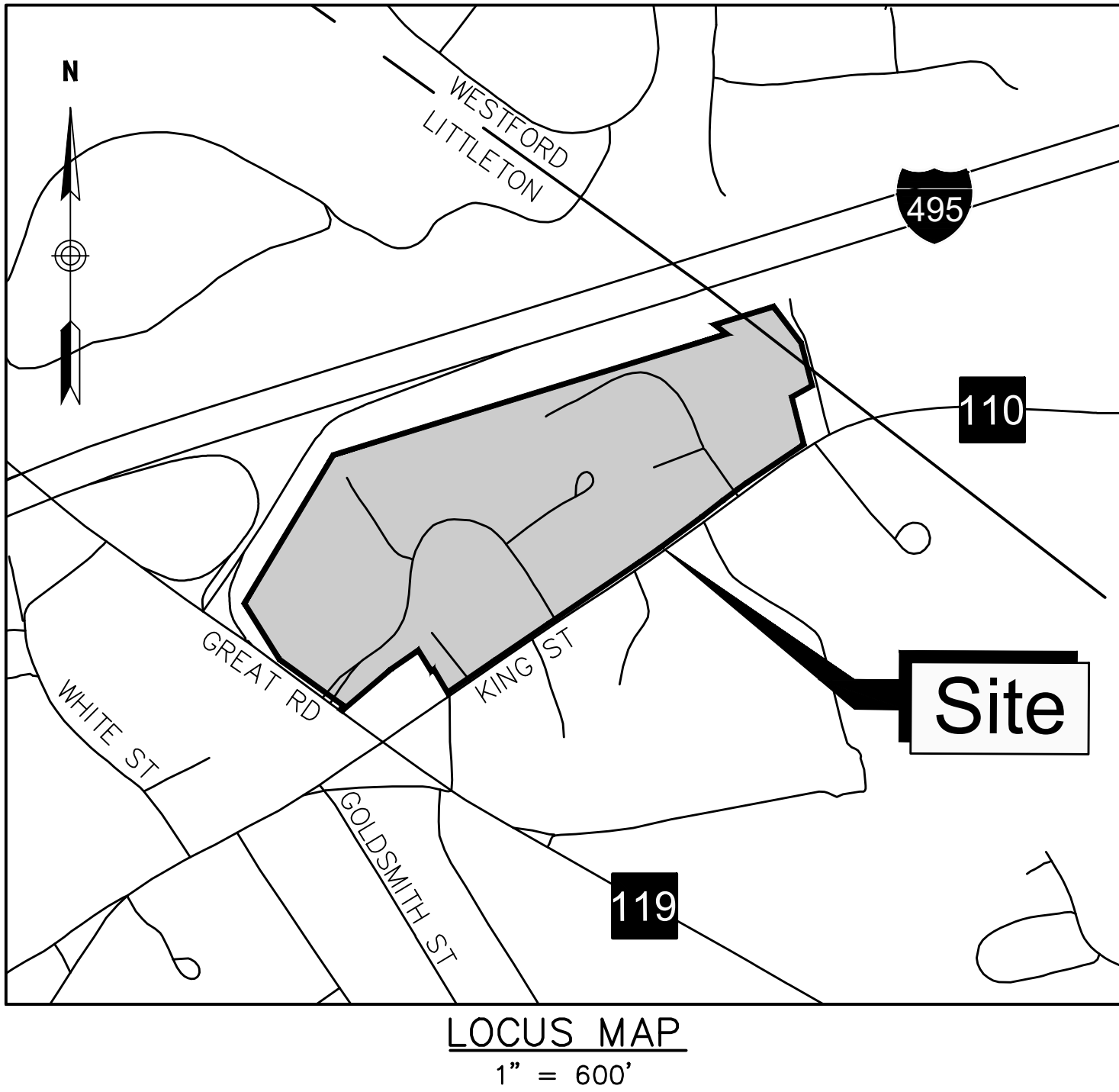


# Subdivision Plans

## King Street Commons

### Definitive Subdivision Plan

550 King Street  
Littleton, Massachusetts 01460



| Index of Sheets |                                          |                   |
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| No.             | Drawing Title                            | Latest Issue      |
| C-1             | Title & Index Sheet                      | February 21, 2024 |
| C-2             | Legend & General Notes                   | February 21, 2024 |
| C-3             | Index Sheet                              | February 21, 2024 |
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| C-27            | Construction Phasing Plan                | February 21, 2024 |
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| Reference Plans Index |                                               |                |
|-----------------------|-----------------------------------------------|----------------|
| No.                   | Drawing Title                                 | Latest Issue   |
| 1                     | Definitive Subdivision Plan of Land (Hancock) | August 1, 2023 |

REVISIONS

1. 2-21-24 PEER REVIEW

2.

3.

DRAWING TITLE

Title & Index Sheet

SUBDIVISION NAME & LOCATION

King Street Commons  
550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER

Lupoli Companies  
290 Merrimack Street  
Lawrence, MA 01840

DESIGNER / ENGINEER

TEC

The Engineering Corp

TEC, Inc.  
282 Merrimack Street, 2nd Floor  
Lawrence, Massachusetts 01843  
978.794.1792  
www.TheEngineeringCorp.com  
Lawrence | Hampton | Worcester

DESIGNED BY RJF DATE 8-22-23

CHECKED BY CPR SCALE AS NOTED

COMMONWEALTH OF MASSACHUSETTS

RICHARD J. FRIBERG JR.

CIVIL

No. 47850

REGISTERED

PROFESSIONAL ENGINEER

PROJECT NO. T1180

TEC CAD FILE

T1180\_COV

DRAWING NO. C-1

SHEET 1 OF 61



GENERAL NOTES

- CONTRACTOR SHALL NOTIFY DIG-SAFE (1-888-344-7233) AND THE LOCAL MUNICIPAL WATER & SEWER DEPT. AT LEAST 72 HOURS BEFORE EXCAVATING.
- CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SECURITY AND JOB SAFETY. CONSTRUCTION ACTIVITIES SHALL BE IN ACCORDANCE WITH OSHA STANDARDS AND LOCAL REQUIREMENTS. A 6-FOOT TEMPORARY CHAINLINK FENCE SHALL BE PROVIDED AROUND ALL CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL LEAVE NO UNSECURED OPEN EXCAVATIONS.
- HANDICAP ACCESSIBLE ROUTES, PARKING SPACES, RAMPS, SIDEWALKS AND WALKWAYS SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE FEDERAL AMERICANS WITH DISABILITIES ACT/ARCHITECTURAL ACCESS BOARD (AAB), AND WITH STATE AND LOCAL LAWS AND REGULATIONS (WHICHEVER ARE MORE STRINGENT).
- WORK WITHIN THE LOCAL RIGHT-OF-WAY SHALL CONFORM TO LOCAL MUNICIPAL STANDARDS. WORK WITHIN STATE RIGHT-OF-WAY SHALL CONFORM TO THE LATEST EDITION OF THE STATE HIGHWAY DEPARTMENT STANDARD SPECIFICATION FOR HIGHWAYS AND BRIDGES.
- UPON AWARD OF CONTRACT, CONTRACTOR SHALL MAKE NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN NECESSARY PERMITS, PAY FEES, AND POST BONDS ASSOCIATED WITH THE WORK INDICATED ON THE DRAWINGS, IN THE SPECIFICATIONS, AND IN THE CONTRACT DOCUMENTS. DO NOT CLOSE OR OBSTRUCT ROADWAYS, SIDEWALK, AND FIRE HYDRANTS, WITHOUT APPROPRIATE PERMITS.
- TRAFFIC SIGNAGE AND PAVEMENT MARKINGS SHALL CONFORM TO THE CURRENT EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
- AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AT NO ADDITIONAL COST TO THE OWNER.
- IN THE EVENT THAT SUSPECTED CONTAMINATED SOIL, GROUNDWATER, AND OTHER MEDIA ARE ENCOUNTERED DURING EXCAVATION AND CONSTRUCTION ACTIVITIES BASED ON VISUAL, OLFACTORY, OR OTHER EVIDENCE, THE CONTRACTOR SHALL STOP WORK IN THE VICINITY OF THE SUSPECT MATERIAL TO AVOID FURTHER SPREADING OF THE MATERIAL, AND SHALL NOTIFY THE OWNER IMMEDIATELY SO THAT THE APPROPRIATE TESTING AND SUBSEQUENT ACTION CAN BE TAKEN.
- CONTRACTOR SHALL PREVENT DUST, SEDIMENT, AND DEBRIS FROM EXITING THE SITE AND SHALL BE RESPONSIBLE FOR CLEANUP, REPAIRS AND CORRECTIVE ACTION IF SUCH OCCURS.
- CONTRACTOR SHALL CONTROL STORMWATER RUNOFF DURING CONSTRUCTION TO PREVENT ADVERSE IMPACTS TO OFF SITE AREAS, AND SHALL BE RESPONSIBLE TO REPAIR RESULTING DAMAGES, IF ANY, AT NO COST TO OWNER.
- CONTRACTOR TO FILE A NOTICE OF INTENT FOR COVERAGE UNDER THE CONSTRUCTION GENERAL PERMIT (CGP) AND PREPARE A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) PRIOR TO START OF CONSTRUCTION.
- CONTRACTOR SHALL PREPARE AND MAINTAIN SWPPP IN ACCORDANCE WITH THE US EPA CGP AND NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT REQUIREMENTS.

GRADING & DRAINAGE NOTES:

- THE LOCATIONS, SIZES, AND TYPES OF EXISTING UNDERGROUND UTILITIES ARE SHOWN AS AN APPROXIMATE REPRESENTATION ONLY. THE OWNER OR ITS REPRESENTATIVE(S) HAVE NOT INDEPENDENTLY VERIFIED THIS INFORMATION AS SHOWN ON THE PLANS. THE UTILITY INFORMATION SHOWN DOES NOT GUARANTEE THE ACTUAL EXISTENCE, SERVICEABILITY, OR OTHER DATA CONCERNING THE UTILITIES, NOR DOES IT GUARANTEE AGAINST THE POSSIBILITY THAT ADDITIONAL UTILITIES MAY BE PRESENT THAT ARE NOT SHOWN ON THE PLANS. PRIOR TO ORDERING MATERIALS AND BEGINNING CONSTRUCTION THE CONTRACTOR SHALL VERIFY AND DETERMINE THE EXACT LOCATION, SIZES, AND ELEVATION OF EXISTING UTILITIES.
- WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, OR EXISTING CONDITIONS DIFFER FROM THOSE SHOWN SUCH THAT THE WORK CANNOT BE COMPLETED AS INTENDED, THE LOCATION, ELEVATION, AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED IN WRITING TO THE OWNER'S REPRESENTATIVE FOR THE RESOLUTION OF THE CONFLICT. FAILURE TO PROVIDE OR PERFORM THE ABOVE PRIOR TO PERFORMING ANY WORK SHALL NOT BE GROUNDS FOR EXTRA PAYMENTS TO THE CONTRACTOR.
- AT ALL LOCATIONS WHERE EXISTING CURBING OR PAVEMENT ABUTS NEW CONSTRUCTION, THE EDGE OF THE EXISTING CURB OR PAVEMENT SHALL BE SAW CUT TO A CLEAN, SMOOTH EDGE. BLEND NEW PAVEMENT, CURBS, AND EARTHWORK SMOOTHLY INTO EXISTING BY MATCHING LINES, GRADES, AND JOINTS.
- THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES, AS REQUIRED.
- ALL UTILITY COVERS, GRATES, ETC. SHALL BE ADJUSTED TO BE FLUSH WITH THE PAVEMENT FINISH GRADE UNLESS OTHERWISE NOTED.
- EXISTING TREES AND SHRUBS OUTSIDE THE LIMITS OF GRADING SHALL BE REMOVED ONLY UPON PRIOR APPROVAL OF THE OWNER.
- ALL SANITARY SEWER PIPE SHALL BE SDR-35 PVC UNLESS OTHERWISE NOTED.
- WATER LINE SHALL BE CLASS 52 CEMENT LINED DUCTILE IRON.
- SANITARY SEWER OR STORM DRAIN LINES SHALL BE ENCASED IN CONCRETE WHEN CROSSING ABOVE A WATER LINE AND HAVING LESS THAN 10 FT OF HORIZONTAL SEPARATION. A MINIMUM OF 18" OF VERTICAL SEPARATION SHALL BE PROVIDED AT ALL WATER LINE CROSSINGS WITH SANITARY SEWER OR STORM DRAIN LINES.
- ALL DRAINAGE PIPING SHALL BE RCP UNLESS OTHERWISE NOTED.
- INSULATE SANITARY PIPES WHERE INVERT DEPTH IS LESS THAN FIVE (5) FEET BELOW FINISHED GRADE.
- CONTRACTOR SHALL PROTECT ALL UNDERGROUND DRAINAGE, SEWER AND UTILITY FACILITIES FROM EXCESSIVE VEHICULAR LOADS DURING CONSTRUCTION. ANY DAMAGE TO THESE FACILITIES RESULTING FROM CONSTRUCTION LOADS WILL BE RESTORED TO ORIGINAL CONDITION (AT NO ADDITIONAL COST TO THE OWNER) BY THE CONTRACTOR.
- ALL WATER AND SEWER UTILITY WORK SHALL CONFORM TO LOCAL DPW, WATER DIVISION SPECIFICATIONS, DETAILS, RULES AND REGULATIONS AND HAVE FIVE (5) FEET OF MINIMUM COVER. GAS, ELECTRIC, AND TELEPHONE LOCATIONS AND ROUTING ARE SUBJECT TO REVIEW AND APPROVAL BY THE APPROPRIATE UTILITY COMPANIES.
- THE CONTRACTOR SHALL REMOVE ALL EROSION CONTROL BARRIERS AFTER REVEGETATION OF DISTURBED AREAS AND AFTER APPROVAL BY THE LOCAL APPROVING AUTHORITY.
- EXCAVATION REQUIRED IN THE PROXIMITY OF EXISTING UTILITY LINES SHALL BE DONE BY HAND. CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING UTILITY LINES OR STRUCTURES INCURRED DURING CONSTRUCTION OPERATIONS AT NO COST TO THE OWNER.
- THE CONTRACTOR SHALL SCHEDULE THEIR WORK TO ALLOW THE FINISHED SUBGRADE ELEVATIONS TO DRAIN PROPERLY WITHOUT PUDDLING. SPECIFICALLY, ALLOW WATER TO ESCAPE WHERE PROPOSED CURB MAY RETAIN RUNOFF PRIOR TO APPLICATION OF THE FINISH SUBGRADE AND/OR SURFACE PAVING.
- UNLESS OTHERWISE INDICATED, ABANDONED EXISTING UTILITY LINES SHALL BE CAPPED AND ABANDONED IN PLACE UNLESS THEY CONFLICT WITH PROPOSED IMPROVEMENTS, WHERE THEY SHALL THEN BE REMOVED. CAP REMAINING PORTIONS WHERE PARTIALLY REMOVED.
- MINIMUM MANHOLE DIAMETER IS 4'. CONTRACTOR SHALL VERIFY, THROUGH SHOP DRAWING SUBMITTALS TO THE ENGINEER, ACTUAL SIZES NEEDED TO ACCOMMODATE SPECIFIED PIPES.
- DETAILED UTILITY SURVEY AND PLAN SHALL BE PROVIDED PRIOR TO CONSTRUCTION.
- STUBS FOR FUTURE WATER CONNECTIONS SHALL BE EMPTY, CLOSED AT THE VALVE, AND CAPPED.
- THE LIMIT OF WORK DELINEATES THE AREA OF LAND DISTURBANCE WHICH SHALL BE LIMITED TO 431,300 SF.

PROPOSED CONSTRUCTION SEQUENCING

- SELECTIVELY REMOVE VEGETATION FOR COMPOST FILTER TUBE INSTALLATION;
- INSTALL COMPOST FILTER TUBE;
- INSTALL CONSTRUCTION FENCING AT LIMITS OF WORK, AND NO-DISTURB/TREE SAVE AREAS, IF ANY;
- STABILIZE CONSTRUCTION ENTRANCES;
- PREPARE CONSTRUCTION TRAILER/STAGING LOCATION;
- CONSTRUCT NEW SEDIMENT BASINS AS NECESSARY;
- STRIP AND STOCKPILE TOPSOIL AND PAVEMENT;
- TEMPORARILY STABILIZE TOPSOIL STOCKPILES (SEED AND SILT FENCE (GRASSED AREA) OR COMPOST FILTER TUBE OR STRAW BALES (PAVEMENT AREA) AROUND TOE OF SLOPE);
- CONDUCT EARTHWORK CUTS AND FILLS TO BRING SITE TO GRADE;
- CONSTRUCT UTILITIES (WATER, SEWER, STORM DRAIN, ETC.);
- CONSTRUCT DRIVEWAY/PARKING/SIDEWALK PAVEMENT AREAS THROUGH BINDER COURSE;
- FINISH GRADE LANDSCAPING AREAS;
- PERMANENTLY STABILIZE LANDSCAPING AREAS WITH SEED/LANDSCAPING;
- CONSTRUCT DRIVEWAY/PARKING AREAS THROUGH TOP COURSE; AND
- REMOVE ALL TEMPORARY SOIL EROSION AND SEDIMENT CONTROL MEASURES UPON PERMANENT SITE STABILIZATION AND APPROVAL BY THE ENGINEER AND TOWN OF LITTLETON.

GENERAL SYMBOLS

| EXISTING | PROPOSED |                                     |
|----------|----------|-------------------------------------|
|          |          | CATCH BASIN                         |
|          |          | DRAIN MANHOLE                       |
|          |          | SEWER MANHOLE                       |
|          |          | ELECTRIC MANHOLE                    |
|          |          | TELEPHONE MANHOLE                   |
|          |          | CABLE MANHOLE                       |
|          |          | UNKNOWN MANHOLE                     |
|          |          | HANDHOLE                            |
|          |          | BOLLARD                             |
|          |          | WATER GATE                          |
|          |          | FIRE HYDRANT                        |
|          |          | GAS GATE                            |
|          |          | GAS VALVE                           |
|          |          | STREET SIGN                         |
|          |          | TRAFFIC SIGNAL                      |
|          |          | LIGHT POLE                          |
|          |          | UTILITY POLE                        |
|          |          | TEST PIT                            |
|          |          | EDGE OF PAVEMENT                    |
|          |          | GRANITE CURB (TYPE VA 4)            |
|          |          | CONCRETE CURB (MONOLITHIC)          |
|          |          | CHAINLINK FENCE                     |
|          |          | DRAINAGE LINE                       |
|          |          | SEWER LINE                          |
|          |          | WATER LINE                          |
|          |          | GAS LINE                            |
|          |          | UNDERGROUND ELECTRIC LINE           |
|          |          | CABLE/TELEVISION LINE               |
|          |          | OVERHEAD WIRE                       |
|          |          | TREE LINE                           |
|          |          | LIMIT OF WORK                       |
|          |          | CONSTRUCTION FENCE                  |
|          |          | ENTRANCE/EXIT DOOR                  |
|          |          | BASELINE                            |
|          |          | TOWN LAYOUT                         |
|          |          | PROPERTY LINE                       |
|          |          | HIGHWAY/PROPERTY BOUND (TYPE NOTED) |
|          |          | WHEELCHAIR RAMP                     |
|          |          | TREE (SIZE AND TYPE NOTED)          |

PAVEMENT MARKINGS AND SIGNING SYMBOLS

| EXISTING | PROPOSED |                                               |
|----------|----------|-----------------------------------------------|
|          |          | CROSSWALK, 12" WHITE LINE (WIDTH NOTED)       |
|          |          | STOP LINE, 12" WHITE LINE 4' BEHIND CW (TYP.) |
|          |          | SOLID WHITE LINE-4"                           |
|          |          | DOUBLE YELLOW CENTER LINE- 2-4" LINES         |
|          |          | TRAFFIC FLOW SYMBOL                           |

ABBREVIATIONS

| GENERAL | UTILITIES                      |
|---------|--------------------------------|
| ABAN    | AD                             |
| ADJ     | ADJUST                         |
| APPROX  | APPROXIMATE                    |
| BLDG    | BUILDING                       |
| BO      | BY OTHERS                      |
| BM      | BENCHMARK                      |
| CC      | CONCRETE CURB                  |
| CEM     | CEMENT                         |
| CONC    | CONCRETE                       |
| COORD   | COORDINATE                     |
| DEMO    | DEMOLISH                       |
| DIA     | DIAMETER                       |
| ELEC    | ELECTRIC                       |
| ELEV    | ELEVATION                      |
| EXIST   | EXISTING                       |
| FGC     | FLUSH GRANITE CURB             |
| GAL     | GALLON                         |
| GC      | GRANITE CURB                   |
| HMA     | HOT MIX ASPHALT                |
| LA      | LANDSCAPED AREA                |
| LF      | LINEAR FEET                    |
| MAX     | MAXIMUM                        |
| MCC     | MONOLITHIC CONCRETE CURB       |
| MIN     | MINIMUM                        |
| MTD     | MOUNTED                        |
| NTS     | NOT TO SCALE                   |
| PROP    | PROPOSED                       |
| PVMT    | PAVEMENT                       |
| R       | RADIUS                         |
| REM     | REMOVE                         |
| RET     | RETAIN                         |
| SQE     | SLOPED GRANITE EDGING          |
| SW      | SIDEWALK                       |
| TYP     | TYPICAL                        |
| VGC     | VERTICAL GRANITE CURB          |
| WCR     | WHEELCHAIR RAMP                |
|         | AD                             |
|         | AREA DRAIN                     |
|         | CB                             |
|         | CATCH BASIN                    |
|         | CI                             |
|         | CAST IRON                      |
|         | CLDI                           |
|         | CEMENT LINED DUCTILE IRON      |
|         | DCB                            |
|         | DOUBLE CATCH BASIN             |
|         | DMH                            |
|         | DRAINAGE MANHOLE               |
|         | GV                             |
|         | GAS VALVE                      |
|         | GT                             |
|         | GREASE TRAP                    |
|         | HDPE                           |
|         | HIGH DENSITY POLYETHYLENE PIPE |
|         | HYD                            |
|         | HYDRANT                        |
|         | INV                            |
|         | INVERT ELEVATION               |
|         | PVC                            |
|         | POLYVINYL CHLORIDE PIPE        |
|         | OHW                            |
|         | OVER HEAD WIRE                 |
|         | SMH                            |
|         | SEWER MANHOLE                  |
|         | WQU                            |
|         | WATER QUALITY UNIT             |
|         | WV                             |
|         | WATER VALVE                    |

|                        |
|------------------------|
| REVISIONS              |
| 1. 2-21-24 PEER REVIEW |
| 2.                     |
| 3.                     |

|                                |
|--------------------------------|
| DRAWING TITLE                  |
| Legend & General Notes         |
| SUBDIVISION NAME & LOCATION    |
| King Street Commons            |
| 550 King Street                |
| Littleton, MA 01460            |
| OWNER / APPLICANT / SUBDIVIDER |
| Lupoli Companies               |
| 290 Merrimack Street           |
| Lawrence, MA 01840             |
| DESIGNER / ENGINEER            |

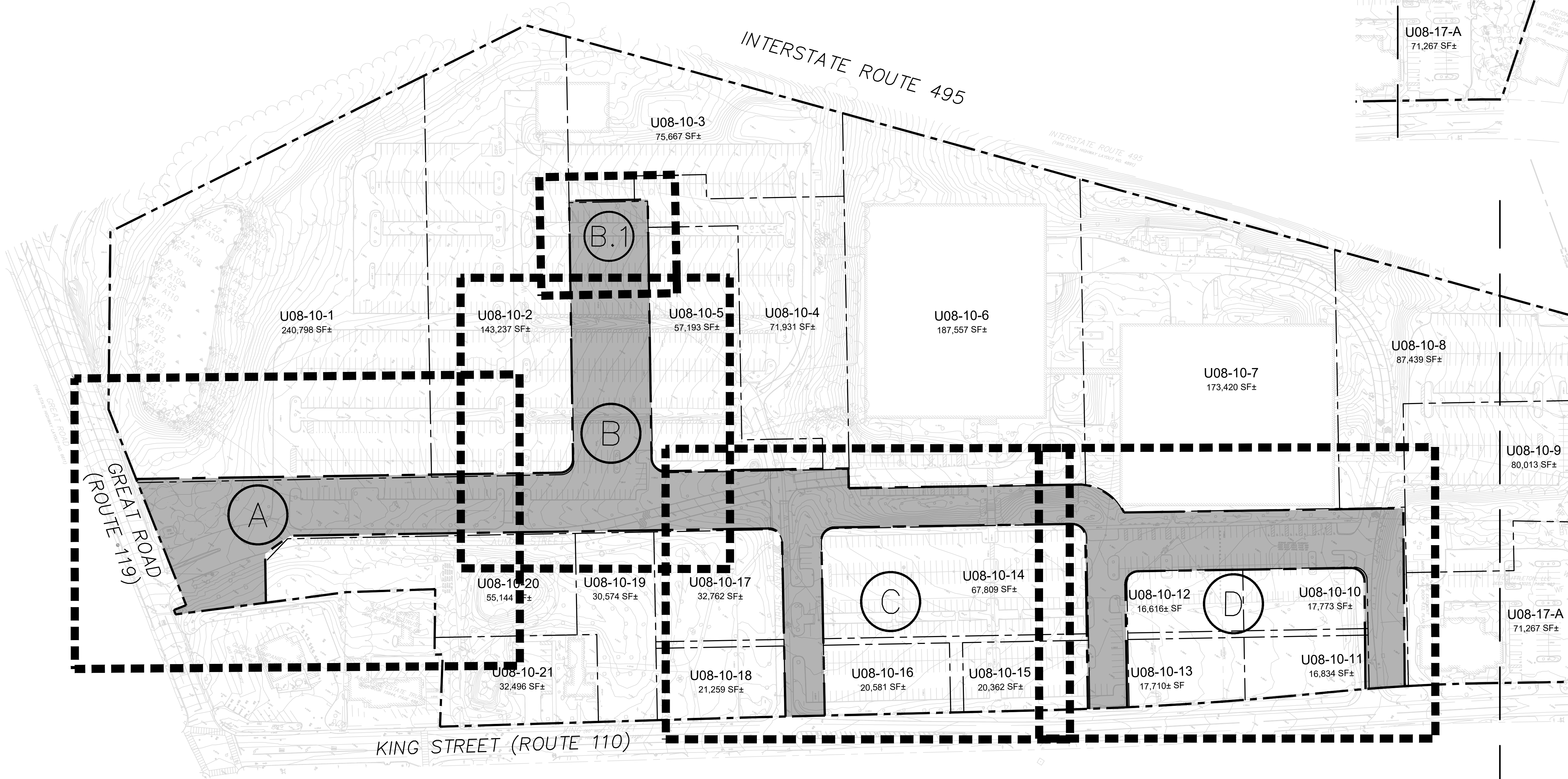
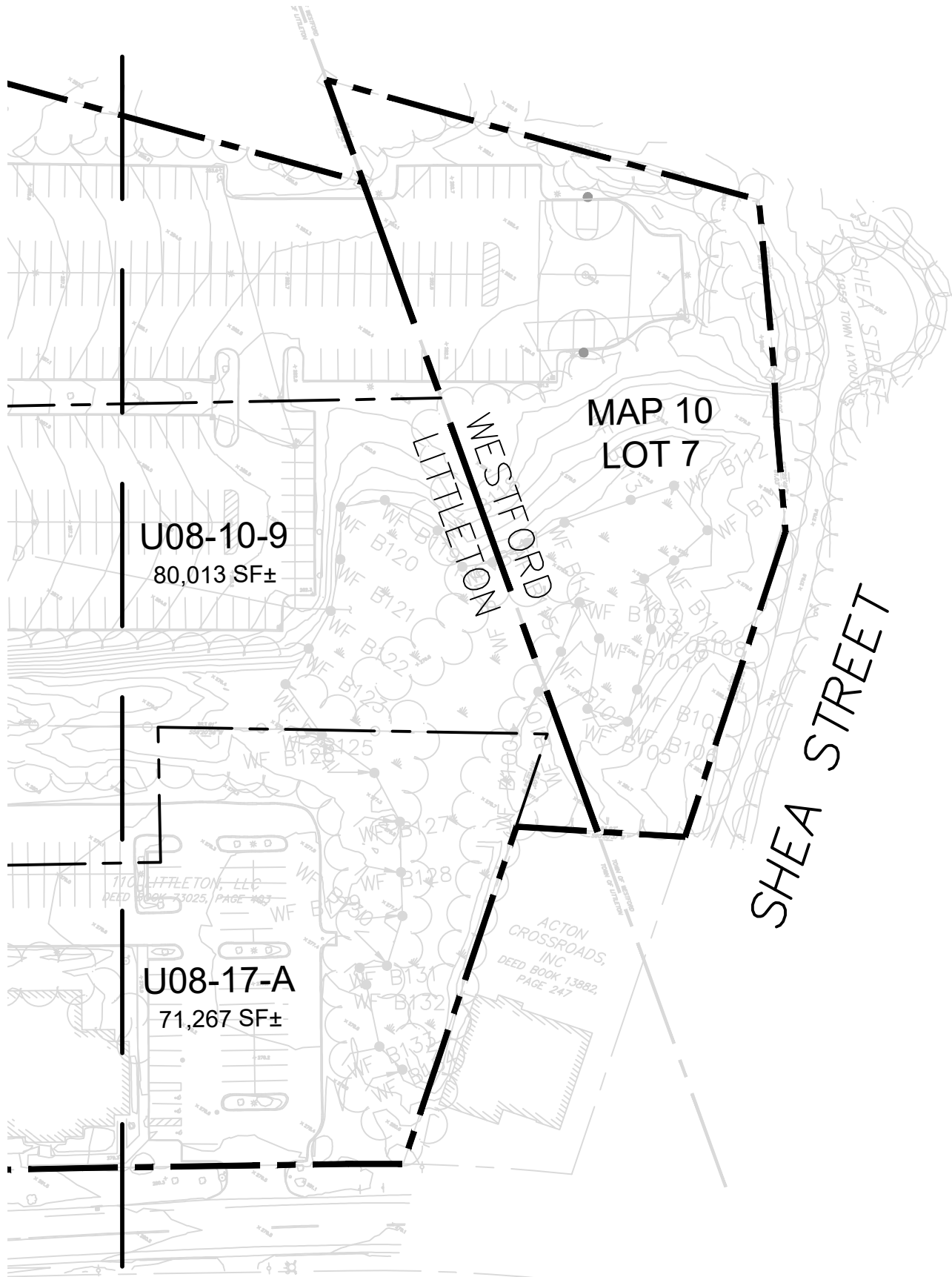
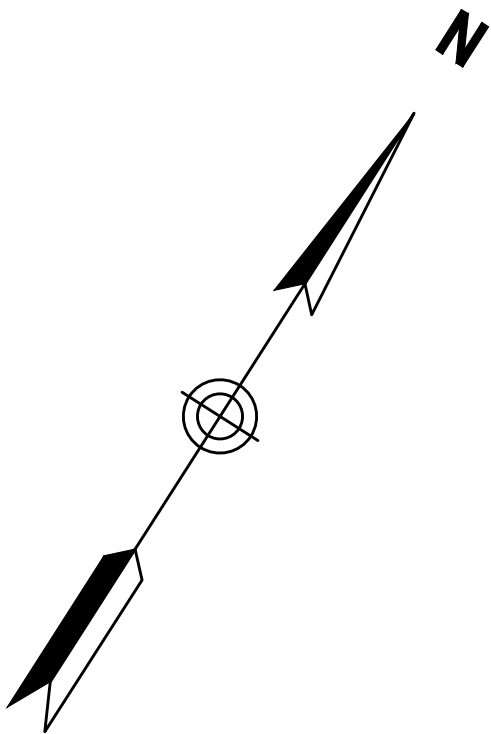
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282 Merrimack Street, 2nd Floor  
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DESIGNED BY RJF      DATE 8-22-23  
CHECKED BY CPR      SCALE AS NOTED

PROJECT NO. T1180  
TEC CAD FILE  
T1180\_INDEX  
DRAWING NO. C-2  
SHEET 2 OF 61



| LOT COVERAGE TABLE |                    |                    |
|--------------------|--------------------|--------------------|
|                    | EXISTING           | PROPOSED           |
| PAVEMENT           | 138,564 SF (51.4%) | 154,124 SF (57.1%) |
| SIDEWALK           | 3,585 SF (1.3%)    | 32,722 SF (12.1%)  |
| LANDSCAPE          | 127,694 SF (47.3%) | 82,997 SF (30.8%)  |
| TOTAL              | 269,843 843 SF     | 269,843 SF         |



| REVISIONS |                     |
|-----------|---------------------|
| 1.        | 2-21-24 PEER REVIEW |
| 2.        |                     |
| 3.        |                     |

DRAWING TITLE  
**Index Sheet**

SUBDIVISION NAME & LOCATION  
**King Street Commons**  
550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER  
**Lupoli Companies**  
290 Merrimack Street  
Lawrence, MA 01840

DESIGNER / ENGINEER



TEC, Inc.  
282 Merrimack Street, 2nd Floor  
Lawrence, Massachusetts 01843  
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DESIGNED BY: RJF DATE: 8-22-23  
CHECKED BY: CPR SCALE: 1"=80'



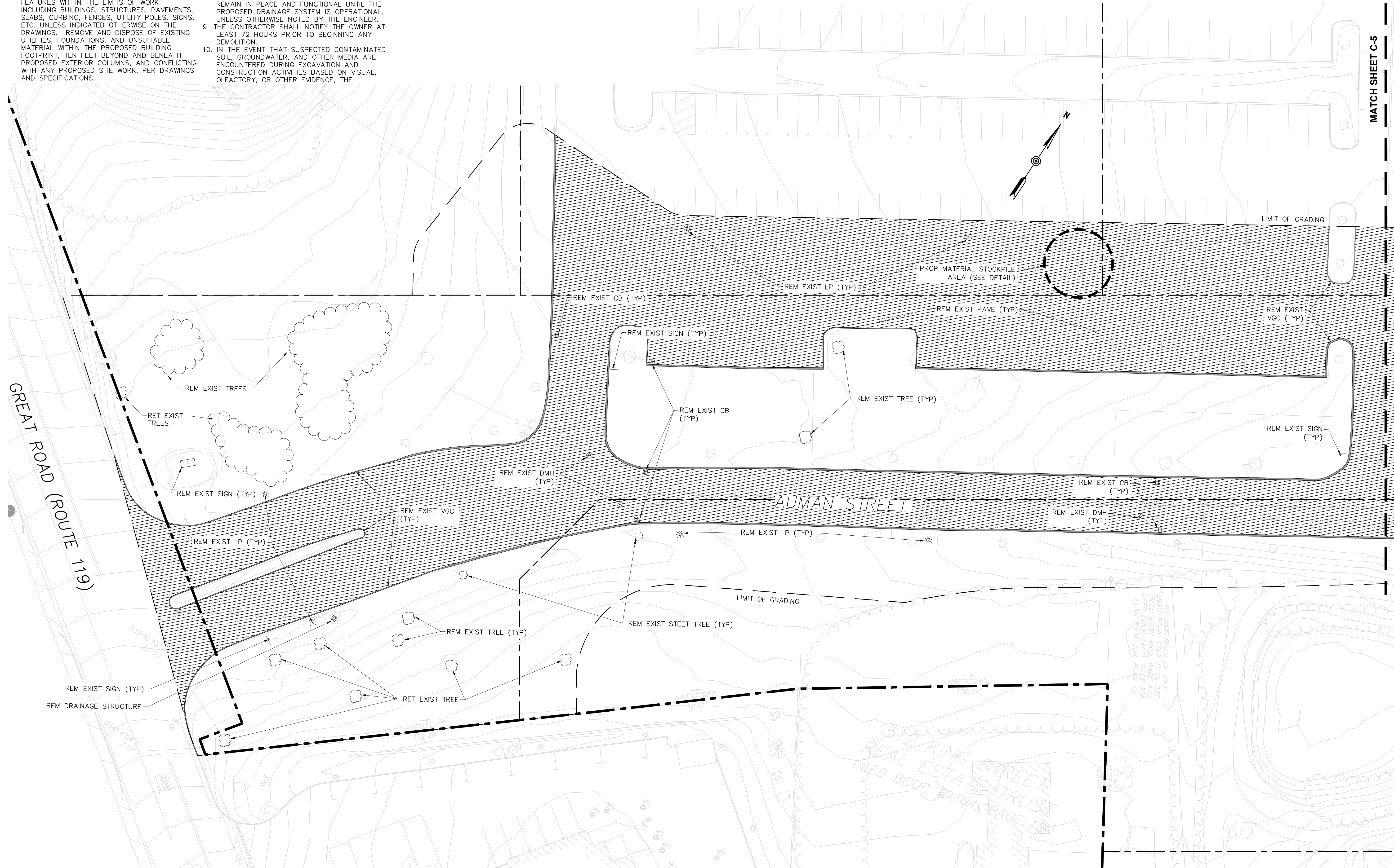
PROJECT NO.  
T1180  
TEC CAD FILE  
T1180\_INDEX  
DRAWING NO.  
**C-3**  
SHEET 3 OF 61



SITE DEMOLITION NOTES:

- SITE DEMOLITION NOTES:**

  1. DELINEATED CONTAMINATED SOIL TO BE REMOVED AND DISPOSED OF BY QUALIFIED PERSONNEL IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL STANDARDS. CONFIRMATORY SOIL SAMPLING TO BE COMPLETED PRIOR TO INITIATING FURTHER DEMOLITION ACTIVITIES.
  2. ALL UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND ELEVATIONS OF EACH UTILITY PRIOR TO REMOVING OR RELOCATING. CONTRACTOR SHALL NOTIFY DIG-SAFE (1-888-344-7233) AND THE LOCAL MUNICIPAL WATER & SEWER DEPT. AT LEAST 72 HOURS BEFORE EXCAVATING.
  3. THE CONTRACTOR IS TO REMOVE AND TO DISPOSE OF EXISTING MANMADE SURFACE FEATURES WITHIN THE LIMITS OF WORK INCLUDING BUILDINGS, STRUCTURES, PAVEMENTS, SLABS, CURBING, FENCES, UTILITY POLES, SIGNS, ETC. UNLESS INDICATED OTHERWISE ON THE DRAWINGS. REMOVE AND DISPOSE OF EXISTING UTILITIES, FOUNDATIONS, AND UNSUITABLE MATERIAL WITHIN THE PROPOSED BUILDING FOOTPRINT, TEN FEET BEYOND AND BENEATH PROPOSED EXTERIOR COLUMNS, AND CONFLICTING WITH ANY PROPOSED SITE WORK, PER DRAWINGS AND SPECIFICATIONS.
  4. ALL UTILITIES AND STUBS WITHIN THE SITE SHALL BE MAINTAINED AND PROTECTED DURING CONSTRUCTION UNLESS OTHERWISE NOTED.
  5. THE CONTRACTOR SHALL DISPOSE OF DEMOLITION DEBRIS IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS, ORDINANCES, AND STATUTES.
  6. ALL EROSION CONTROL DEVICES ARE TO BE INSTALLED AND APPROVED PRIOR TO DEMOLITION.
  7. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SECURITY AND JOB SAFETY. CONSTRUCTION ACTIVITIES SHALL BE IN ACCORDANCE WITH OSHA STANDARDS AND LOCAL REQUIREMENTS. A 6-FOOT TEMPORARY CHAIN LINK FENCE SHALL BE PROVIDED AROUND ALL CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL LEAVE NO UNSECURED OPEN EXCAVATIONS.
  8. ALL EXISTING DRAINAGE STRUCTURES SHALL REMAIN IN PLACE AND FUNCTIONAL UNTIL THE PROPOSED DRAINAGE SYSTEM IS OPERATIONAL, UNLESS OTHERWISE NOTED BY THE ENGINEER.
  9. THE CONTRACTOR SHALL NOTIFY THE OWNER AT LEAST 72 HOURS PRIOR TO BEGINNING ANY DEMOLITION.
  10. IN THE EVENT THAT SUSPECTED CONTAMINATED SOIL, GROUNDWATER, AND OTHER MEDIA ARE ENCOUNTERED DURING EXCAVATION AND CONSTRUCTION ACTIVITIES BASED ON VISUAL, OLFACTORY, OR OTHER EVIDENCE, THE CONTRACTOR SHALL STOP WORK IN THE VICINITY OF THE SUSPECT MATERIAL TO AVOID FURTHER SPREADING OF THE MATERIAL, AND SHALL NOTIFY THE OWNER IMMEDIATELY SO THAT THE APPROPRIATE TESTING AND SUBSEQUENT ACTION CAN BE TAKEN.
  11. ALL LIGHTING AND TREES WITHIN LIMIT OF WORK SHALL BE REMOVED UNLESS OTHERWISE NOTED.
  12. TOTAL DISTURBED AREA: 431,300 SF.



**MATCH SHEET C-5**



## REVISIONS

1. 2-21-24 PEER REVIEW
- 2.
- 3.

## DRAWING TITLE

## Demolition Plan A

SUBDIVISION NAME &amp; LOCATION

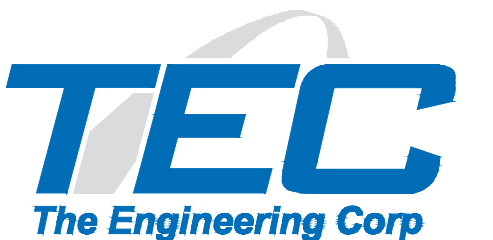
King Street  
Commons

550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER

Lupoli Companies  
290 Merrimack Street  
Lawrence, MA 01840

DESIGNER / ENGINEER



TEC, Inc.  
282 Merrimack Street, 2nd Floor  
Lawrence, Massachusetts 01843  
978.794.1792

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| DESIGNED BY RJF | DATE 8-22-23 |
| CHECKED BY CPR  | SCALE 1"=20' |



PROJECT NO.  
T1180

TEC CAD FILE

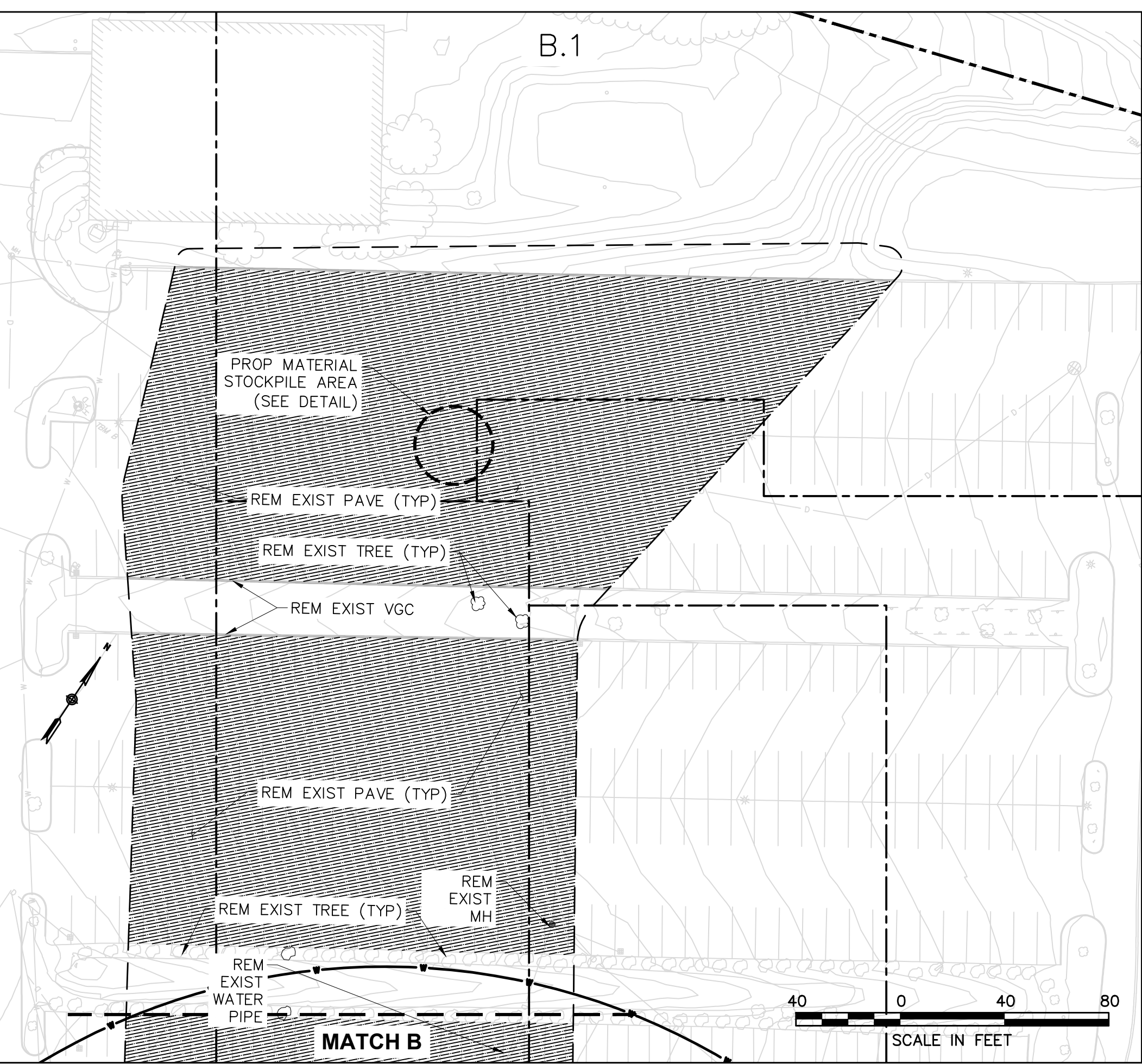
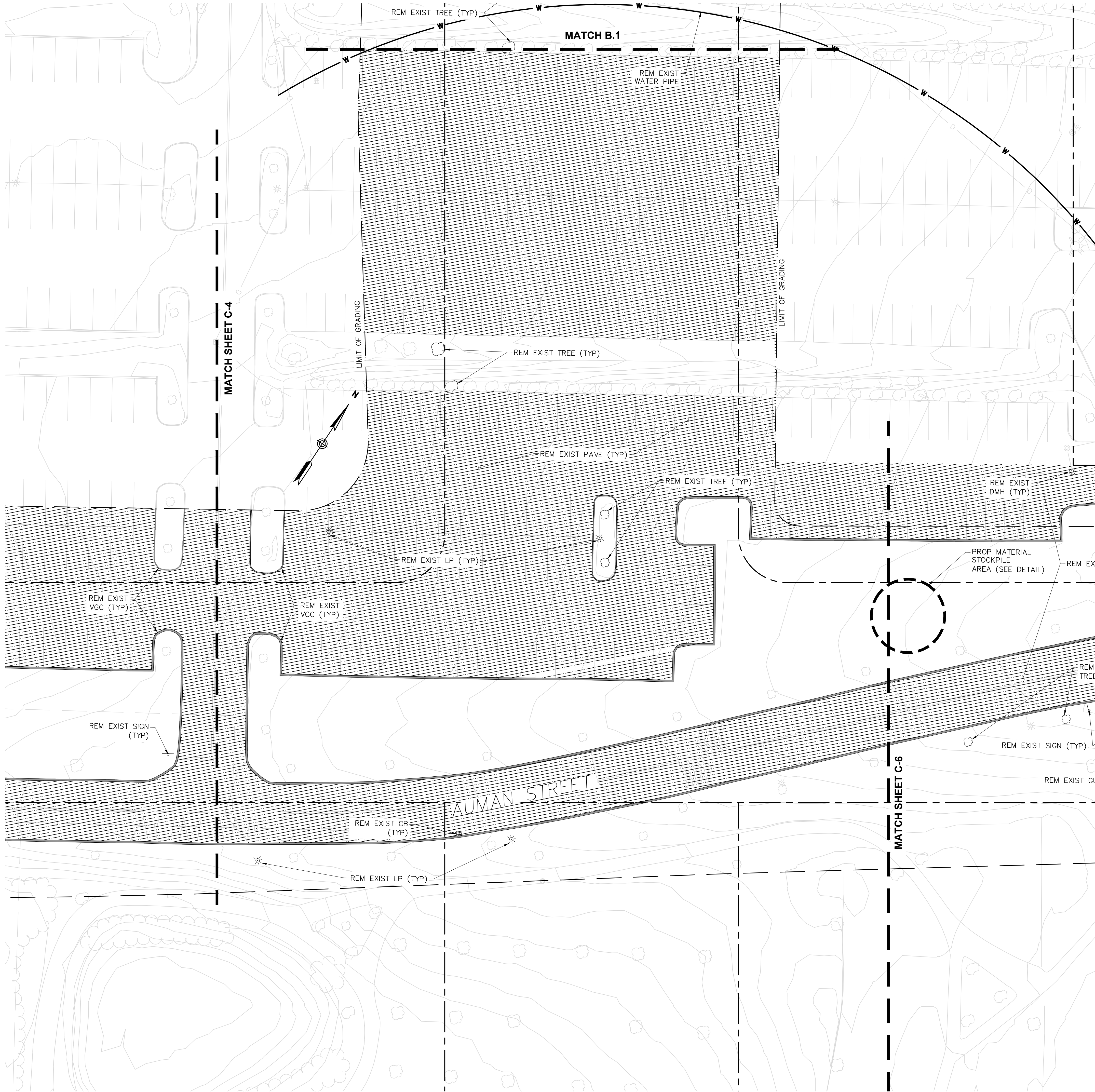
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**C-4**

SHEET 4 OF 61





20 0 20 40  
SCALE IN FEET

REVISIONS  
1. 2-21-24 PEER REVIEW  
2.  
3.

