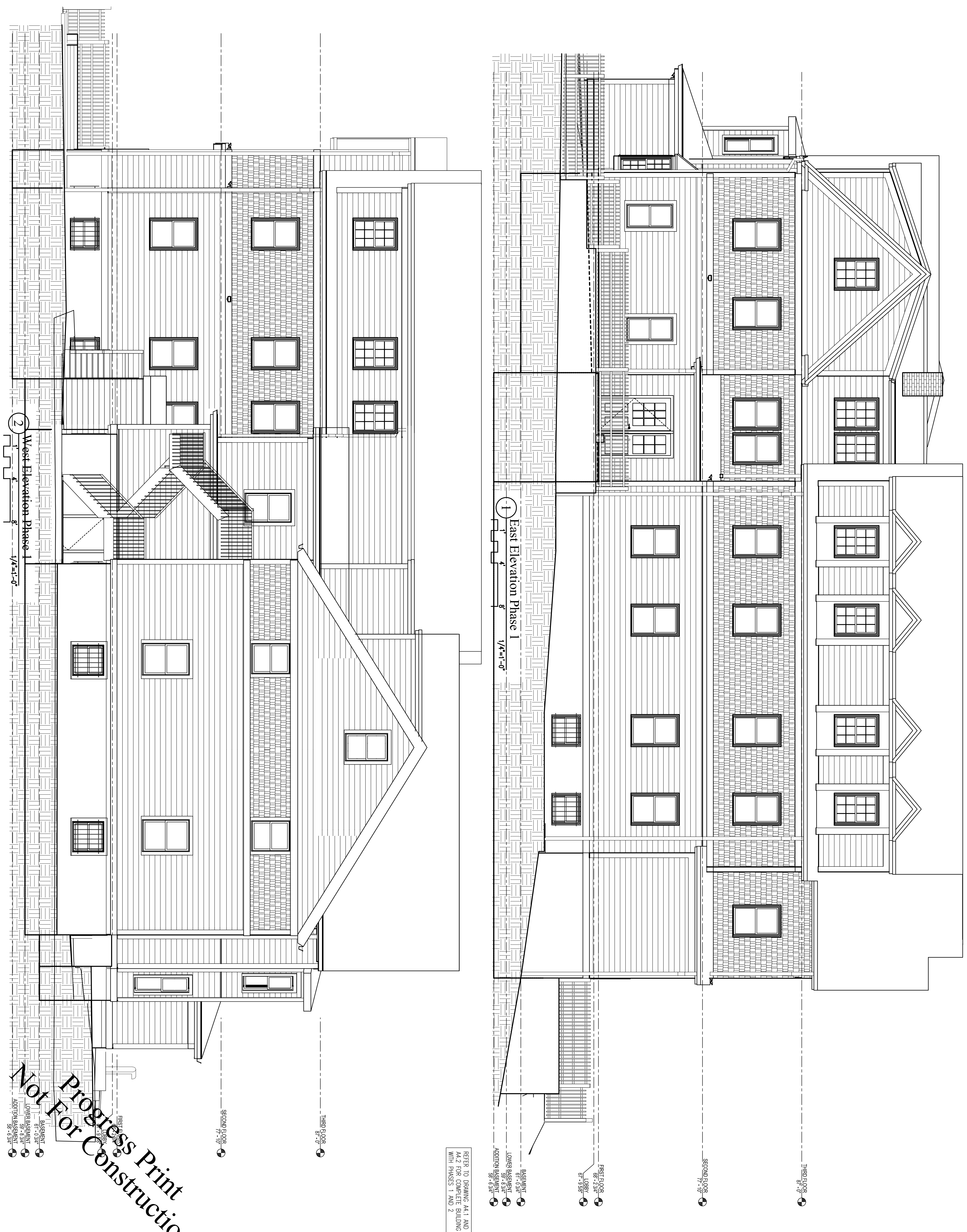


THIRD FLOOR  
 67'-0"  
 SECOND FLOOR  
 77'-0"  
 FIRST FLOOR  
 68'-2 3/4"  
 67'-9 5/8"  
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 ADDITION BASEMENT  
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 BASEMENT  
 67'-0 3/4"

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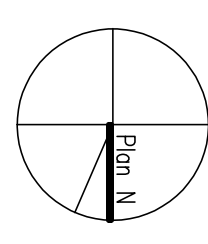
<p>AG Architects, PC          634 Central Avenue, Dover, NH 03820          E-Mail: <a href="mailto:aga@agarchitects.com">aga@agarchitects.com</a>  <a href="http://www.agarchitects.com">www.agarchitects.com</a>          Phone: 603-743-3700          Fax: 603-743-3777</p>	<h1 style="margin: 0;">Kappa Delta Expansion</h1> <h2 style="margin: 0;">Durham, New Hampshire</h2>	<p>             Date: 18 December 2018              Scale: 1/4" = 1'-0"              Drawn By: JG              Checked By: AG              Sheet: 14 of 17              File: 18728.LA401-01              Sheet Title: Exterior Elevations Phase 1              Sheet Number: A4.1a           </p>
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REFER TO DRAWING A4.1 AND A4.2 FOR COMPLETE BUILDINGS WITH PHASES 1 AND 2

**Progress Print  
Not For Construction**

Sheet Number: <b>A4.2a</b>	Sheet Title: Exterior Elevations Phase 1	Sheet: 15 of 17 Drawn By: JG Date: 18 December 2018 Scale: 1/4" = 1'-0"	Checked By: AG File: 187281.A4D0-01	Consultant: AG Architects, PC	<div style="text-align: center;">             Plan N         </div>	<h1 style="margin: 0;">Kappa Delta Expansion</h1> <h2 style="margin: 0;">Durham, New Hampshire</h2>	<b>AG Architects, PC</b> 634 Central Avenue, Dover, NH 03820 E-Mail: <a href="mailto:aga@agarchitects.com">aga@agarchitects.com</a> <a href="http://www.agarchitects.com">www.agarchitects.com</a> Phone: 603-743-3700 Fax: 603-743-3777
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