DRAWING TITLE  
**Demolition Plan B**

SUBDIVISION NAME & LOCATION  
**King Street Commons**  
550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER  
**Lupoli Companies**  
290 Merrimack Street  
Lawrence, MA 01840

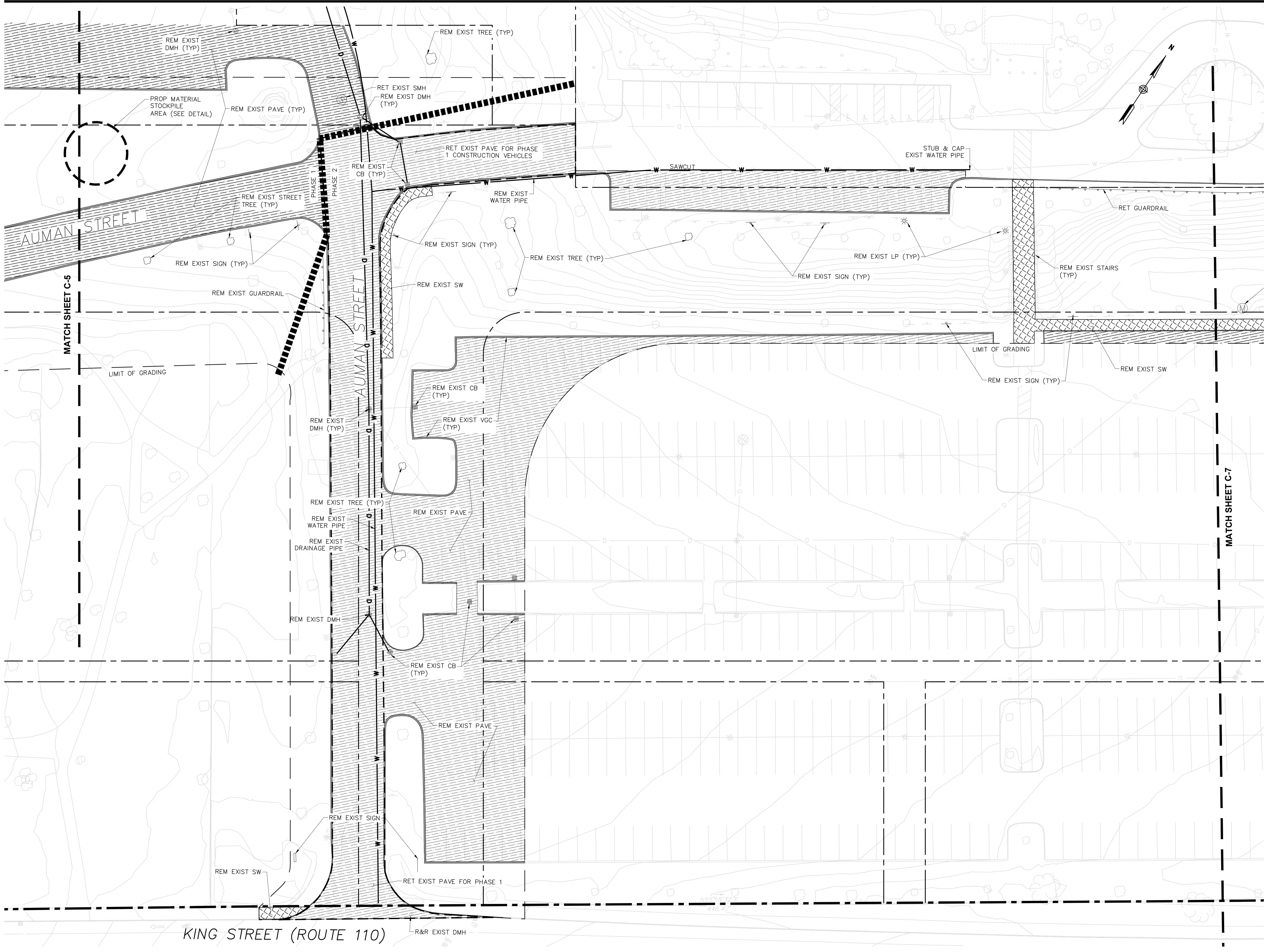
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DESIGNED BY RJF DATE 8-22-23  
CHECKED BY CPR SCALE 1"=20'

PROJECT NO. T1180  
TEC CAD FILE  
T1180\_DEMO  
DRAWING NO. **C-5**  
SHEET 5 OF 61

SEAL: RICHARD J. FRIBERG JR., CIVIL, No. 47850, PROFESSIONAL ENGINEER, COMMONWEALTH OF MASSACHUSETTS





| REVISIONS |                     |
|-----------|---------------------|
| 1.        | 2-21-24 PEER REVIEW |
| 2.        |                     |
| 3.        |                     |

DRAWING TITLE

## Demolition Plan C

SUBDIVISION NAME & LOCATION

**King Street Commons**  
550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER

**Lupoli Companies**  
290 Merrimack Street  
Lawrence, MA 01840

DESIGNER / ENGINEER



TEC, Inc.  
282 Merrimack Street, 2nd Floor  
Lawrence, Massachusetts 01843  
978.794.1792

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Lawrence | Hampton | Worcester

DESIGNED BY RJF DATE 8-22-23  
CHECKED BY CPR SCALE 1"=20'

|  |               |
|--|---------------|
|  | PROJECT NO.   |
|  | T1180         |
|  | TEC CAD FILE  |
|  | T1180_DEMO    |
|  | DRAWING NO.   |
|  | <b>C-6</b>    |
|  | SHEET 6 OF 61 |







| ZONING TABLE              |                          |                          |
|---------------------------|--------------------------|--------------------------|
| ZONING DISTRICT           | KING STREET COMMON       |                          |
| PROPOSED USE              | MIXED-USE                |                          |
| PROPOSED USE ALLOWABLE BY | BY RIGHT/SPECIAL PERMIT* |                          |
| DIMENSIONAL REQUIREMENTS  | REQUIRED                 | PROVIDED                 |
| PRIMARY FRONT SETBACK     | 10 FT (MIN), 20 FT (MAX) | 10 FT (MIN), 20 FT (MAX) |
| SECONDARY FRONT SETBACK   | 10 FT (MIN), 20 FT (MAX) | 10 FT (MIN), 20 FT (MAX) |
| SIDE SETBACK              | 15 FT (MIN)              | 49 FT                    |
| REAR SETBACK              | 15 FT (MIN)              | 15 FT                    |
| PRIMARY PARKING SETBACK   | 20 FT                    | 20 FT                    |
| SECONDARY PARKING SETBACK | 20 FT                    | 36 FT                    |
| LOT COVERAGE              | 80% (MAX)                | 65%                      |
| BUILDING COVERAGE         | 50% (MAX)                | 33%                      |
| FACADE BUILD OUT          | 60% (MIN)                | 54%**                    |
| BUILDING HEIGHT           | 6 STORIES/75 FT (MAX)    | 6 STORIES/75 FT          |

\* WAIVER FROM 173-221.J.A., AS SPECIFICALLY ALLOWED BY SECTION 173-233.H.  
\*\* WAIVER FROM FORM BASED CODE, AS SPECIFICALLY ALLOWED BY SECTION 173-233.H.

| PARKING TABLE                         |                                                                                                 |          |
|---------------------------------------|-------------------------------------------------------------------------------------------------|----------|
| REQUIRED PARKING                      | RETAIL/COMMERCIAL: 112,879 SF X 3 SP/1,000 SF = 339 SPACES                                      |          |
|                                       | OFFICE: 564,270 SF X 3 SP/1,000 SF = 775 SPACES                                                 |          |
| PROPOSED PARKING                      | RESIDENTIAL: 865 UNITS X 1.25 SP/UNIT =1,081 SPACES                                             |          |
|                                       | HOTEL: 67 UNITS X 1.25 SP/UNIT =84 SPACES                                                       |          |
|                                       | TOTAL REQUIRED PARKING = 2,279 SPACES                                                           |          |
|                                       | STREET PARKING: 158 SPACES                                                                      |          |
|                                       | PROPOSED OFF SITE PARKING:<br>ON-GRADE PARKING: 235 SPACES<br>PODIUM PARKING: 798 SPACES        |          |
| ON STREET PARKING                     | STRUCTURED PARKING:<br>U08-10-4 = 827 SPACES<br>U08-10-8&9 = 548 SPACES<br>TOTAL = 1,375 SPACES |          |
|                                       | TOTAL PROPOSED PARKING = 2,566 SPACES                                                           |          |
| ON STREET PARKING                     | PARALLEL                                                                                        | HEAD-IN  |
|                                       | 90                                                                                              | 68       |
| PARKING REQUIREMENTS                  | REQUIRED                                                                                        | PROVIDED |
| HANDICAP ACCESSIBLE SPACES (ON SITE)  | 6                                                                                               | 6        |
| HANDICAP ACCESSIBLE SPACES (OFF SITE) | 64                                                                                              | 64       |
| AISE WIDTH                            | 24 FT                                                                                           | 24 FT    |
| STALL WIDTH                           | 8 FT (BIKE LANE)                                                                                | 9 FT     |
|                                       | 9 FT (NO BIKE LANE)                                                                             |          |
| STALL LENGTH                          | 23 FT                                                                                           | 18 FT    |

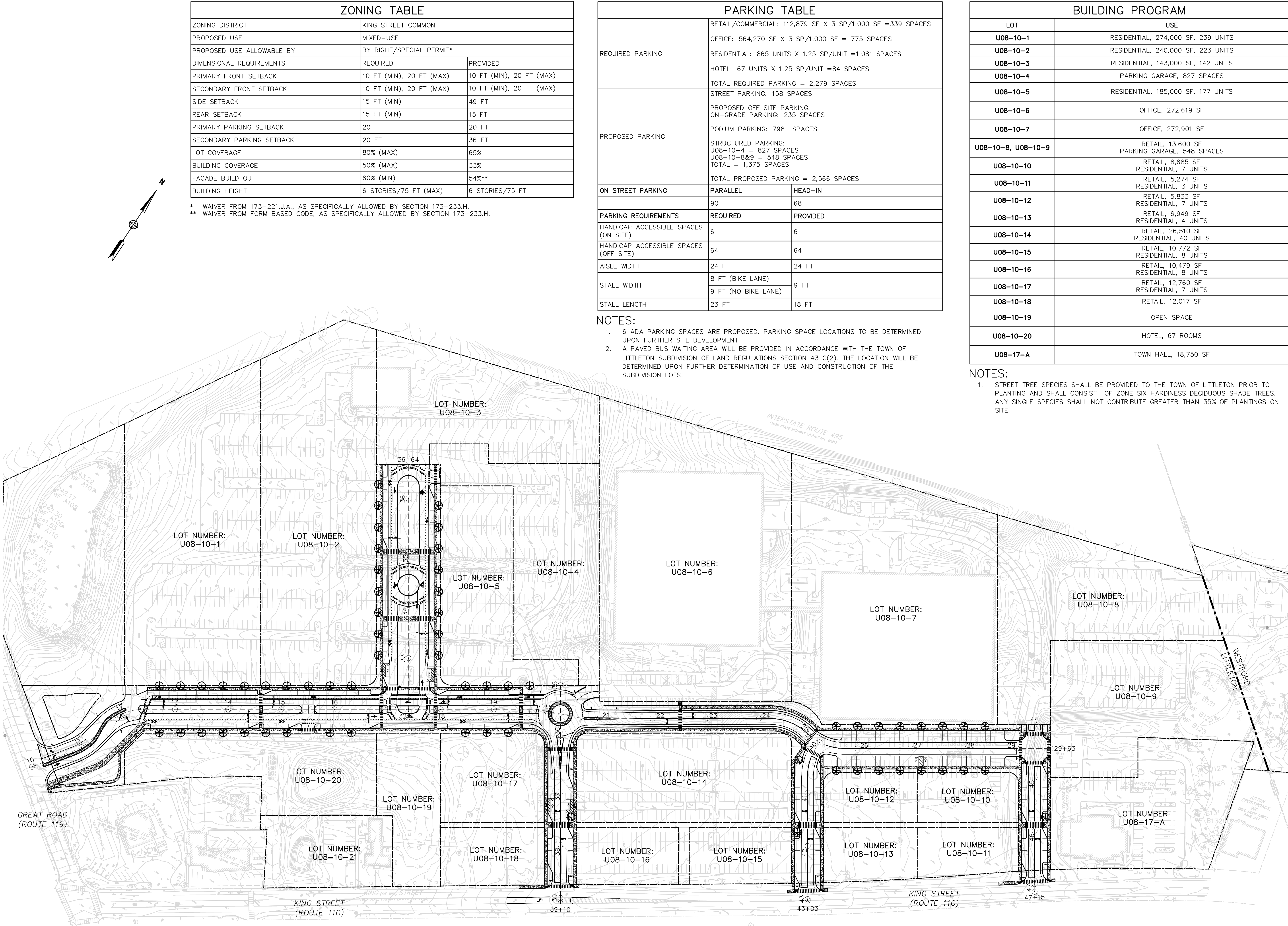
| LOT                | USE                                             |
|--------------------|-------------------------------------------------|
| U08-10-1           | RESIDENTIAL, 274,000 SF, 239 UNITS              |
| U08-10-2           | RESIDENTIAL, 240,000 SF, 223 UNITS              |
| U08-10-3           | RESIDENTIAL, 143,000 SF, 142 UNITS              |
| U08-10-4           | PARKING GARAGE, 827 SPACES                      |
| U08-10-5           | RESIDENTIAL, 185,000 SF, 177 UNITS              |
| U08-10-6           | OFFICE, 272,619 SF                              |
| U08-10-7           | OFFICE, 272,901 SF                              |
| U08-10-8, U08-10-9 | RETAIL, 13,600 SF<br>PARKING GARAGE, 548 SPACES |
| U08-10-10          | RETAIL, 8,685 SF<br>RESIDENTIAL, 7 UNITS        |
| U08-10-11          | RETAIL, 5,274 SF<br>RESIDENTIAL, 3 UNITS        |
| U08-10-12          | RETAIL, 5,833 SF<br>RESIDENTIAL, 7 UNITS        |
| U08-10-13          | RETAIL, 6,949 SF<br>RESIDENTIAL, 4 UNITS        |
| U08-10-14          | RETAIL, 26,510 SF<br>RESIDENTIAL, 40 UNITS      |
| U08-10-15          | RETAIL, 10,772 SF<br>RESIDENTIAL, 8 UNITS       |
| U08-10-16          | RETAIL, 10,479 SF<br>RESIDENTIAL, 8 UNITS       |
| U08-10-17          | RETAIL, 12,760 SF<br>RESIDENTIAL, 7 UNITS       |
| U08-10-18          | RETAIL, 12,017 SF                               |
| U08-10-19          | OPEN SPACE                                      |
| U08-10-20          | HOTEL, 67 ROOMS                                 |
| U08-17-A           | TOWN HALL, 18,750 SF                            |

#### NOTES:

- 6 ADA PARKING SPACES ARE PROPOSED. PARKING SPACE LOCATIONS TO BE DETERMINED UPON FURTHER SITE DEVELOPMENT.
- A PAVED BUS WAITING AREA WILL BE PROVIDED IN ACCORDANCE WITH THE TOWN OF LITTLETON SUBDIVISION OF LAND REGULATIONS SECTION 43 C(2). THE LOCATION WILL BE DETERMINED UPON FURTHER DETERMINATION OF USE AND CONSTRUCTION OF THE SUBDIVISION LOTS.

#### NOTES:

- STREET TREE SPECIES SHALL BE PROVIDED TO THE TOWN OF LITTLETON PRIOR TO PLANTING AND SHALL CONSIST OF ZONE SIX HARDINESS DECIDUOUS SHADE TREES. ANY SINGLE SPECIES SHALL NOT CONTRIBUTE GREATER THAN 35% OF PLANTINGS ON SITE.



|                        |
|------------------------|
| REVISIONS              |
| 1. 2-21-24 PEER REVIEW |
| 2.                     |
| 3.                     |

#### DRAWING TITLE

### Layout Plan

SUBDIVISION NAME & LOCATION  
**King Street Commons**  
550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER  
**Lupoli Companies**  
290 Merrimack Street  
Lawrence, MA 01840

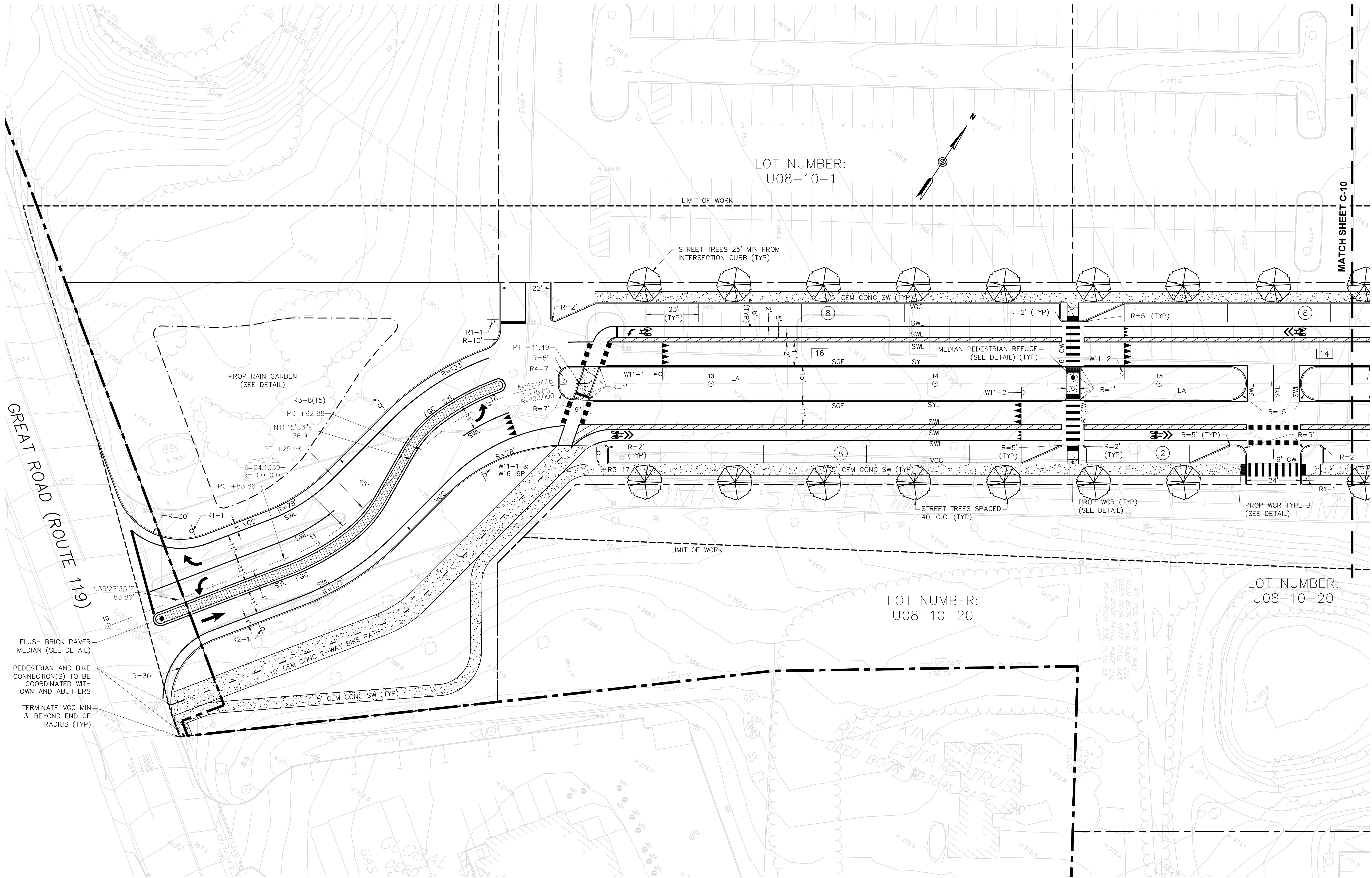
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Lawrence, Massachusetts 01843  
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DESIGNED BY RJF DATE 8-22-23  
CHECKED BY CPR SCALE 1"=20'

PROJECT NO. T1180  
TEC CAD FILE  
T1180\_SITE  
DRAWING NO. C-8  
SHEET 8 OF 61





| REVISIONS |                     |
|-----------|---------------------|
| 1.        | 2-21-24 PEER REVIEW |
| 2.        |                     |
| 3.        |                     |

DRAWING TITLE  
**Layout Plan A**

SUBDIVISION NAME & LOCATION  
**King Street Commons**  
550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER  
**Lupoli Companies**  
290 Merrimack Street  
Lawrence, MA 01840

DESIGNER / ENGINEER

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The Engineering Corp

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DESIGNED BY RJF DATE 8-22-23  
CHECKED BY CPR SCALE 1"=20'

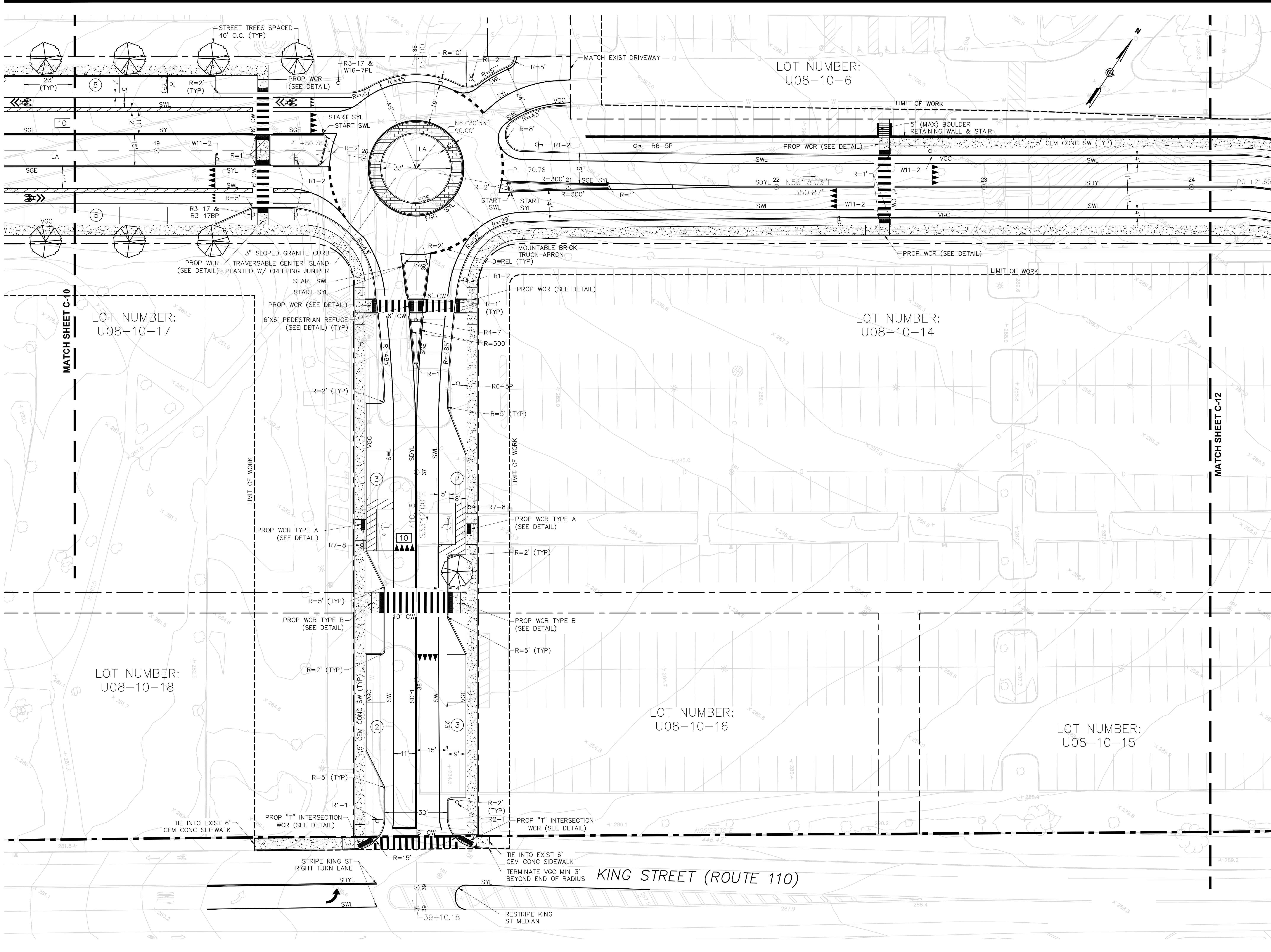
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TEC CAD FILE  
T1180\_SITE  
DRAWING NO. **C-9**  
SHEET 9 OF 61

SEAL: COMMONWEALTH OF MASSACHUSETTS, RICHARD J. FRIBERG JR., CIVIL, No. 47850, REGISTERED PROFESSIONAL ENGINEER









|           |                     |
|-----------|---------------------|
| REVISIONS |                     |
| 1.        | 2-21-24 PEER REVIEW |
| 2.        |                     |
| 3.        |                     |

DRAWING TITLE

Layout Plan C

SUBDIVISION NAME & LOCATION

King Street Commons  
550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER

Lupoli Companies  
290 Merrimack Street  
Lawrence, MA 01840

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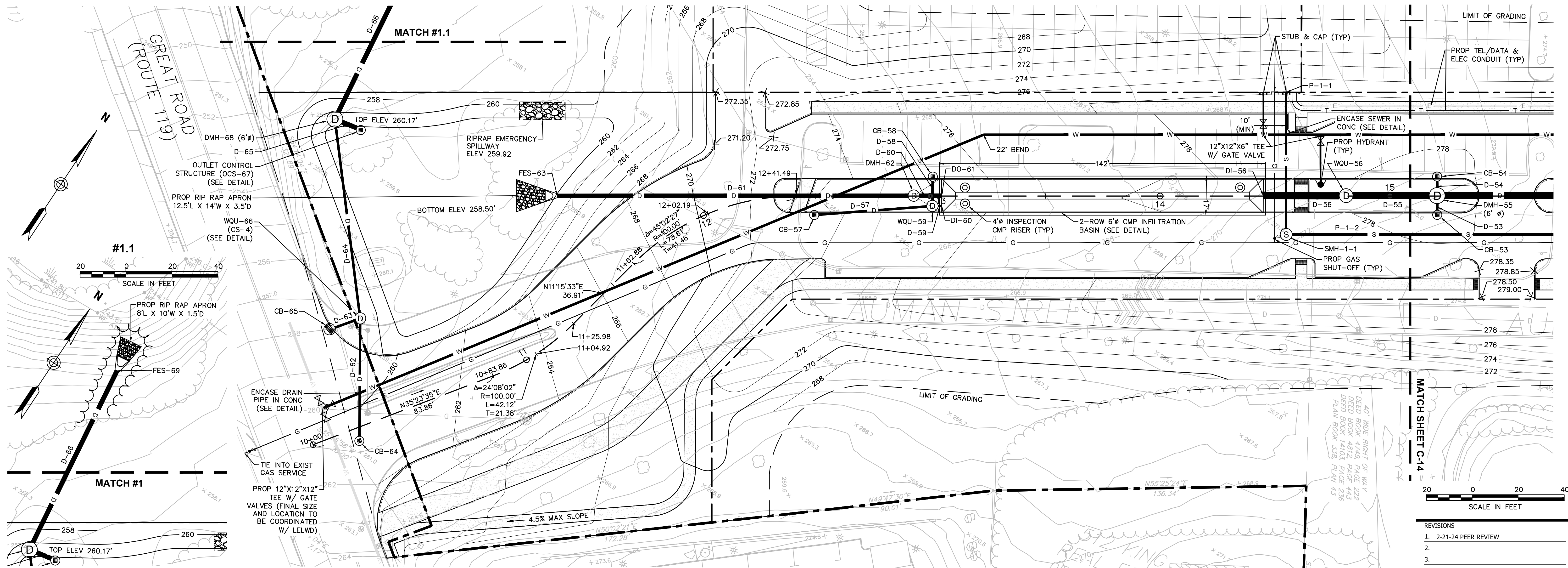
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| DESIGNED BY | RJF | DATE  | 8-22-23 |
| CHECKED BY  | CPR | SCALE | 1"=20'  |

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|--------------|----------|
| PROJECT NO.  | T1180    |
| TEC CAD FILE |          |
| T1180_SITE   |          |
| DRAWING NO.  | C-11     |
| SHEET        | 11 OF 61 |





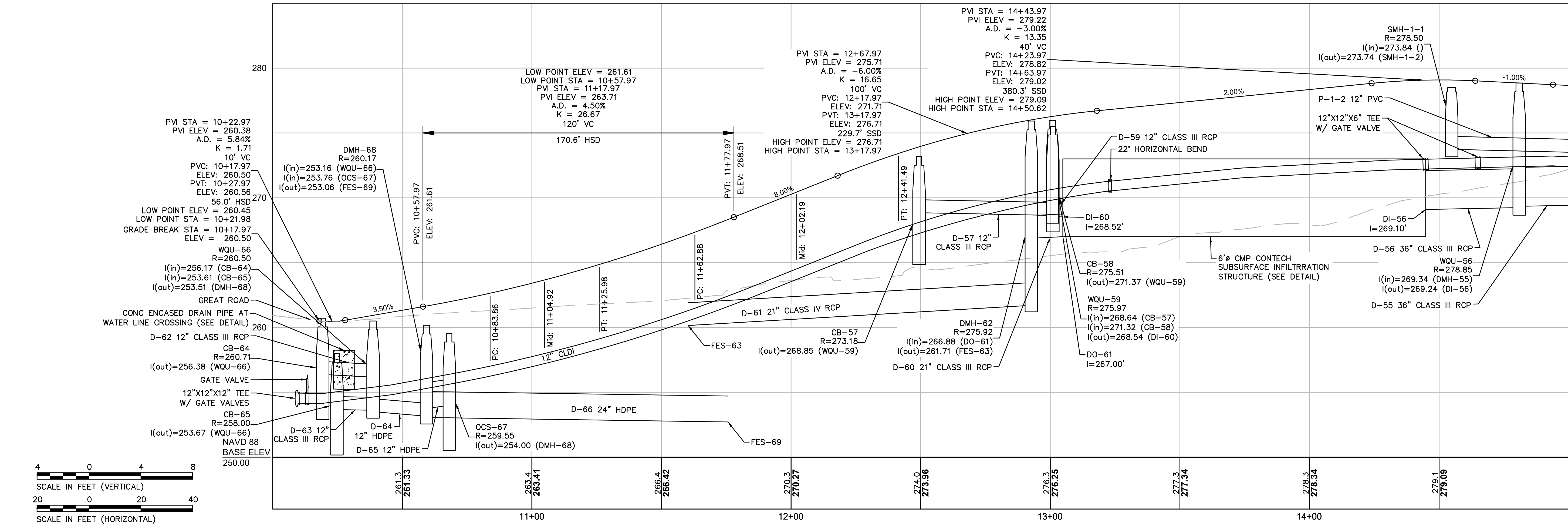




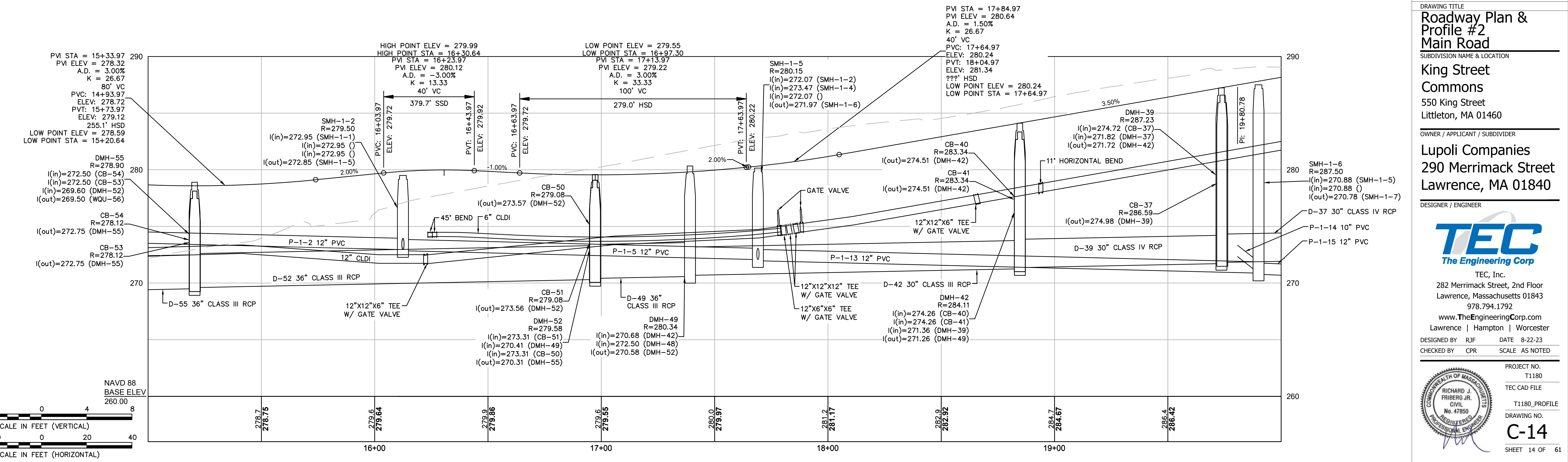
| REVISIONS |                     |
|-----------|---------------------|
| 1.        | 2-21-24 PEER REVIEW |
| 2.        |                     |
| 3.        |                     |

DRAWING TITLE  
**Roadway Plan & Profile #1  
Main Road**  
SUBDIVISION NAME & LOCATION  
**King Street  
Commons**  
550 King Street  
Littleton, MA 01460  
OWNER / APPLICANT / SUBDIVIDER  
**Lupoli Companies**  
290 Merrimack Street  
Lawrence, MA 01840  
DESIGNER / ENGINEER

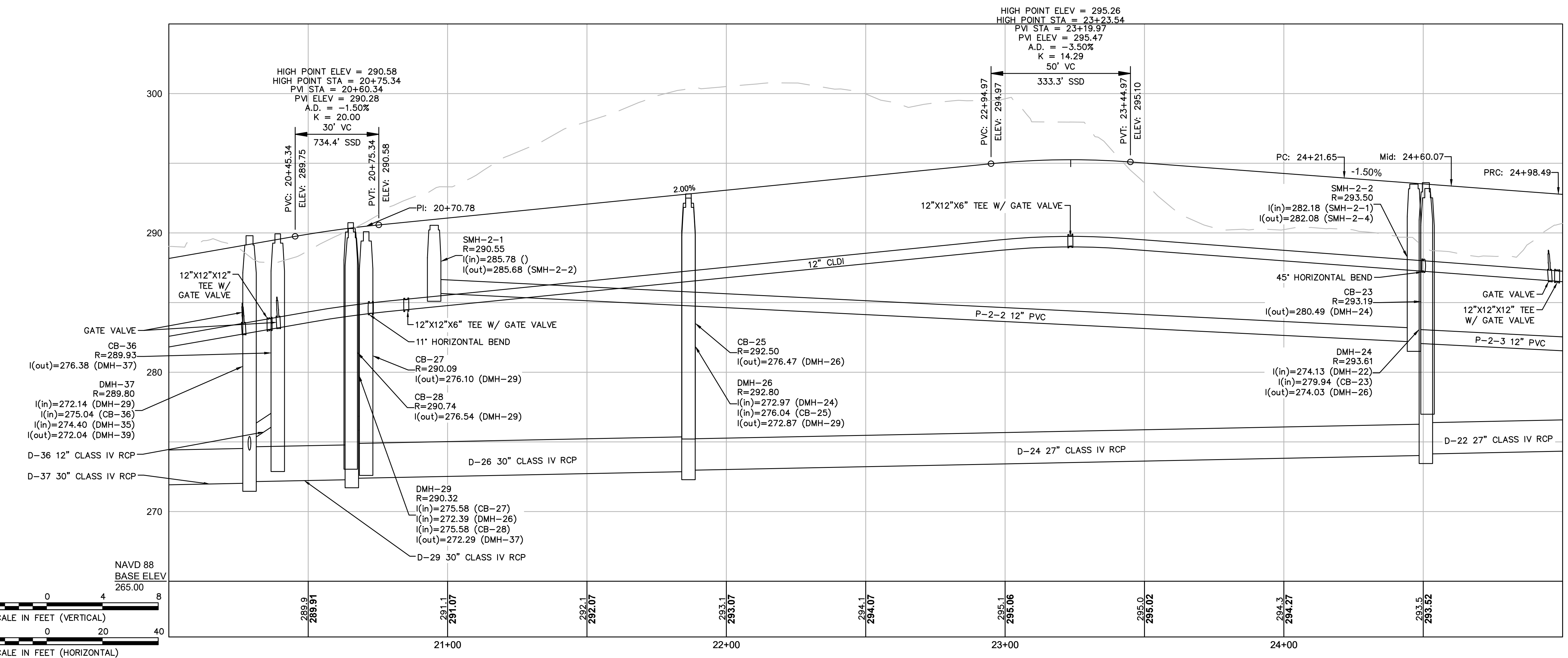
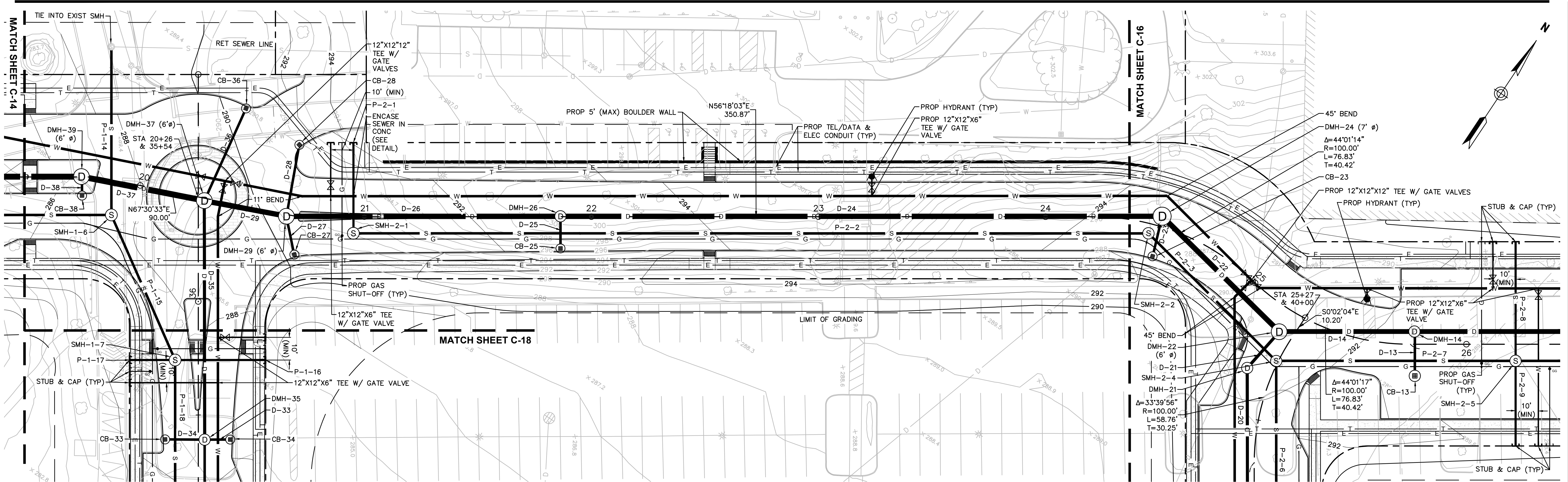
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PROJECT NO. T1180  
TEC CAD FILE  
T1180\_PROFILE  
DRAWING NO. **C-13**  
SHEET 13 OF 61











| REVISIONS |                     |
|-----------|---------------------|
| 1.        | 2-21-24 PEER REVIEW |
| 2.        |                     |
| 3.        |                     |

DRAWING TITLE  
**Roadway Plan &  
Profile #3  
Main Road**

SUBDIVISION NAME & LOCATION  
**King Street  
Commons**  
550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER  
**Lupoli Companies**  
290 Merrimack Street  
Lawrence, MA 01840

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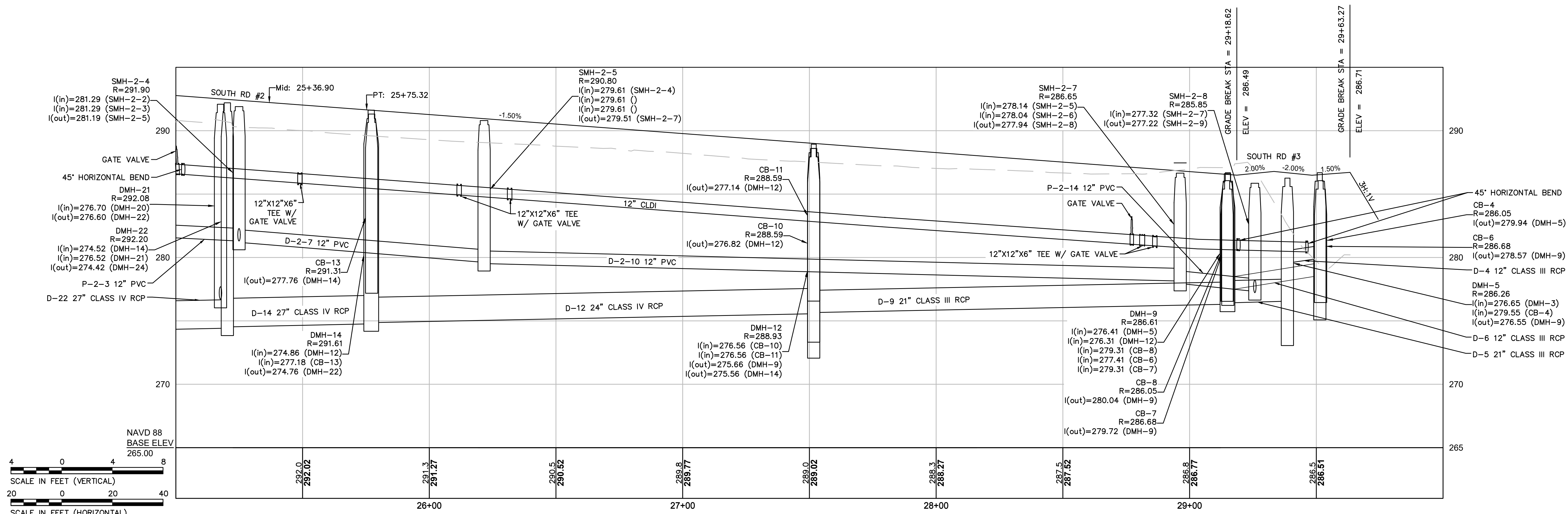
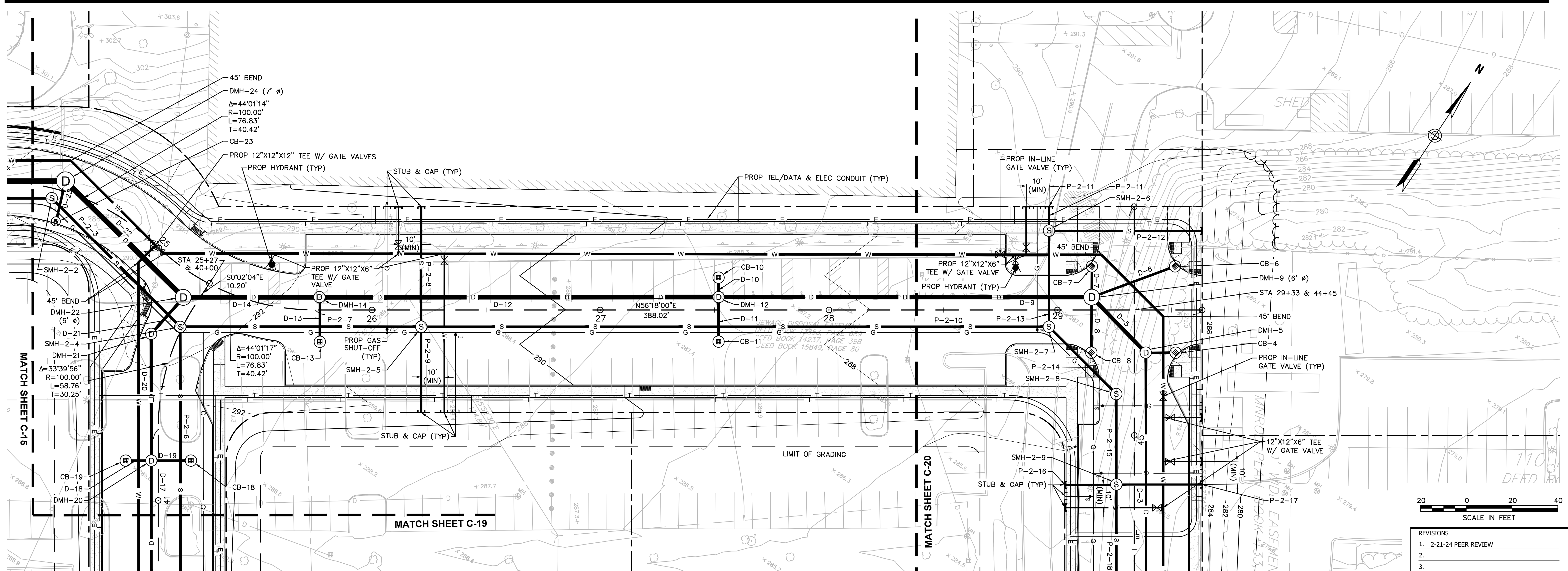
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PROJECT NO.  
T1180  
TEC CAD FILE  
T1180\_PROFILE  
DRAWING NO.  
**C-15**  
SHEET 15 OF 61





| REVISIONS |                     |
|-----------|---------------------|
| 1.        | 2-21-24 PEER REVIEW |
| 2.        |                     |
| 3.        |                     |

DRAWING TITLE

**Roadway Plan &  
Profile #4  
Main Road**

---

SUBDIVISION NAME & LOCATION

**King Street  
Commons**

550 King Street  
Littleton, MA 01460

---

OWNER / APPLICANT / SUBDIVIDER

**Lupoli Companies**

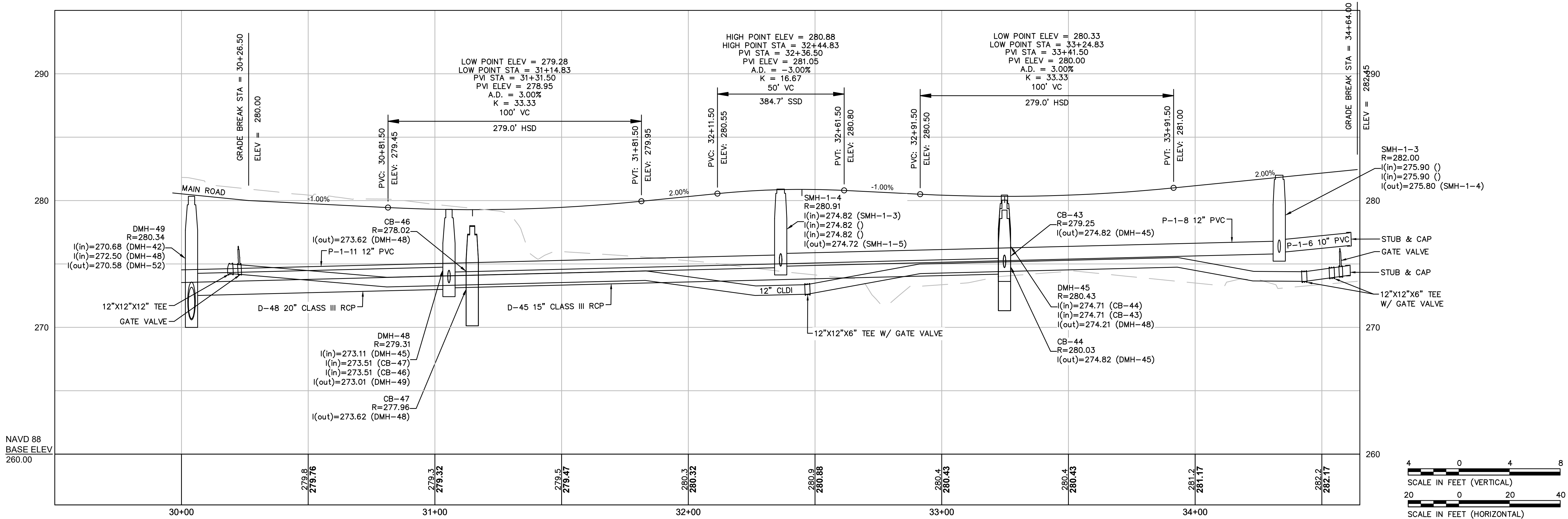
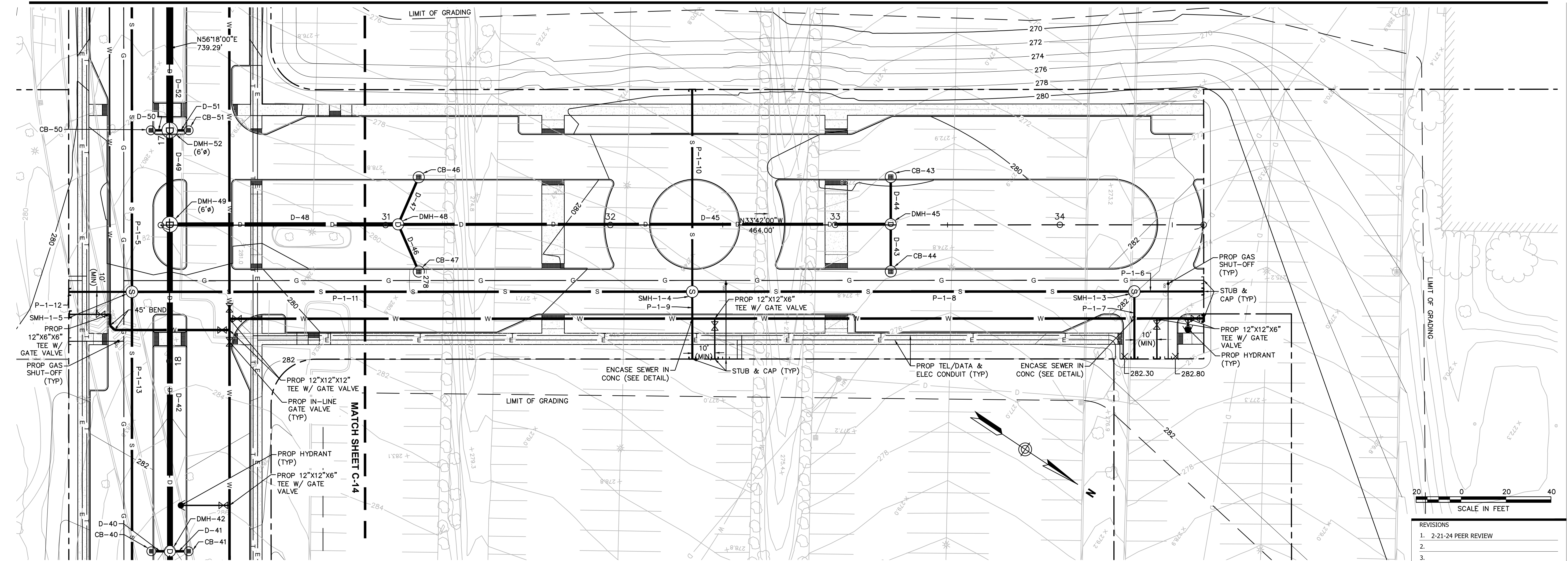
290 Merrimack Street  
Lawrence, MA 01840

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DESIGNER / ENGINEER

|                                                                                       |     |                               |          |
|---------------------------------------------------------------------------------------|-----|-------------------------------|----------|
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| CHECKED BY                                                                            | CPR | SCALE                         | AS NOTED |
| <hr/>                                                                                 |     |                               |          |
|  |     | PROJECT NO.<br>T1180          |          |
|                                                                                       |     | TEC CAD FILE<br>T1180_PROFILE |          |
|                                                                                       |     | DRAWING NO.                   |          |
|                                                                                       |     | <b>C-16</b>                   |          |
|                                                                                       |     | SHEET 16 OF 61                |          |





| REVISIONS |                     |
|-----------|---------------------|
| 1.        | 2-21-24 PEER REVIEW |
| 2.        |                     |
| 3.        |                     |

DRAWING TITLE  
**Roadway Plan &  
Profile #5  
North Road**

SUBDIVISION NAME & LOCATION  
**King Street  
Commons**  
550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER  
**Lupoli Companies**  
290 Merrimack Street  
Lawrence, MA 01840

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**TEC**  
The Engineering Corp

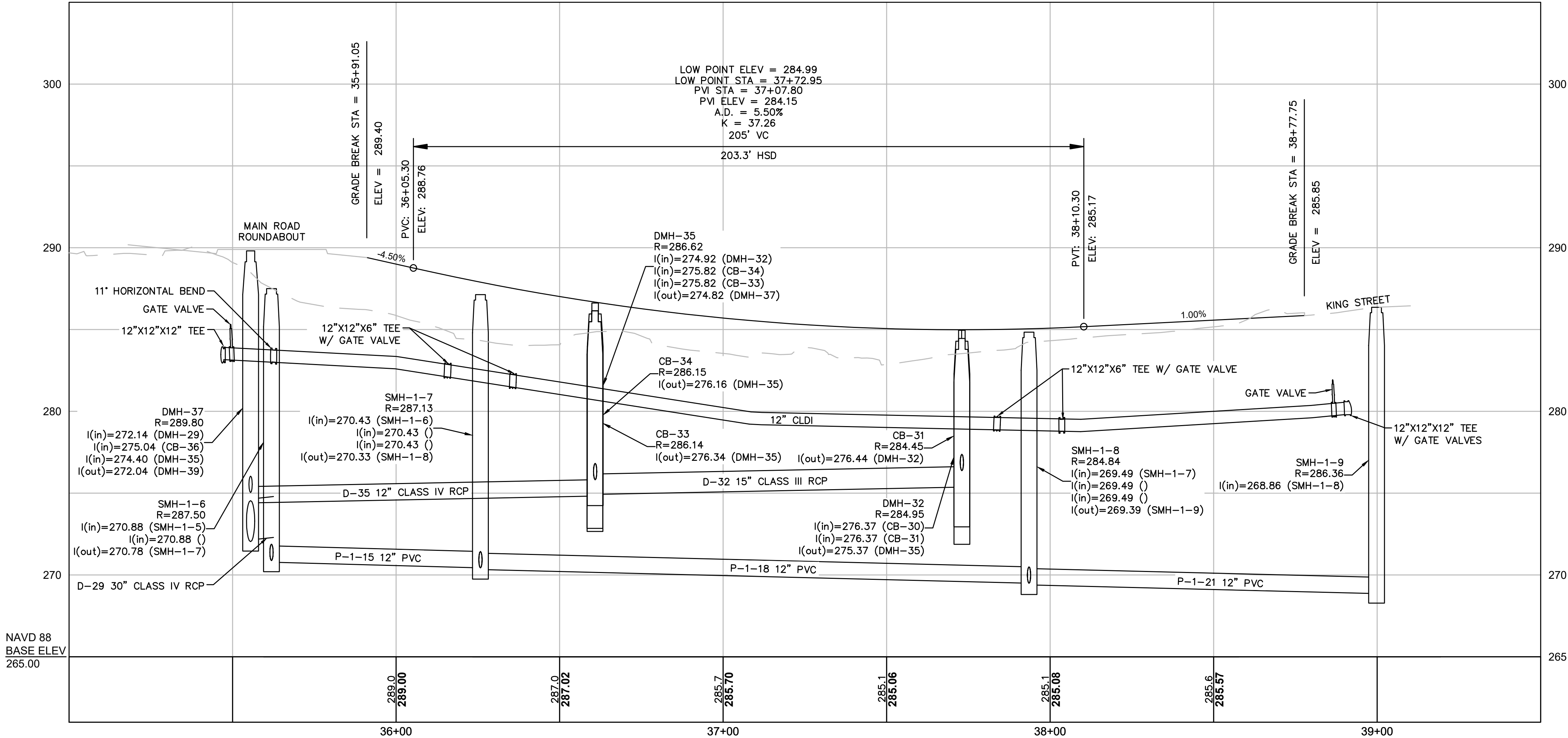
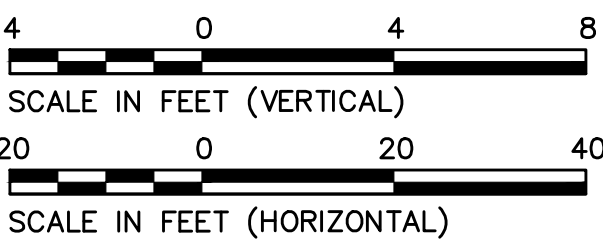
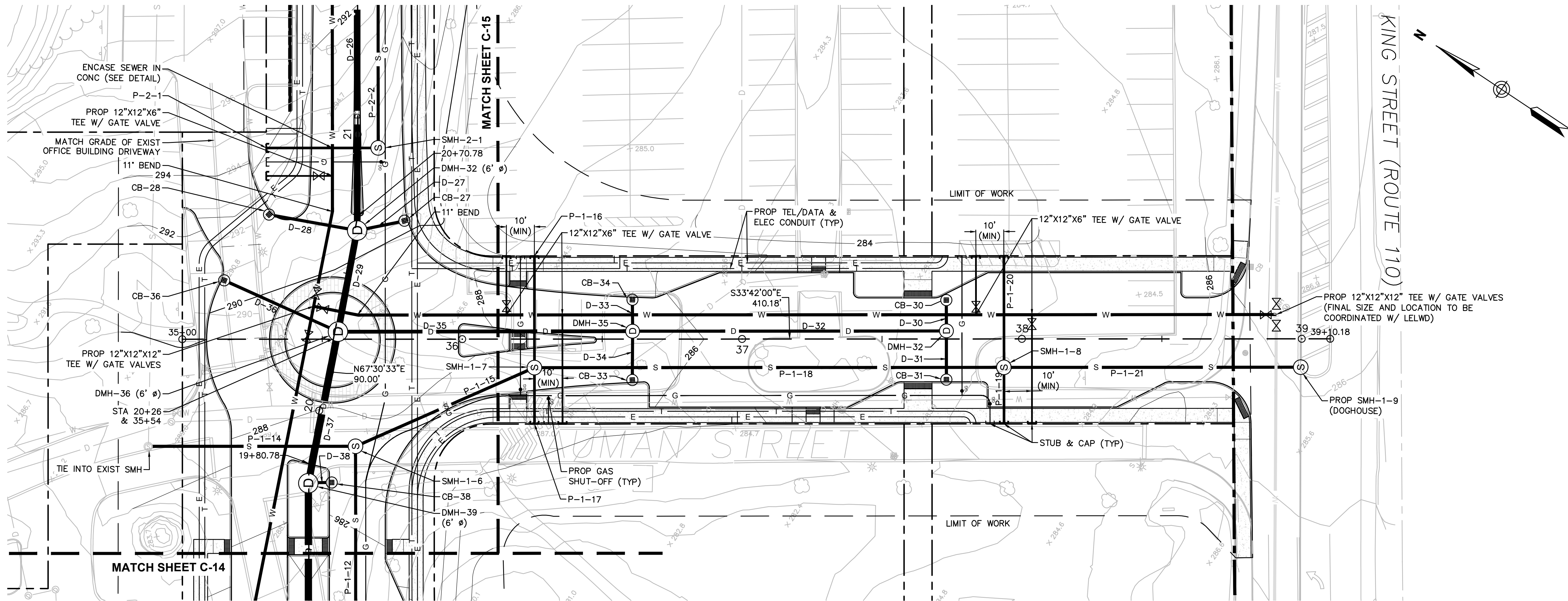
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CHECKED BY CPR SCALE AS NOTED

PROJECT NO.  
T1180  
TEC CAD FILE  
T1180\_PROFILE  
DRAWING NO.  
**C-17**  
SHEET 17 OF 61

RICHARD J. FRIBERG JR.  
CIVIL  
No. 47850  
PROFESSIONAL ENGINEER  
COMMONWEALTH OF MASSACHUSETTS





| REVISIONS |                     |
|-----------|---------------------|
| 1.        | 2-21-24 PEER REVIEW |
| 2.        |                     |
| 3.        |                     |

DRAWING TITLE  
**Roadway Plan &  
Profile #6  
South Road #1**  
SUBDIVISION NAME & LOCATION  
**King Street  
Commons**  
550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER  
**Lupoli Companies**  
290 Merrimack Street  
Lawrence, MA 01840

DESIGNER / ENGINEER

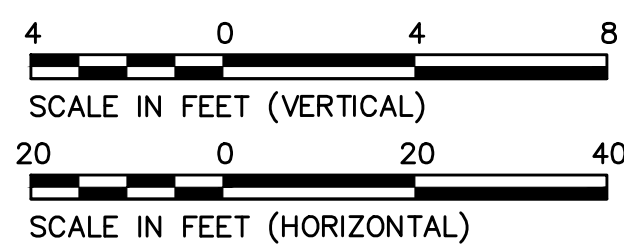
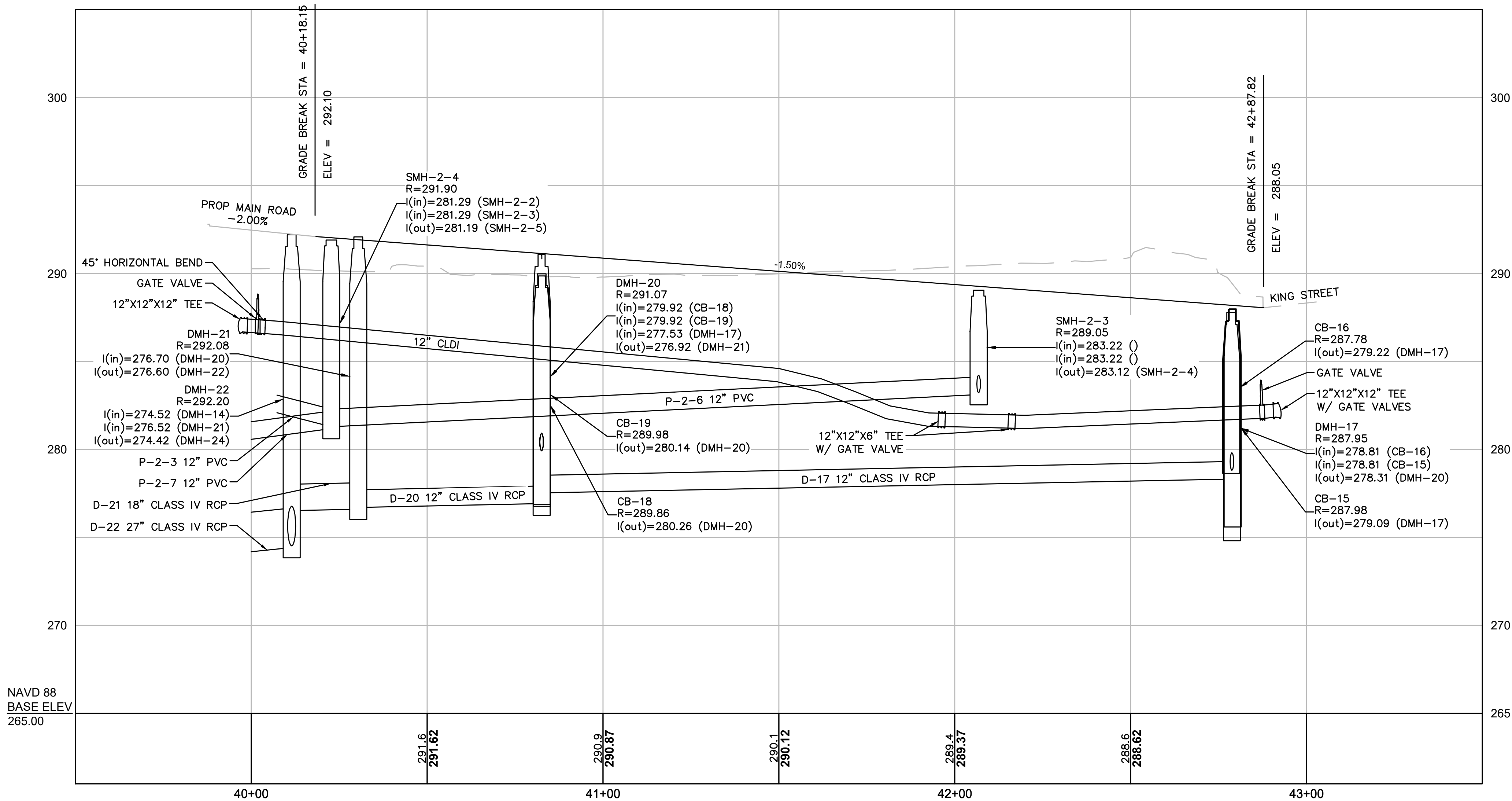
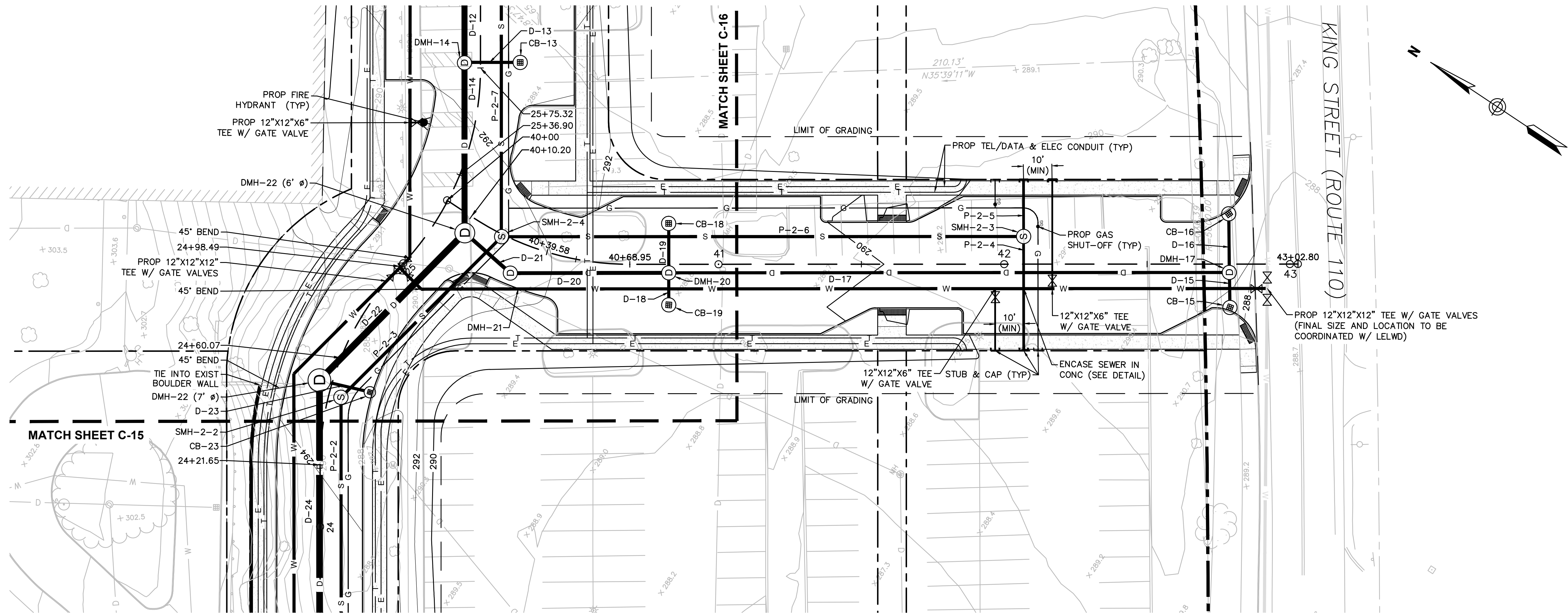
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PROJECT NO. T1180  
TEC CAD FILE  
T1180\_PROFILE  
DRAWING NO. **C-18**  
SHEET 18 OF 61





REVISIONS

- 2-21-24 PEER REVIEW
- 
- 

DRAWING TITLE

**Roadway Plan & Profile #7**  
**South Road #2**

SUBDIVISION NAME & LOCATION

**King Street Commons**  
550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER

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Lawrence, MA 01840

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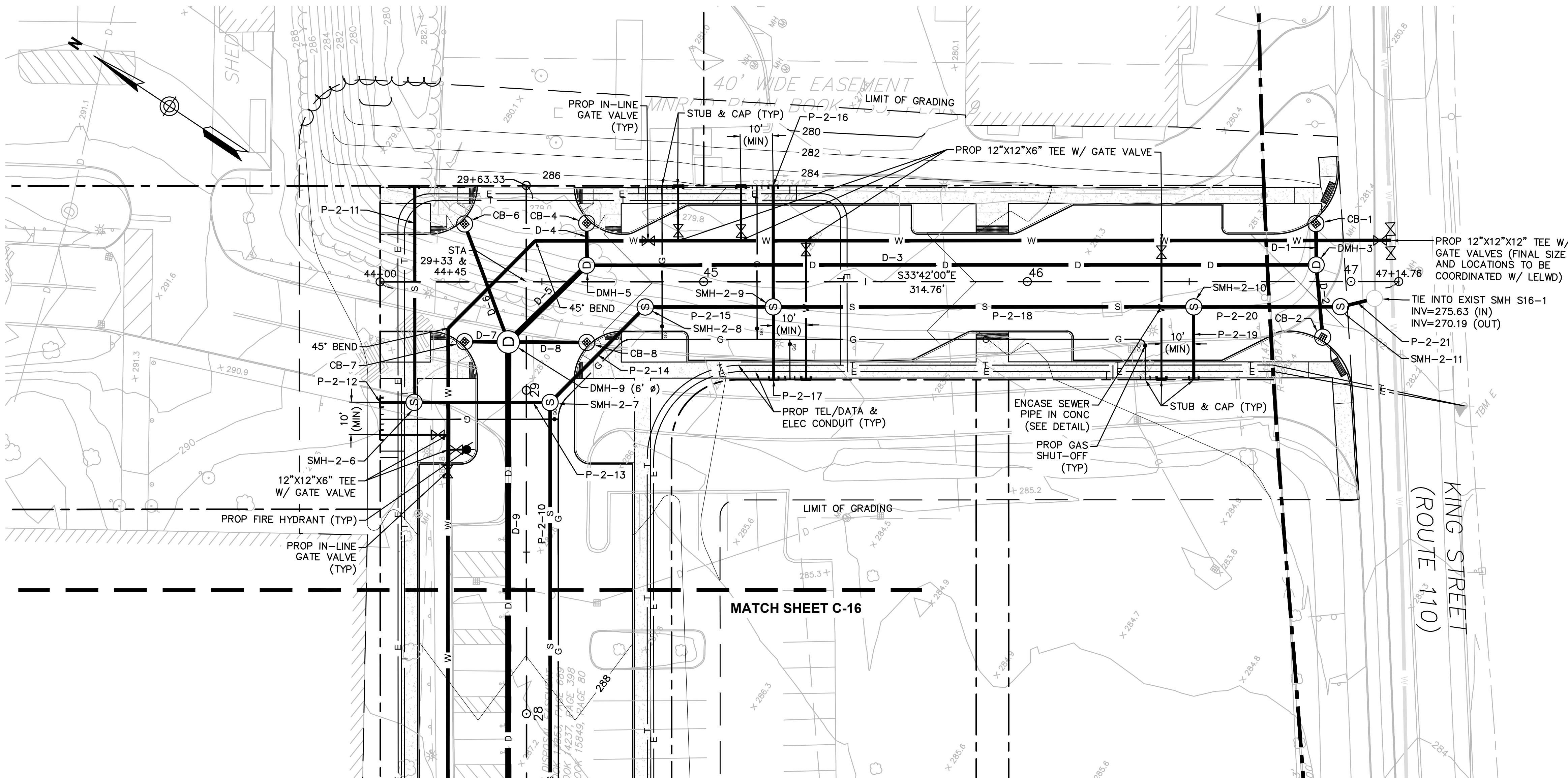
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PROJECT NO. T1180  
TEC CAD FILE  
T1180\_PROFILE  
DRAWING NO. **C-19**  
SHEET 19 OF 61





| REVISIONS |                     |
|-----------|---------------------|
| 1.        | 2-21-24 PEER REVIEW |
| 2.        |                     |
| 3.        |                     |

DRAWING TITLE  
**Roadway Plan &  
Profile #7  
South Road #3**  
SUBDIVISION NAME & LOCATION

**King Street  
Commons**  
550 King Street  
Littleton, MA 01460

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**Lupoli Companies**  
290 Merrimack Street  
Lawrence, MA 01840

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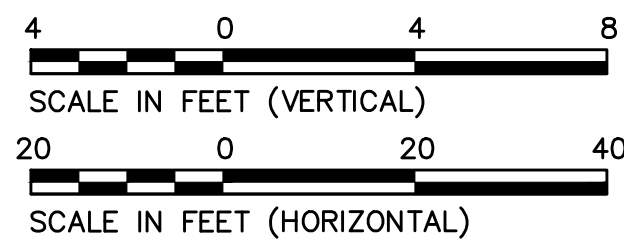
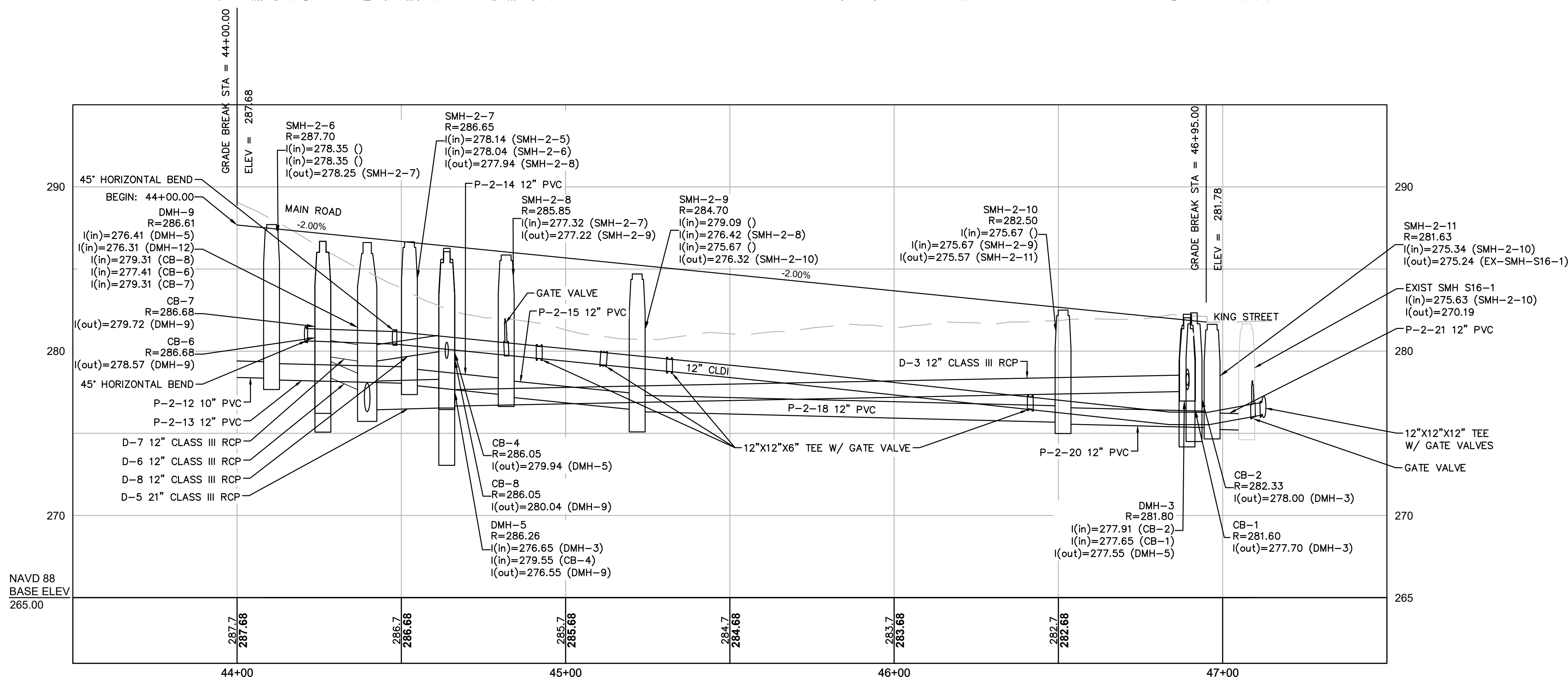


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|  | PROJECT NO.   | T1180       |
|  | TEC CAD FILE  |             |
|  | T1180_PROFILE |             |
|  | DRAWING NO.   | <b>C-20</b> |
|  | SHEET         | 20 OF 61    |





PHASE 1 SANITARY SEWER:

| SEWER STRUCTURE DATA |        |                      |           |                                                             |                     |
|----------------------|--------|----------------------|-----------|-------------------------------------------------------------|---------------------|
| NO.                  | TYPE   | STATION              | RIM ELEV. | INV. ELEV. IN                                               | INV. ELEV. OUT      |
| SMH-1-1              | SMH-48 | 14+54.8<br>16.7' RT  | 278.50    | I=273.84' ( )                                               | I=273.74' (SMH-1-2) |
| SMH-1-2              | SMH-48 | 16+12.5<br>16.8' RT  | 279.50    | I=272.95' (SMH-1-1)<br>I=272.95' ( )<br>I=272.95' ( )       | I=272.85' (SMH-1-5) |
| SMH-1-3              | SMH-48 | 34+33.2<br>29.7' RT  | 282.00    | I=275.90' ( )<br>I=275.90' ( )                              | I=275.80' (SMH-1-4) |
| SMH-1-4              | SMH-48 | 32+36.4<br>29.7' RT  | 280.91    | I=274.82' (SMH-1-3)<br>I=274.82' ( )<br>I=274.82' ( )       | I=274.72' (SMH-1-5) |
| SMH-1-5              | SMH-48 | 17+69.1<br>16.7' RT  | 280.15    | I=272.07' (SMH-1-2)<br>I=273.47' (SMH-1-4)<br>I=272.07' ( ) | I=271.97' (SMH-1-6) |
| SMH-1-6              | SMH-48 | 19+90<br>15.2' RT    | 287.50    | I=270.88' (SMH-1-5)<br>I=270.88' ( )                        | I=270.78' (SMH-1-7) |
| SMH-1-7              | SMH-48 | 20+30<br>72.5' RT    | 287.13    | I=270.43' (SMH-1-6)<br>I=270.43' ( )<br>I=270.43' ( )       | I=270.33' (SMH-1-8) |
| SMH-1-8              | SMH-48 | 20+62.7<br>237.0' RT | 284.84    | I=269.49' (SMH-1-7)<br>I=269.49' ( )<br>I=269.49' ( )       | I=269.39' (SMH-1-9) |
| SMH-1-9              | SMH-48 | 20+70.8<br>341.4' RT | 286.36    | I=268.86' (SMH-1-8)                                         |                     |

| SEWER PIPE DATA |                                          |             |        |       |              |
|-----------------|------------------------------------------|-------------|--------|-------|--------------|
| PIPE            | PIPE LOCATION                            | SIZE & TYPE | LENGTH | SLOPE | SHEET # (C-) |
| P-1-1           | STUB TO SMH-1-1<br>STA 14+55 TO 14+55    | 10" PVC     | 60 LF  | 0.005 | 13           |
| P-1-2           | SMH-1-1 TO SMH-1-2<br>STA 14+55 TO 16+12 | 12" PVC     | 154 LF | 0.005 | 13, 14       |
| P-1-3           | STUB TO SMH-1-2<br>STA 16+12 TO 16+12    | 10" PVC     | 26 LF  | 0.020 | 14           |
| P-1-4           | STUB TO SMH-1-2<br>STA 16+14 TO 16+12    | 10" PVC     | 56 LF  | 0.020 | 14           |
| P-1-5           | SMH-1-2 TO SMH-1-5<br>STA 16+12 TO 17+69 | 12" PVC     | 153 LF | 0.005 | 14           |
| P-1-6           | STUB TO SMH-1-3<br>STA 34+61 TO 34+33    | 12" PVC     | 26 LF  | 0.020 | 17           |
| P-1-7           | STUB TO SMH-1-3<br>STA 34+33 TO 34+33    | 10" PVC     | 28 LF  | 0.020 | 17           |
| P-1-8           | SMH-1-3 TO SMH-1-4<br>STA 34+33 TO 32+36 | 12" PVC     | 193 LF | 0.005 | 17           |
| P-1-9           | STUB TO SMH-1-4<br>STA 32+36 TO 32+36    | 10" PVC     | 28 LF  | 0.020 | 17           |
| P-1-10          | STUB TO SMH-1-4<br>STA 32+37 TO 32+36    | 10" PVC     | 88 LF  | 0.005 | 17           |
| P-1-11          | SMH-1-4 TO SMH-1-5<br>STA 32+36 TO 17+69 | 12" PVC     | 245 LF | 0.005 | 17           |
| P-1-12          | STUB TO SMH-1-5<br>STA 17+69 TO 17+69    | 10" PVC     | 26 LF  | 0.020 | 14           |
| P-1-13          | SMH-1-5 TO SMH-1-6<br>STA 17+69 TO 19+90 | 12" PVC     | 214 LF | 0.005 | 14           |
| P-1-14          | STUB TO SMH-1-6<br>STA 19+81 TO 19+90    | 10" PVC     | 71 LF  | 0.020 | 14, 15       |
| P-1-15          | SMH-1-6 TO SMH-1-7<br>STA 35+62 TO 36+26 | 12" PVC     | 66 LF  | 0.005 | 15, 18       |
| P-1-16          | STUB TO SMH-1-7<br>STA 36+26 TO 36+26    | 10" PVC     | 38 LF  | 0.020 | 18           |
| P-1-17          | SMH-1-7 TO SMH-1-8<br>STA 36+26 TO 36+26 | 10" PVC     | 18 LF  | 0.020 | 18           |
| P-1-18          | SMH-1-7 TO SMH-1-8<br>STA 36+26 TO 37+94 | 12" PVC     | 164 LF | 0.005 | 18           |
| P-1-19          | STUB TO SMH-1-8<br>STA 37+94 TO 37+94    | 10" PVC     | 18 LF  | 0.020 | 18           |
| P-1-20          | STUB TO SMH-1-8<br>STA 37+94 TO 37+94    | 10" PVC     | 38 LF  | 0.020 | 18           |
| P-1-21          | SMH-1-8 TO SMH-1-9<br>STA 37+94 TO 39+00 | 12" PVC     | 102 LF | 0.005 | 18           |

PHASE 2 SANITARY SEWER:

| SEWER STRUCTURE DATA |        |                      |           |                                                       |                          |
|----------------------|--------|----------------------|-----------|-------------------------------------------------------|--------------------------|
| NO.                  | TYPE   | STATION              | RIM ELEV. | INV. ELEV. IN                                         | INV. ELEV. OUT           |
| EX-SMH-S16-1         | SMH-48 | 47+07.3<br>5.3' RT   | 281.66    | I=275.19' (SMH-2-11)                                  |                          |
| SMH-2-1              | SMH-48 | 20+95.2<br>7.3' RT   | 290.55    | I=285.78' ( )                                         | I=285.68' (SMH-2-2)      |
| SMH-2-2              | SMH-48 | 24+46.7<br>4.4' RT   | 293.50    | I=282.18' (SMH-2-1)                                   | I=282.08' (SMH-2-4)      |
| SMH-2-3              | SMH-48 | 42+06.8<br>-9.7' LT  | 289.05    | I=283.22' ( )<br>I=283.22' ( )                        | I=283.12' (SMH-2-4)      |
| SMH-2-4              | SMH-48 | 40+22.8<br>0.9' RT   | 291.90    | I=281.29' (SMH-2-2)<br>I=281.29' (SMH-2-3)            | I=281.19' (SMH-2-5)      |
| SMH-2-5              | SMH-48 | 26+21.6<br>7.3' RT   | 290.80    | I=279.61' (SMH-2-4)<br>I=279.61' ( )<br>I=279.61' ( ) | I=279.51' (SMH-2-7)      |
| SMH-2-6              | SMH-48 | 28+96.3<br>-34.7' LT | 287.70    | I=278.35' ( )<br>I=278.35' ( )                        | I=278.25' (SMH-2-7)      |
| SMH-2-7              | SMH-48 | 28+96.3<br>7.3' RT   | 286.65    | I=278.14' (SMH-2-5)<br>I=278.04' (SMH-2-6)            | I=277.94' (SMH-2-8)      |
| SMH-2-8              | SMH-48 | 44+81.9<br>7.8' RT   | 285.85    | I=277.32' (SMH-2-7)                                   | I=277.22' (SMH-2-9)      |
| SMH-2-9              | SMH-48 | 45+21.8<br>7.8' RT   | 284.70    | I=279.09' ( )<br>I=276.42' (SMH-2-8)<br>I=275.67' ( ) | I=276.32' (SMH-2-10)     |
| SMH-2-10             | SMH-48 | 46+51.4<br>7.8' RT   | 282.50    | I=275.67' ( )<br>I=275.67' (SMH-2-9)                  | I=275.57' (SMH-2-11)     |
| SMH-2-11             | SMH-48 | 46+96.8<br>7.9' RT   | 281.63    | I=275.34' (SMH-2-10)                                  | I=275.24' (EX-SMH-S16-1) |

| SEWER PIPE DATA |                                                |             |        |       |              |
|-----------------|------------------------------------------------|-------------|--------|-------|--------------|
| PIPE            | PIPE LOCATION                                  | SIZE & TYPE | LENGTH | SLOPE | SHEET # (C-) |
| P-2-1           | STUB TO SMH-2-1<br>STA 20+95 TO 20+95          | 10" PVC     | 38 LF  | 0.005 | 15           |
| P-2-2           | SMH-2-1 TO SMH-2-2<br>STA 20+95 TO 24+47       | 12" PVC     | 346 LF | 0.010 | 15           |
| P-2-3           | SMH-2-2 TO SMH-2-4<br>STA 24+47 TO 25+25       | 12" PVC     | 75 LF  | 0.010 | 15, 16       |
| P-2-4           | STUB TO SMH-2-3<br>STA 42+07 TO 42+07          | 10" PVC     | 38 LF  | 0.005 | 19           |
| P-2-5           | STUB TO SMH-2-3<br>STA 42+07 TO 42+07          | 10" PVC     | 18 LF  | 0.005 | 19           |
| P-2-6           | SMH-2-3 TO SMH-2-4<br>STA 42+07 TO 40+23       | 12" PVC     | 179 LF | 0.010 | 19           |
| P-2-7           | SMH-2-4 TO SMH-2-5<br>STA 25+25 TO 26+22       | 12" PVC     | 101 LF | 0.015 | 16           |
| P-2-8           | STUB TO SMH-2-5<br>STA 26+22 TO 26+22          | 10" PVC     | 50 LF  | 0.010 | 16           |
| P-2-9           | STUB TO SMH-2-5<br>STA 26+22 TO 26+22          | 10" PVC     | 36 LF  | 0.010 | 16           |
| P-2-10          | SMH-2-5 TO SMH-2-7<br>STA 26+22 TO 28+96       | 12" PVC     | 271 LF | 0.005 | 16, 20       |
| P-2-11          | STUB TO SMH-2-6<br>STA 28+96 TO 28+96          | 10" PVC     | 8 LF   | 0.005 | 16, 20       |
| P-2-12          | STUB TO SMH-2-6<br>STA 44+11 TO 44+10          | 10" PVC     | 65 LF  | 0.005 | 16, 20       |
| P-2-13          | SMH-2-6 TO SMH-2-7<br>STA 28+96 TO 28+96       | 12" PVC     | 38 LF  | 0.005 | 16, 20       |
| P-2-14          | SMH-2-7 TO SMH-2-8<br>STA 28+96 TO 29+26       | 12" PVC     | 38 LF  | 0.015 | 16, 20       |
| P-2-15          | SMH-2-8 TO SMH-2-9<br>STA 44+82 TO 45+22       | 12" PVC     | 36 LF  | 0.020 | 16, 20       |
| P-2-16          | STUB TO SMH-2-9<br>STA 45+22 TO 45+22          | 10" PVC     | 21 LF  | 0.005 | 16, 20       |
| P-2-17          | SMH-2-9 TO SMH-2-10<br>STA 45+22 TO 46+51      | 12" PVC     | 126 LF | 0.005 | 16, 20       |
| P-2-18          | STUB TO SMH-2-10<br>STA 46+51 TO 46+51         | 10" PVC     | 20 LF  | 0.005 | 16, 20       |
| P-2-19          | STUB TO SMH-2-9<br>STA 45+21 TO 45+22          | 10" PVC     | 36 LF  | 0.005 | 20           |
| P-2-20          | SMH-2-10 TO SMH-2-11<br>STA 46+51 TO 46+97     | 12" PVC     | 41 LF  | 0.005 | 20           |
| P-2-21          | SMH-2-11 TO EX-SMH-S16-1<br>STA 46+97 TO 47+07 | 12" PVC     | 7 LF   | 0.005 | 20           |

REVISIONS

1.

2-21-24 PEER REVIEW

2.

3.

DRAWING TITLE

Sanitary Sewer  
Tables

SUBDIVISION NAME & LOCATION

King Street  
Commons  
550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER

Lupoli Companies  
290 Merrimack Street  
Lawrence, MA 01840

DESIGNER / ENGINEER

TEC

The Engineering Corp

TEC, Inc.

282 Merrimack Street, 2nd Floor  
Lawrence, Massachusetts 01843  
978.794.1792

www.TheEngineeringCorp.com  
Lawrence | Hampton | Worcester

DESIGNED BY

RJF

DATE

8-22-23

CHECKED BY

CPR

SCALE

AS NOTED

COMMONWEALTH OF MASSACHUSETTS

RICHARD J. FRIEBERG JR.

CIVIL

No. 47850

REGISTERED

PROFESSIONAL ENGINEER

PROJECT NO.

T1180

TEC CAD FILE

T1180\_PROFILE

DRAWING NO.

C-21

SHEET 21 OF 61



| DRAINAGE STRUCTURE DATA |                     |                      |           |                    |                    |
|-------------------------|---------------------|----------------------|-----------|--------------------|--------------------|
| NO.                     | TYPE                | STATION              | RIM ELEV. | INV. ELEV. IN      | INV. ELEV. OUT     |
| CB-1                    | CB                  | 48+89.1<br>-17.9' LT | 281.60    |                    | I=277.70' (DMH-3)  |
| CB-2                    | CB                  | 46+91.3<br>17.2' RT  | 282.33    |                    | I=278.00' (DMH-3)  |
| CB-4                    | CB                  | 44+63.8<br>-18.1' LT | 286.05    |                    | I=279.94' (DMH-5)  |
| CB-6                    | CB                  | 44+26.1<br>-17.8' LT | 286.68    |                    | I=278.57' (DMH-9)  |
| CB-7                    | CB                  | 44+26.1<br>18.5' RT  | 286.68    |                    | I=279.72' (DMH-9)  |
| CB-8                    | CB                  | 44+63.8<br>18.8' RT  | 286.05    |                    | I=280.04' (DMH-9)  |
| CB-10                   | CB                  | 27+51.7<br>-14.2' LT | 288.59    |                    | I=276.82' (DMH-12) |
| CB-11                   | CB                  | 27+51.7<br>13.8' RT  | 288.59    |                    | I=277.14' (DMH-12) |
| CB-13                   | CB                  | 25+77.3<br>13.8' RT  | 291.31    |                    | I=277.76' (DMH-14) |
| CB-15                   | CB                  | 42+79<br>17.2' RT    | 287.98    |                    | I=279.09' (DMH-17) |
| CB-16                   | CB                  | 42+78.6<br>-17.6' LT | 287.78    |                    | I=279.22' (DMH-17) |
| CB-18                   | CB                  | 40+82.6<br>-14.2' LT | 289.86    |                    | I=280.26' (DMH-20) |
| CB-19                   | CB                  | 40+82.6<br>14.2' RT  | 289.98    |                    | I=280.14' (DMH-20) |
| CB-23                   | CB                  | 24+51.5<br>13.6' RT  | 293.19    |                    | I=280.49' (DMH-24) |
| CB-25                   | CB                  | 21+86.4<br>14.0' RT  | 292.50    |                    | I=276.47' (DMH-26) |
| CB-27                   | CB                  | 20+70.8<br>16.7' RT  | 290.09    |                    | I=276.10' (DMH-29) |
| CB-28                   | CB                  | 20+65.2<br>-31.2' LT | 290.74    |                    | I=276.54' (DMH-29) |
| CB-30                   | CB                  | 37+73.1<br>-13.9' LT | 284.46    |                    | I=276.41' (DMH-32) |
| CB-31                   | CB                  | 37+73<br>14.4' RT    | 284.45    |                    | I=276.44' (DMH-32) |
| CB-33                   | CB                  | 36+60.8<br>14.6' RT  | 286.14    |                    | I=276.34' (DMH-35) |
| CB-34                   | CB                  | 36+60.8<br>-14.1' LT | 286.15    |                    | I=276.16' (DMH-35) |
| CB-36                   | CB                  | 20+39.1<br>-42.4' LT | 289.93    |                    | I=276.38' (DMH-37) |
| CB-37                   | CB                  | 19+74<br>8.4' RT     | 286.59    |                    | I=274.98' (DMH-39) |
| CB-40                   | CB                  | 18+84.7<br>8.2' RT   | 283.34    |                    | I=274.51' (DMH-42) |
| CB-41                   | CB                  | 18+84.6<br>-8.5' LT  | 283.34    |                    | I=274.51' (DMH-42) |
| CB-43                   | CB                  | 33+24.8<br>-21.4' LT | 279.25    |                    | I=274.82' (DMH-45) |
| CB-44                   | CB                  | 33+24.8<br>20.7' RT  | 280.03    |                    | I=274.82' (DMH-45) |
| CB-46                   | CB                  | 31+14.7<br>-21.4' LT | 278.02    |                    | I=273.62' (DMH-48) |
| CB-47                   | CB                  | 31+14.7<br>20.7' RT  | 277.96    |                    | I=273.62' (DMH-48) |
| CB-50                   | CB                  | 16+97.2<br>8.4' RT   | 279.08    |                    | I=273.57' (DMH-52) |
| CB-51                   | CB                  | 16+97.2<br>-8.6' LT  | 279.08    |                    | I=273.56' (DMH-52) |
| CB-53                   | CB                  | 15+20.6<br>8.2' RT   | 278.12    |                    | I=272.75' (DMH-55) |
| CB-54                   | CB                  | 15+20.6<br>-8.5' LT  | 278.12    |                    | I=272.75' (DMH-55) |
| CB-57                   | CB                  | 12+49.4<br>8.4' RT   | 273.18    |                    | I=268.85' (WQU-59) |
| CB-58                   | CB                  | 13+01<br>-8.6' LT    | 275.51    |                    | I=271.37' (WQU-59) |
| CB-64                   | CB                  | 10+19.3<br>5.5' RT   | 260.71    |                    | I=256.38' (WQU-66) |
| CB-65                   | CB                  | 10+24.8<br>-44.4' LT | 258.00    |                    | I=253.67' (WQU-66) |
| DI-56                   | CMP DETENTION INLET | 14+43.8<br>-0.2' LT  |           | I=269.10' (WQU-56) |                    |

| DRAINAGE STRUCTURE DATA |                          |                       |           |                                                                               |                    |
|-------------------------|--------------------------|-----------------------|-----------|-------------------------------------------------------------------------------|--------------------|
| NO.                     | TYPE                     | STATION               | RIM ELEV. | INV. ELEV. IN                                                                 | INV. ELEV. OUT     |
| DI-60                   | CMP DETENTION INLET      | 13+04.9<br>4.3' RT    |           | I=268.52' (WQU-59)                                                            |                    |
| DMH-3                   | DMH (4'Ø)                | 46+89.3<br>-5.1' LT   | 281.80    | I=277.91' (CB-2)<br>I=277.65' (CB-1)                                          | I=277.55' (DMH-5)  |
| DMH-5                   | DMH (4'Ø)                | 44+63.8<br>-5.0' LT   | 286.26    | I=276.65' (DMH-3)<br>I=279.55' (CB-4)                                         | I=276.55' (DMH-9)  |
| DMH-9                   | DMH (6'Ø)                | 29+15<br>-5.6' LT     | 286.61    | I=276.41' (DMH-5)<br>I=279.31' (CB-8)<br>I=279.31' (CB-6)<br>I=279.31' (CB-7) | I=276.31' (DMH-12) |
| DMH-12                  | DMH (4'Ø)                | 27+51.7<br>-5.6' LT   | 288.93    | I=278.58' (CB-10)<br>I=277.98' (CB-11)<br>I=275.66' (DMH-9)                   | I=275.56' (DMH-14) |
| DMH-14                  | DMH (4'Ø)                | 25+77.1<br>-5.6' LT   | 291.61    | I=274.86' (DMH-12)<br>I=277.18' (CB-13)                                       | I=274.76' (DMH-22) |
| DMH-17                  | DMH (4'Ø)                | 42+78.8<br>3.0' RT    | 287.95    | I=278.81' (CB-16)<br>I=278.81' (CB-15)                                        | I=278.31' (DMH-20) |
| DMH-20                  | DMH (4'Ø)                | 40+82.6<br>3.0' RT    | 291.07    | I=279.92' (CB-18)<br>I=279.92' (CB-19)<br>I=277.53' (DMH-17)                  | I=276.92' (DMH-21) |
| DMH-21                  | DMH (4'Ø)                | 40+30.4<br>11.3' RT   | 292.08    | I=276.70' (DMH-20)                                                            | I=276.60' (DMH-22) |
| DMH-22                  | DMH (6'Ø)                | 25+20.3<br>10.9' RT   | 292.20    | I=274.52' (DMH-14)<br>I=276.52' (DMH-21)                                      | I=274.42' (DMH-24) |
| DMH-24                  | DMH (7'Ø)                | 24+50.9<br>-4.7' LT   | 293.61    | I=274.13' (DMH-22)<br>I=279.94' (CB-23)                                       | I=274.03' (DMH-26) |
| DMH-26                  | DMH (4'Ø)                | 21+86.4<br>-0.2' LT   | 292.80    | I=272.97' (DMH-24)<br>I=276.04' (CB-25)                                       | I=272.87' (DMH-29) |
| DMH-29                  | DMH (6'Ø)                | 20+65.7<br>0.8' RT    | 290.32    | I=275.58' (CB-27)<br>I=272.39' (DMH-26)<br>I=275.58' (CB-28)                  | I=272.29' (DMH-37) |
| DMH-32                  | DMH (4'Ø)                | 37+73<br>-2.8' LT     | 284.95    | I=276.37' (CB-30)<br>I=276.37' (CB-31)                                        | I=275.37' (DMH-35) |
| DMH-35                  | DMH (4'Ø)                | 36+60.9<br>-2.8' LT   | 286.62    | I=274.92' (DMH-32)<br>I=275.82' (CB-34)<br>I=275.82' (CB-33)                  | I=274.82' (DMH-37) |
| DMH-37                  | DMH (6'Ø)                | 20+28.9<br>1.0' RT    | 289.80    | I=272.14' (DMH-29)<br>I=275.04' (CB-36)<br>I=274.40' (DMH-35)                 | I=272.04' (DMH-39) |
| DMH-39                  | DMH (6'Ø)                | 19+73.7<br>-0.2' LT   | 287.23    | I=274.72' (CB-37)<br>I=271.82' (DMH-37)                                       | I=271.72' (DMH-42) |
| DMH-42                  | DMH (4'Ø)                | 18+84.7<br>-0.2' LT   | 284.11    | I=274.26' (CB-40)<br>I=274.26' (CB-41)<br>I=271.36' (DMH-39)                  | I=271.26' (DMH-49) |
| DMH-45                  | DMH (4'Ø)                | 33+24.8<br>-0.3' LT   | 280.43    | I=274.71' (CB-44)<br>I=274.71' (CB-43)                                        | I=274.21' (DMH-48) |
| DMH-48                  | DMH (4'Ø)                | 31+05.6<br>-0.3' LT   | 279.31    | I=273.11' (DMH-45)<br>I=273.51' (CB-47)<br>I=273.51' (CB-46)                  | I=273.01' (DMH-49) |
| DMH-49                  | DMH (6'Ø)                | 17+39.1<br>-0.1' LT   | 280.34    | I=270.68' (DMH-42)<br>I=272.50' (DMH-48)                                      | I=270.58' (DMH-52) |
| DMH-52                  | DMH (6'Ø)                | 16+97.3<br>-0.2' LT   | 279.58    | I=273.31' (CB-51)<br>I=270.41' (DMH-49)<br>I=273.31' (CB-50)                  | I=270.31' (DMH-55) |
| DMH-55                  | DMH (6'Ø)                | 15+20.5<br>-0.1' LT   | 278.90    | I=272.50' (CB-54)<br>I=272.50' (CB-53)<br>I=269.60' (DMH-52)                  | I=269.50' (WQU-56) |
| DMH-62                  | DMH (4'Ø)                | 12+92.7<br>-0.2' LT   | 275.92    | I=266.88' (DO-61)                                                             | I=261.71' (FES-63) |
| DMH-68                  | DMH (6'Ø)                | 10+59.3<br>-128.9' LT | 260.17    | I=253.16' (WQU-66)<br>I=253.76' (OCS-67)                                      | I=253.06' (FES-69) |
| DO-61                   | CMP DETENTION OUTLET     | 13+04.9<br>-0.2' LT   |           |                                                                               | I=267.00' (DMH-62) |
| FES-63                  | FLARED END SECTION       | 11+60.3<br>-44.4' LT  |           | I=260.16' (DMH-62)                                                            |                    |
| FES-69                  | FLARED END SECTION       | 11+75.6<br>-166.3' LT |           | I=252.71' (DMH-68)                                                            |                    |
| OCS-67                  | OUTLET CONTROL STRUCTURE | 10+68.2<br>-120.5' LT | 259.55    |                                                                               | I=254.00' (DMH-68) |
| WQU-56                  | WQU (CONTECH CS-5)       | 14+80.9<br>-0.3' LT   | 278.85    | I=269.34' (DMH-55)                                                            | I=269.24' (DI-56)  |
| WQU-59                  | WQU (CONTECH CS-4)       | 13+00.8<br>4.3' RT    | 275.97    | I=268.64' (CB-57)<br>I=271.32' (CB-58)                                        | I=268.54' (DI-60)  |
| WQU-66                  | WQU (CONTECH CS-4)       | 10+38.7<br>-44.0' LT  | 260.50    | I=256.17' (CB-64)<br>I=253.61' (CB-65)                                        | I=253.51' (DMH-68) |

| DRAINAGE PIPE DATA |                                        |                   |        |       |
|--------------------|----------------------------------------|-------------------|--------|-------|
| PIPE               | PIPE LOCATION                          | SIZE & TYPE       | LENGTH | SLOPE |
| D-1                | CB-1 TO DMH-3<br>STA 46+89 TO 46+89    | 12" CLASS III RCP | 9 LF   | 0.004 |
| D-2                | CB-2 TO DMH-3<br>STA 46+91 TO 46+89    | 12" CLASS III RCP | 18 LF  | 0.004 |
| D-3                | DMH-3 TO DMH-5<br>STA 46+89 TO 44+64   | 12" CLASS III RCP | 221 LF | 0.004 |
| D-4                | CB-4 TO DMH-5<br>STA 44+64 TO 44+64    | 12" CLASS III RCP | 9 LF   | 0.030 |
| D-5                | DMH-5 TO DMH-9<br>STA 44+64 TO 44+40   | 21" CLASS III RCP | 29 LF  | 0.000 |
| D-6                | CB-6 TO DMH-9<br>STA 44+26 TO 44+40    | 12" CLASS III RCP | 34 LF  | 0.030 |
| D-7                | CB-7 TO DMH-9<br>STA 44+26 TO 44+40    | 12" CLASS III RCP | 9 LF   | 0.030 |
| D-8                | CB-8 TO DMH-9<br>STA 44+64 TO 44+40    | 12" CLASS III RCP | 20 LF  | 0.030 |
| D-9                | DMH-9 TO DMH-12<br>STA 29+15 TO 27+52  | 21" CLASS III RCP | 159 LF | 0.004 |
| D-10               | CB-10 TO DMH-12<br>STA 27+52 TO 27+52  | 12" CLASS III RCP | 5 LF   | 0.030 |
| D-11               | CB-11 TO DMH-12<br>STA 27+52 TO 27+52  | 12" CLASS III RCP | 15 LF  | 0.030 |
| D-12               | DMH-12 TO DMH-14<br>STA 27+52 TO 25+77 | 24" CLASS IV RCP  | 170 LF | 0.004 |
| D-13               | CB-13 TO DMH-14<br>STA 25+77 TO 25+77  | 12" CLASS IV RCP  | 15 LF  | 0.030 |
| D-14               | DMH-14 TO DMH-22<br>STA 25+77 TO 25+20 | 27" CLASS IV RCP  | 55 LF  | 0.004 |
| D-15               | CB-15 TO DMH-17<br>STA 42+79 TO 42+79  | 12" CLASS III RCP | 10 LF  | 0.020 |
| D-16               | CB-16 TO DMH-17<br>STA 42+79 TO 42+79  | 12" CLASS III RCP | 17 LF  | 0.020 |
| D-17               | DMH-17 TO DMH-20<br>STA 42+79 TO 40+83 | 12" CLASS IV RCP  | 192 LF | 0.004 |
| D-18               | CB-19 TO DMH-20<br>STA 40+83 TO 40+83  | 12" CLASS IV RCP  | 7 LF   | 0.020 |
| D-19               | CB-18 TO DMH-20<br>STA 40+83 TO 40+83  | 12" CLASS IV RCP  | 13 LF  | 0.020 |
| D-20               | DMH-20 TO DMH-21<br>STA 40+83 TO 40+30 | 12" CLASS IV RCP  | 51 LF  | 0.004 |
| D-21               | DMH-21 TO DMH-22<br>STA 40+30 TO 40+11 | 18" CLASS IV RCP  | 17 LF  | 0.004 |
| D-22               | DMH-22 TO DMH-24<br>STA 25+20 TO 24+51 | 27" CLASS IV RCP  | 68 LF  | 0.004 |
| D-23               | CB-23 TO DMH-24<br>STA 24+52 TO 24+51  | 12" CLASS IV RCP  | 14 LF  | 0.030 |
| D-24               | DMH-24 TO DMH-26<br>STA 24+51 TO 21+86 | 27" CLASS IV RCP  | 261 LF | 0.004 |
| D-25               | CB-25 TO DMH-26<br>STA 21+86 TO 21+86  | 12" CLASS IV RCP  | 10 LF  | 0.030 |
| D-26               | DMH-26 TO DMH-29<br>STA 21+86 TO 20+66 | 30" CLASS IV RCP  | 117 LF | 0.004 |
| D-27               | CB-27 TO DMH-29<br>STA 20+71 TO 20+66  | 12" CLASS IV RCP  | 13 LF  | 0.030 |
| D-28               | CB-28 TO DMH-29<br>STA 20+65 TO 20+66  | 12" CLASS IV RCP  | 28 LF  | 0.030 |
| D-29               | DMH-29 TO DMH-37<br>STA 20+66 TO 20+29 | 30" CLASS IV RCP  | 33 LF  | 0.004 |
| D-30               | CB-30 TO DMH-32<br>STA 37+73 TO 37+73  | 12" CLASS III RCP | 7 LF   | 0.004 |
| D-31               | CB-31 TO DMH-32<br>STA 37+73 TO 37+73  | 12" CLASS III RCP | 13 LF  | 0.004 |
| D-32               | DMH-32 TO DMH-35<br>STA 37+73 TO 36+61 | 15" CLASS III RCP | 108 LF | 0.004 |
| D-33               | CB-34 TO DMH-35<br>STA 36+61 TO 36+61  | 12" CLASS III RCP | 7 LF   | 0.030 |

| DRAINAGE PIPE DATA |                                        |                   |        |       |
|--------------------|----------------------------------------|-------------------|--------|-------|
| PIPE               | PIPE LOCATION                          | SIZE & TYPE       | LENGTH | SLOPE |
| D-34               | CB-33 TO DMH-35<br>STA 36+61 TO 36+61  | 12" CLASS III RCP | 13 LF  | 0.030 |
| D-35               | DMH-35 TO DMH-37<br>STA 36+61 TO 35+56 | 12" CLASS IV RCP  | 101 LF | 0.004 |
| D-36               | CB-36 TO DMH-37<br>STA 20+39 TO 20+29  | 12" CLASS IV RCP  | 41 LF  | 0.030 |
| D-37               | DMH-37 TO DMH-39<br>STA 20+29 TO 19+74 | 30" CLASS IV RCP  | 51 LF  | 0.004 |
| D-38               | CB-37 TO DMH-39<br>STA 19+74 TO 19+74  | 12" CLASS III RCP | 5 LF   | 0.030 |
| D-39               | DMH-39 TO DMH-42<br>STA 19+74 TO 18+85 | 30" CLASS IV RCP  | 85 LF  | 0.004 |
| D-40               | CB-40 TO DMH-42<br>STA 18+85 TO 18+85  | 12" CLASS III RCP | 4 LF   | 0.030 |
| D-41               | CB-41 TO DMH-42<br>STA 18+85 TO 18+85  | 12" CLASS III RCP | 4 LF   | 0.030 |
| D-42               | DMH-42 TO DMH-49<br>STA 18+85 TO 17+39 | 30" CLASS III RCP | 142 LF | 0.004 |
| D-43               | CB-44 TO DMH-45<br>STA 33+25 TO 33+25  | 12" CLASS III RCP | 17 LF  | 0.005 |
| D-44               | CB-43 TO DMH-45<br>STA 33+25 TO 33+25  | 12" CLASS III RCP | 17 LF  | 0.005 |
| D-45               | DMH-45 TO DMH-48<br>STA 33+25 TO 31+06 | 15" CLASS III RCP | 215 LF | 0.005 |
| D-46               | CB-47 TO DMH-48<br>STA 31+15 TO 31+06  | 12" CLASS III RCP | 19 LF  | 0.005 |
| D-47               | CB-46 TO DMH-48<br>STA 31+15 TO 31+06  | 12" CLASS III RCP | 19 LF  | 0.005 |
| D-48               | DMH-48 TO DMH-49<br>STA 31+06 TO 30+04 | 21" CLASS III RCP | 98 LF  | 0.005 |
| D-49               | DMH-49 TO DMH-52<br>STA 17+39 TO 16+97 | 36" CLASS III RCP | 38 LF  | 0.004 |
| D-50               | CB-50 TO DMH-52<br>STA 16+97 TO 16+97  | 12" CLASS III RCP | 5 LF   | 0.030 |
| D-51               | CB-51 TO DMH-52<br>STA 16+97 TO 16+97  | 12" CLASS III RCP | 4 LF   | 0.030 |
| D-52               | DMH-52 TO DMH-55<br>STA 16+97 TO 15+21 | 36" CLASS III RCP | 173 LF | 0.004 |
| D-53               | CB-53 TO DMH-55<br>STA 15+21 TO 15+21  | 12" CLASS III RCP | 4 LF   | 0.030 |
| D-54               | CB-54 TO DMH-55<br>STA 15+21 TO 15+21  | 12" CLASS III RCP | 4 LF   | 0.030 |
| D-55               | DMH-55 TO WQU-56<br>STA 15+21 TO 14+81 | 36" CLASS III RCP | 36 LF  | 0.004 |
| D-56               | WQU-56 TO DI-56<br>STA 14+81 TO 14+45  | 36" CLASS III RCP | 34 LF  | 0.004 |
| D-57               | CB-57 TO WQU-59<br>STA 12+49 TO 13+01  | 12" CLASS III RCP | 48 LF  | 0.004 |
| D-58               | CB-58 TO WQU-59<br>STA 13+01 TO 13+01  | 12" CLASS III RCP | 9 LF   | 0.004 |
| D-59               | WQU-59 TO DI-60<br>STA 13+01 TO 13+05  | 12" CLASS III RCP | 2 LF   | 0.004 |
| D-60               | DO-61 TO DMH-62<br>STA 13+05 TO 12+93  | 21" CLASS III RCP | 10 LF  | 0.010 |
| D-61               | DMH-62 TO FES-63<br>STA 12+93 TO 11+60 | 21" CLASS IV RCP  | 153 LF | 0.010 |
| D-62               | CB-64 TO WQU-66<br>STA 10+19 TO 10+39  | 12" CLASS III RCP | 49 LF  | 0.004 |
| D-63               | CB-65 TO WQU-66<br>STA 10+25 TO 10+39  | 12" CLASS III RCP | 10 LF  | 0.004 |
| D-64               | WQU-66 TO DMH-68<br>STA 10+39 TO 10+59 | 12" HDPE          | 83 LF  | 0.004 |
| D-65               | OCS-67 TO DMH-68<br>STA 10+68 TO 10+59 | 24" HDPE          | 8 LF   | 0.020 |
| D-66               | DMH-68 TO FES-69<br>STA 10+59 TO 11+76 | 24" HDPE          | 84 LF  | 0.004 |

| REVISIONS              |
|------------------------|
| 1. 2-21-24 PEER REVIEW |
| 2.                     |
| 3.                     |

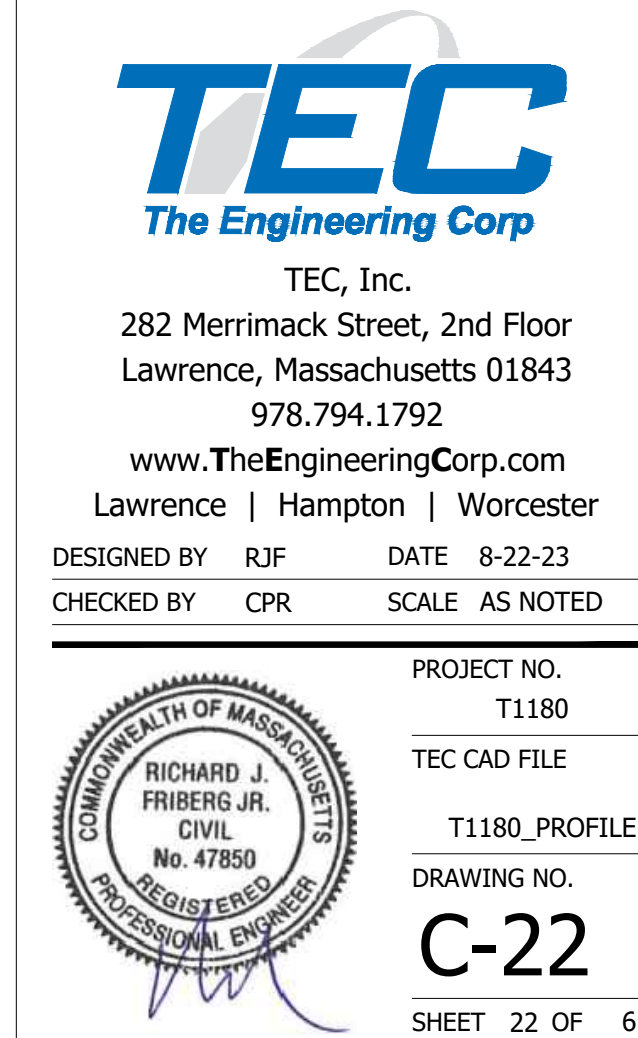
|                    |
|--------------------|
| DRAWING TITLE      |
| Storm Sewer Tables |

SUBDIVISION NAME & LOCATION

King Street  
Commons  
550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER

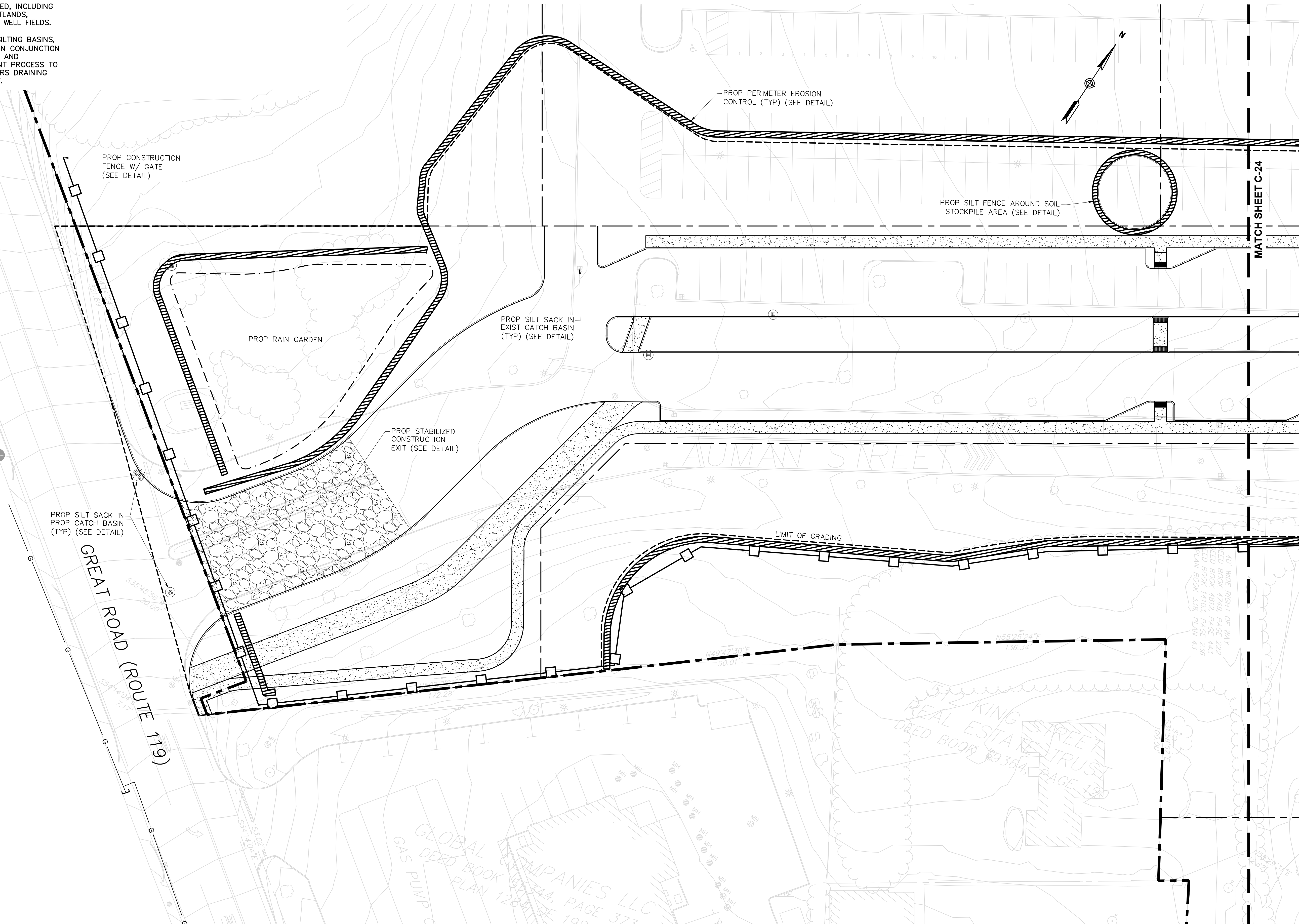
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290 Merrimack Street  
Lawrence, MA 01840

DESIGNER / ENGINEER



NOTES:

- NOTES:
1. LAND SHALL BE DEVELOPED IN INCREMENTS OF WORKABLE SIZE WHICH CAN BE COMPLETED DURING A SINGLE CONSTRUCTION SEASON. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE COORDINATED WITH THE SEQUENCING OF GRADING, DEVELOPMENT AND CONSTRUCTION OPERATIONS. CONTROL MEASURES SUCH AS HYDROSEEDING, BERMS, INTERCEPTOR DITCHES, MULCHING, TEMPORARY SODDING, TERRACES, AND SEDIMENT TRAPS SHALL BE PUT INTO EFFECT PRIOR TO THE COMMENCEMENT OF EACH INCREMENT OF THE DEVELOPMENT/CONSTRUCTION PROCESS.
  2. VEGETATIVE COVER AND RUNOFF CHARACTERISTICS SHALL BE MAINTAINED AS CLOSE AS POSSIBLE TO CONDITIONS BEFORE DEVELOPMENT BY REDUCING CUT AND FILL AND OTHER CONSIDERATIONS.
  3. WATER RESOURCES SHALL BE PROTECTED, INCLUDING BUT NOT LIMITED TO FLOODPLAINS, WETLANDS, AQUIFER RECHARGE AREAS, AND TOWN WELL FIELDS.
  4. SEDIMENT BASINS (DEBRIS BASINS, DESILTING BASINS, OR SILT TRAPS) SHALL BE INSTALLED IN CONJUNCTION WITH THE INITIAL GRADING OPERATIONS AND MAINTAINED THROUGH THE DEVELOPMENT PROCESS TO REMOVE SEDIMENT FROM RUNOFF WATERS DRAINING FROM LAND UNDERGOING DEVELOPMENT.
  5. THE APPLICANT IS REQUIRED TO CLEAN UP ANY SAND, DIRT, OR DEBRIS WHICH ERODES FROM THE SUBDIVISION ONTO ANY PUBLIC STREET OR PRIVATE PROPERTY, AND TO REMOVE SILT OR DEBRIS THAT ENTERS ANY EXISTING DRAINAGE SYSTEM INCLUDING CATCH BASIN SUMPS, PIPELINES, MANHOLES AND DITCHES WITHIN 24 HOURS OF BEING NOTED BY THE TOWN.
  6. HAY BALES OR BOARD APPROVED EQUIVALENT MUST BE USED AROUND THE CATCH BASINS ON THE PROPOSED STREETS TO PROTECT THEM FROM THE ERODING SOILS AND PROVIDE A CHECK DAM TO SLOW RUNOFF DURING CONSTRUCTION.



## REVISIONS

1. 2-21-24 PEER REVIEW
- 2.
- 3.

## DRAWING TITLE

# Erosion & Sedimentation Control Plan A

SUBDIVISION NAME &amp; LOCATION

## King Street

## Commons

550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER

Lupoli Companies  
290 Merrimack Street  
Lawrence, MA 01840

DESIGNER / ENGINEER



TEC, Inc.  
282 Merrimack Street, 2nd Floor  
Lawrence, Massachusetts 01840  
978.794.1792

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|-----------------|--------------|
| DESIGNED BY RJF | DATE 8-22-23 |
| CHECKED BY CPR  | SCALE 1"=20' |



PROJECT NO.  
T1180

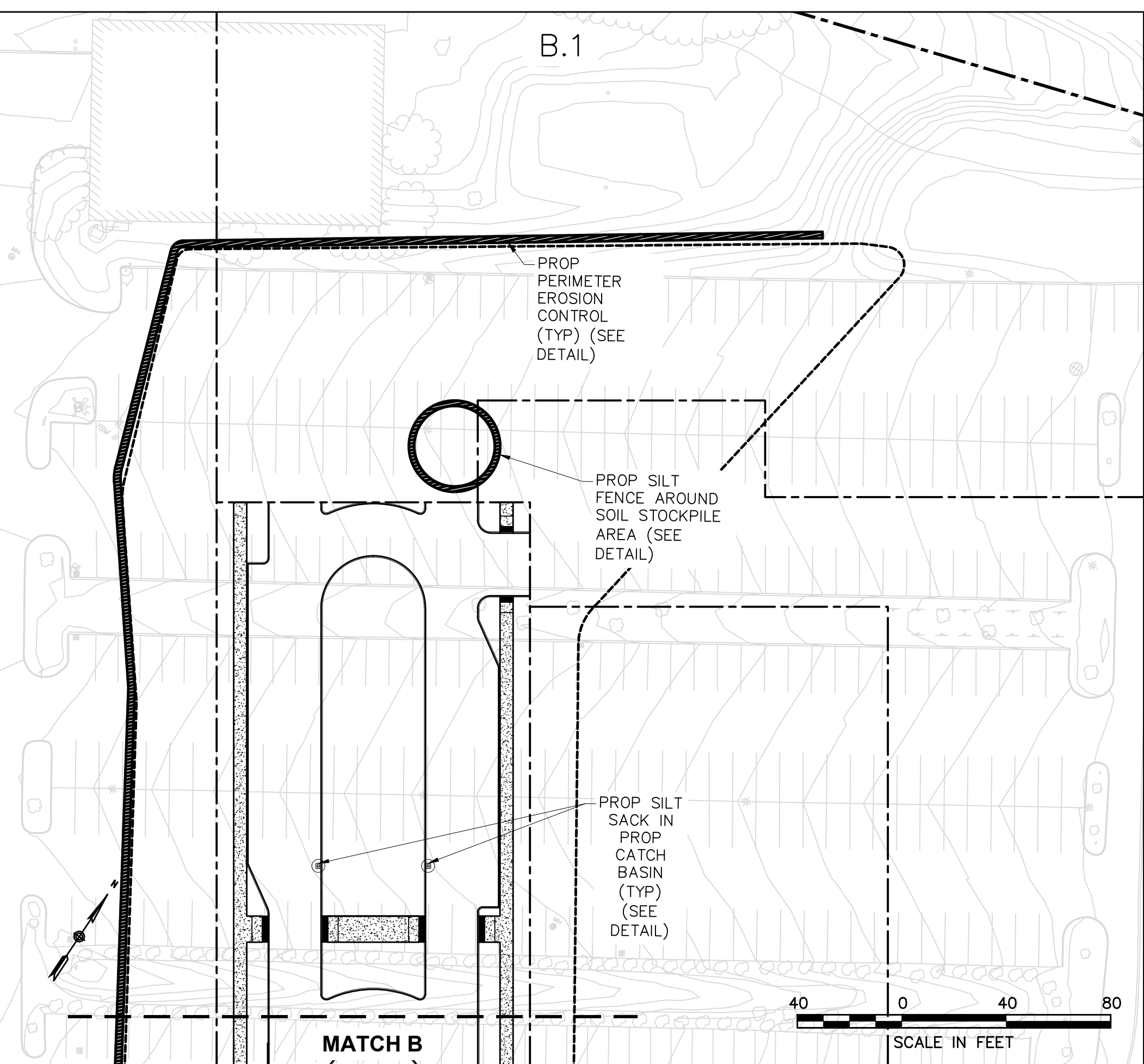
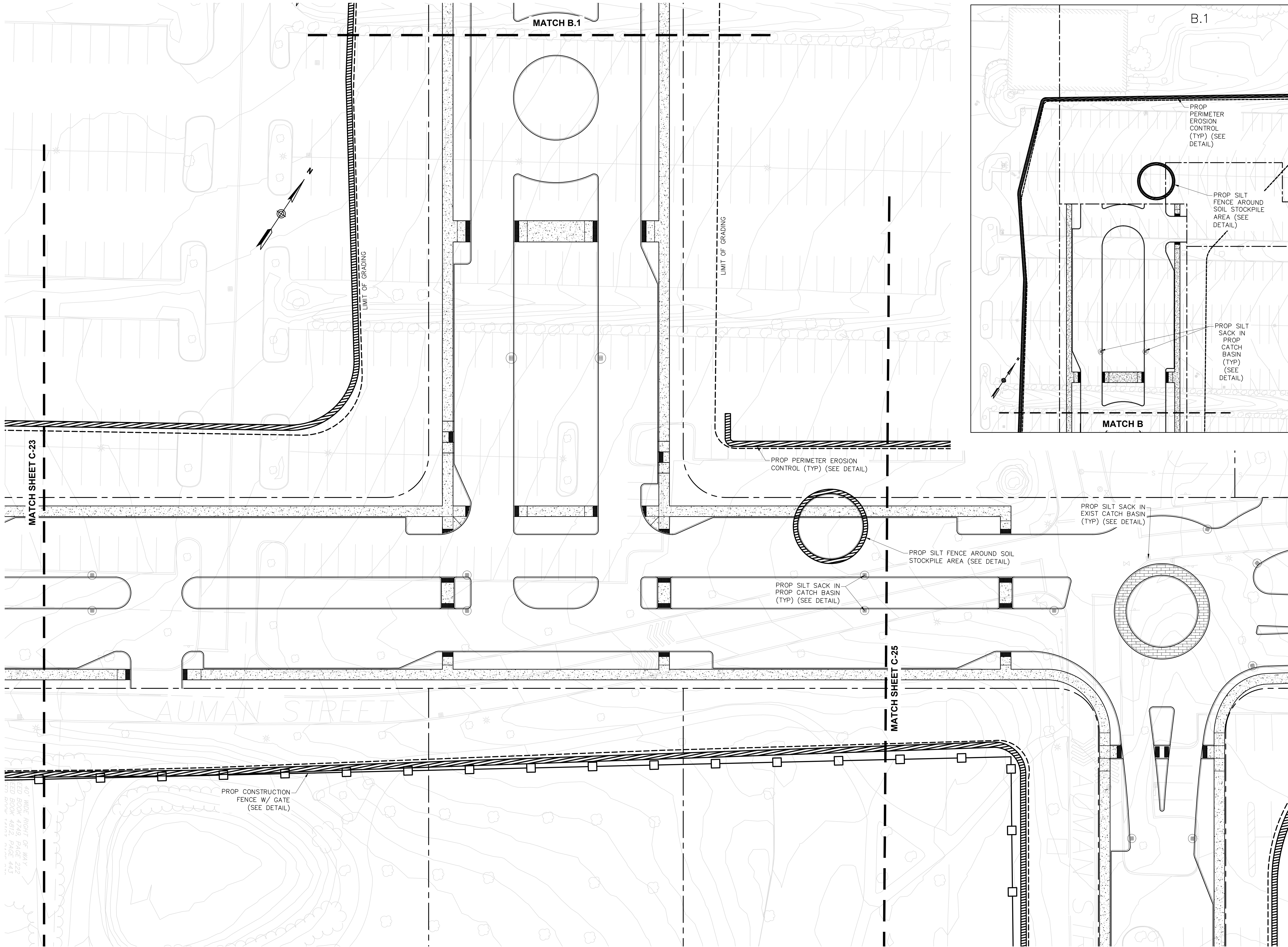
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DRAWING NO.  
**C-23**

SHEET 23 OF 61





| REVISIONS |                     |
|-----------|---------------------|
| 1.        | 2-21-24 PEER REVIEW |
| 2.        |                     |
| 3.        |                     |

DRAWING TITLE  
**Erosion & Sedimentation Control Plan B**

SUBDIVISION NAME & LOCATION  
**King Street Commons**  
550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER  
**Lupoli Companies**  
290 Merrimack Street  
Lawrence, MA 01840

DESIGNER / ENGINEER



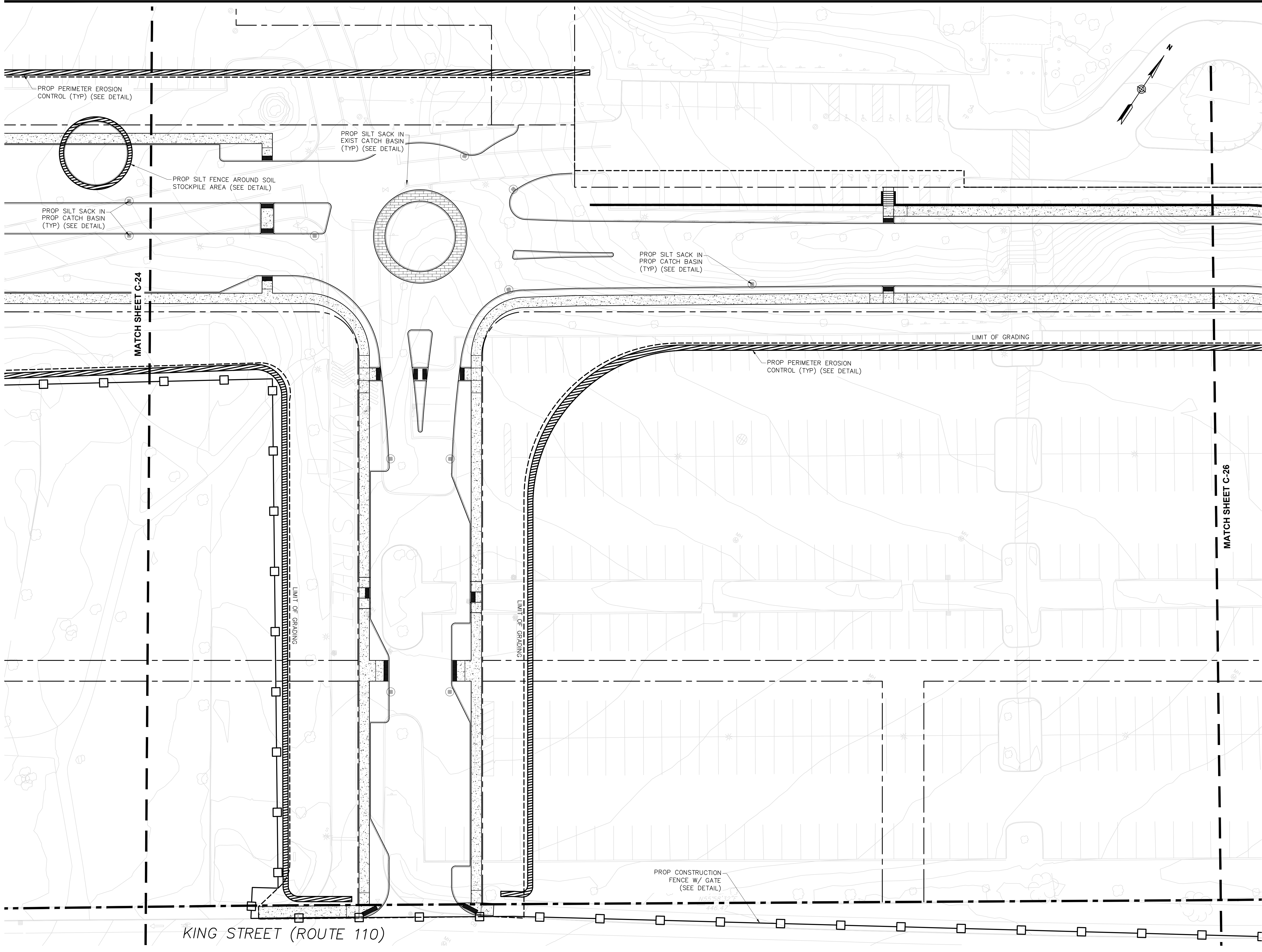
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DESIGNED BY RJF DATE 8-22-23  
CHECKED BY CPR SCALE 1"=20'

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|--|--------------|----------|
|  | PROJECT NO.  | T1180    |
|  | TEC CAD FILE |          |
|  | DRAWING NO.  | C-24     |
|  | SHEET        | 24 OF 61 |





| REVISIONS |                     |
|-----------|---------------------|
| 1.        | 2-21-24 PEER REVIEW |
| 2.        |                     |
| 3.        |                     |

DRAWING TITLE  
**Erosion & Sedimentation Control Plan C**

SUBDIVISION NAME & LOCATION  
**King Street Commons**  
550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER  
**Lupoli Companies**  
290 Merrimack Street  
Lawrence, MA 01840

DESIGNER / ENGINEER



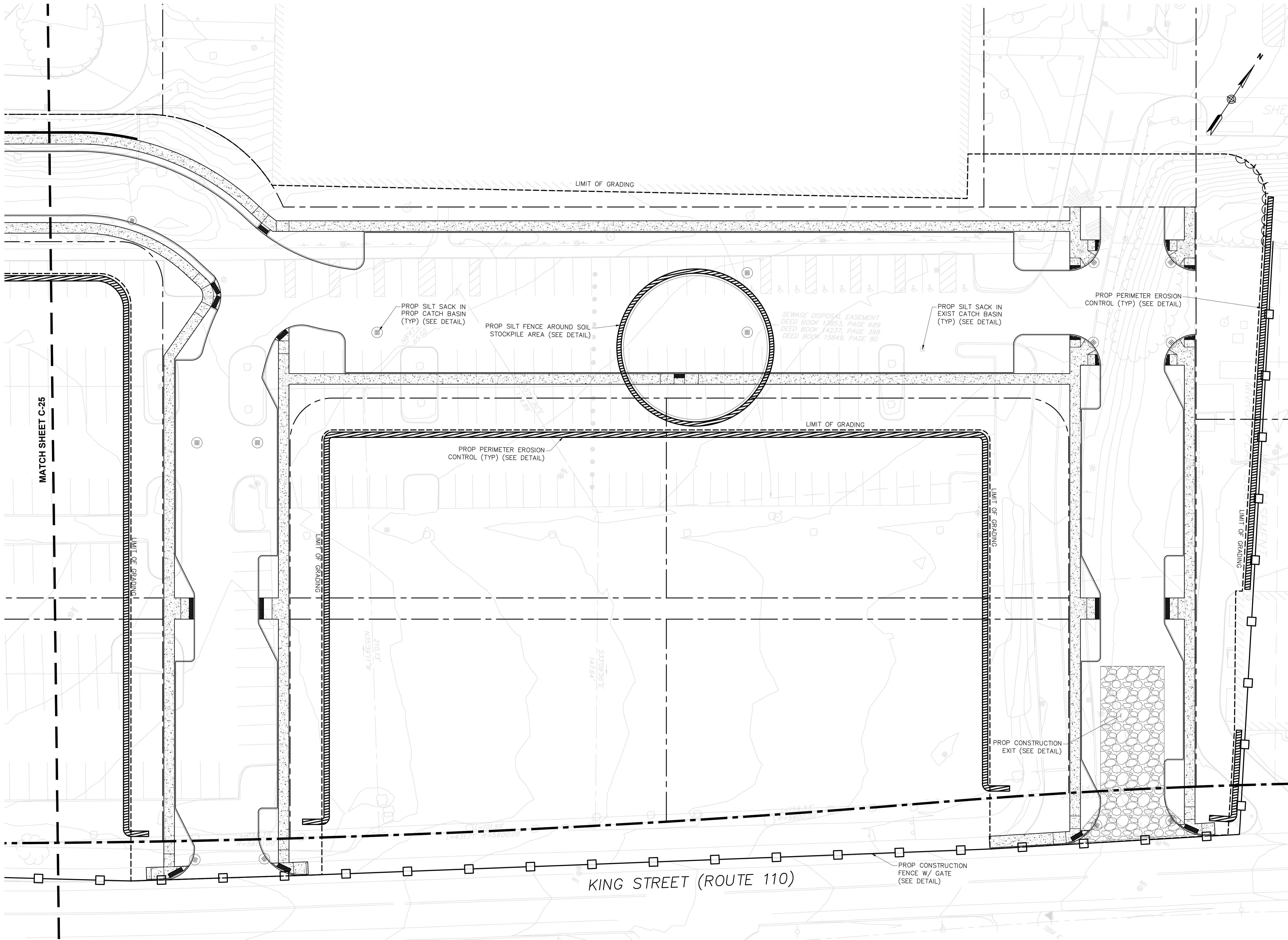
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TEC CAD FILE  
T1180\_ER  
DRAWING NO. **C-25**  
SHEET 25 OF 61







MATCH SHEET C-25



| REVISIONS |                     |
|-----------|---------------------|
| 1.        | 2-21-24 PEER REVIEW |
| 2.        |                     |
| 3.        |                     |

DRAWING TITLE  
**Erosion & Sedimentation Control Plan D**

SUBDIVISION NAME & LOCATION  
**King Street Commons**  
550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER  
**Lupoli Companies**  
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Lawrence, MA 01840

DESIGNER / ENGINEER



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T1180

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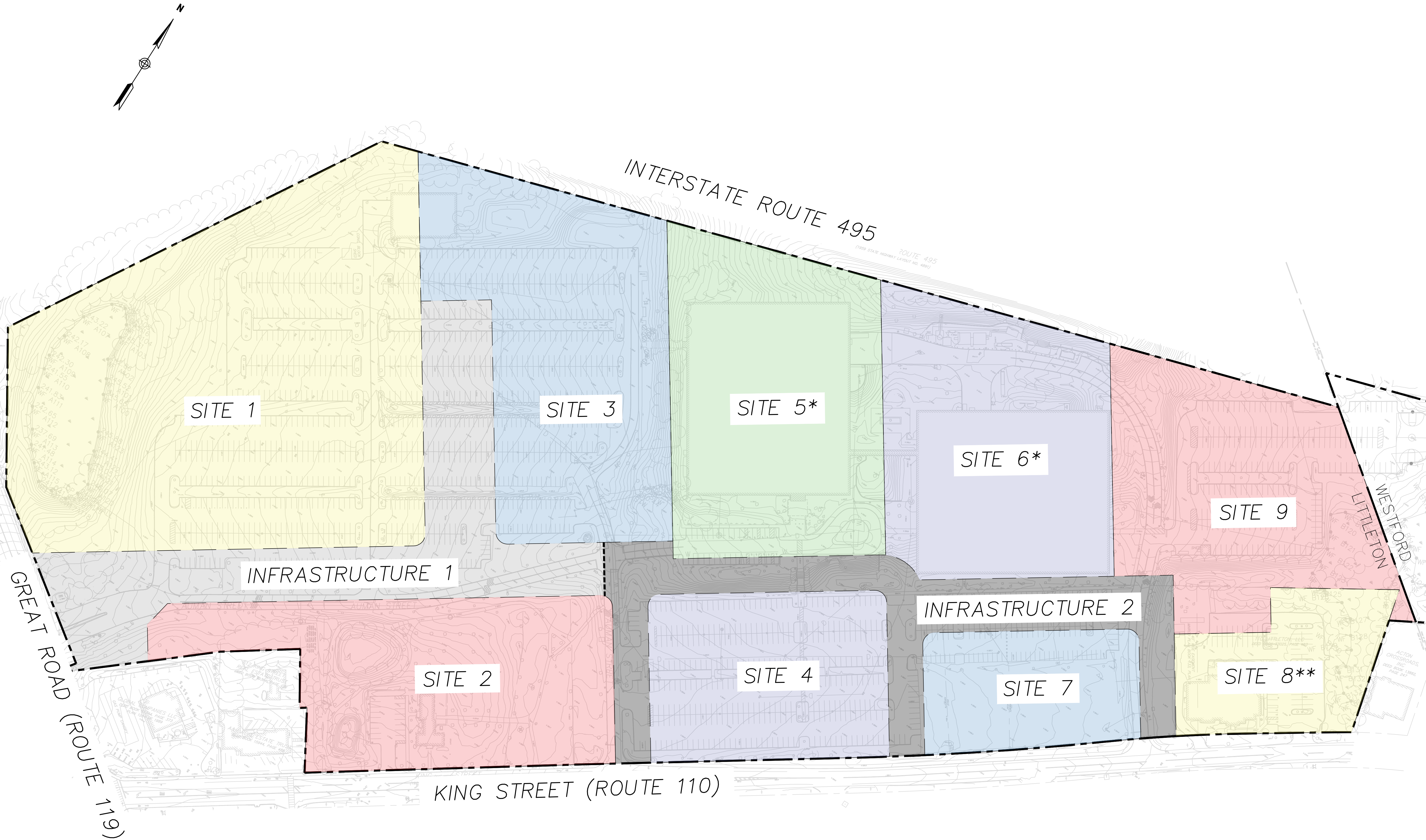
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DRAWING NO.  
**C-26**

SHEET 26 OF 61



- NOTES:
1. \*DEVELOPMENT OF SITES 5 & 6, BOTH OF WHICH ARE CURRENTLY OCCUPIED BY OFFICE BUILDINGS, IS DEPENDENT UPON MARKET CONDITIONS.
  2. \*\*SITE 8 TO BE INCORPORATED INTO PLANNED DEVELOPMENT UPON COMPLETION OF LAND PURCHASE.
  3. INFRASTRUCTURE PHASE 1 IS TO TIE THE PROPOSED ROAD INTO THE EXISTING AUMAN STREET.



| REVISIONS |                     |
|-----------|---------------------|
| 1.        | 2-21-24 PEER REVIEW |
| 2.        |                     |
| 3.        |                     |

DRAWING TITLE

**Construction Phasing**

SUBDIVISION NAME & LOCATION

**King Street Commons**  
550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER

**Lupoli Companies**  
290 Merrimack Street  
Lawrence, MA 01840

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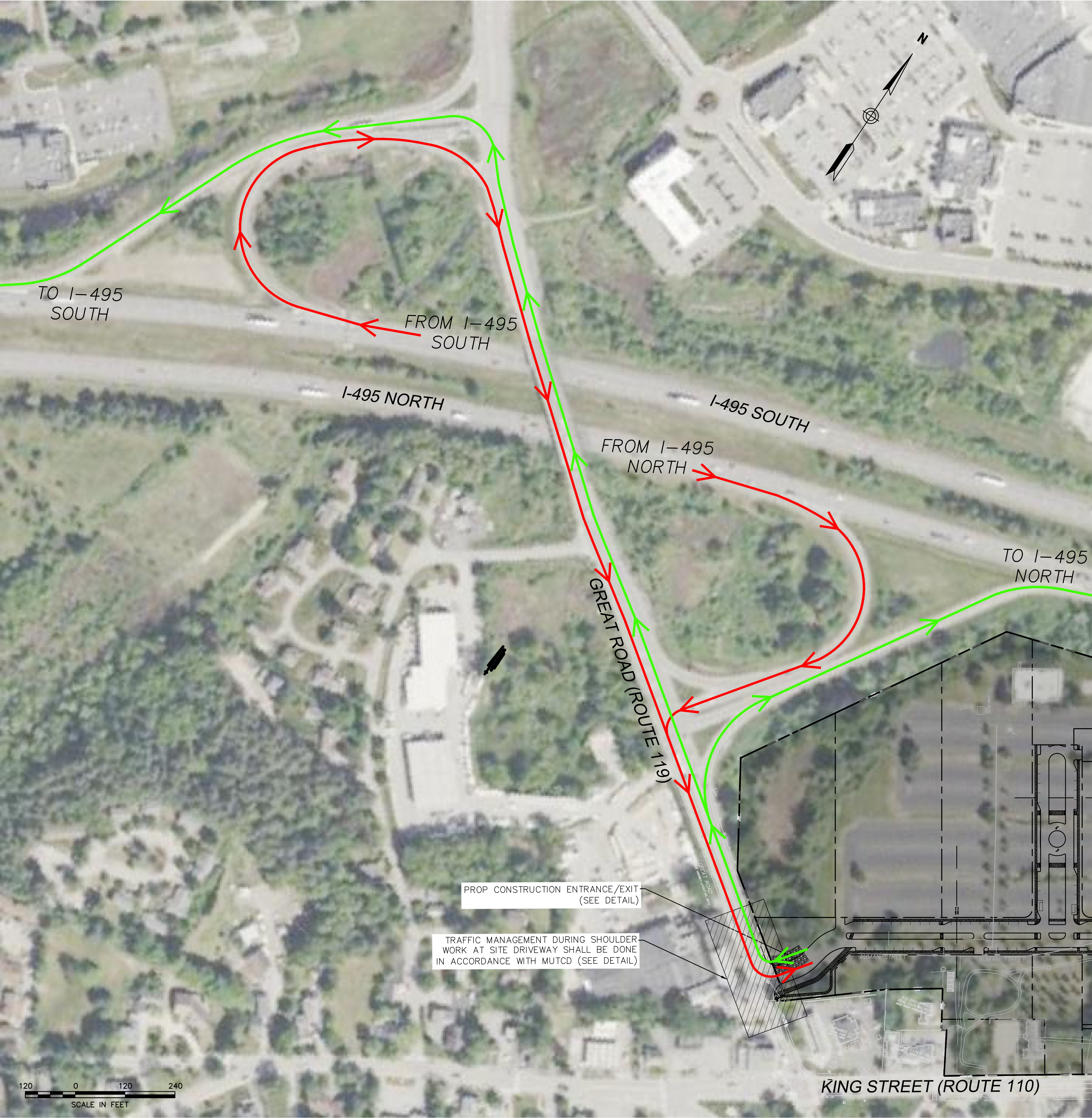
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DRAWING NO.  
**C-27**

SHEET 27 OF 61







LEGEND

- TO THE SITE
- FROM THE SITE

NOTES:  
1. CONSTRUCTION SHALL OCCUR MON-SAT BETWEEN 7:00 AM AND 7:00 PM WITH THE EXCEPTION OF HOLIDAYS. ALL HOURS OF CONSTRUCTION OPERATIONS SHALL BE IN ACCORDANCE WITH ALL STATE AND LOCAL REGULATIONS.  
2. SITE ENTRANCE/EXIT SHALL BE STABILIZED THROUGHOUT CONSTRUCTION, SEE EROSION AND SEDIMENT CONTROL PLAN FOR DETAILS.

| REVISIONS              |
|------------------------|
| 1. 2-21-24 PEER REVIEW |
| 2.                     |
| 3.                     |

| DRAWING TITLE                                                  |
|----------------------------------------------------------------|
| Construction Management Plan                                   |
| SUBDIVISION NAME & LOCATION                                    |
| King Street Commons<br>550 King Street<br>Littleton, MA 01460  |
| OWNER / APPLICANT / SUBDIVIDER                                 |
| Lupoli Companies<br>290 Merrimack Street<br>Lawrence, MA 01840 |
| DESIGNER / ENGINEER                                            |

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978.794.1792  
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|-------------|-----|-------|----------|
| DESIGNED BY | RJF | DATE  | 8-22-23  |
| CHECKED BY  | CPR | SCALE | AS NOTED |

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|----------------|---------------|-------|
|                | PROJECT NO.   | T1180 |
|                | TEC CAD FILE  |       |
|                | T1180_CMP.dwg |       |
|                | DRAWING NO.   | C-28  |
| SHEET 28 OF 61 |               |       |



Notes for Figure 6H-6—Typical Application 6  
Shoulder Work with Minor Encroachment

Guidance:

1. All lanes should be a minimum of 10 feet in width as measured to the near face of the channelizing devices.
2. The treatment shown should be used on a minor road having low speeds. For higher-speed traffic conditions, a lane closure should be used.

Option:

3. For short-term use on low-volume, low-speed roadways with vehicular traffic that does not include longer and wider heavy commercial vehicles, a minimum lane width of 9 feet may be used.
4. Where the opposite shoulder is suitable for carrying vehicular traffic and of adequate width, lanes may be shifted by use of closely-spaced channelizing devices, provided that the minimum lane width of 10 feet is maintained.
5. Additional advance warning may be appropriate, such as a ROAD NARROWS sign.
6. Temporary traffic barriers may be used along the work space.
7. The shadow vehicle may be omitted if a taper and channelizing devices are used.
8. A truck-mounted attenuator may be used on the shadow vehicle.
9. For short-duration work, the taper and channelizing devices may be omitted if a shadow vehicle with activated high-intensity rotating, flashing, oscillating, or strobe lights is used.
10. Vehicle hazard warning signals may be used to supplement high-intensity rotating, flashing, oscillating, or strobe lights.

Standard:

11. Vehicle-mounted signs shall be mounted in a manner such that they are not obscured by equipment or supplies. Sign legends on vehicle-mounted signs shall be covered or turned from view when work is not in progress.
12. Shadow and work vehicles shall display high-intensity rotating, flashing, oscillating, or strobe lights.
13. Vehicle hazard warning signals shall not be used instead of the vehicle's high-intensity rotating, flashing, oscillating, or strobe lights.

Notes for Figure 6H-10—Typical Application 10  
Lane Closure on a Two-Lane Road Using Flaggers

Option:

1. For low-volume situations with short work zones on straight roadways where the flagger is visible to road users approaching from both directions, a single flagger, positioned to be visible to road users approaching from both directions, may be used (see Chapter 6E).
2. The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short-duration operations.
3. Flashing warning lights and/or flags may be used to call attention to the advance warning signs. A BE PREPARED TO STOP sign may be added to the sign series.

Guidance:

4. The buffer space should be extended so that the two-way traffic taper is placed before a horizontal (or crest vertical) curve to provide adequate sight distance for the flagger and a queue of stopped vehicles.

Standard:

5. At night, flagger stations shall be illuminated, except in emergencies.

Guidance:

6. When used, the BE PREPARED TO STOP sign should be located between the Flagger sign and the ONE LANE ROAD sign.
7. When a grade crossing exists within or upstream of the transition area and it is anticipated that queues resulting from the lane closure might extend through the grade crossing, the TTC zone should be extended so that the transition area precedes the grade crossing.
8. When a grade crossing equipped with active warning devices exists within the activity area, provisions should be made for keeping flaggers informed as to the activation status of these warning devices.
9. When a grade crossing exists within the activity area, drivers operating on the left-hand side of the normal center line should be provided with comparable warning devices as for drivers operating on the right-hand side of the normal center line.
10. Early coordination with the railroad company or light rail transit agency should occur before work starts.

Option:

11. A flagger or a uniformed law enforcement officer may be used at the grade crossing to minimize the probability that vehicles are stopped within 15 feet of the grade crossing, measured from both sides of the outside rails.

NOTES:

1. APPROPRIATE TRAFFIC MANAGEMENT METHODS ARE TO BE USED ON ALL PUBLIC ROADS TO ENSURE AND PROTECT THE SAFETY OF BOTH THE PUBLIC AND WORKERS DURING CONSTRUCTION OF THE SITE DRIVEWAYS. ALL TRAFFIC MANAGEMENT SHALL BE PERFORMED IN ACCORDANCE WITH MUTCD STANDARDS.
2. IF DETOURS ARE REQUIRED DURING CONSTRUCTION, ALL DETOUR ROUTES AND ASSOCIATED SIGNAGE SHALL BE SHOWN IN ACCORDANCE WITH MUTCD AND ARE SUBJECT TO APPROVAL BY THE FIRE DEPARTMENT AND POLICE DEPARTMENT.
3. TO MINIMIZE IMPACTS TO LOCAL ROADS, SCHOOLS, PARKS, RESIDENTS, AND ABUTTERS ALL TRUCK TRAFFIC SHALL BE ROUTED TO AND FROM THE ABUTTING I-495 FREEWAY AND TO AND FROM THE NEAREST SITE DRIVEWAY ON GREAT ROAD.
4. SHOULDER AND PARTIAL LANE CLOSURE ON THE NORTHEAST SIDE OF GREAT ROAD IS EXPECTED AT THE LOACTION OF UTILITY CONNECTIONS. PARTIAL LANE CLOSURE SHALL FOLLOW TA-6. TWO-WAY TRAVEL SHALL BE MAINTAINED BY USE OF THE SOUTHBOUND SHOULDER AND LEFT TURN LANE, AS NECESSARY.
5. FULL WEST-BOUND LANE CLOSURE IS EXPECTED ON KING STREET AT THE LOCATION OF UTILITY CONNECTIONS. LANE CLOSURE SHALL FOLLOW TA-10.

Figure 6H-6. Shoulder Work with Minor Encroachment (TA-6)

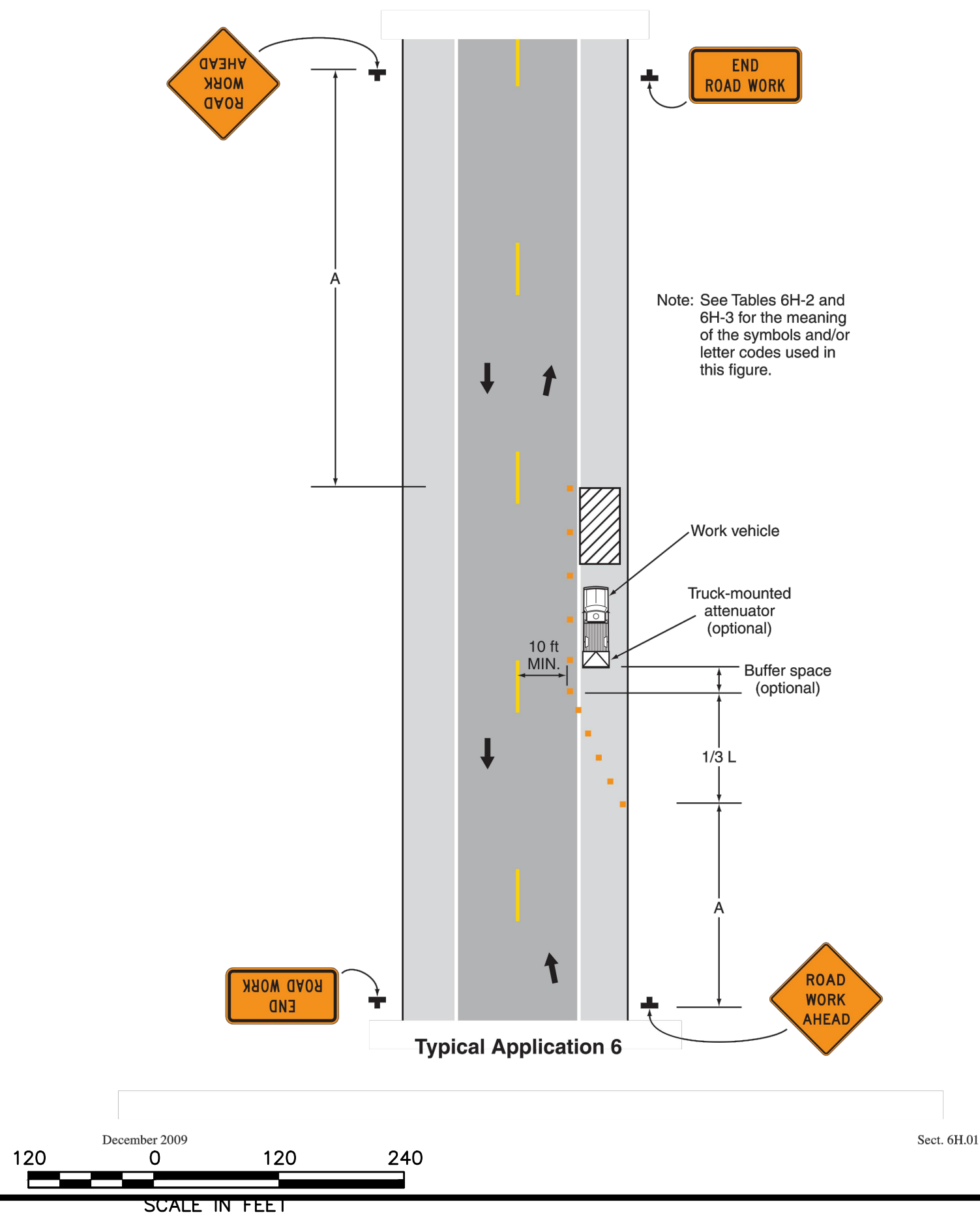
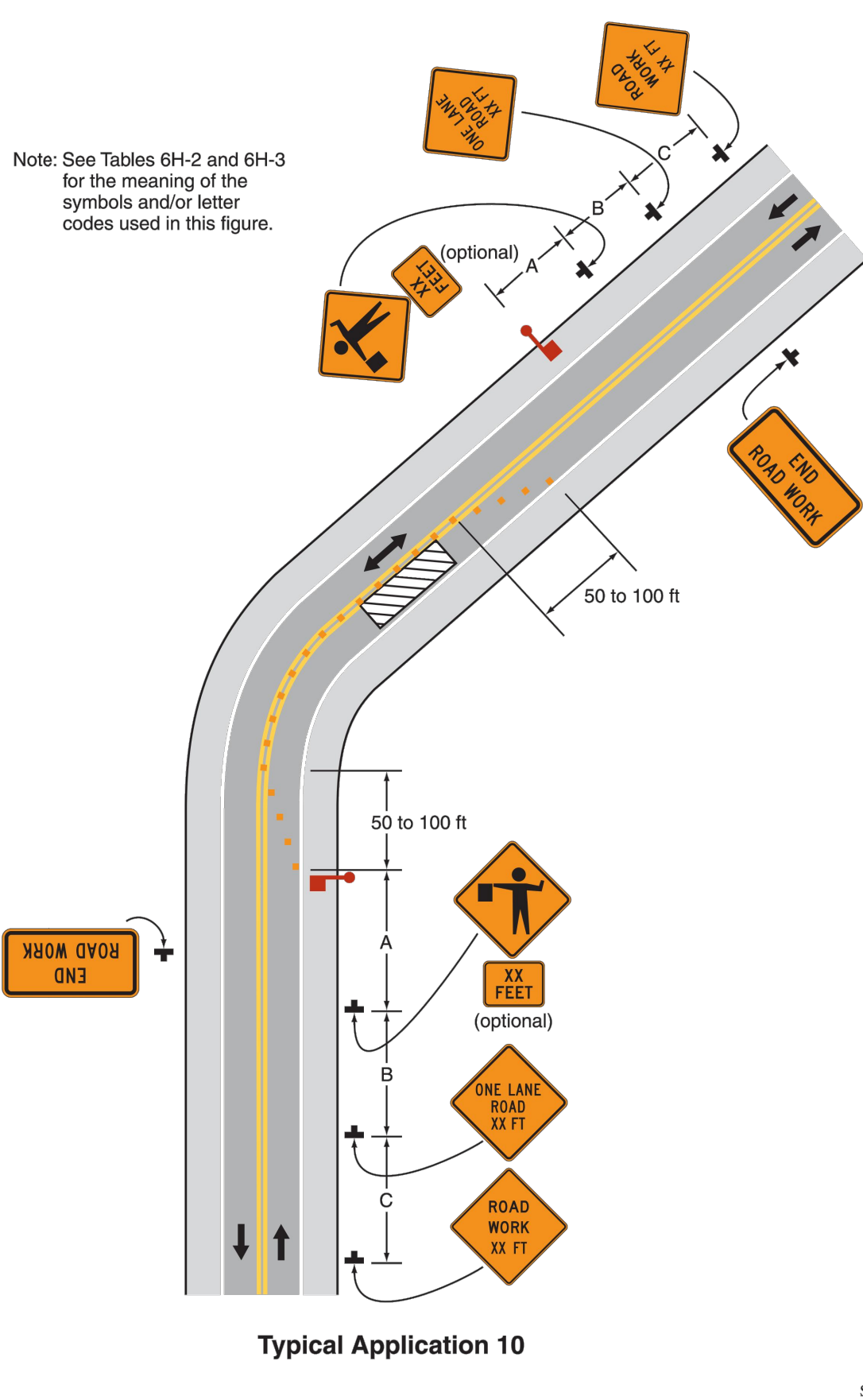


Figure 6H-10. Lane Closure on a Two-Lane Road Using Flaggers (TA-10)



REVISIONS

1. 2-21-24 PEER REVIEW
- 2.
- 3.

DRAWING TITLE

Traffic  
Management Plan

SUBDIVISION NAME & LOCATION

King Street  
Commons  
550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER

Lupoli Companies  
290 Merrimack Street  
Lawrence, MA 01840

DESIGNER / ENGINEER



TEC, Inc.  
282 Merrimack Street, 2nd Floor  
Lawrence, Massachusetts 01843  
978.794.1792

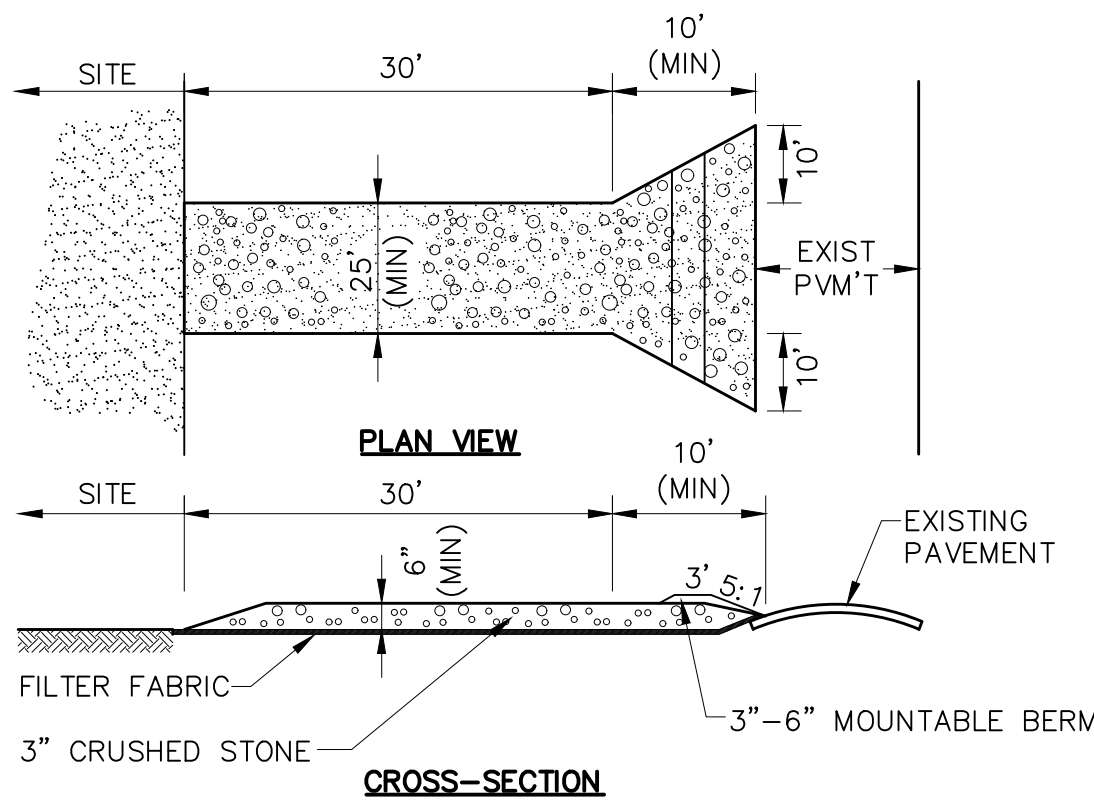
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DESIGNED BY RJF DATE 8-22-23  
CHECKED BY CPR SCALE AS NOTED



PROJECT NO.  
T1180  
TEC CAD FILE  
T1180\_CMP.dwg  
DRAWING NO.  
C-29  
SHEET 29 OF 61

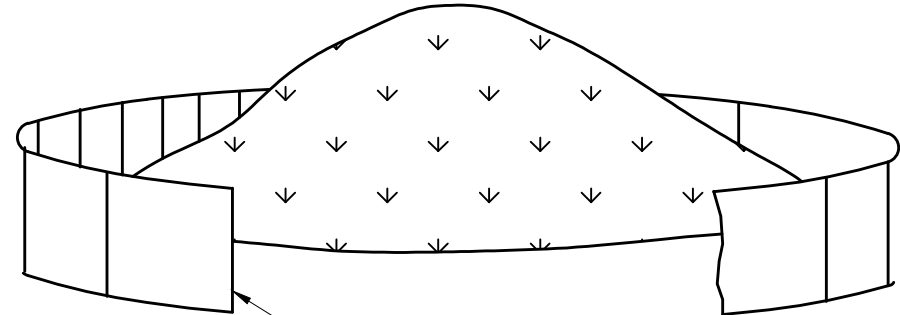




- NOTES:
- ENTRANCE WIDTH SHALL BE A TWENTY-FIVE (25) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.
  - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH SHALL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY. BERM SHALL BE PERMITTED, PERIODIC INSPECTION AND MAINTENANCE SHALL BE PROVIDED AS NEEDED.
  - STABILIZED CONSTRUCTION EXIT SHALL BE REMOVED PRIOR TO FINAL FINISH MATERIALS BEING INSTALLED.

### STABILIZED CONSTRUCTION EXIT

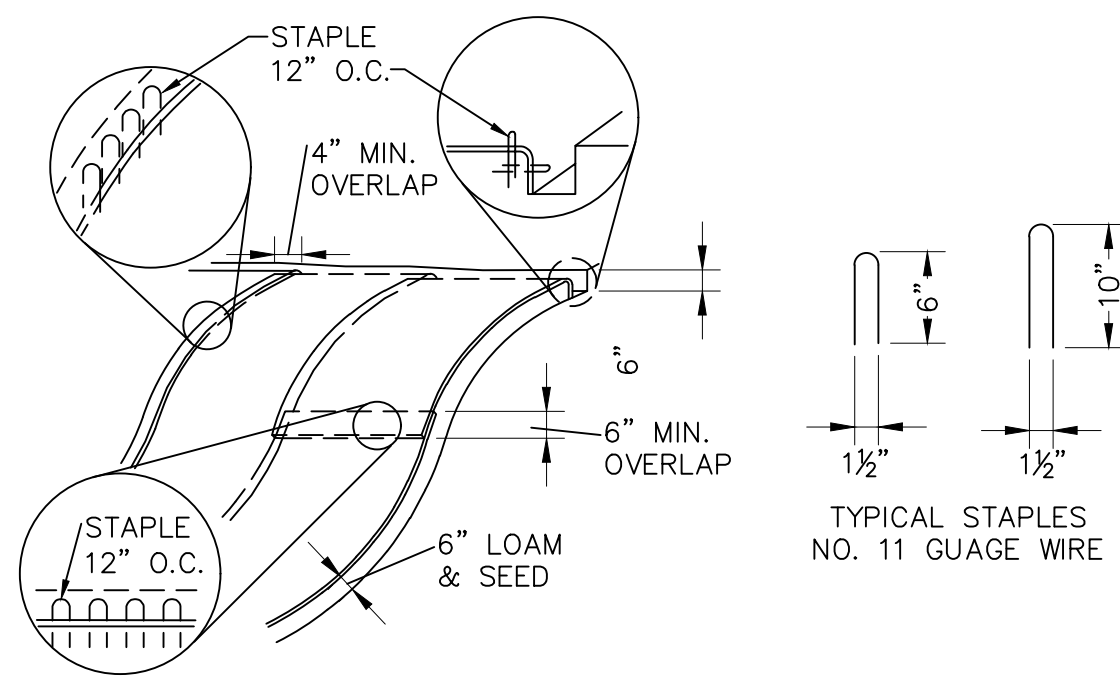
N.T.S.



- NOTES:
- SOIL STOCKPILES SHALL BE COVERED WITH ANCHORED TARPS AND THE END OF EACH WORK DAY.

### SOIL STOCKPILE

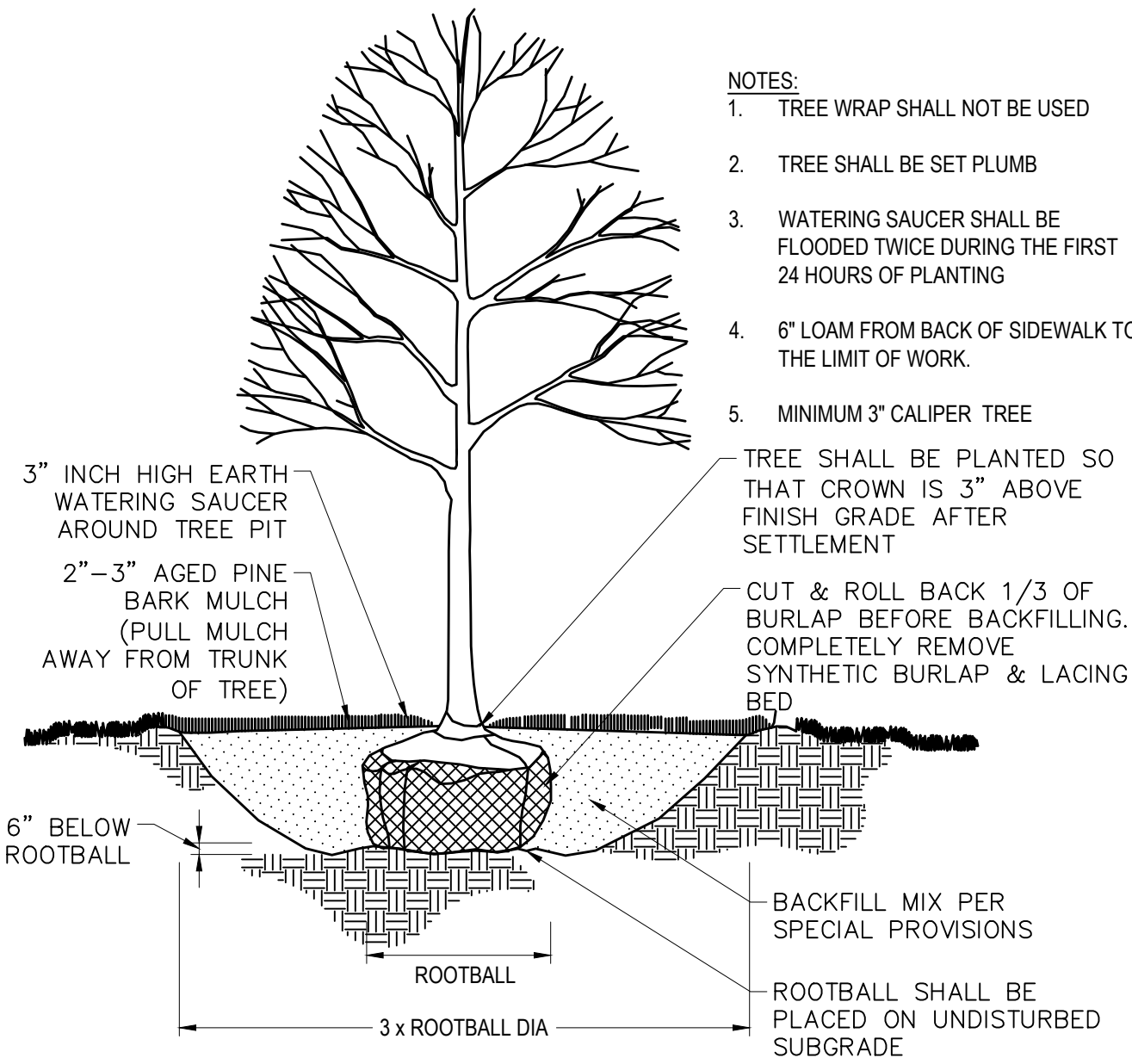
N.T.S.



- NOTES:
- BEGIN AT THE TOP OF BLANKET INSTALLATION AREA BY ANCHORING BLANKET IN A 6\"/>

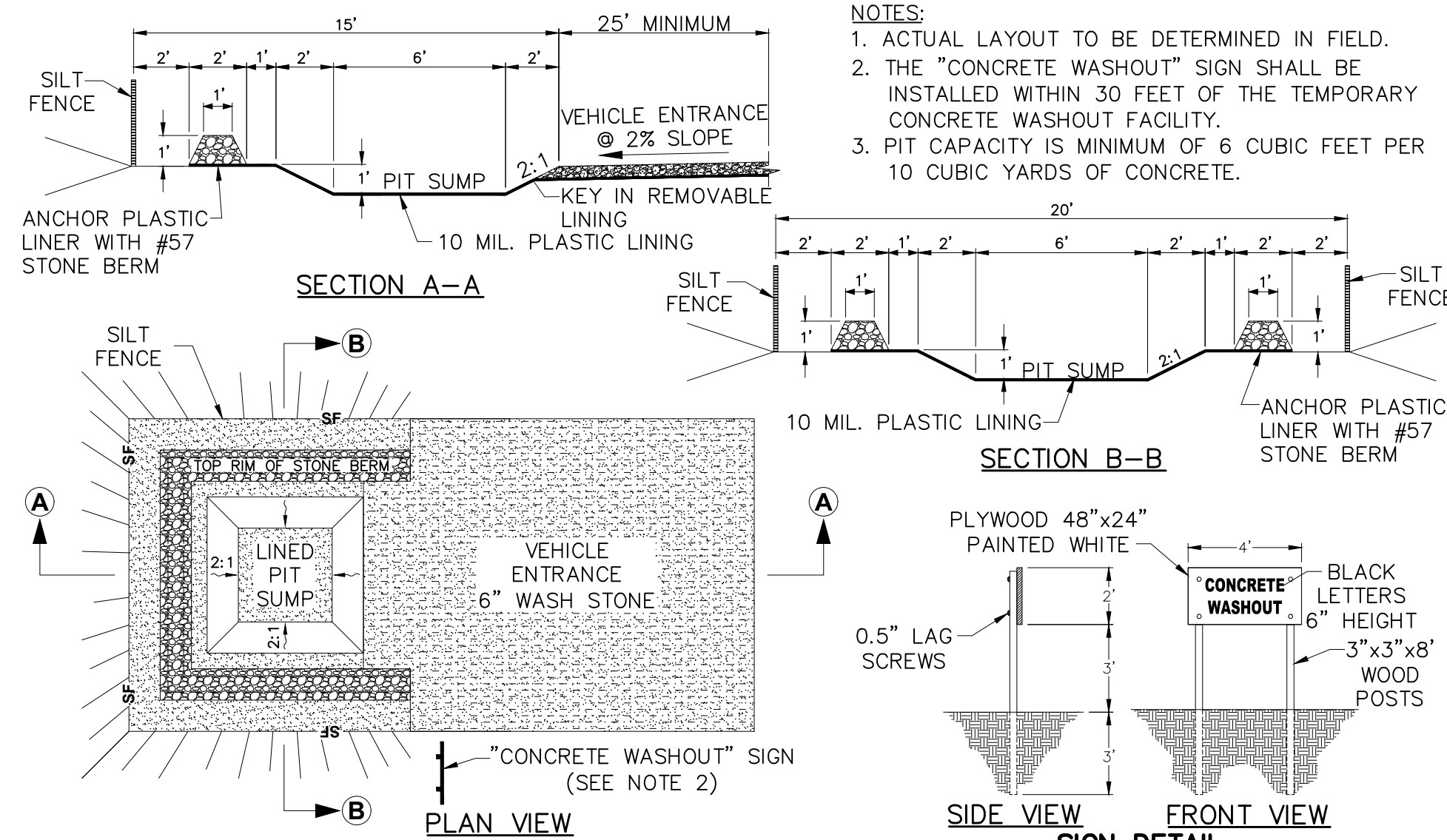
### EROSION CONTROL MAT SLOPE INSTALLATION

N.T.S.



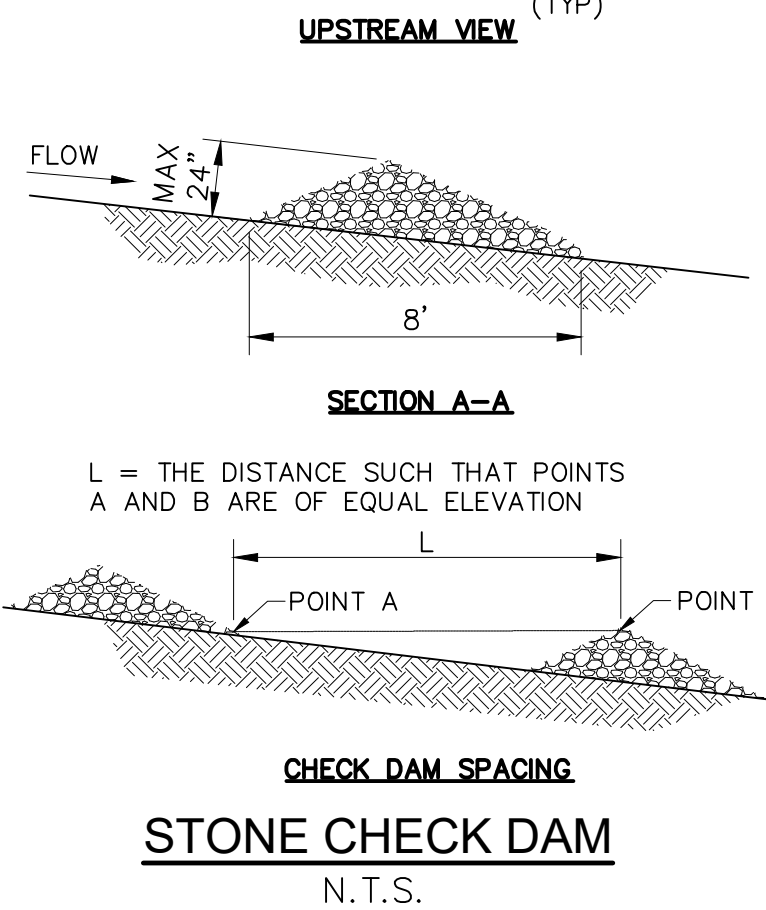
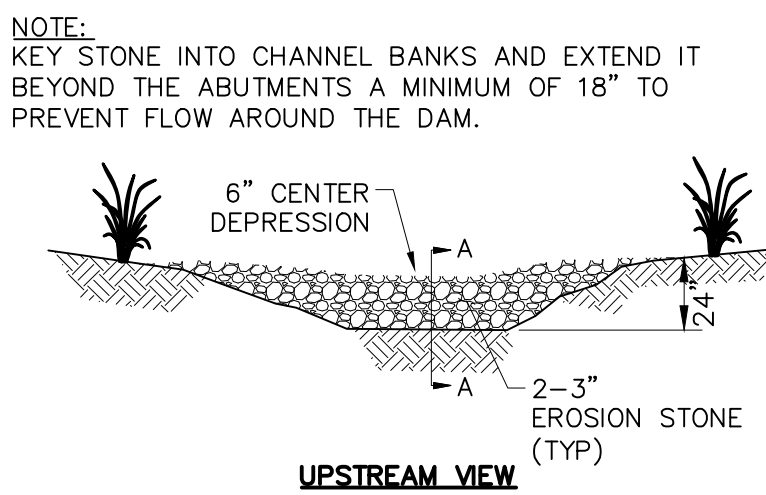
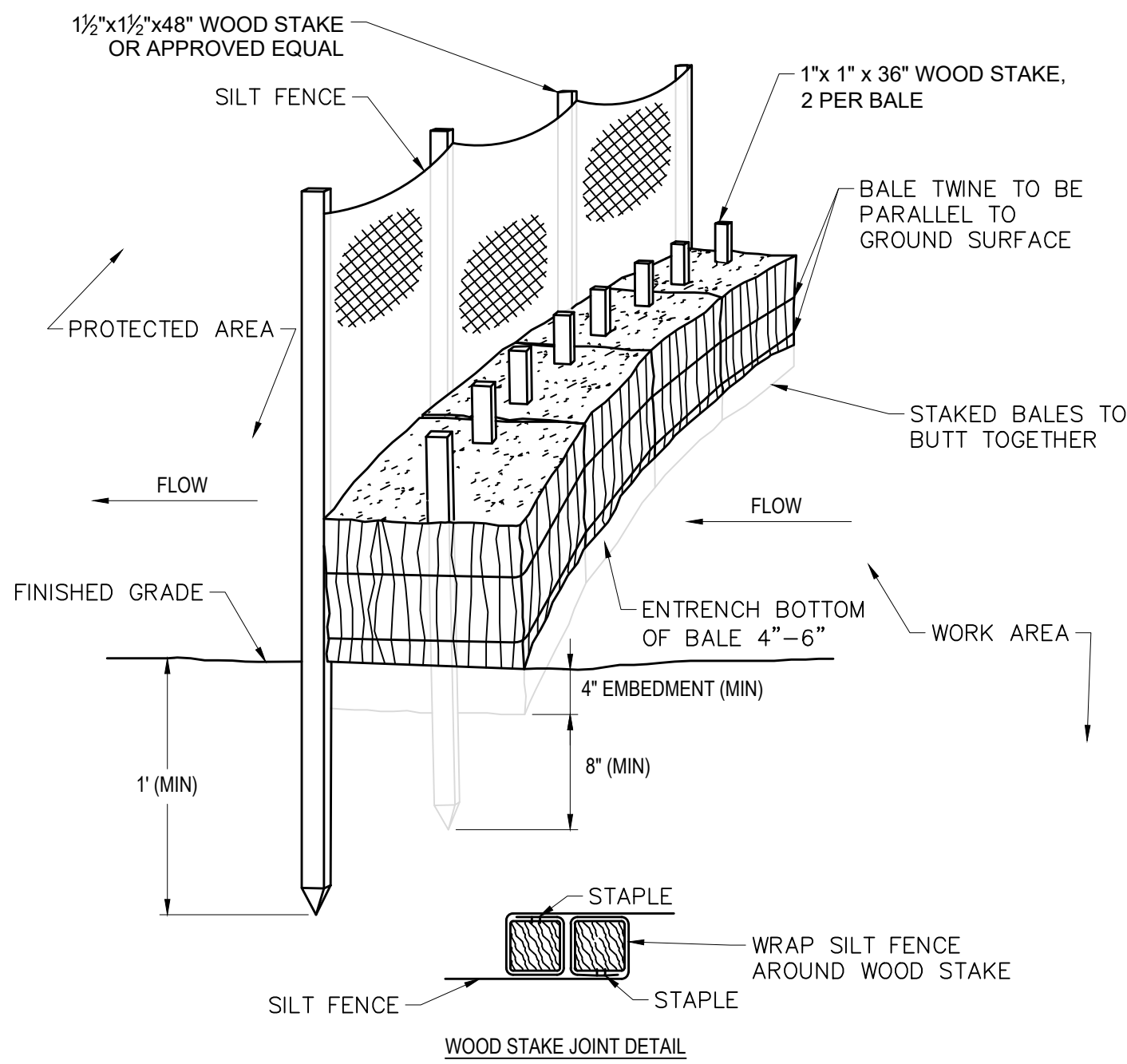
### DECIDUOUS TREE PLANTING

N.T.S.



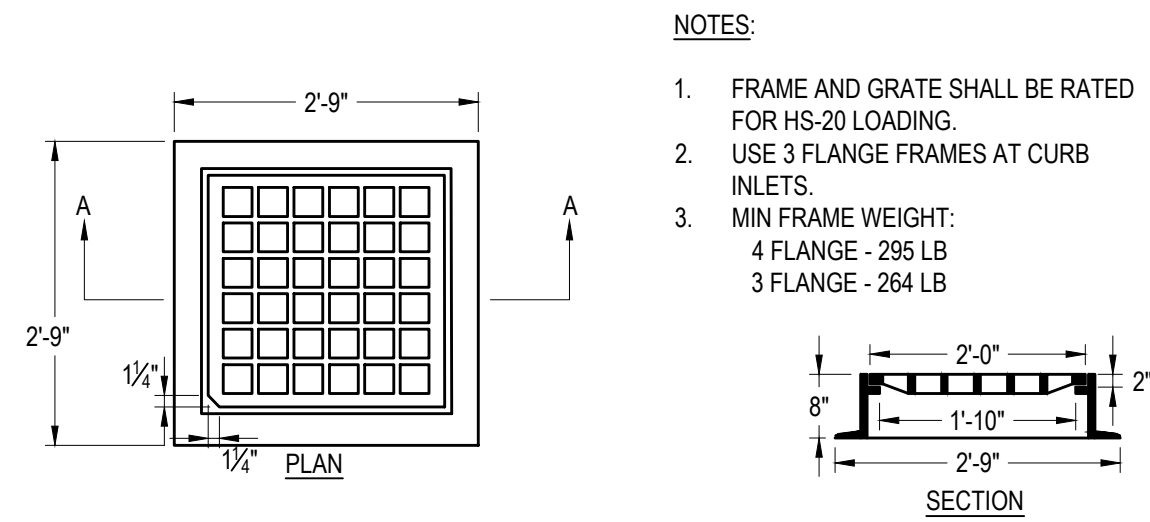
### LINED CONCRETE WASHOUT PIT

N.T.S.



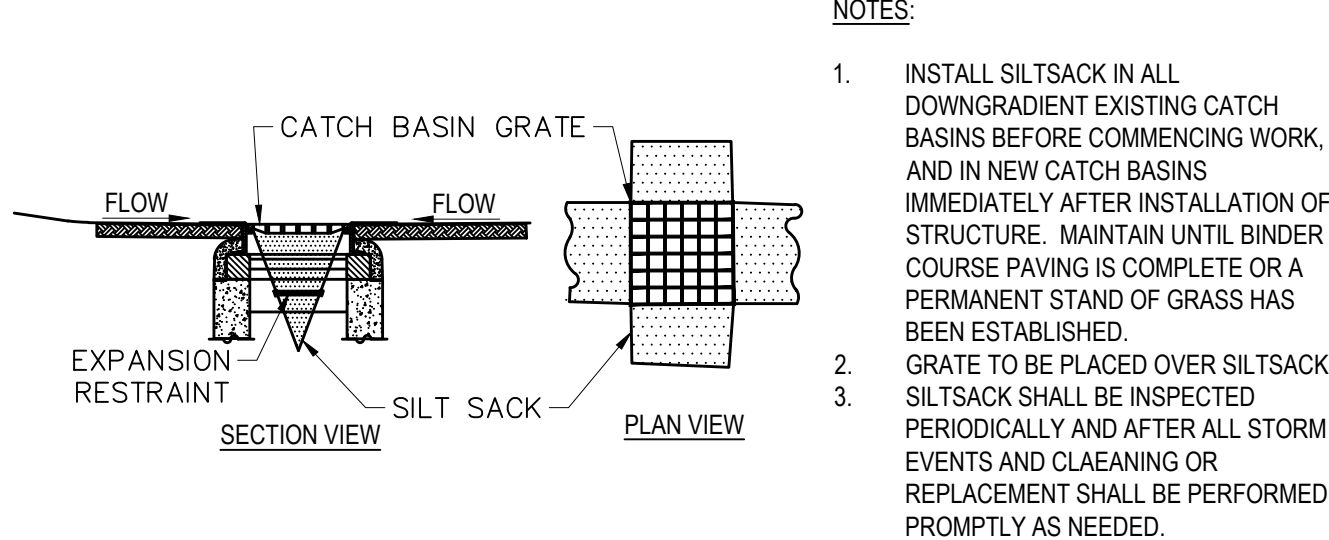
### STONE CHECK DAM

N.T.S.



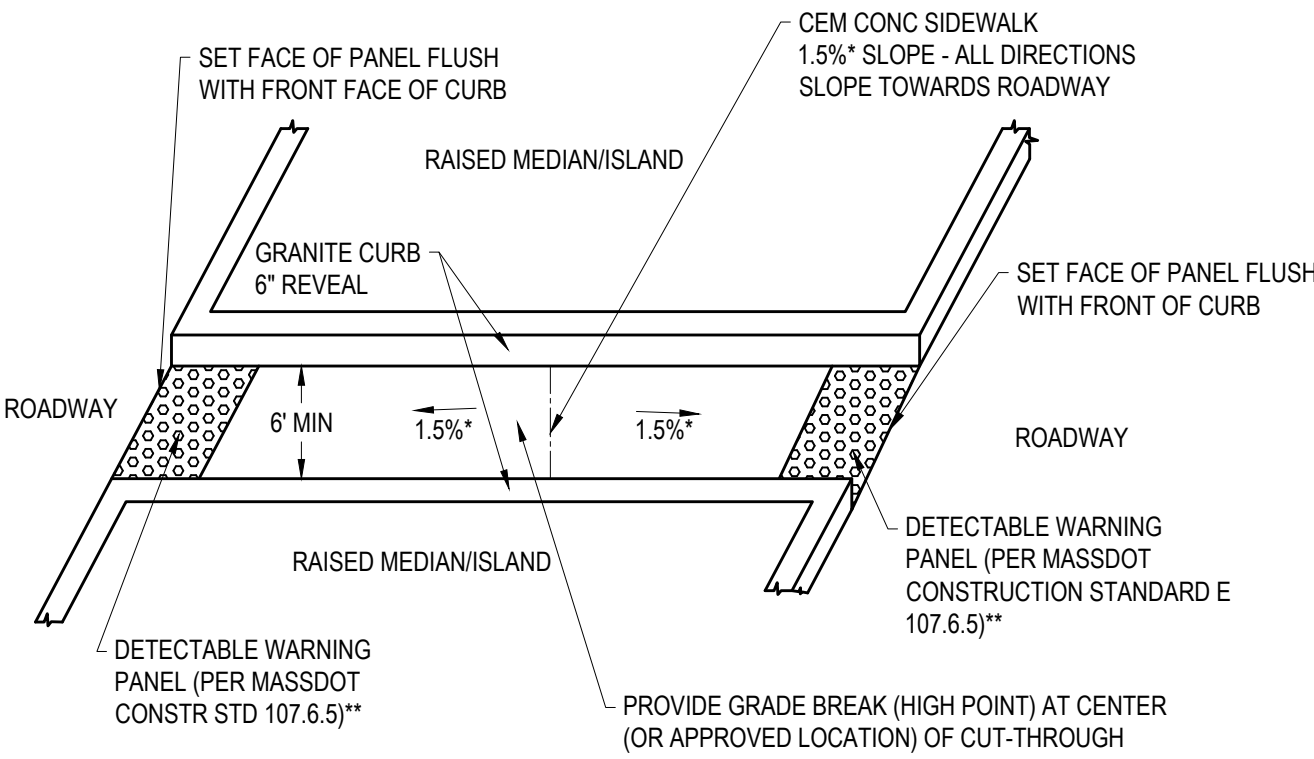
### CATCH BASIN FRAME AND GRATE

N.T.S.



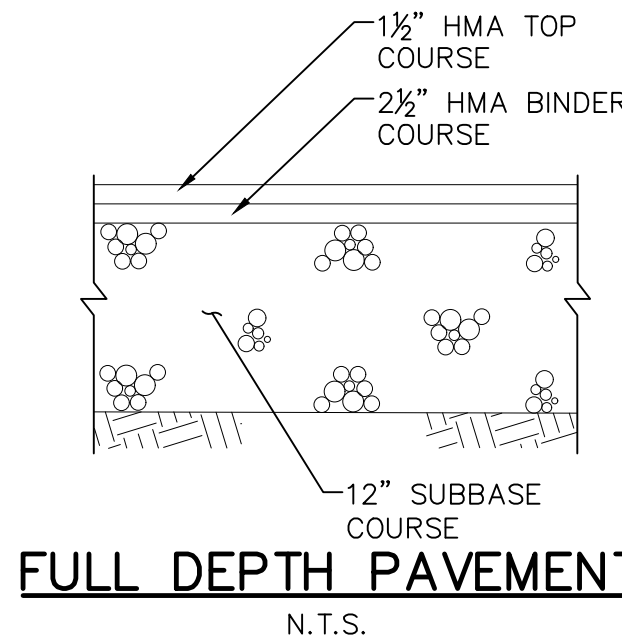
### CATCH BASIN INLET PROTECTION

N.T.S.



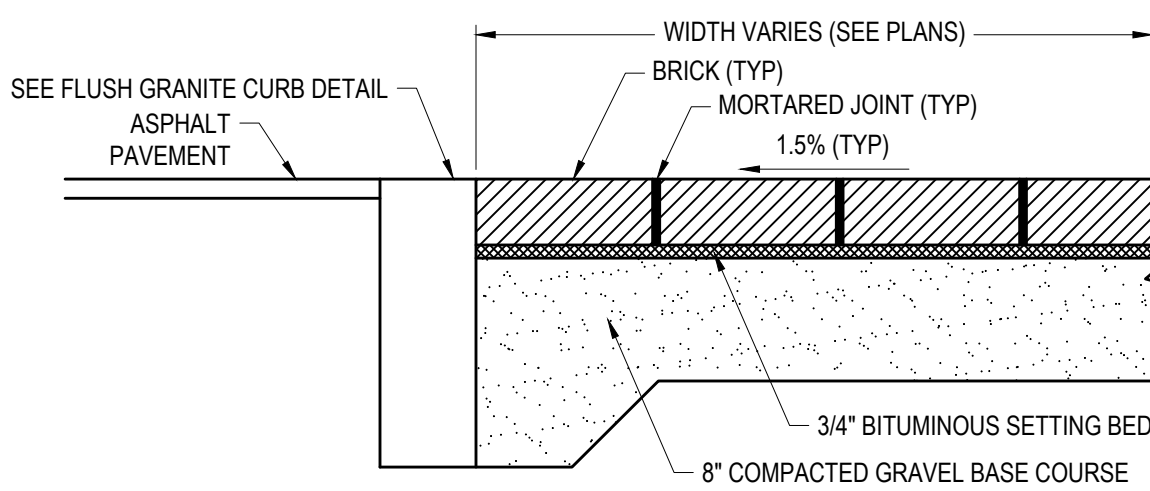
### MEDIAN CUT-THROUGH

N.T.S.



### FULL DEPTH PAVEMENT

N.T.S.



### BRICK TURN APRON

N.T.S.

### PERIMETER EROSION CONTROL

N.T.S.

| REVISIONS              |
|------------------------|
| 1. 2-21-24 PEER REVIEW |
| 2.                     |
| 3.                     |

DRAWING TITLE

### Construction Details

SUBDIVISION NAME & LOCATION

King Street Commons  
550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER

Lupoli Companies  
290 Merrimack Street  
Lawrence, MA 01840

DESIGNER / ENGINEER



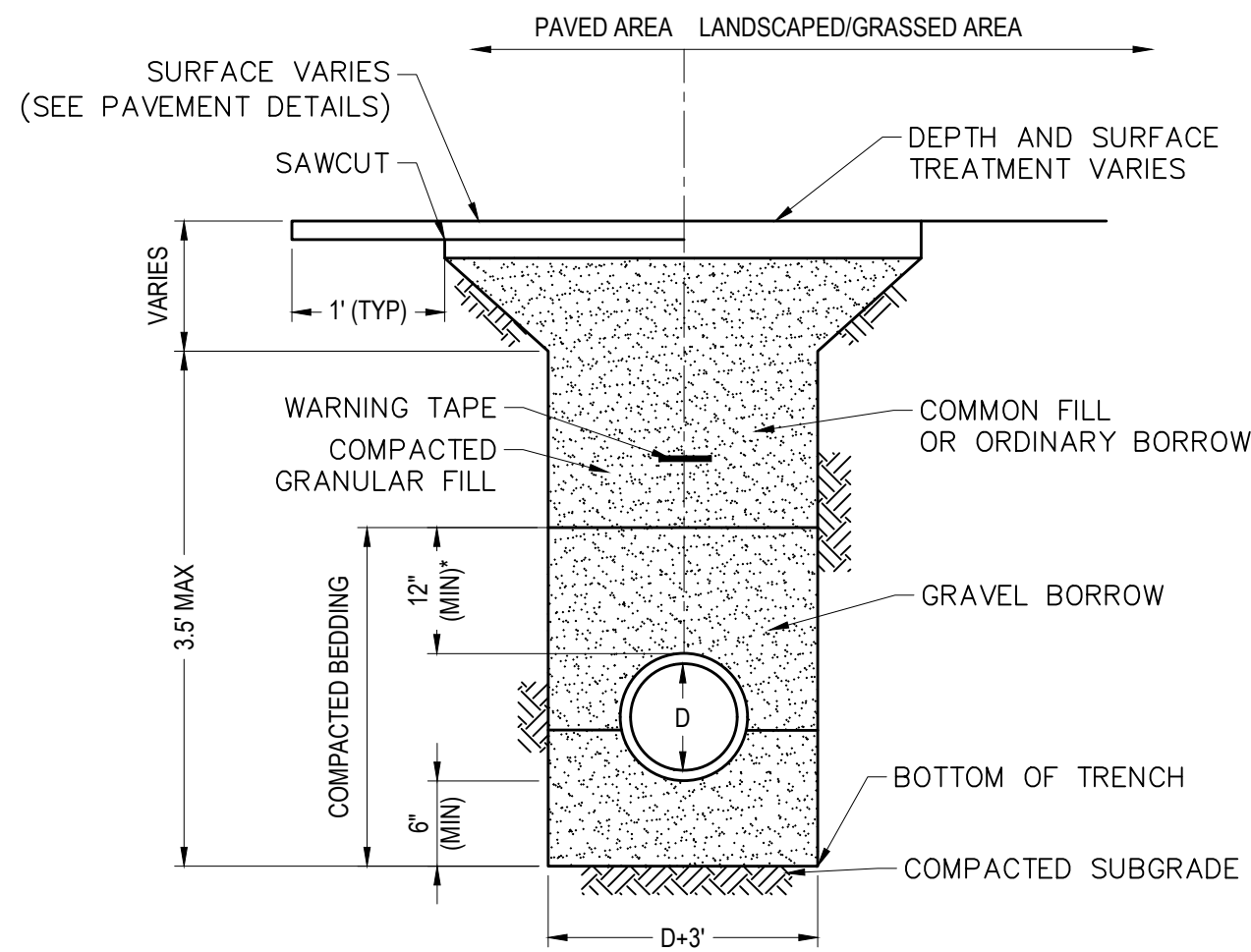
TEC, Inc.  
282 Merrimack Street, 2nd Floor  
Lawrence, Massachusetts 01843  
978.794.1792

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DESIGNED BY RJF DATE 8-22-23  
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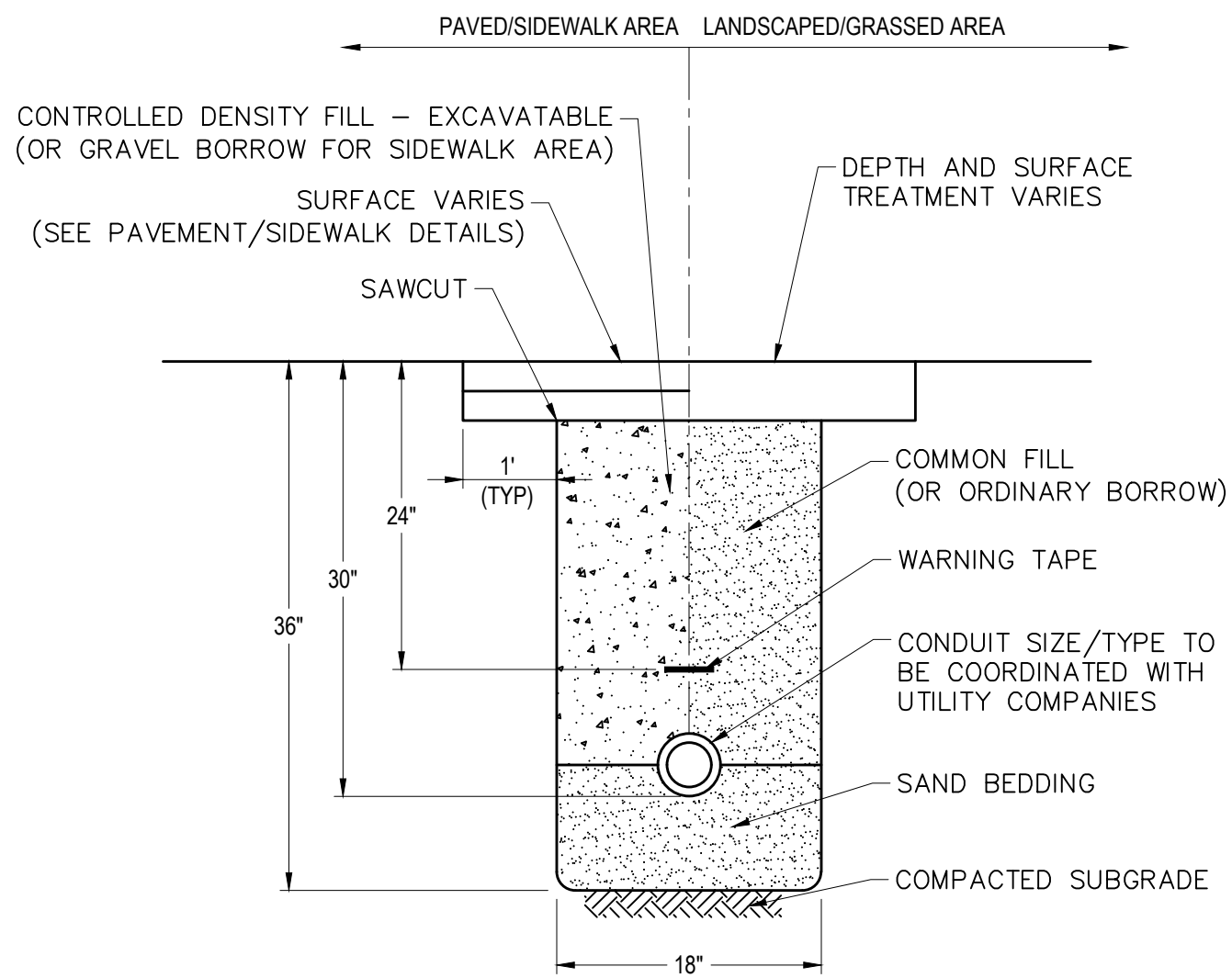
| PROJECT NO.    |
|----------------|
| T1180          |
| TEC CAD FILE   |
| T1180_DET      |
| DRAWING NO.    |
| C-30           |
| SHEET 30 OF 61 |



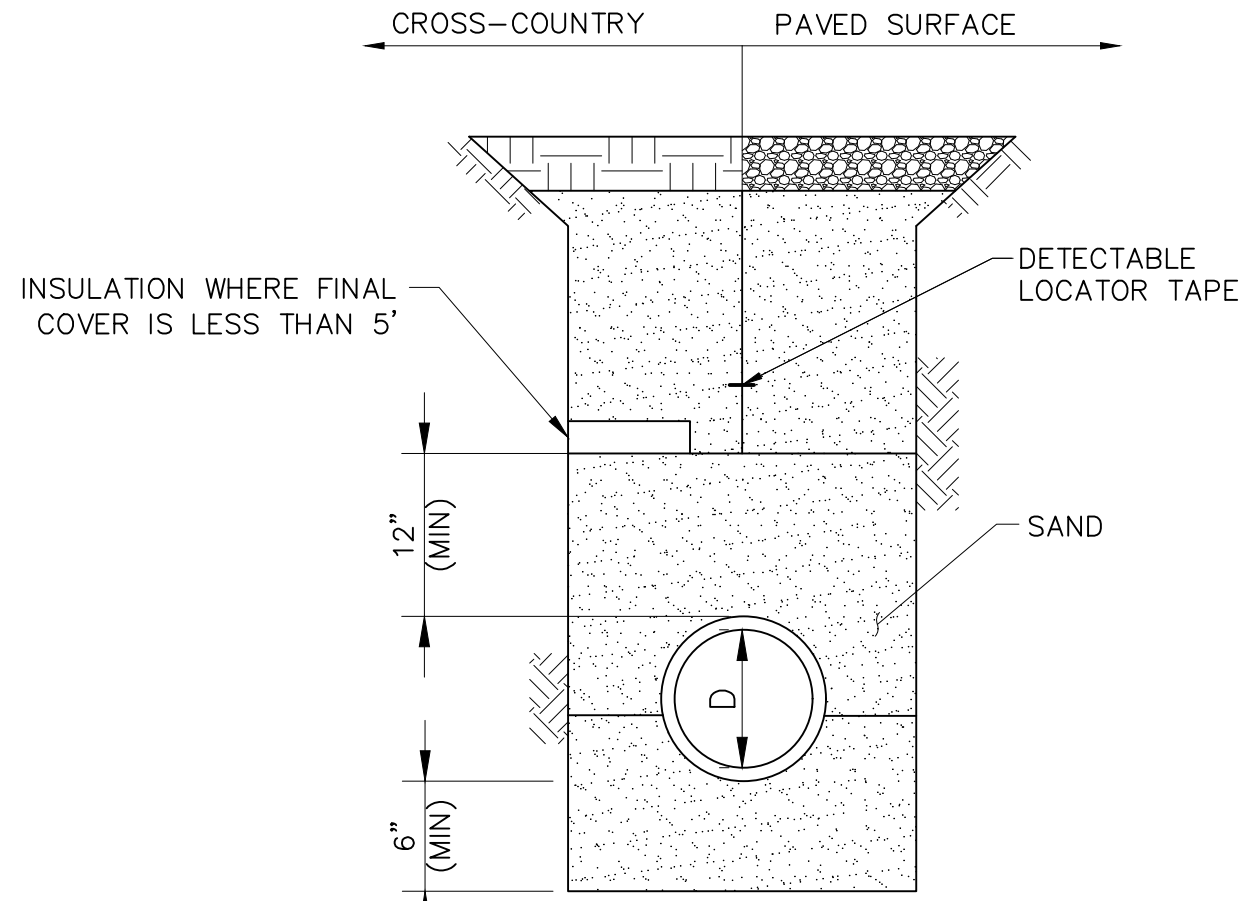


\*= FOR HDPE PIPE, DIMENSION IS 24" (MIN)

**UTILITY TRENCH**  
N.T.S.

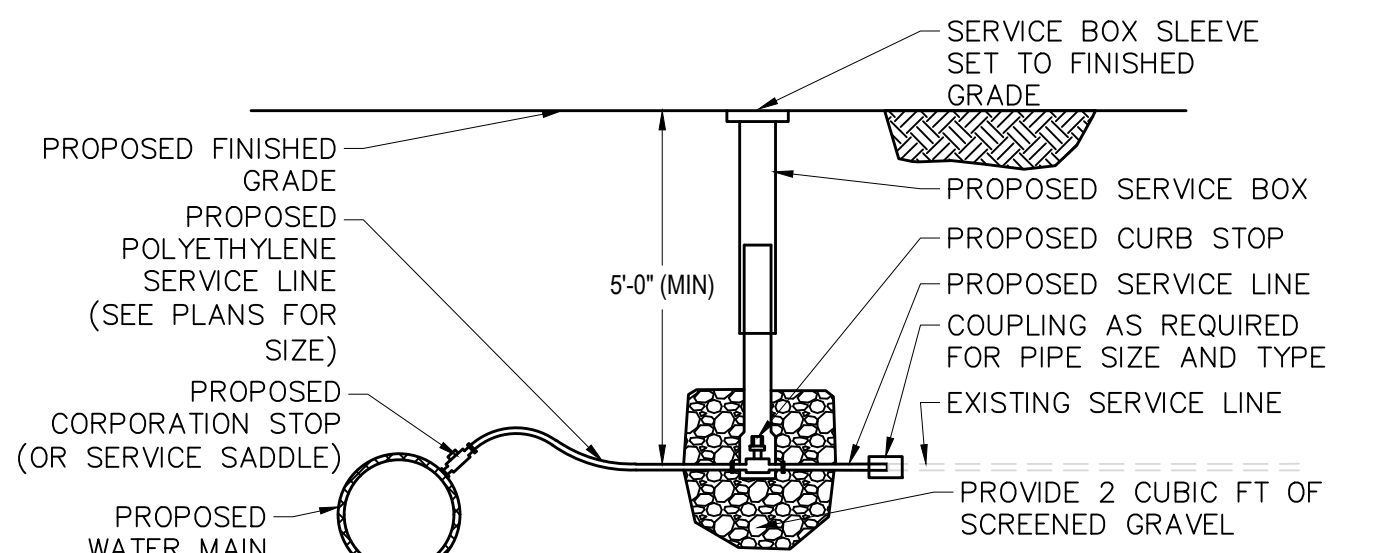


**CONDUIT TRENCH**  
N.T.S.

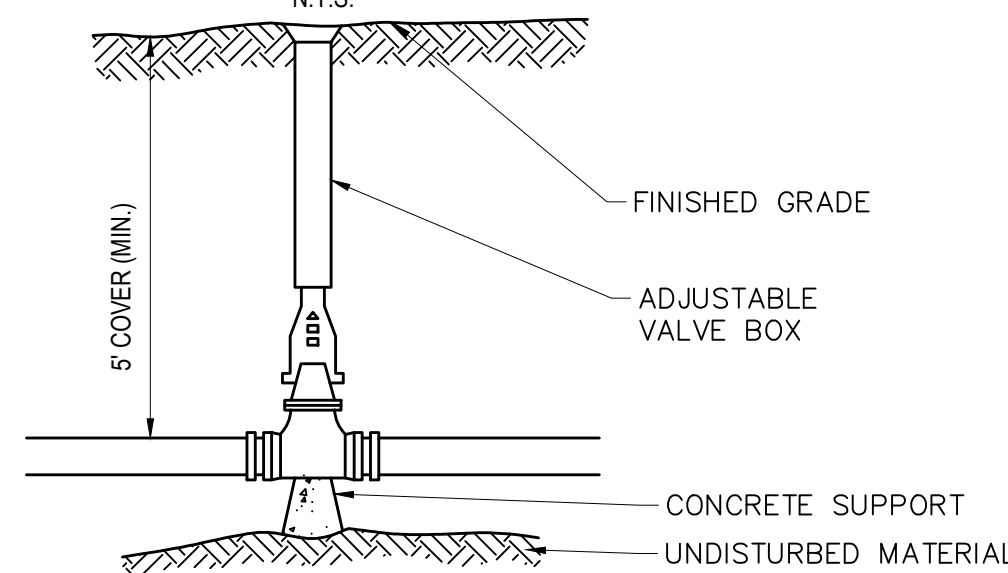


NOTES:  
1. ALL WATER LINES 4" OR GREATER SHALL BE DUCTILE IRON WITH AN 8 MIL POLYETHYLENE WRAP. CONTRACTOR MAY FORGO WRAPPING PIPE IF THE DUCTILE IRON PIPE IS ZINC-COATED, TEES AND OTHER CONNECTIONS WILL STILL NEED TO BE WRAPPED.

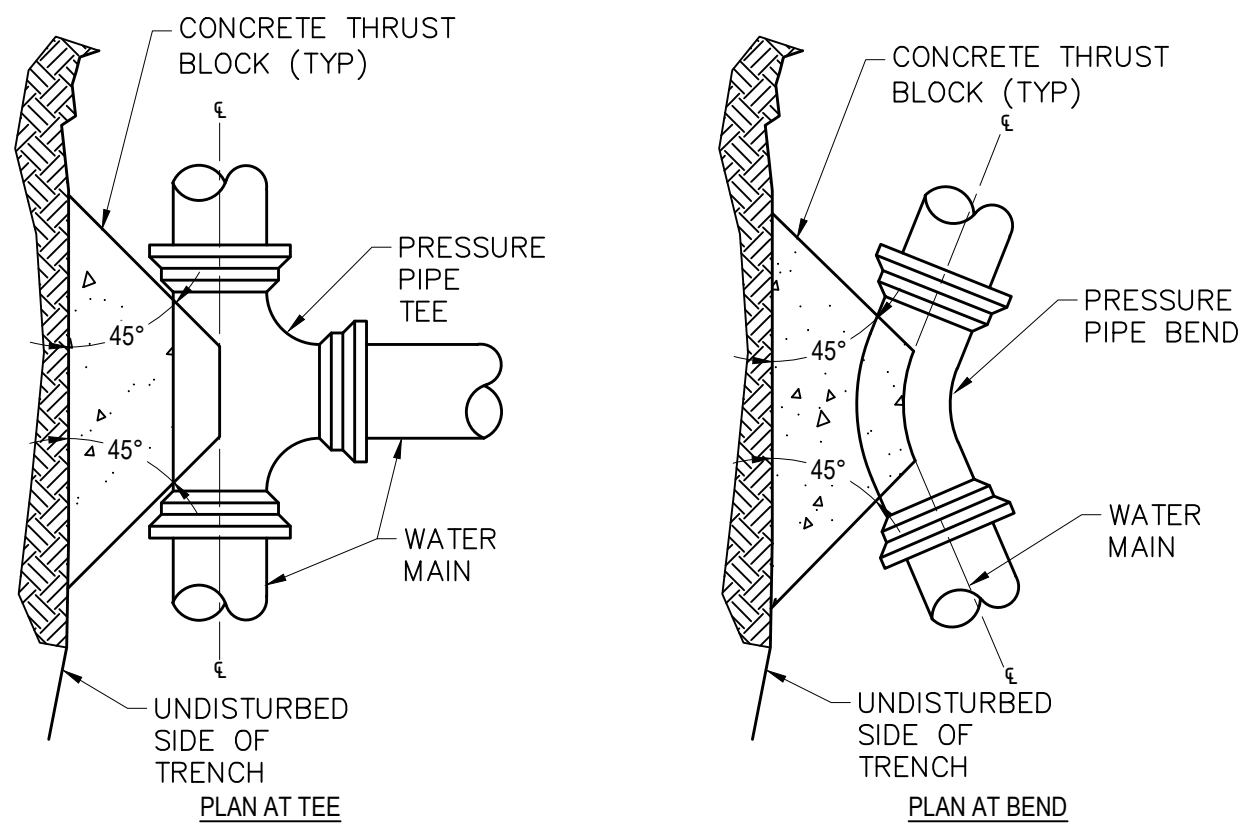
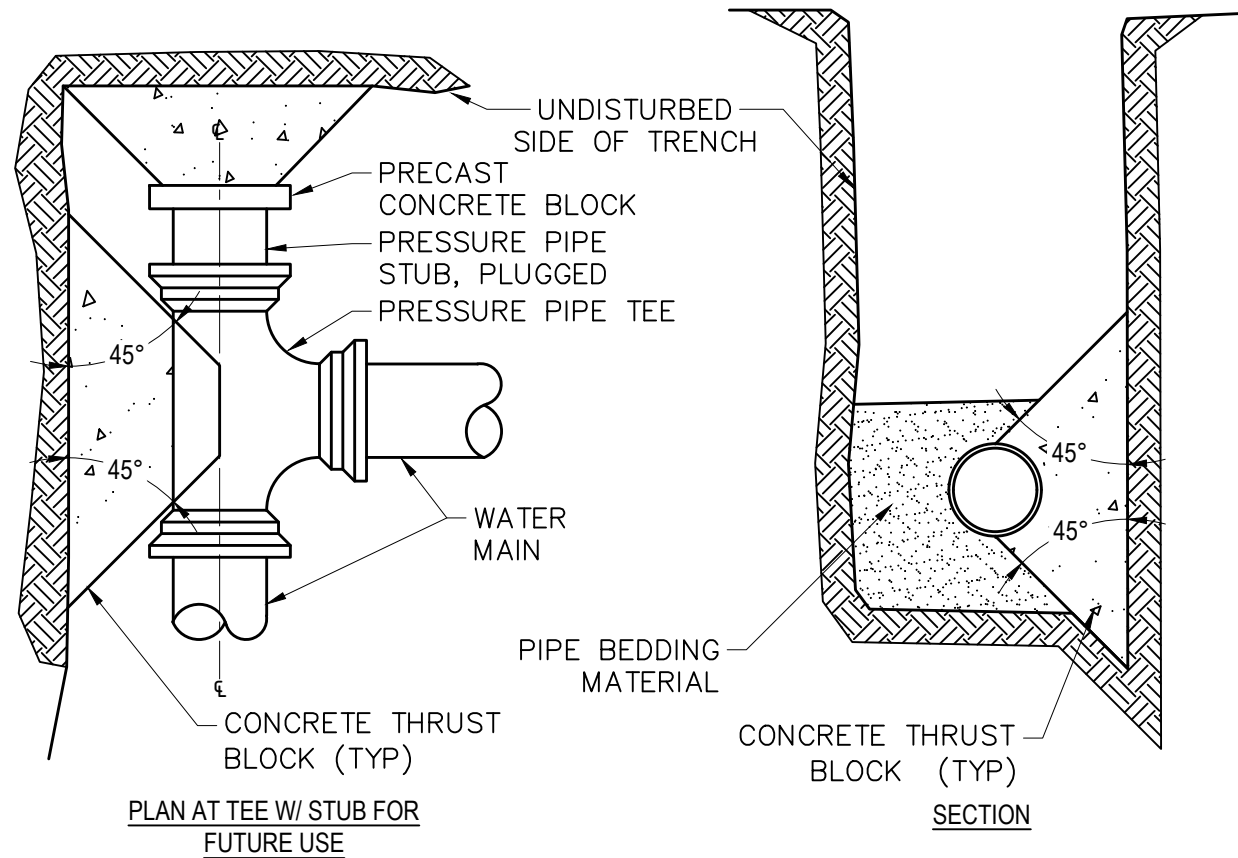
**WATERLINE TRENCH**  
N.T.S.



**WATER SERVICE CONNECTION**  
N.T.S.



**WATER GATE VALVE**  
N.T.S.



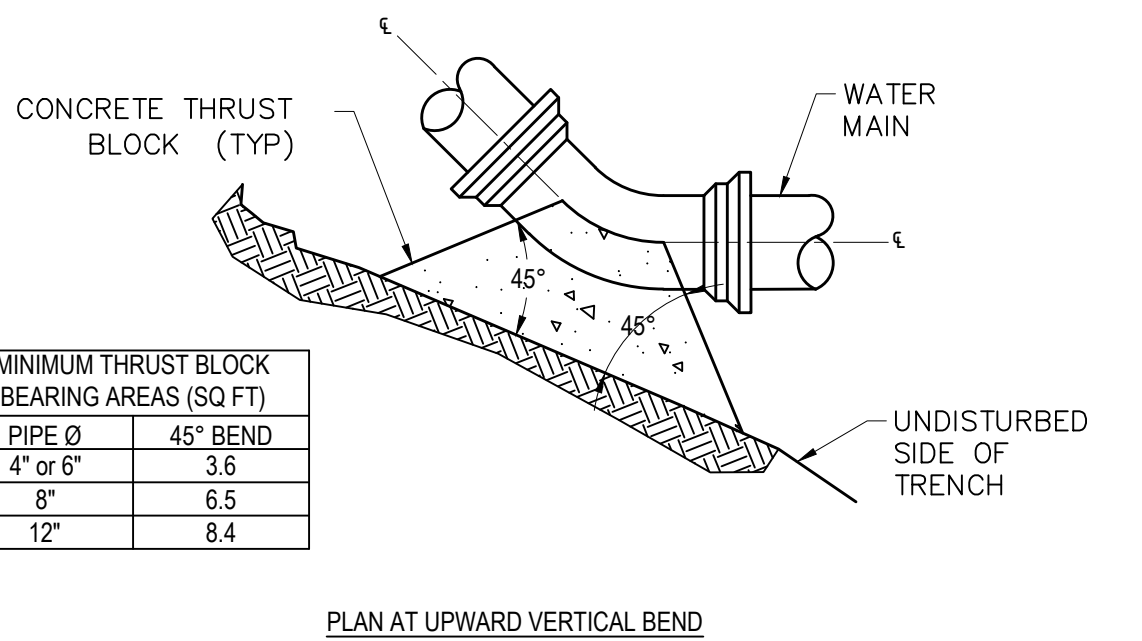
| MINIMUM THRUST BLOCK BEARING AREAS (SQ FT) |          |          |            |      |  |
|--------------------------------------------|----------|----------|------------|------|--|
| PIPE Ø                                     | 90° BEND | 45° BEND | 22.5° BEND | TEES |  |
| 4", 6" or 8"                               | 6.0      | 2.9      | 2.3        | 4.5  |  |
| 10"                                        | 9.6      | 5.2      | 2.3        | 6.7  |  |
| 12"                                        | 13.3     | 6.7      | 3.7        | 9.6  |  |

| MINIMUM PIPE RESTRAINT LENGTH (IN FEET)* |          |          |            |      |          |
|------------------------------------------|----------|----------|------------|------|----------|
| PIPE Ø                                   | 90° BEND | 45° BEND | 22.5° BEND | TEES | PLUG/CAP |
| 8"                                       | 21.0     | 9.0      | 4.0        | 29.0 | 38.0     |
| 10"                                      | 26.0     | 11.0     | 5.0        | 38.0 | 46.0     |
| 12"                                      | 33.0     | 14.0     | 6.0        | 48.0 | 69.0     |

**NOTES:**

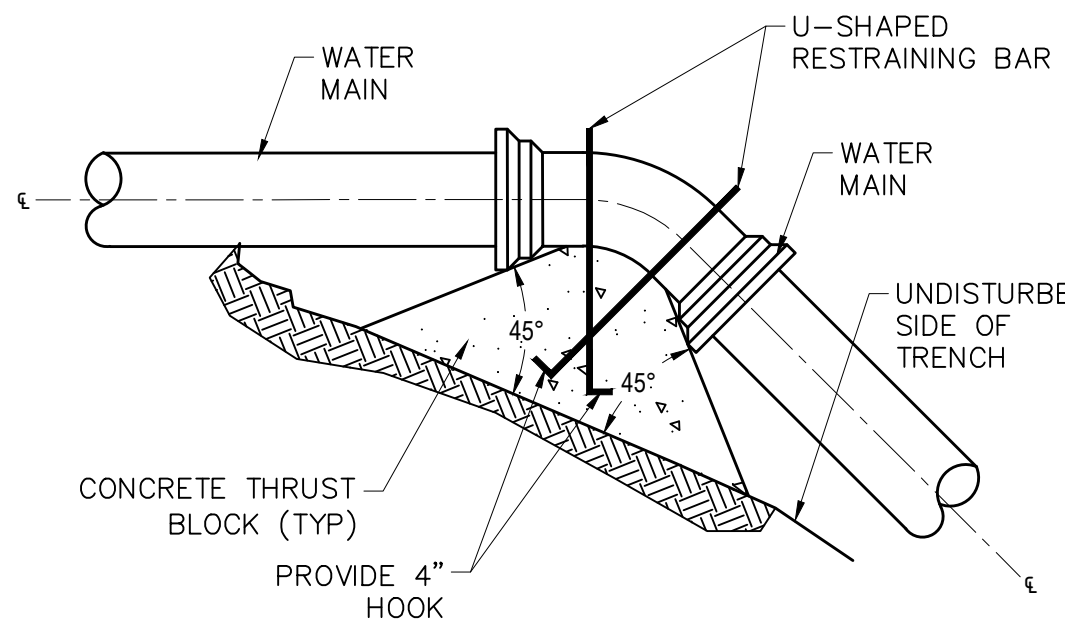
- ALL WATER MAIN FITTINGS, BENDS, TEES, PLUGS ETC. SHALL BE RESTRAINED W/ THRUST BLOCKS EXCEPT WHERE NOTED.
- ALL THRUST BLOCKS & COLLARS SHALL BE INSTALLED SO THAT THEY BEAR AGAINST UNDISTURBED EARTH.
- MINIMUM COMPRESSIVE STRENGTH OF THRUST BLOCK CONCRETE SHALL BE 3,000 P.S.I.
- KEEP CONCRETE CLEAR OF MECHANICAL JOINTS.
- MINIMUM BEARING AREAS ARE BASED ON 250 P.S.I INTERNAL PIPE PRESSURE & 1.5 TONS/S.F. ALLOWABLE SOIL BEARING CAPACITY.
- MINIMUM PIPE RESTRAINT LENGTH IS BASED ON DUCTILE IRON PIPE WITH A 150 P.S.I INTERNAL PIPE PRESSURE WITH 5.0' OF BURY IN UNIFIED SOIL CLASSIFICATION SM.

**THRUST BLOCK - HORIZONTAL BENDS**  
N.T.S.



| MINIMUM THRUST BLOCK BEARING AREAS (SQ FT) |          |  |
|--------------------------------------------|----------|--|
| PIPE Ø                                     | 45° BEND |  |
| 4" or 6"                                   | 3.6      |  |
| 8"                                         | 6.5      |  |
| 12"                                        | 8.4      |  |

**PLAN AT UPWARD VERTICAL BEND**



| MINIMUM THRUST BLOCK BEARING AREAS (SQ FT) |          |      |     |  |
|--------------------------------------------|----------|------|-----|--|
| PIPE Ø                                     | 45° BEND | TEES |     |  |
| 4" or 6"                                   | 0.9      | 2.3  | 4.5 |  |
| 8"                                         | 1.6      |      |     |  |
| 12"                                        | 3.3      |      |     |  |

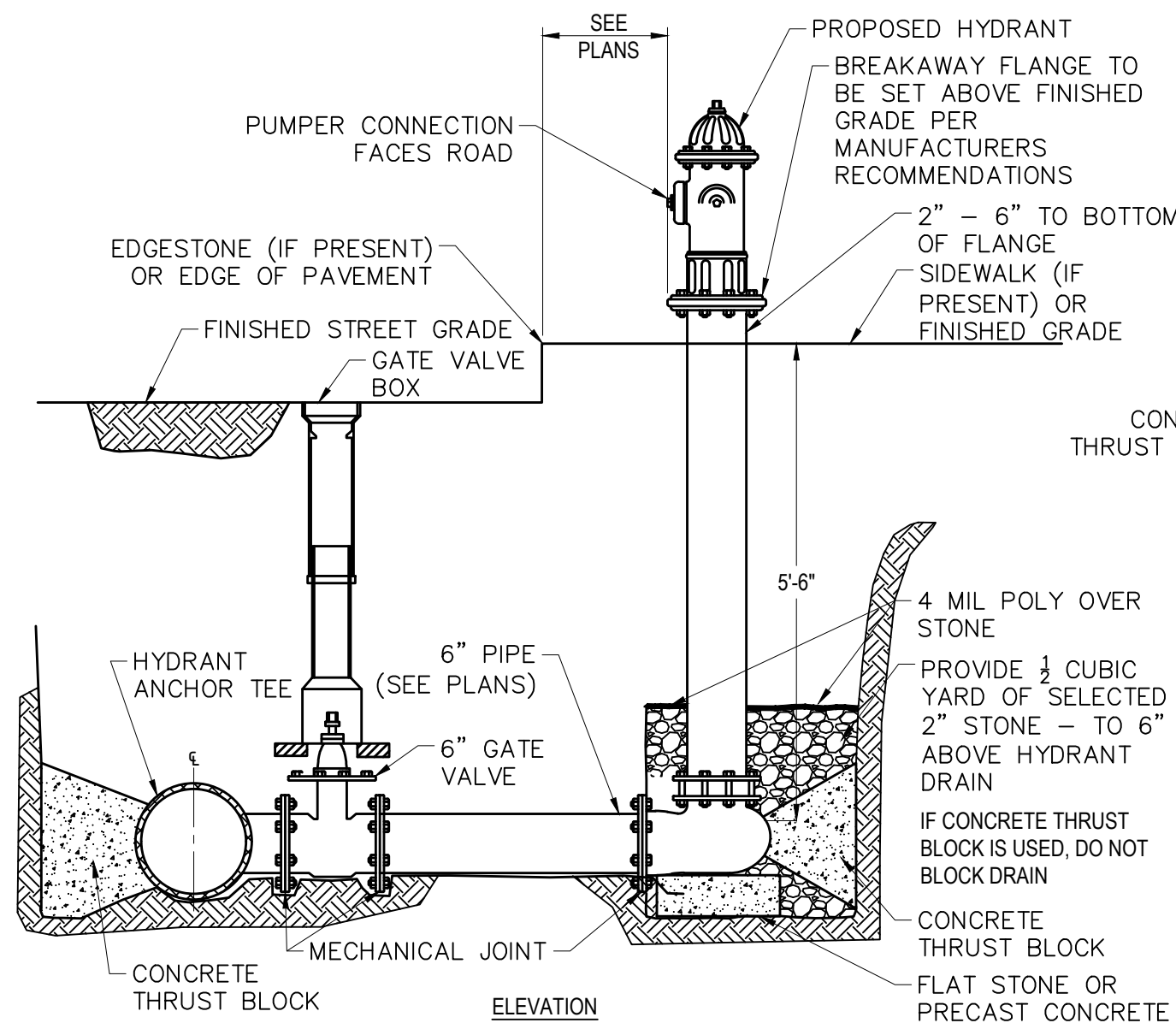
| RESTRAINING BAR DIMENSIONS |          |                  |  |
|----------------------------|----------|------------------|--|
| PIPE Ø                     | BAR SIZE | EMBEDMENT LENGTH |  |
| 4", 6"                     | #4       | 15"              |  |
| 8"                         | #4       | 15"              |  |
| 12"                        | #6       | 2'-0"            |  |

**PLAN AT DOWNWARD VERTICAL BEND**

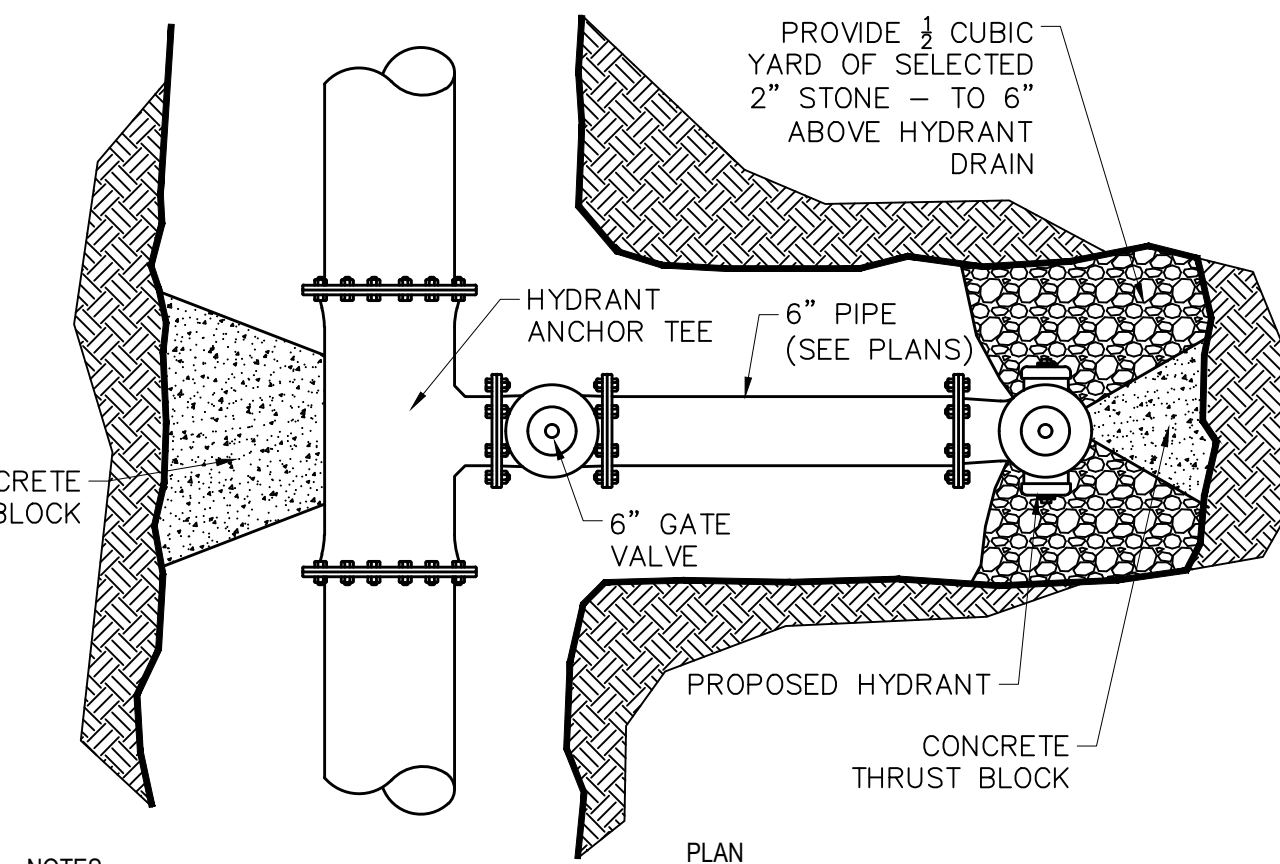
**NOTES:**

- ALL WATER MAIN BENDS SHALL BE RESTRAINED W/ THRUST BLOCKS EXCEPT WHERE NOTED.
- ALL THRUST BLOCKS & COLLARS SHALL BE INSTALLED SO THAT THEY BEAR AGAINST UNDISTURBED EARTH.
- MINIMUM COMPRESSIVE STRENGTH OF THRUST BLOCK CONCRETE SHALL BE 3,000 P.S.I.
- KEEP CONCRETE CLEAR OF MECHANICAL JOINTS.
- MINIMUM BEARING AREAS ARE BASED ON 250 P.S.I INTERNAL PIPE PRESSURE & 1.5 TONS/S.F. ALLOWABLE SOIL BEARING CAPACITY.

**THRUST BLOCK - VERTICAL BENDS**  
N.T.S.

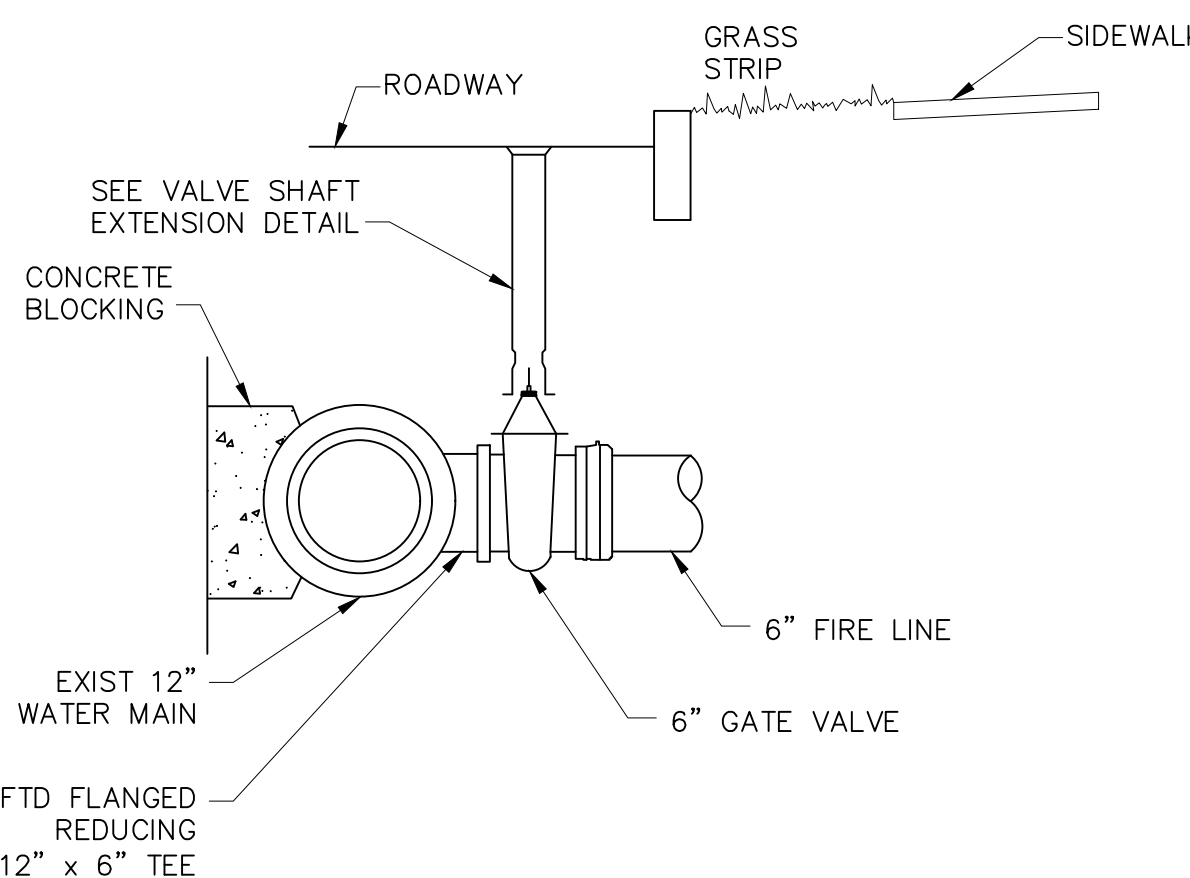


**HYDRANT ASSEMBLY**  
N.T.S.

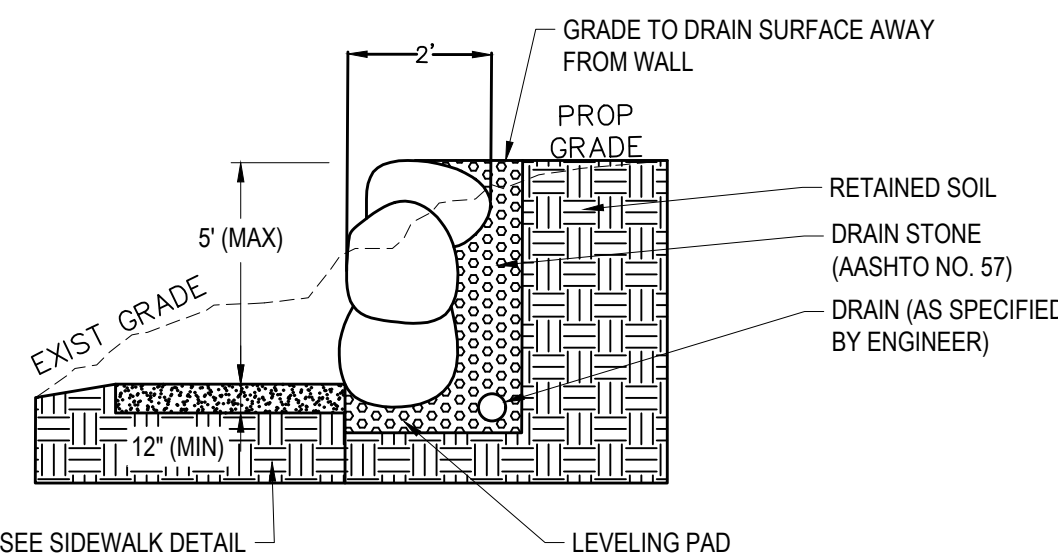


**NOTES:**

- ALL CONCRETE TO BE CAST-IN-PLACE (MIN 3000 PSI)
- CONCRETE THRUST BLOCK TO BE USED ONLY WHERE IT WILL BEAR ON UNDISTURBED EARTH.
- CONTRACTOR SHALL SHIELD HYDRANT BASE DRAIN HOLES, MECHANICAL JOINT GLANDS, AND BOLTS DURING PLACEMENT OF CONCRETE THRUST BLOCKS. DRAIN HOLES, GLANDS AND BOLTS, SHALL BE VERIFIED AS OPEN AND FREE OF OBSTRUCTIONS PRIOR TO BACKFILLING.



**FIRE SERVICE CONNECTION**  
N.T.S.



**BOULDER WALL**  
N.T.S.

**NOTES:**

- WALL HEIGHTS OVER 4 FEET WILL REQUIRE A FINAL WALL DESIGN STAMPED BY A STRUCTURAL ENGINEER.
- FINAL WALL DESIGN TO BE SUBJECT TO THE RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEER INCLUDING DESIGN ON LATERAL EARTH PRESSURES, GLOBAL STABILITY, FILL MATERIALS ADJACENT TO THE WALLS AND REQUIRED GEOGRID REINFORCEMENT.

**REVISIONS**

- 2-21-24 PEER REVIEW
- 
- 

**DRAWING TITLE**

**Construction Details**

**SUBDIVISION NAME & LOCATION**

**King Street Commons**  
550 King Street  
Littleton, MA 01460

**OWNER / APPLICANT / SUBDIVIDER**

**Lupoli Companies**  
290 Merrimack Street  
Lawrence, MA 01840

**DESIGNER / ENGINEER**



TEC, Inc.  
282 Merrimack Street, 2nd Floor  
Lawrence, Massachusetts 01843  
978.794.1792

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DESIGNED BY RJF DATE 8-22-23  
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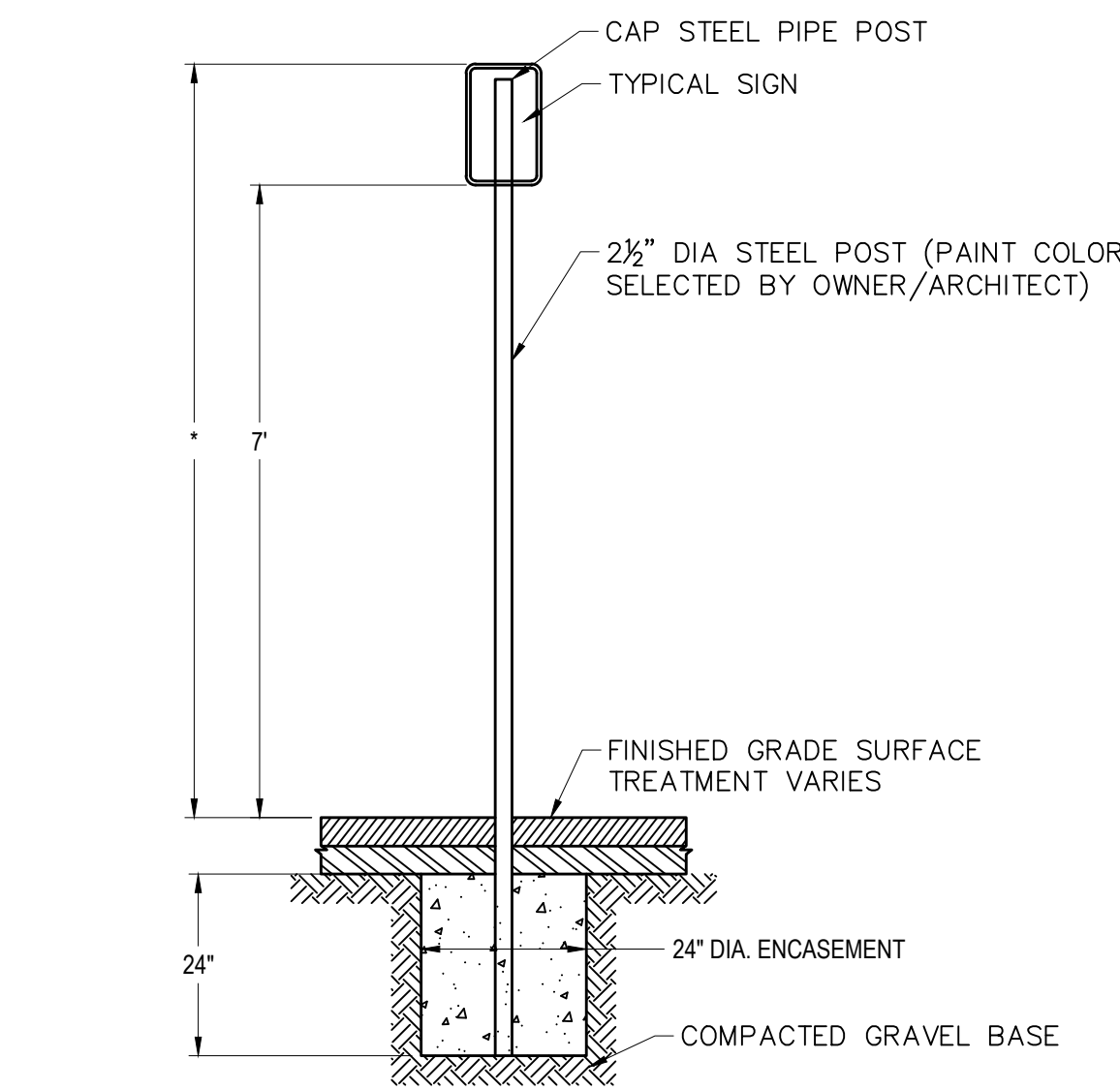
PROJECT NO. T1180  
TEC CAD FILE  
T1180\_DET  
DRAWING NO. **C-31**  
SHEET 31 OF 61





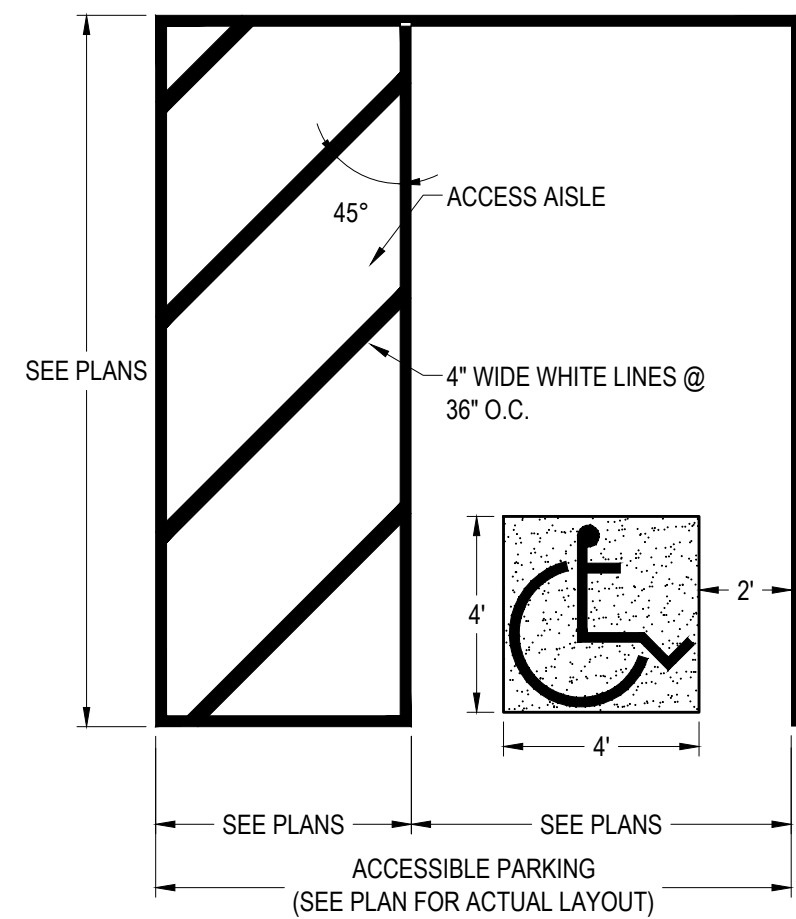






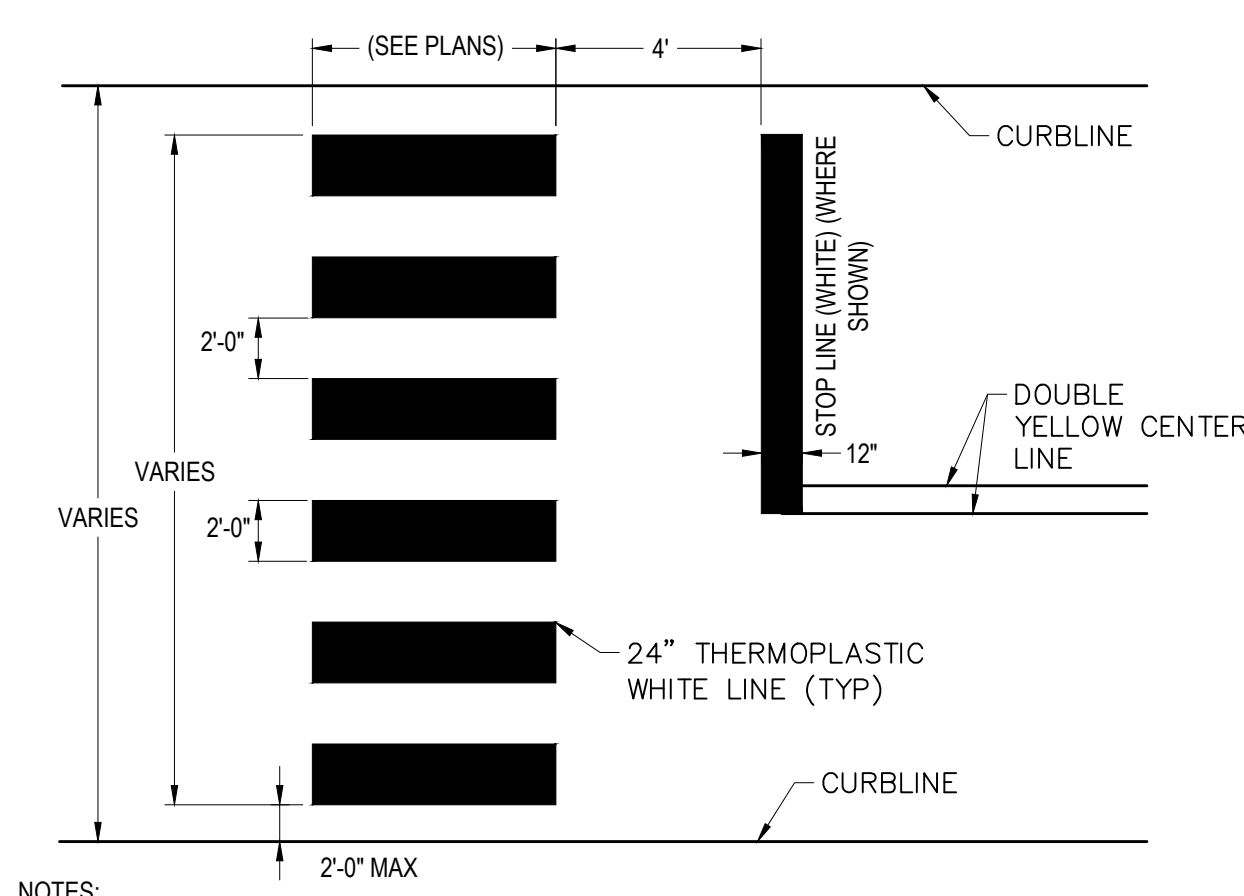
\*THIS DIMENSION SHALL BE A MINIMUM OF 5' AND A MAXIMUM OF 8' FOR ACCESSIBLE SIGNAGE IN THE COMMONWEALTH OF MASSACHUSETTS.

**SIGN POST**  
N.T.S.



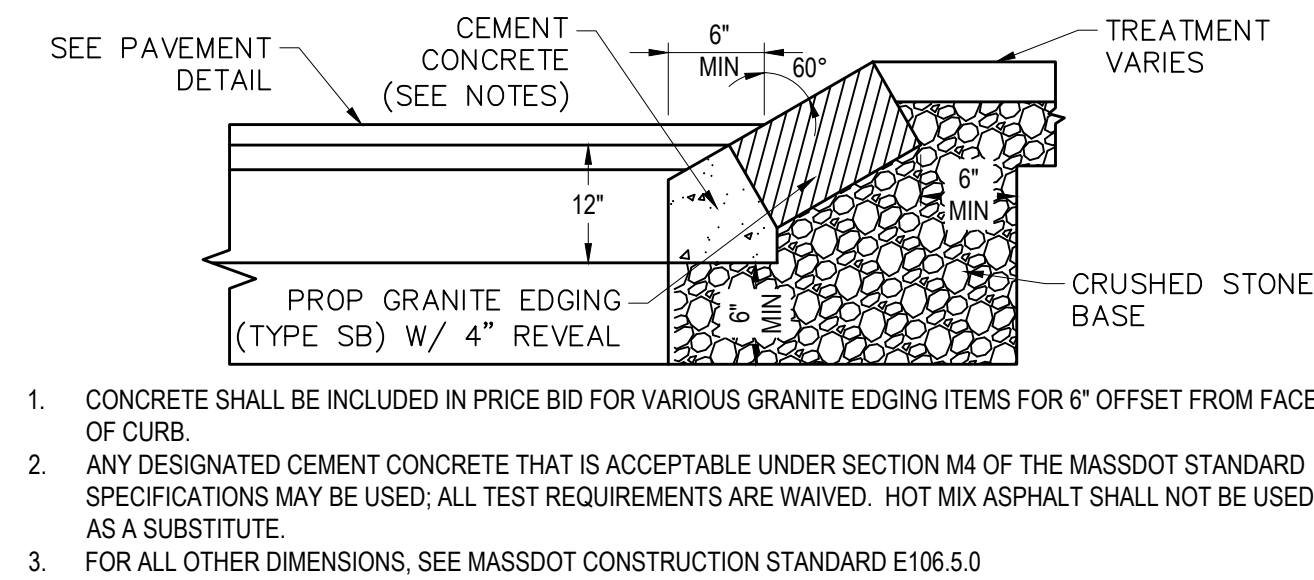
- NOTES:
1. ALL DIMENSIONS TO EDGE OF 4" PAVEMENT STRIPING.
  2. ALL STRIPING SHALL BE 4" WIDE SOLID WHITE PAVEMENT MARKINGS UNLESS OTHERWISE NOTED.
  3. 8' CLEAR WIDTH REFERS TO 8' BETWEEN INSIDE EDGES OF PAVEMENT MARKINGS.
  4. SYMBOL SHALL BE CENTERED WITHIN PARKING STALL.

**ACCESSIBLE PARKING SPACE**  
N.T.S.



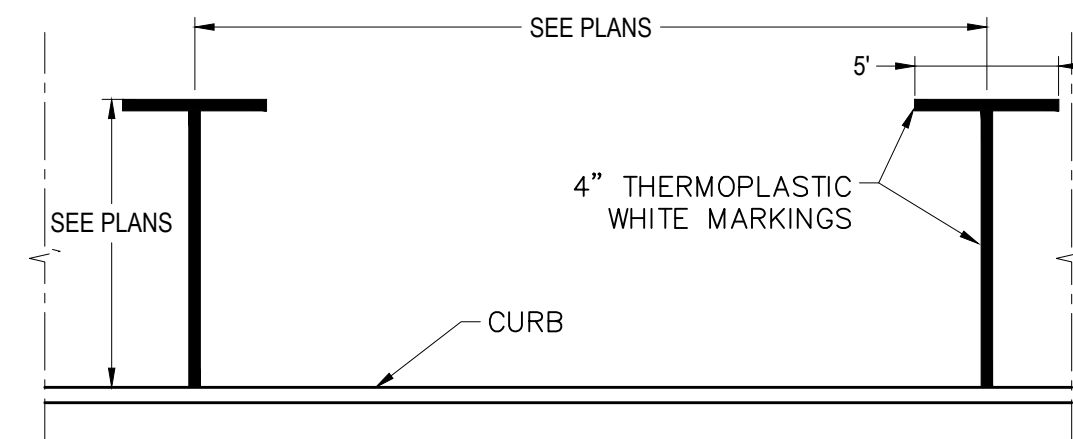
- NOTES:
1. ALL 12" LINES SHALL BE APPLIED IN ONE APPLICATION, NO COMBINATION OF LINES (TWO - 6" LINES) WILL BE ACCEPTED. ALL 24" LINES MAY BE EITHER ONE 24" LINE OR A COMBINATION OF TWO - 12" LINES.
  2. LAYOUT OF CROSSWALKS SHALL BE APPROVED BY THE ENGINEER PRIOR TO APPLICATION.
  3. CROSSWALK BARS SHALL BE PLACED OUTSIDE THE VEHICULAR WHEEL PATH WHEREVER POSSIBLE.

**CROSSWALK PAVEMENT MARKING**  
N.T.S.

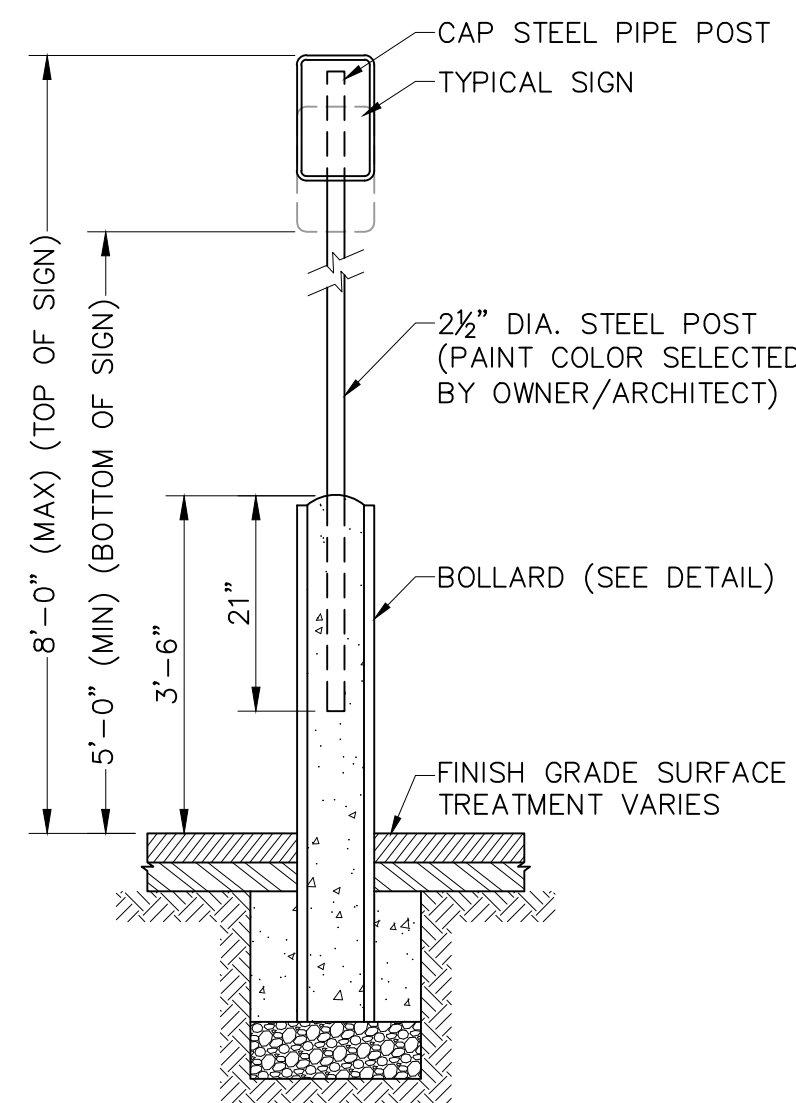


1. CONCRETE SHALL BE INCLUDED IN PRICE BID FOR VARIOUS GRANITE EDGING ITEMS FOR 6" OFFSET FROM FACE OF CURB.
2. ANY DESIGNATED CEMENT CONCRETE THAT IS ACCEPTABLE UNDER SECTION M4 OF THE MASSDOT STANDARD SPECIFICATIONS MAY BE USED; ALL TEST REQUIREMENTS ARE WAIVED. HOT MIX ASPHALT SHALL NOT BE USED AS A SUBSTITUTE.
3. FOR ALL OTHER DIMENSIONS, SEE MASSDOT CONSTRUCTION STANDARD E106.5.0

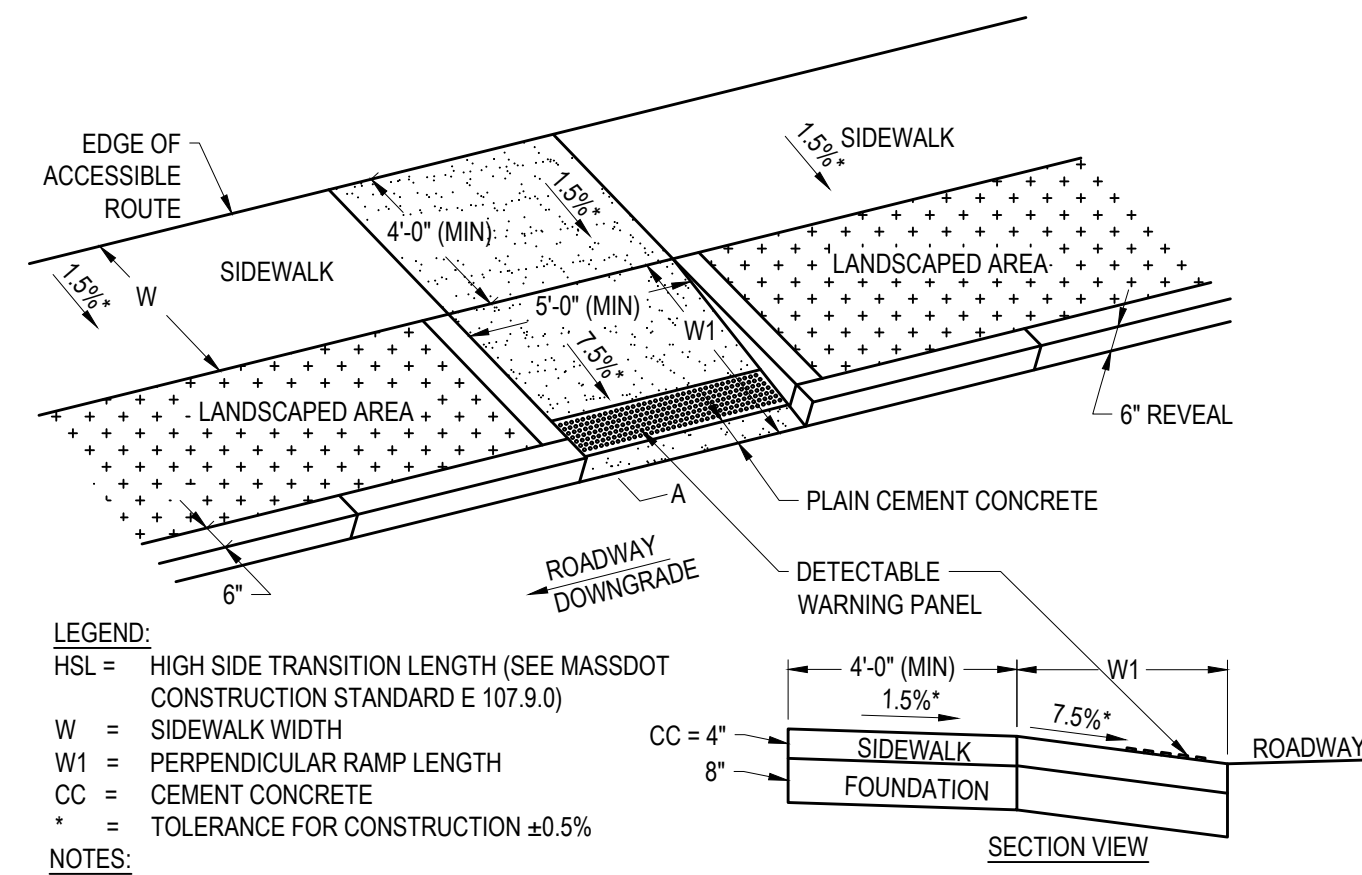
**GRANITE EDGING**  
N.T.S.



**PARALLEL PARKING PAVEMENT MARKING**  
N.T.S.

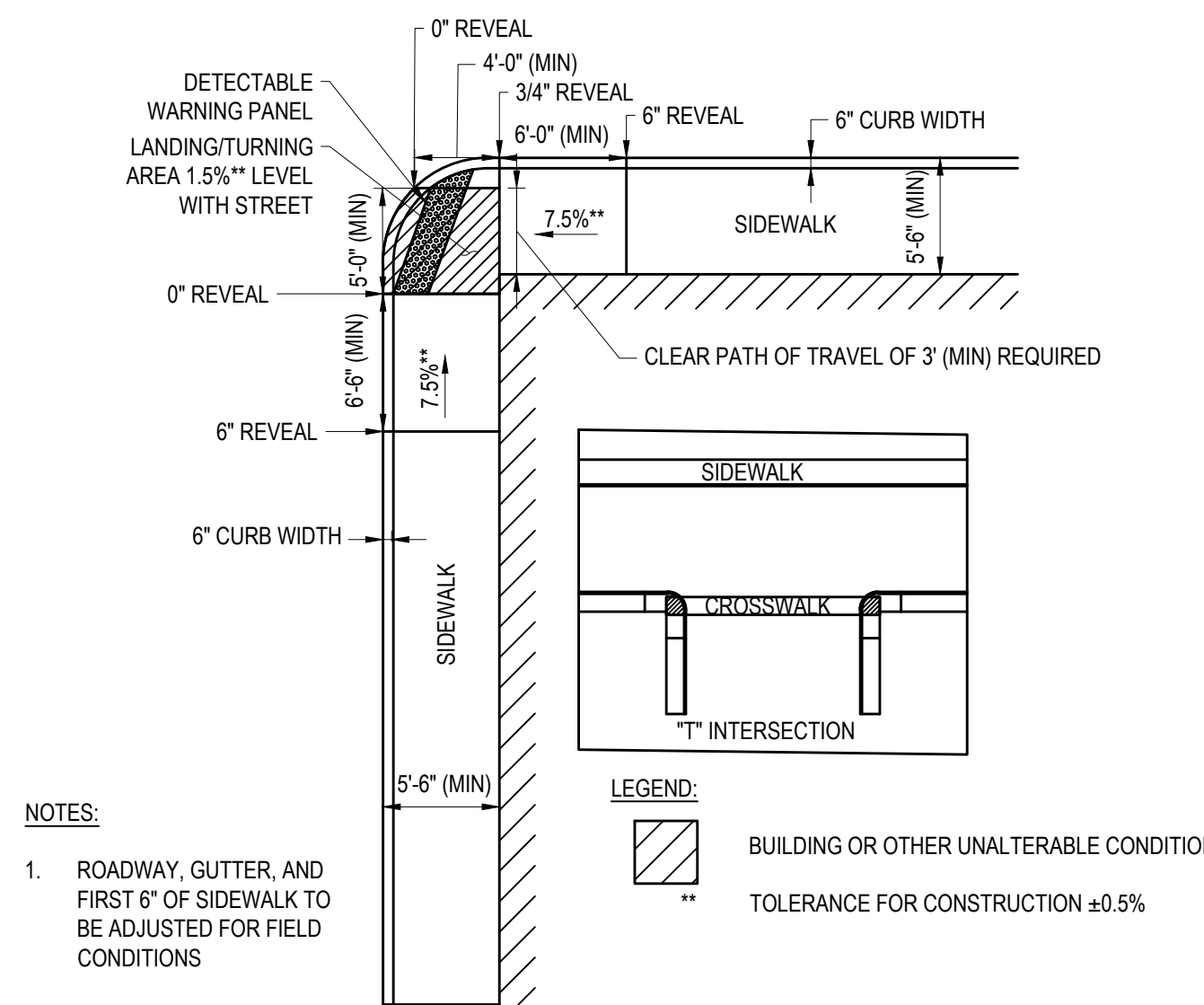


**BOLLARD MOUNTED SIGN**  
N.T.S.



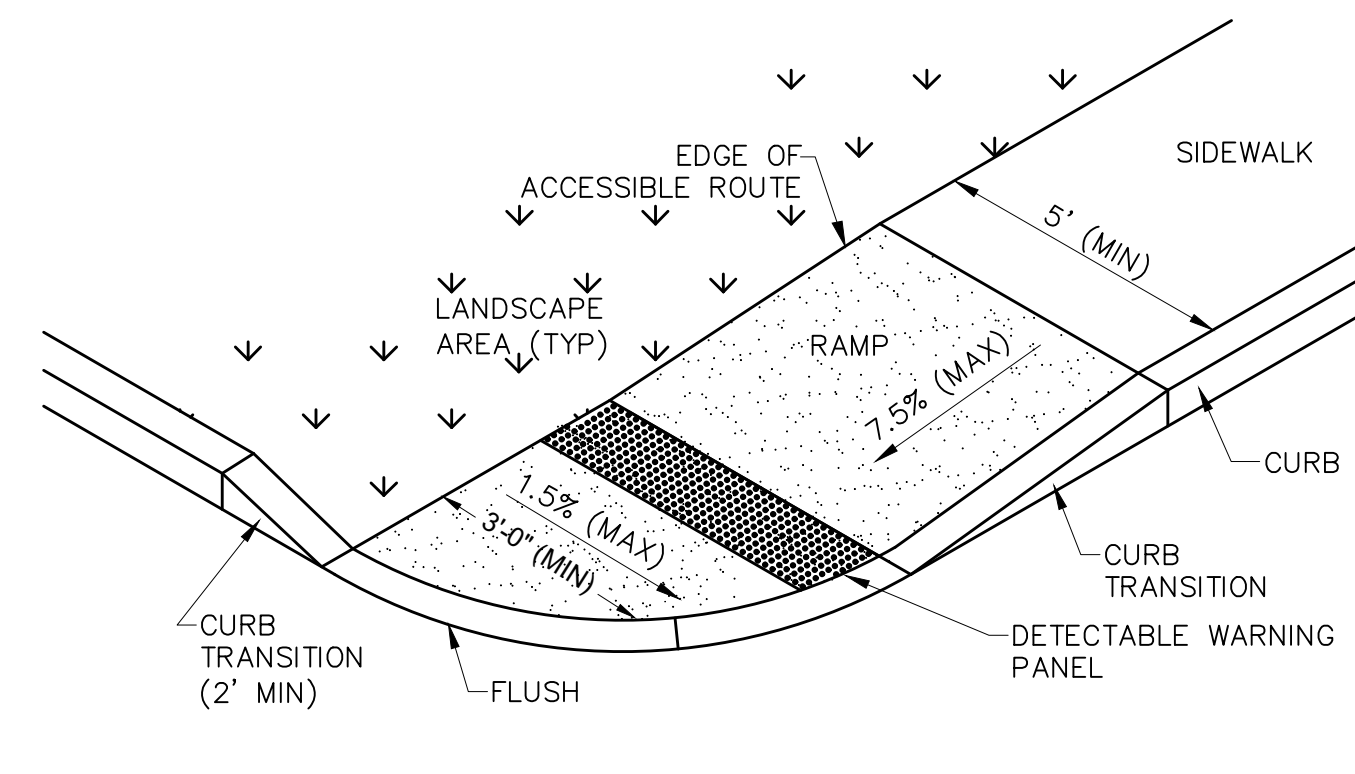
- LEGEND:
- HSL = HIGH SIDE TRANSITION LENGTH (SEE MASSDOT CONSTRUCTION STANDARD E 107.9.0)
- W = SIDEWALK WIDTH
- W1 = PERPENDICULAR RAMP LENGTH
- CC = CEMENT CONCRETE
- \* = TOLERANCE FOR CONSTRUCTION ±0.5%
- NOTES:
1. USABLE SIDEWALK WIDTH PER AAB IS NOT TO BE LESS THAN 4'-0"
  2. ROADWAY GUTTER SLOPE MEASURED IN UPSTATION DIRECTION
  3. SEE MASSDOT CONSTRUCTION STANDARD E 107.6.5 FOR DETECTABLE WARNING PANEL DETAILS

**WHEELCHAIR RAMP**  
N.T.S.

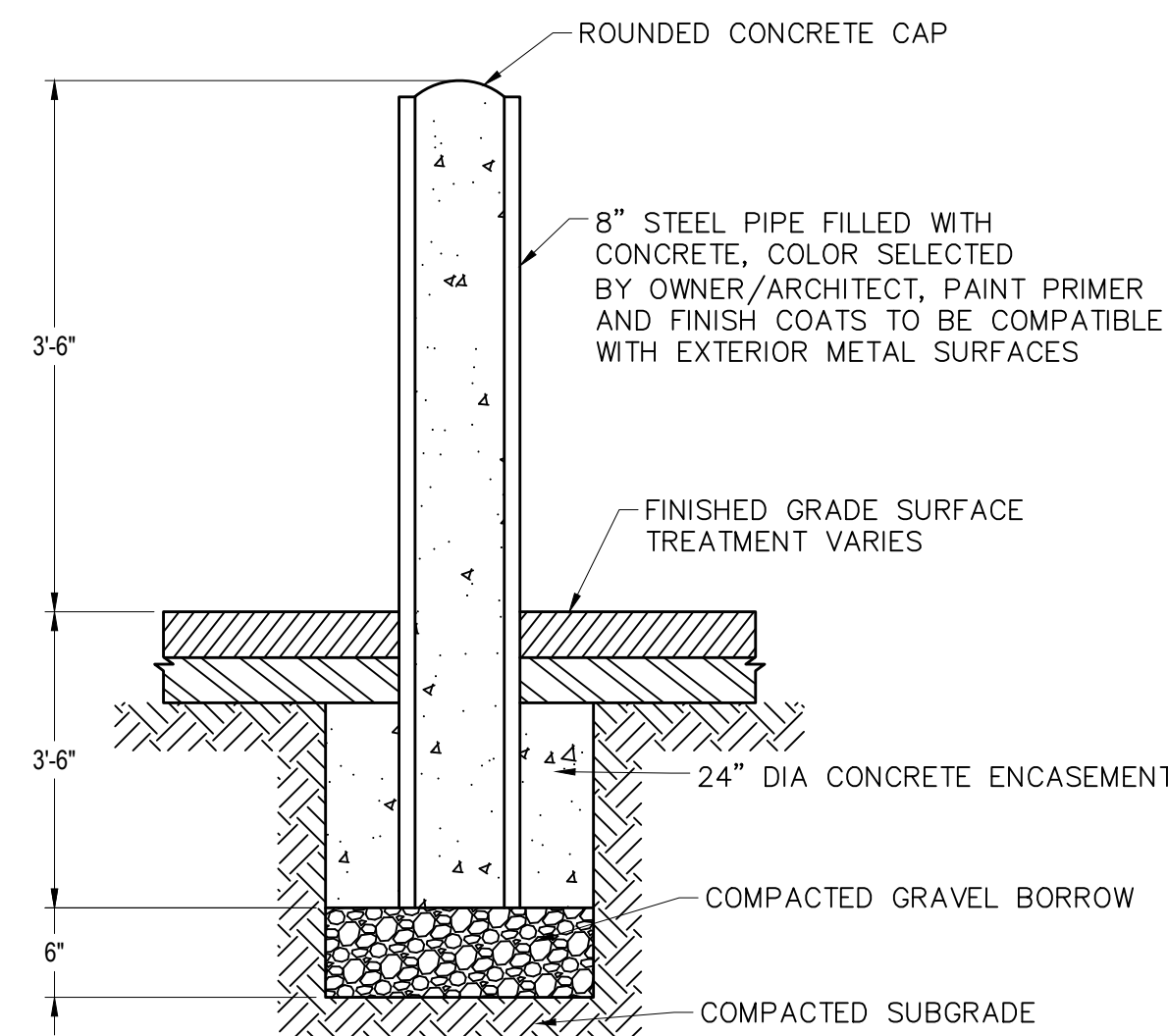


- NOTES:
1. ROADWAY, GUTTER, AND FIRST 6" OF SIDEWALK TO BE ADJUSTED FOR FIELD CONDITIONS

**"T" INTERSECTION WHEELCHAIR RAMP**  
N.T.S.

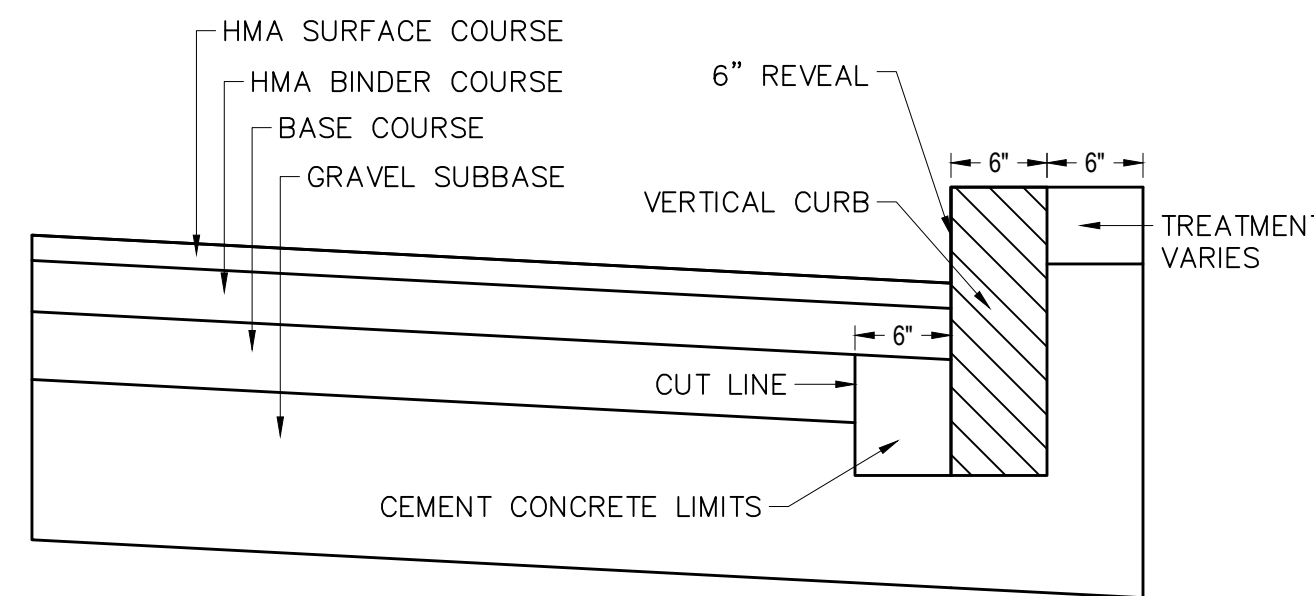


**WHEELCHAIR RAMP TYPE B**  
N.T.S.



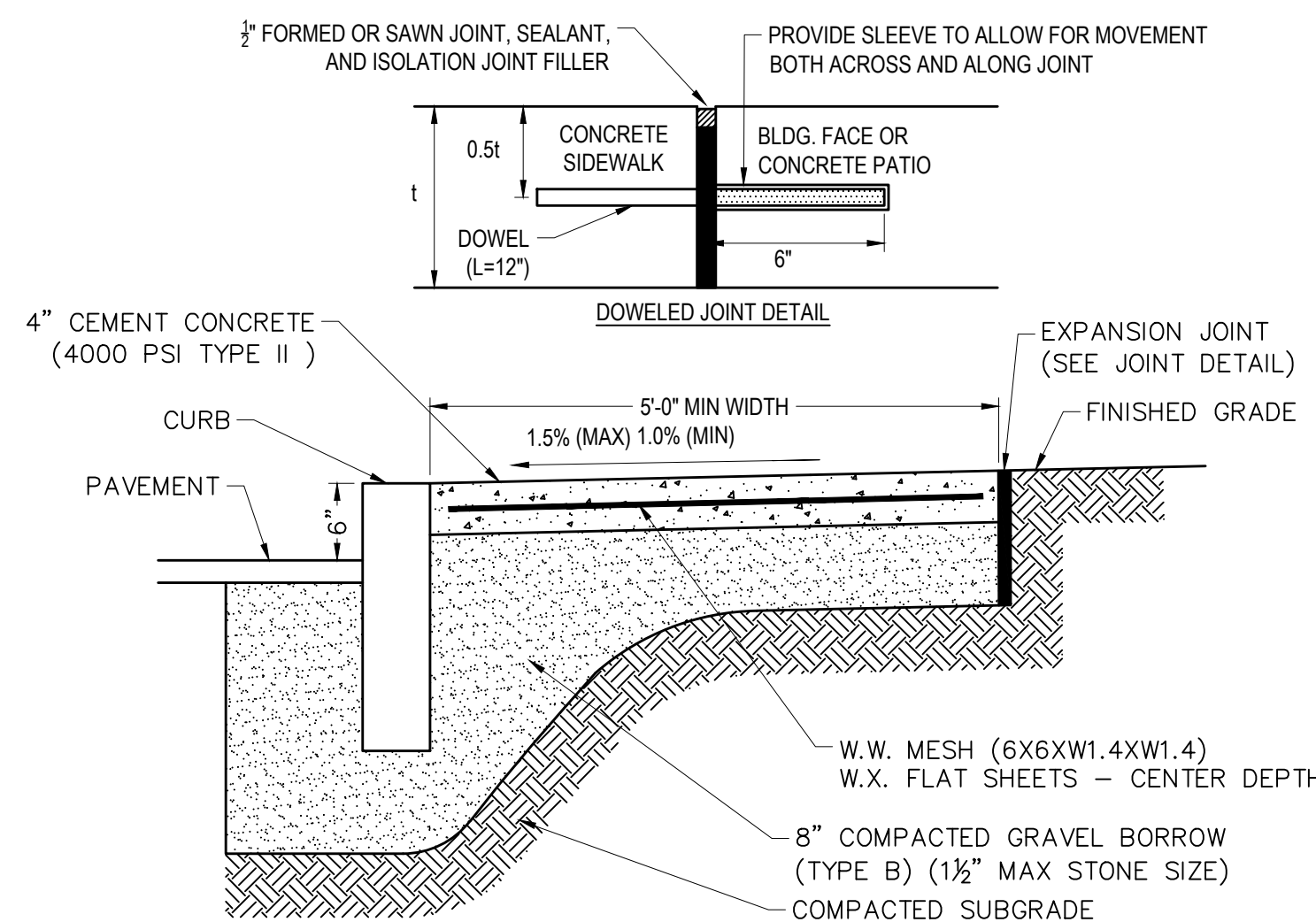
NOTE:  
BOLLARDS SHALL BE PLACED IN ACCORDANCE WITH THE ADA ACCESSIBILITY GUIDELINES. A MINIMUM CLEAR WIDTH OF 36" SHALL BE PROVIDED TO MAINTAIN AN ACCESSIBLE PATH.

**BOLLARD**  
N.T.S.



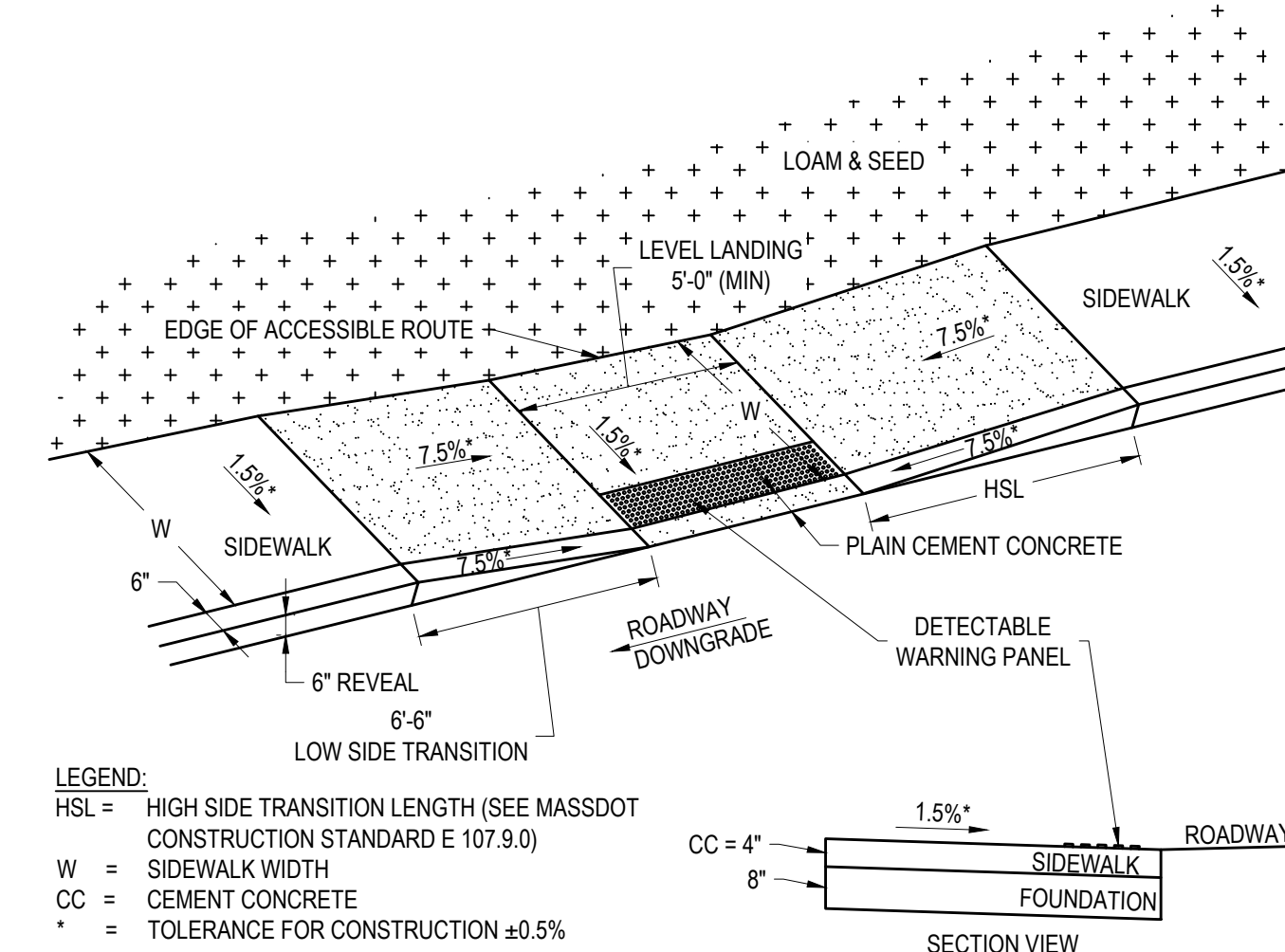
- NOTES:
1. THIS PROCEDURE IS APPLICABLE ONLY IF CURB IS TO BE SET AFTER BASE COURSE IS IN PLACE PRIOR TO BINDER AND TOP PLACEMENT.
  2. CUT NEAT LINE 6" FROM CURB LINE AND REMOVE BASE AND GRAVEL. REPLACE WITH CEMENT CONCRETE
  3. ANY DESIGNATED CEMENT CONCRETE THAT IS ACCEPTABLE UNDER SECTION M4 OF MADOT STANDARD SPECIFICATIONS MAY BE USED; ALL TEST REQUIREMENTS ARE WAIVED. HOT MIX ASPHALT SHALL NOT BE USED AS A SUBSTITUTE.

**VERTICAL GRANITE CURB**  
N.T.S.



- NOTES:
1. PROVIDE A DOWELED CONSTRUCTION JOINT AT ALL DOORWAY LOCATIONS

**CEMENT CONCRETE SIDEWALK**  
N.T.S.



- LEGEND:
- HSL = HIGH SIDE TRANSITION LENGTH (SEE MASSDOT CONSTRUCTION STANDARD E 107.9.0)
- W = SIDEWALK WIDTH
- CC = CEMENT CONCRETE
- \* = TOLERANCE FOR CONSTRUCTION ±0.5%
- NOTES:
1. USABLE SIDEWALK WIDTH PER AAB IS NOT TO BE LESS THAN 4'-0"
  2. ROADWAY GUTTER SLOPE MEASURED IN UPSTATION DIRECTION.
  3. SEE MASSDOT CONSTRUCTION STANDARD E 107.6.5 FOR DETECTABLE WARNING PANEL DETAILS.
  4. SEE MASSDOT CONSTRUCTION STANDARD E 107.2.1 FOR ALL OTHER DETAILS.

**WHEELCHAIR RAMP TYPE A**  
N.T.S.

| REVISIONS              |
|------------------------|
| 1. 2-21-24 PEER REVIEW |
| 2.                     |
| 3.                     |

DRAWING TITLE

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DESIGNER / ENGINEER

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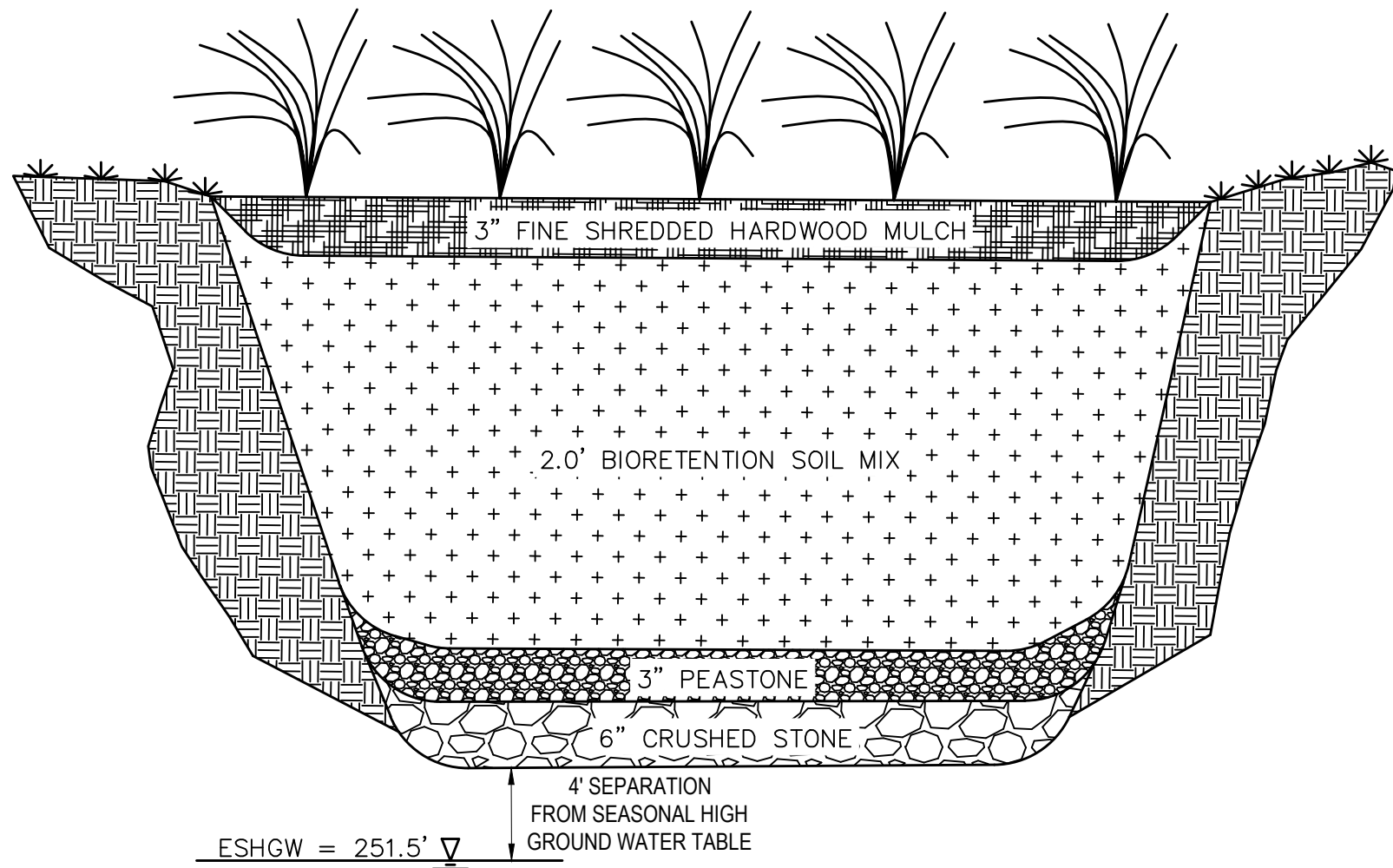
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DESIGNED BY RJF DATE 8-22-23  
CHECKED BY CPR SCALE AS NOTED

PROJECT NO. T1180  
TEC CAD FILE  
T1180\_DET  
DRAWING NO. C-33  
SHEET 33 OF 61

COMMONWEALTH OF MASSACHUSETTS  
REGISTERED PROFESSIONAL ENGINEER  
RICHARD J. FRIEBERG JR.  
CIVIL  
No. 47850



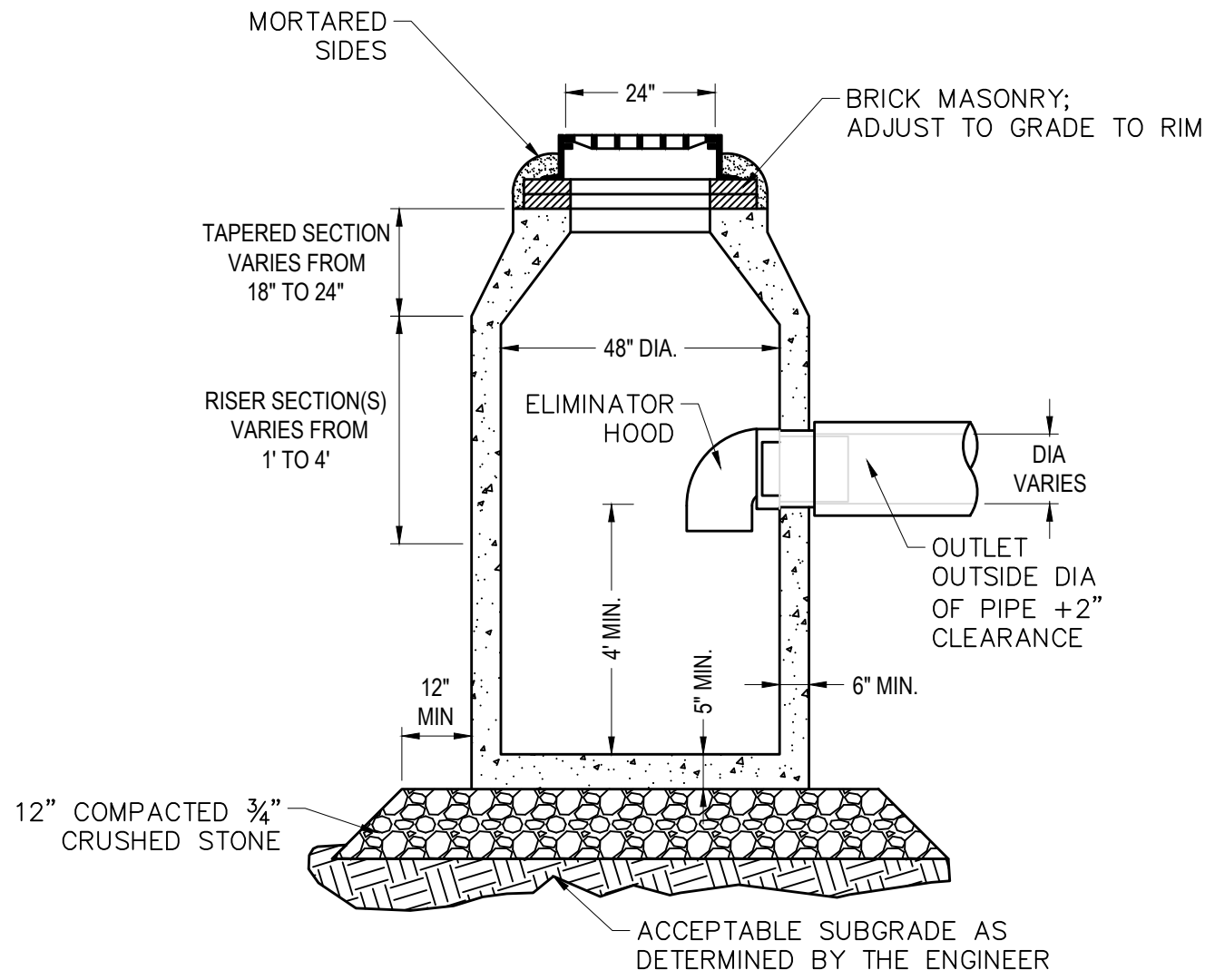


NOTES:

1. THE BIORETENTION SOIL MIX SHALL CONSIST OF A UNIFORM MIXTURE OF TWO PARTS (40% BY VOLUME) COURSE SAND (MASSDOT MATERIAL SPECIFICAION M1.04.0 TYPE A), TWO PARTS (40% BY VOLUME) TOPSOIL (MASSDOT SPECIFICATION M1.05.0 OR M1.06.1) AND ONE PART (20% BY VOLUME HARDWORD CHIPS.
2. THE LARGEST STONE SIZE SHALL BE 2" DIAMETER IN THE TOPSOIL.
3. REMOVE ANY FILL BENEATH THE RAIN GARDEN. REPLACE WITH TITLE 5 SAND BACKFILL.
4. SOIL SURROUNDING TREES TO REMAIN SHALL NOT BE EXCAVATED TO PROTECT THE ROOTS.

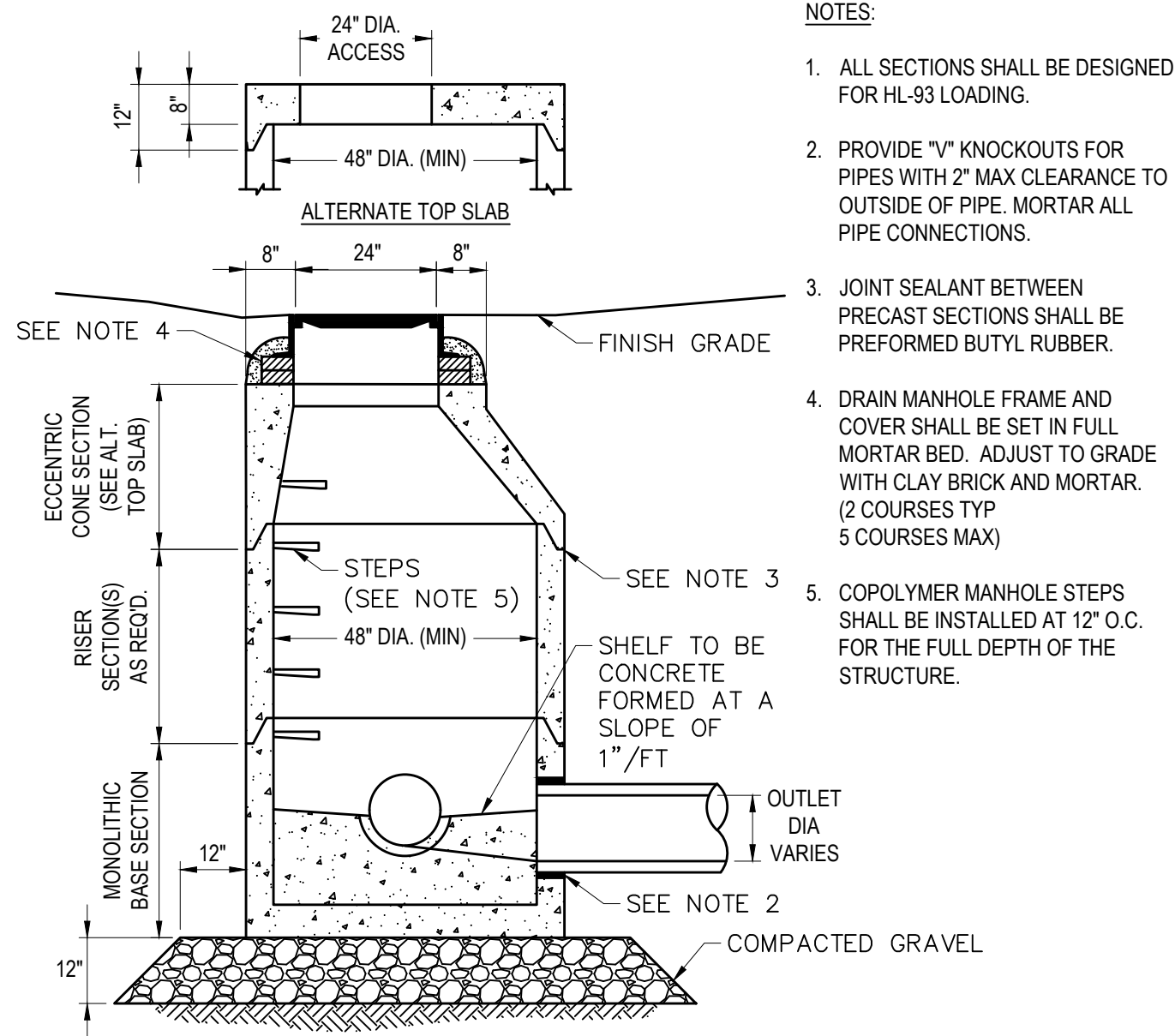
RAIN GARDEN

N.T.S.



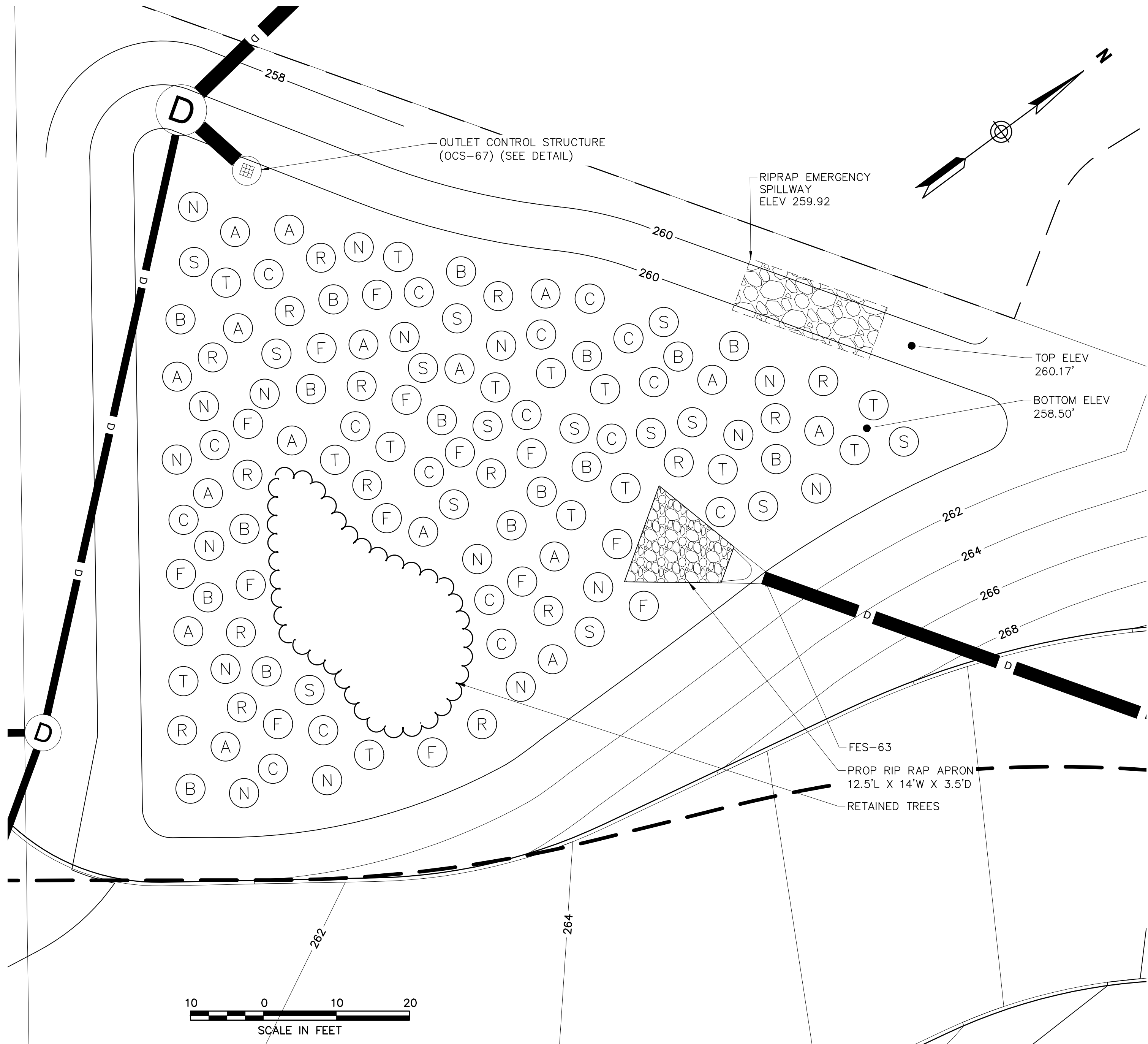
DEEP SUMP CATCH BASIN WITH HOOD

N.T.S.



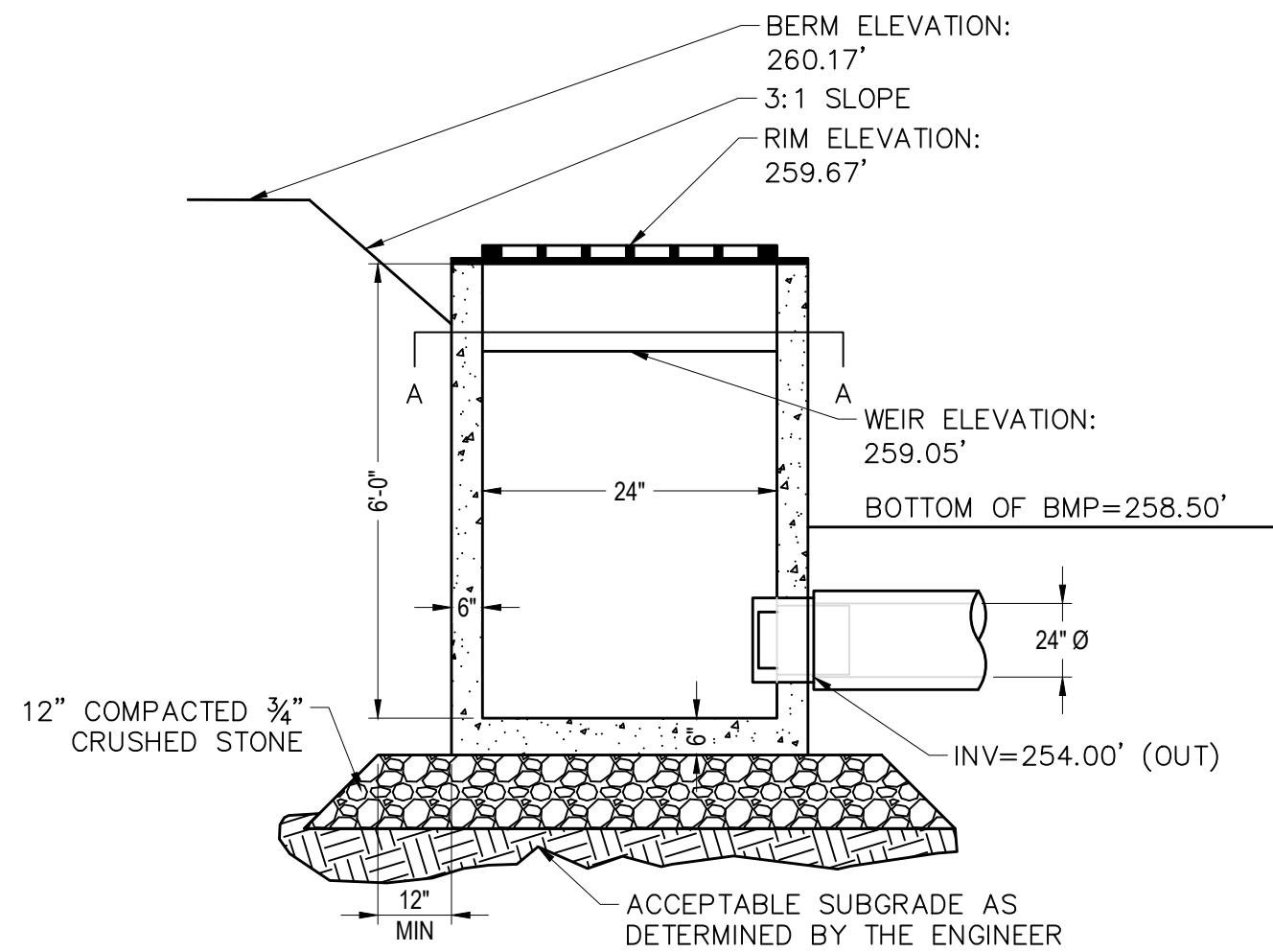
DRAINAGE MANHOLE

N.T.S.



RAIN GARDEN PLANTING PLAN

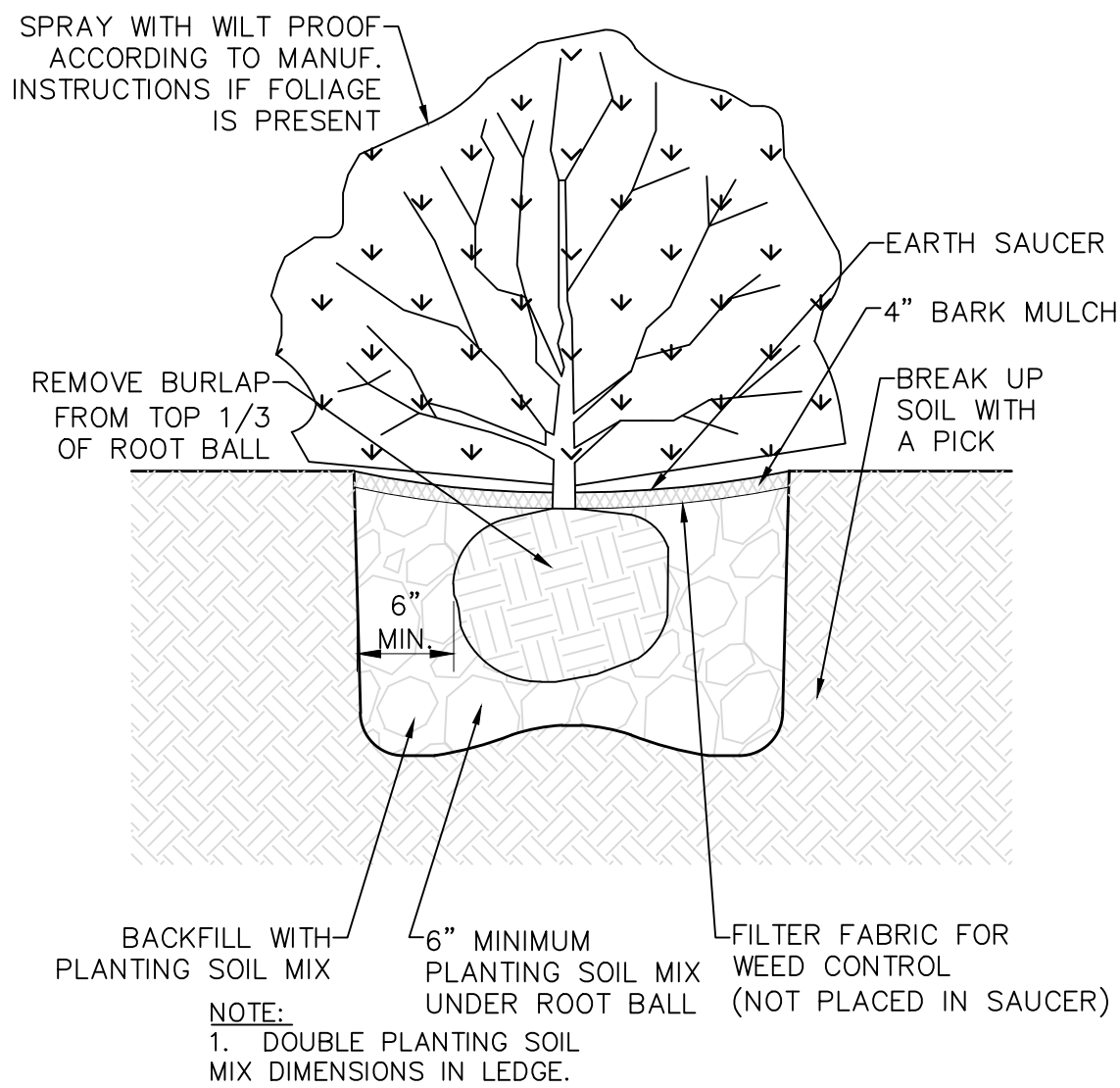
1"=10'



RAIN GARDEN OUTLET CONTROL STRUCTURE (OCS-67)

N.T.S.

| RAIN GARDEN PLANTINGS |                                                |            |                  |
|-----------------------|------------------------------------------------|------------|------------------|
| SYMBOL                | PLANT SPECIES                                  | PLANT TYPE | NUMBER OF PLANTS |
| (F)                   | FOX SEDGE<br>(Carex vulpinoidea)               | GRASS      | 14               |
| (S)                   | SWITCHGRASS<br>(Panicum virgatum)              | GRASS      | 14               |
| (T)                   | BIRDSFOOT TREFOIL<br>(Lotus corniculatus)      | GRASS      | 14               |
| (A)                   | ARROW-WOOD<br>(Viiburnum dentatum)             | SHRUB      | 16               |
| (B)                   | NORTHERN BAYBERRY<br>(Myrica pensylvanica)     | SHRUB      | 16               |
| (N)                   | NANNYBERRY<br>(Viburnum lentago)               | SHRUB      | 16               |
| (R)                   | NORTHERN WILD RAISIN<br>(Viburnum cassinoides) | SHRUB      | 16               |
| (C)                   | RED CHOKEBERRY<br>(Aronia arbutifolia)         | SHRUB      | 16               |



SHRUB PLANTING DETAIL

N.T.S.

REVISIONS

1. 2-21-24 PEER REVIEW
- 2.
- 3.

DRAWING TITLE

Construction Details

SUBDIVISION NAME & LOCATION

King Street Commons  
550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER

Lupoli Companies  
290 Merrimack Street  
Lawrence, MA 01840

DESIGNER / ENGINEER



TEC, Inc.  
282 Merrimack Street, 2nd Floor  
Lawrence, Massachusetts 01843  
978.794.1792

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DESIGNED BY RJF DATE 8-22-23  
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DRAWING NO.  
**C-34**  
SHEET 34 OF 61



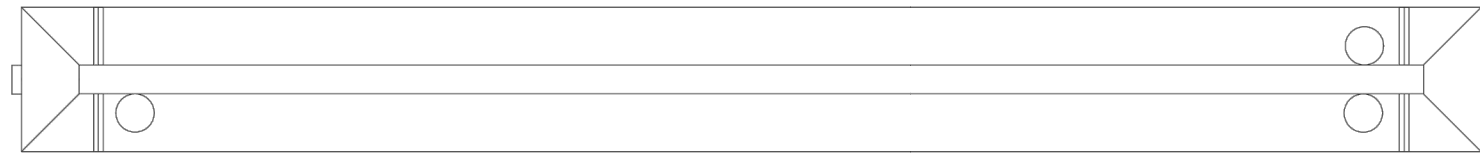
PROJECT SUMMARY

CALCULATION DETAILS  
• LOADING = HS20H25  
• APPROX. LINEAR FOOTAGE = 290 LF

STORAGE SUMMARY  
• STORAGE VOLUME REQUIRED = N/A  
• PIPE STORAGE VOLUME = 8,086 CF  
• BACKFILL STORAGE VOLUME = 3,525  
• TOTAL STORAGE PROVIDED = 11,611 CF

PIPE DETAILS  
• DIAMETER = 72"  
• CORRUGATION = 5x1  
• GAGE = 16  
• COATING = ALT2  
• WALL TYPE = PERFORATED  
• BARREL SPACING = 36"

BACKFILL DETAILS  
• WIDTH AT ENDS = 12"  
• ABOVE PIPE = 6"  
• WIDTH AT SIDES = 12"  
• BELOW PIPE = 6"



NOTES

- ALL RISER AND STUB DIMENSIONS ARE TO CENTERLINE. ALL ELEVATIONS, DIMENSIONS, AND LOCATIONS OF RISERS AND INLETS, SHALL BE VERIFIED BY THE ENGINEER OF RECORD PRIOR TO RELEASING FOR FABRICATION.
- ALL FITTINGS AND REINFORCEMENT COMPLY WITH ASTM A898.
- ALL RISERS AND STUBS ARE 2 1/2" x 1/2" CORRUGATION AND 16 GAGE UNLESS OTHERWISE NOTED.
- RISERS TO BE FIELD TRIMMED TO GRADE.
- QUANTITY OF PIPE SHOWN DOES NOT PROVIDE EXTRA PIPE FOR CONNECTING THE SYSTEM TO EXISTING PIPE OR DRAINAGE STRUCTURES. OUR SYSTEM AS DETAILED PROVIDES NOMINAL INLET AND/OR OUTLET PIPE STUB FOR CONNECTION TO EXISTING DRAINAGE FACILITIES. IF ADDITIONAL PIPE IS NEEDED IT IS THE RESPONSIBILITY OF THE CONTRACTOR.
- BAND TYPE TO BE DETERMINED UPON FINAL DESIGN.
- THE PROJECT SUMMARY IS REFLECTIVE OF THE DYODS DESIGN, QUANTITIES ARE APPROX, AND SHOULD BE VERIFIED UPON FINAL DESIGN AND APPROVAL. FOR EXAMPLE, TOTAL EXCAVATION DOES NOT CONSIDER ALL VARIABLES SUCH AS SHORING AND ONLY ACCOUNTS FOR MATERIAL WITHIN THE ESTIMATED EXCAVATION FOOTPRINT.
- THESE DRAWINGS ARE FOR CONCEPTUAL PURPOSES AND DO NOT REFLECT ANY LOCAL PREFERENCES OR REGULATIONS. PLEASE CONTACT YOUR LOCAL CONTECH REP FOR MODIFICATIONS.

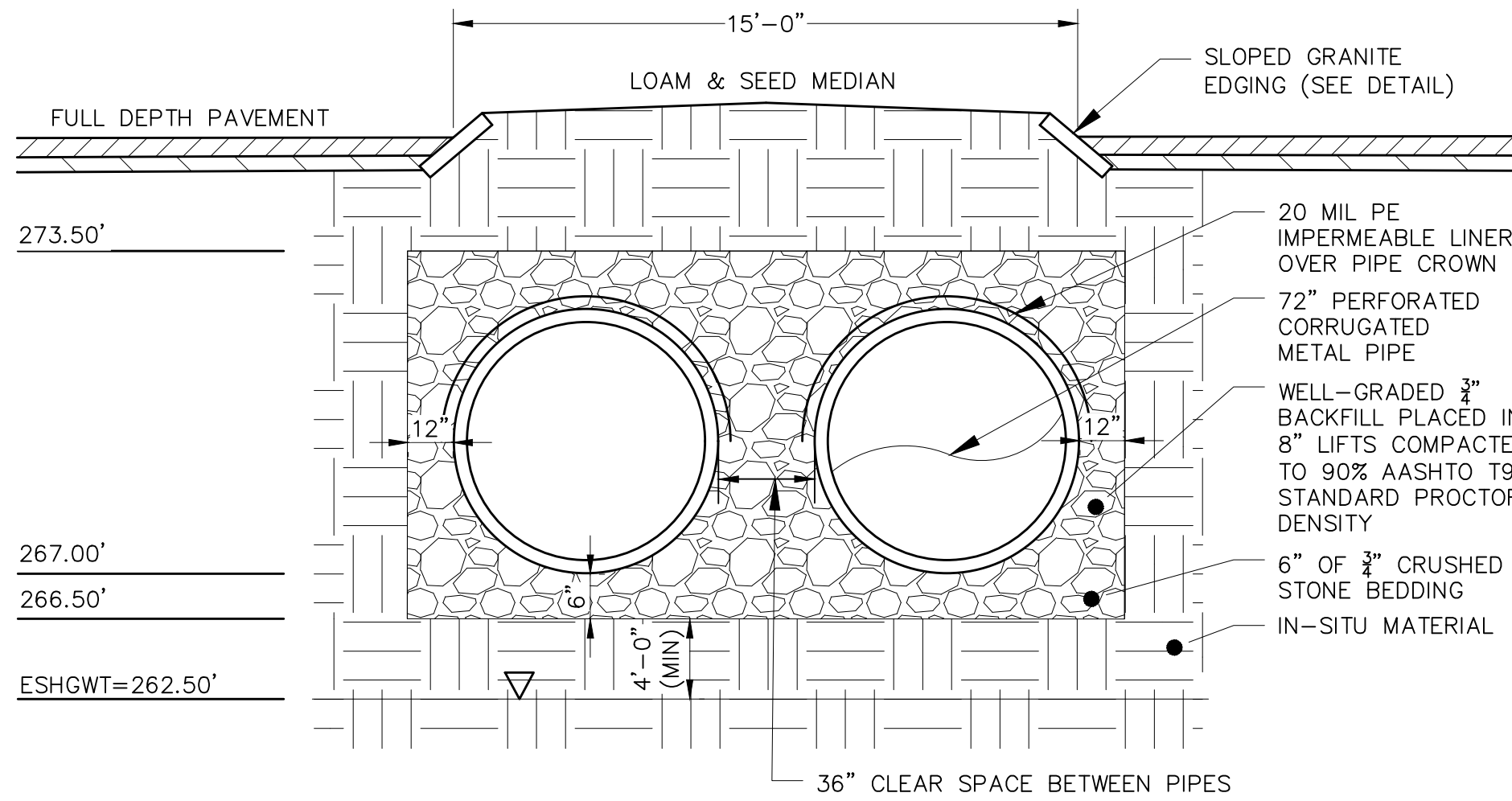
ASSEMBLY  
SCALE: 1" = 20'

| DATE | REVISION DESCRIPTION | BY |
|------|----------------------|----|
|      |                      |    |
|      |                      |    |
|      |                      |    |



DY042752 King Street Commons Subdivision  
CMP Detention  
Littleton, MA  
DETENTION SYSTEM

|                    |                 |                |
|--------------------|-----------------|----------------|
| PROJECT NO.: 25049 | REQ. NO.: 42752 | DATE: 2/8/2024 |
| DESIGNED: DY0      | DRAWN: DY0      |                |
| CHECKED: DY0       | APPROVED: DY0   |                |
| SHEET NO.: 1       |                 |                |

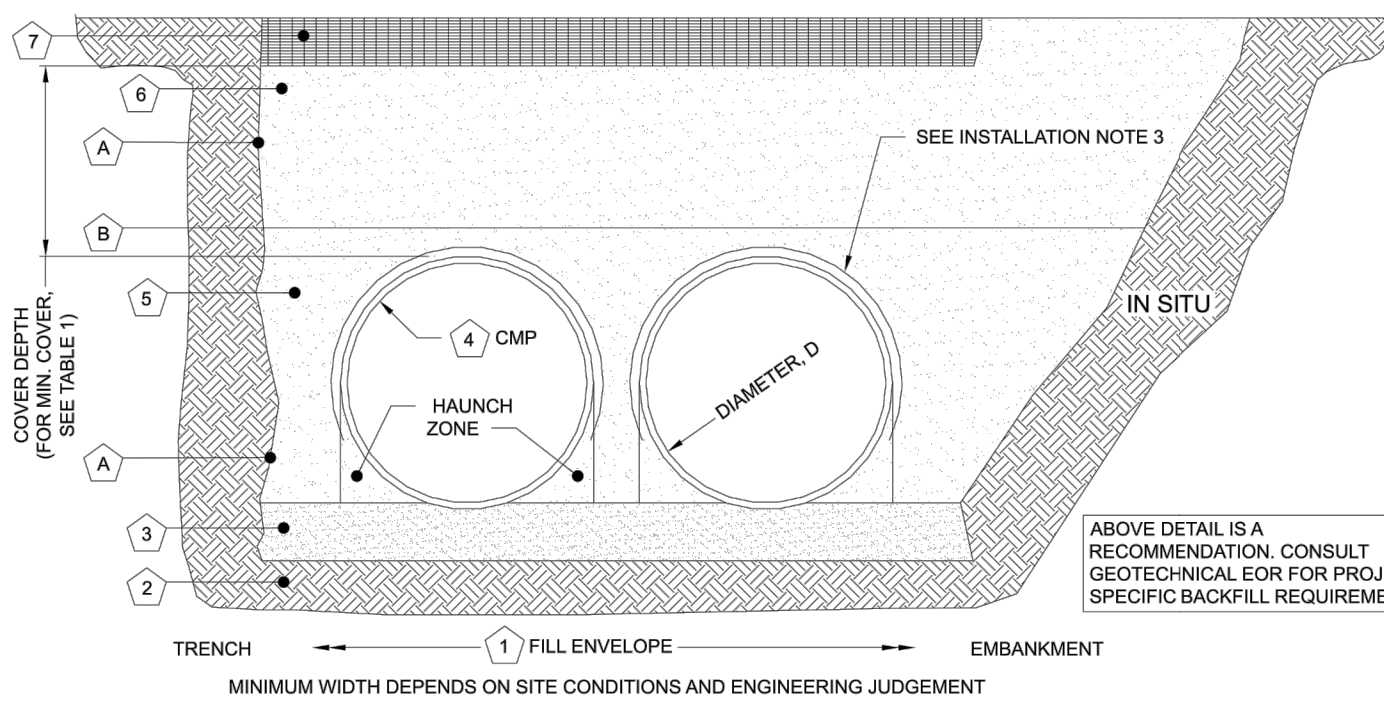


CMP INFILTRATION SECTION  
N.T.S.

TABLE 1:

| DIAMETER, D | MIN. COVER | CORR. PROFILE    |
|-------------|------------|------------------|
| 6"-10"      | 12"        | 1 1/2" x 1/4"    |
| 12"-48"     | 12"        | 2 2/3" x 1/2"    |
| >48"-96"    | 12"        | 3" x 1", 5" x 1" |
| >96"        | D/8        | 3" x 1", 5" x 1" |

- STRUCTURAL BACKFILL MUST EXTEND TO LIMITS OF THE TABLE
- TOTAL HEIGHT OF COMPACTED COVER FOR CONVENTIONAL HIGHWAY LOADS IS MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TOP OF RIGID PAVEMENT.



INSTALLATION NOTES

- WHEN PLACING THE FIRST LIFTS OF BACKFILL IT IS IMPORTANT TO MAKE SURE THAT THE BACKFILL IS PROPERLY COMPACTED UNDER AND AROUND THE PIPE HAUNCHES.
- OTHER ALTERNATE BACKFILL MATERIAL MAY BE ALLOWED DEPENDING ON SITE SPECIFIC CONDITIONS, AS APPROVED BY SITE ENGINEER.
- AN HDPE MEMBRANE LINER WILL BE PLACED ON THE CROWN OF EACH PIPE TO PROVIDE AN IMPERMEABLE BARRIER AGAINST ENVIRONMENTAL CHANGES THAT MAY ADVERSELY AFFECT THE SYSTEM OVER TIME. PLEASE REFER TO THE CORRUGATED METAL PIPE DETENTION DESIGN GUIDE FOR ADDITIONAL TECHNICAL DETAILS.

ABOVE DETAIL IS A RECOMMENDATION. CONSULT GEOTECHNICAL EOR FOR PROJECT SPECIFIC BACKFILL REQUIREMENTS.

TABLE 2: PERFORATED STANDARD

CMP RETENTION STANDARD BACKFILL SPECIFICATIONS

| MATERIAL LOCATION                          | MATERIAL SPECIFICATION                                                                             | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------------------|----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FILL ENVELOPE WIDTH                        | PER ENGINEER OF RECORD                                                                             | MINIMUM TRENCH WIDTH MUST ALLOW ROOM FOR PROPER COMPACTION OF HAUNCH MATERIALS UNDER THE PIPE.<br>THE SUGGESTED MINIMUM TRENCH WIDTH, OR EOR RECOMMENDATION:<br>PIPE ≤ 12": D + 16"<br>PIPE > 12": 1.5D + 12"<br><br>MINIMUM EMBANKMENT WIDTH (IN FEET) FOR INITIAL FILL ENVELOPE:<br>PIPE < 24": 3.0D<br>PIPE 24" - 144": D + 4'0"<br>PIPE > 144": D + 10'0"                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| FOUNDATION                                 | AASHTO 26.5.2 - PER ENGINEER OF RECORD                                                             | PRIOR TO PLACING THE BEDDING, THE FOUNDATION MUST BE CONSTRUCTED TO A UNIFORM AND STABLE GRADE. IN THE EVENT THAT UNSUITABLE FOUNDATION MATERIALS ARE ENCOUNTERED DURING EXCAVATION, THEY SHALL BE REMOVED AND FOUNDATION BROUGHT BACK TO GRADE WITH A FILL MATERIAL APPROVED BY THE ENGINEER OF RECORD.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| BEDDING                                    | AASHTO M 43: 3, 357, 4, 467, 5, 56, 57                                                             | ENGINEER OF RECORD TO DETERMINE IF BEDDING IS REQUIRED. PIPE MAY BE PLACED ON THE TRENCH BOTTOM OF A RELATIVELY LOOSE, NATIVE SUITABLE WELL GRADED GRANULAR MATERIAL THAT IS ROUGHLY SHAPED TO FIT THE BOTTOM OF THE PIPE, 2" MIN DEPTH. THE BEDDING MATERIAL MAY BE SUITABLE OPEN GRADED GRANULAR BEDDING CONFORMING TO AASHTO SOIL CLASSIFICATIONS A1, A2, OR A3 WITH MAXIMUM PARTICLE SIZE OF 3" PER AASHTO 26.5.1                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                            |                                                                                                    | CORRUGATED METAL PIPE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| BACKFILL                                   | FREE-DRAINING, ANGULAR, WASHED-STONE PER AASHTO M 43: 3, 357, 4, 467, 5, 56, 57 OR APPROVED EQUAL. | HAUNCH ZONE MATERIAL SHALL BE HAND SHOVELED OR SHOVEL SLICED INTO PLACE TO ALLOW FOR PROPER COMPACTION WITHOUT SOFT SPOTS. BACKFILL SHALL BE PLACED IN 8" +/- LOOSE LIFTS AND COMPACTED TO 90% STANDARD PROCTOR PER AASHTO T 99. BACKFILL SHALL BE PLACED SUCH THAT THERE IS NO MORE THAN A TWO LIFT (16") DIFFERENTIAL BETWEEN ANY OF THE PIPES AT ANY TIME DURING THE BACKFILL PROCESS. THE BACKFILL SHOULD BE ADVANCED ALONG THE LENGTH OF THE SYSTEM TO AVOID DIFFERENTIAL LOADING. WHERE CONVENTIONAL COMPACTION TESTING IS NOT PRACTICAL, THE MATERIAL SHALL BE MECHANICALLY COMPACTED UNTIL NO FURTHER YIELDING OF MATERIAL IS OBSERVED UNDER THE COMPACTOR.<br>AREAS WITH HIGH WATER TABLE FLUCTUATIONS THAT INTERACT WITH THE PIPE ZONE, CONSIDER INSTALLING A GEOTEXTILE SEPARATION LAYER TO PREVENT SOIL MIGRATION. |
| COVER MATERIAL                             | UP TO MIN. COVER - AASHTO M 145: A-1, A-2, A-3 ABOVE MIN. COVER - PER ENGINEER OF RECORD           | COVER MATERIAL MAY INCLUDE NON-BITUMINOUS, GRANULAR ROADBASE MATERIAL WITHIN MIN COVER LIMITS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| RIGID OR FLEXIBLE PAVEMENT (IF APPLICABLE) | PER ENGINEER OF RECORD                                                                             | FLEXIBLE PAVEMENT SHOULD NOT BE COUNTED AS PART OF THE FILL HEIGHT OVER THE CMP. FINAL BACKFILL MATERIAL SELECTION AND COMPACTION REQUIREMENTS SHALL FOLLOW THE PROJECT PLANS AND SPECIFICATIONS PER THE ENGINEER OF RECORD.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| OPTIONAL SIDE GEOTEXTILE                   | NONE                                                                                               | GEOTEXTILE LAYER IS RECOMMENDED ON SIDES OF EXCAVATION TO PREVENT SOIL MIGRATION.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| GEOTEXTILE BETWEEN LAYERS                  | NONE                                                                                               | IF SOIL TYPES DIFFER AT ANY POINT ABOVE PIPE INVERT, A GEOTEXTILE LAYER IS RECOMMENDED TO BE PLACED BETWEEN THE LAYERS TO PREVENT SOIL MIGRATION.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

- NOTES:
- FOR MULTIPLE BARREL INSTALLATIONS, THE RECOMMENDED STANDARD SPACING BETWEEN PARALLEL PIPE RUNS SHALL BE THE PIPE DIAMETER / 2 BUT NO LESS THAN 12" FOR DIAMETERS < 72". FOR 72" AND LARGER DIAMETERS, THE MINIMUM SPACING IS 36". CONTACT YOUR CONTECH REPRESENTATIVE FOR NONSTANDARD SPACING.
  - APPROVED REGIONAL EQUIVALENTS FOR SECTION 5 INCLUDE CA-7, MIDOT 6AA, 6A, OR SG, PROVIDED THEY MEET THE PARTICLE SIZES INDICATED.

MANUFACTURER RECOMMENDED BACKFILL

NOT TO SCALE

| DATE | REVISION DESCRIPTION | BY |
|------|----------------------|----|
|      |                      |    |
|      |                      |    |
|      |                      |    |



DY042752 King Street Commons Subdivision  
CMP Detention  
Littleton, MA  
DETENTION SYSTEM

|                    |                 |                  |
|--------------------|-----------------|------------------|
| PROJECT NO.: 25049 | REQ. NO.: 42752 | DATE: 11/10/2024 |
| DESIGNED: DY0      | DRAWN: DY0      |                  |
| CHECKED: DY0       | APPROVED: DY0   |                  |
| SHEET NO.: 1       |                 |                  |

REVISIONS

- 2-21-24 PEER REVIEW
- 
- 

DRAWING TITLE

Construction  
Details

SUBDIVISION NAME & LOCATION

King Street  
Commons

550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER

Lupoli Companies  
290 Merrimack Street  
Lawrence, MA 01840

DESIGNER / ENGINEER



TEC, Inc.  
282 Merrimack Street, 2nd Floor  
Lawrence, Massachusetts 01843  
978.794.1792

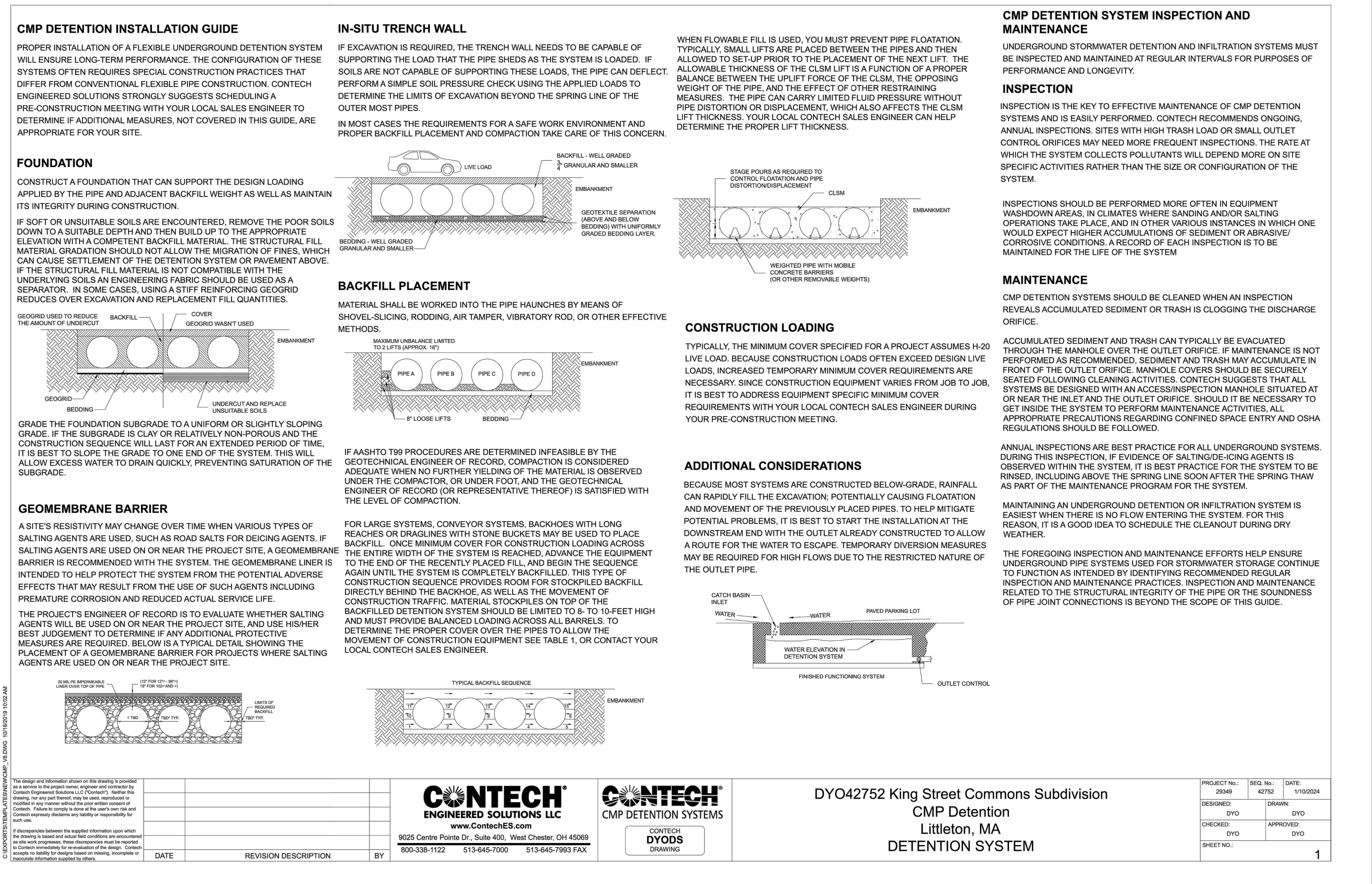
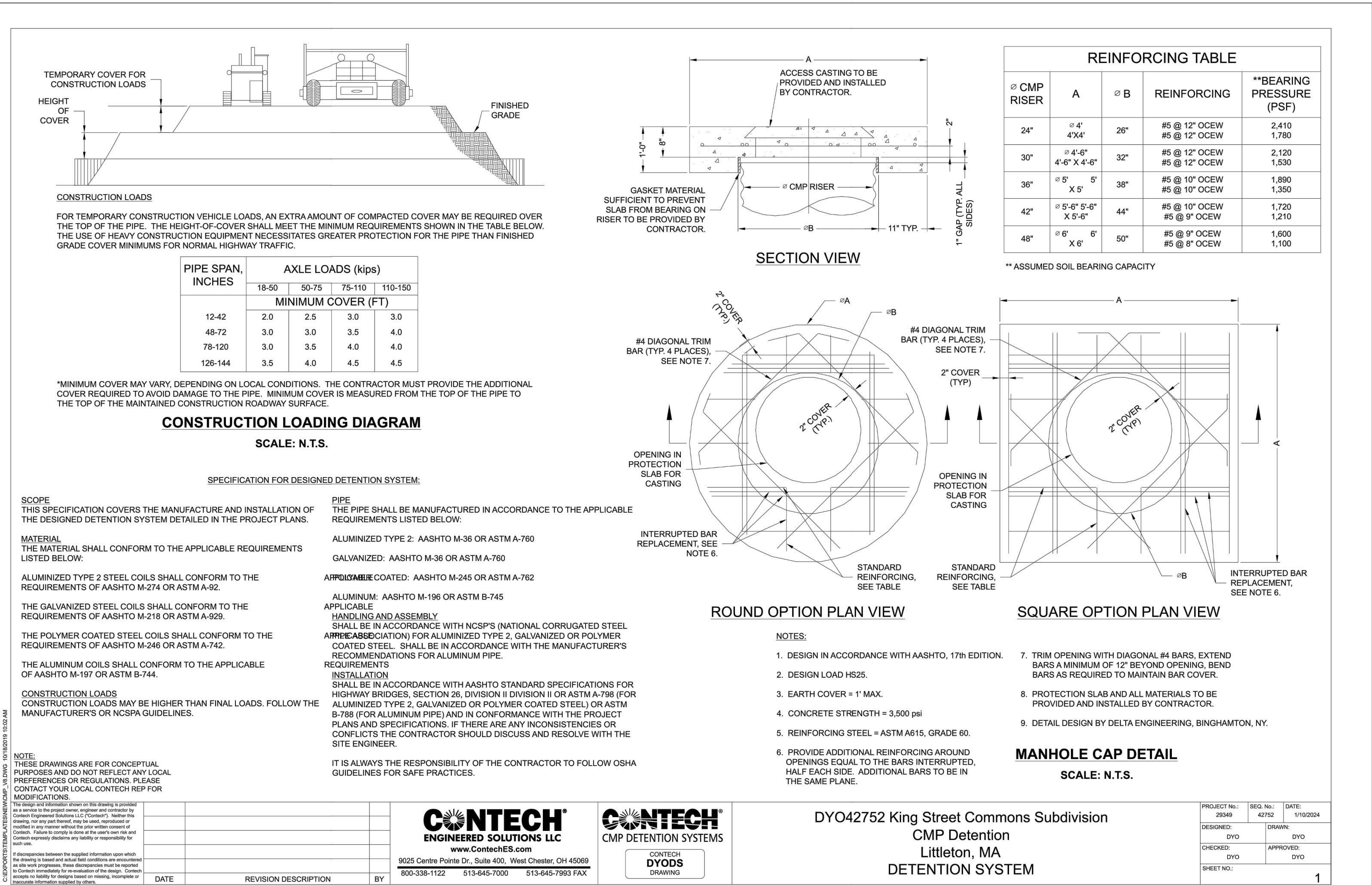
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DESIGNED BY: RJF DATE: 8-22-23  
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PROJECT NO.  
T1180  
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T1180\_DET  
DRAWING NO.  
C-35  
SHEET 35 OF 61





REVISIONS

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## Construction Details

SUBDIVISION NAME & LOCATION

King Street Commons

550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER

Lupoli Companies

290 Merrimack Street  
Lawrence, MA 01840

DESIGNER / ENGINEER

**TEC**  
The Engineering Corp

TEC, Inc.  
282 Merrimack Street, 2nd Floor  
Lawrence, Massachusetts 01843  
978.794.1792

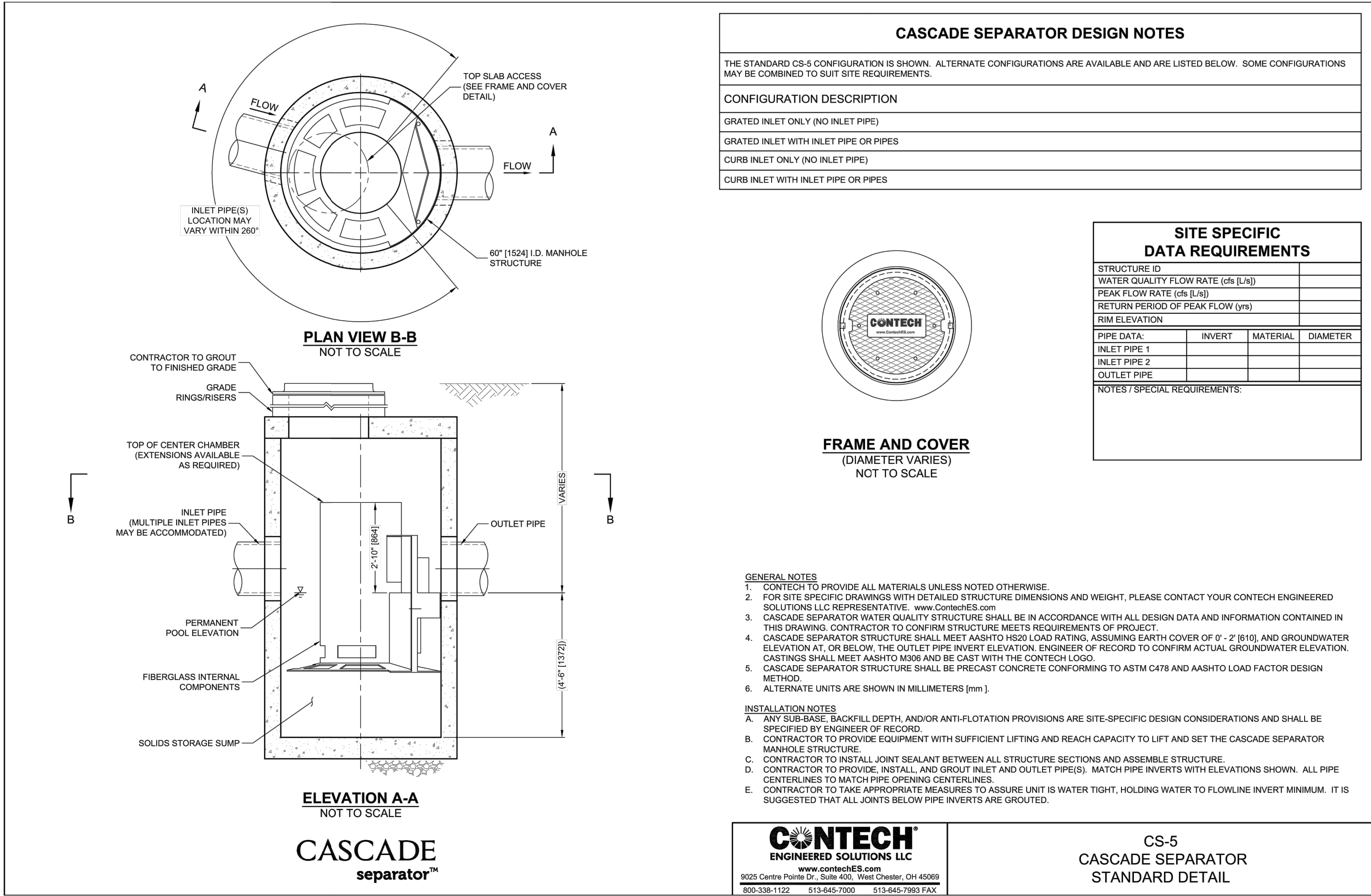
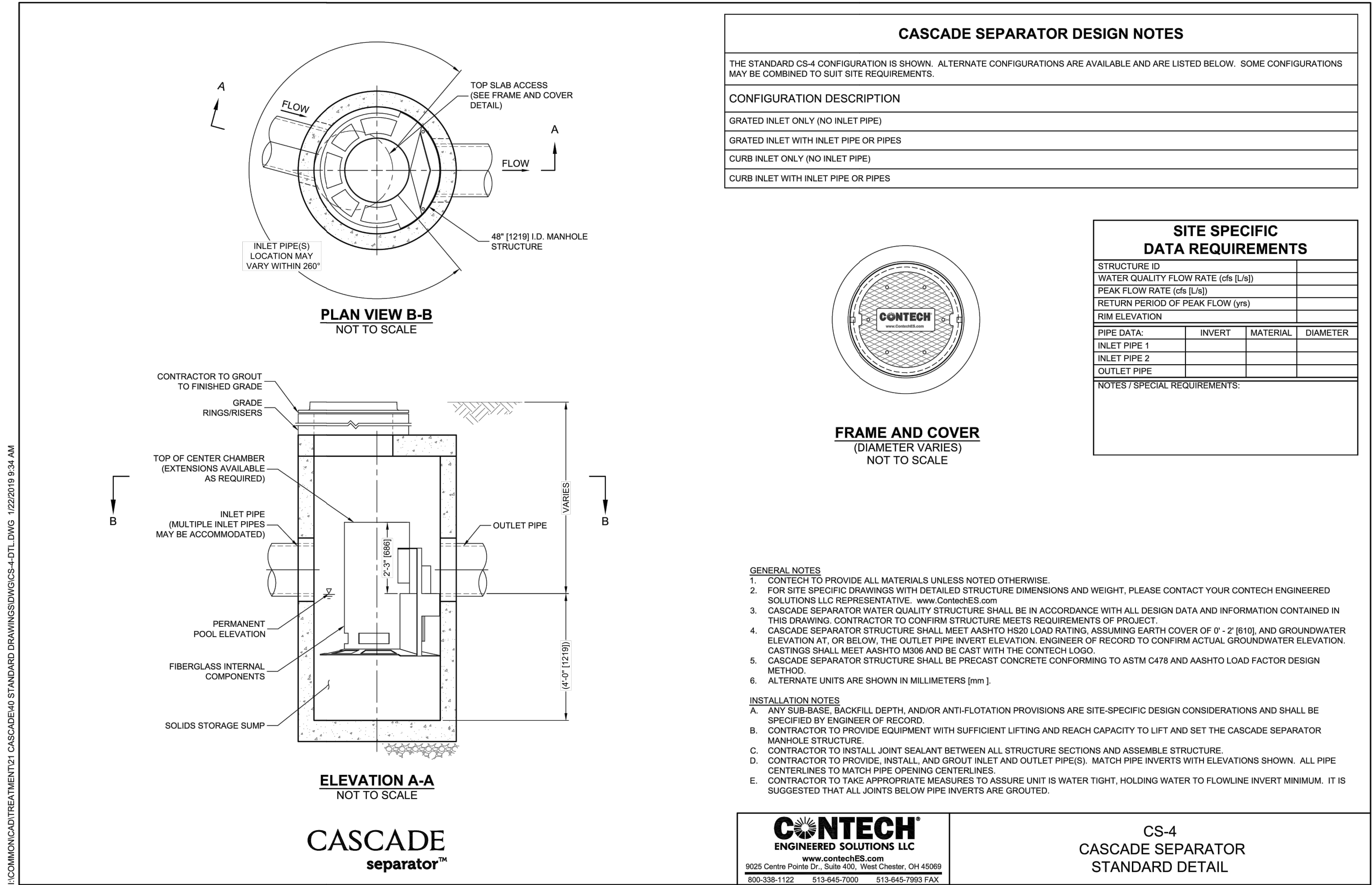
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SHEET 36 OF 61





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| REVISIONS              |
| 1. 2-21-24 PEER REVIEW |
| 2.                     |
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## Construction Details

SUBDIVISION NAME & LOCATION

King Street Commons  
550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER

Lupoli Companies  
290 Merrimack Street  
Lawrence, MA 01840

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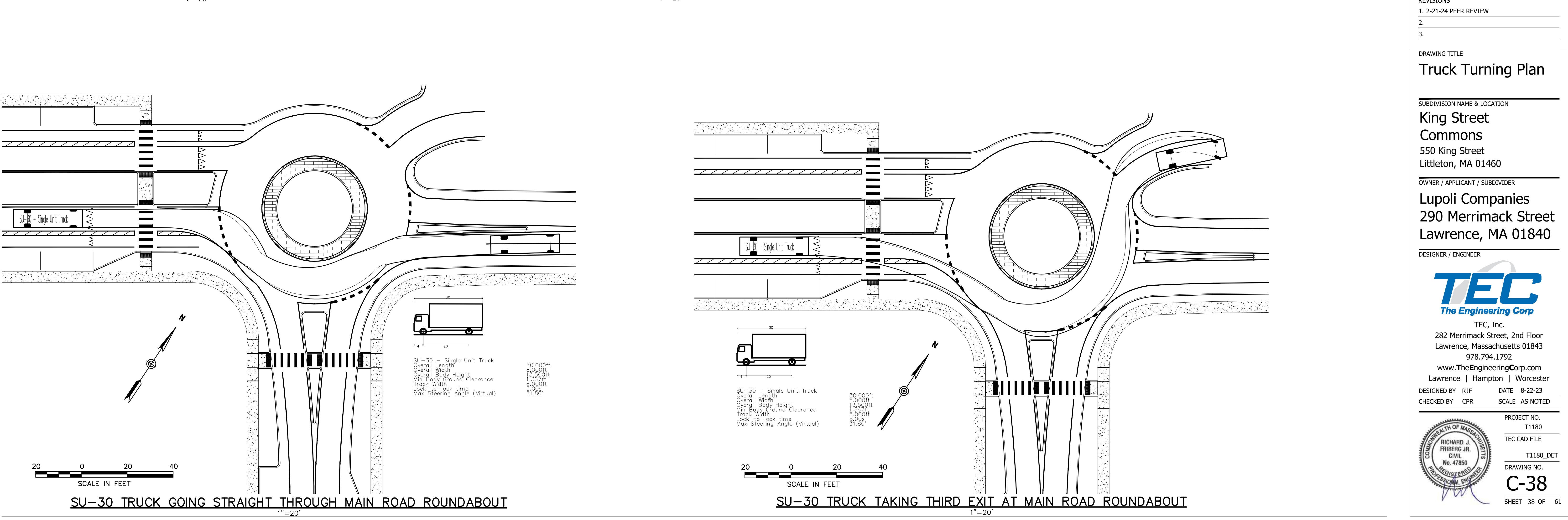
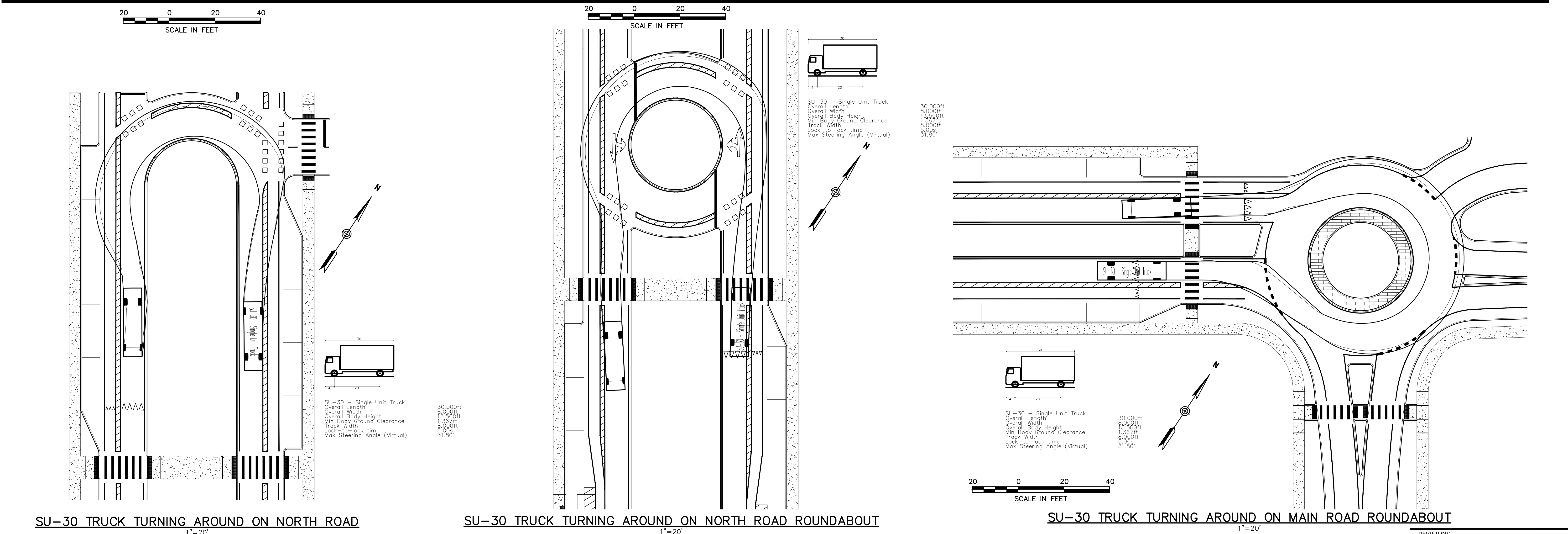
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| DRAWING NO.<br><b>C-37</b> |
| SHEET 37 OF 61             |





REVISIONS

1. 2-21-24 PEER REVIEW

2.

3.

DRAWING TITLE

Truck Turning Plan

SUBDIVISION NAME & LOCATION

King Street Commons  
550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER

Lupoli Companies  
290 Merrimack Street  
Lawrence, MA 01840

DESIGNER / ENGINEER

TEC

The Engineering Corp

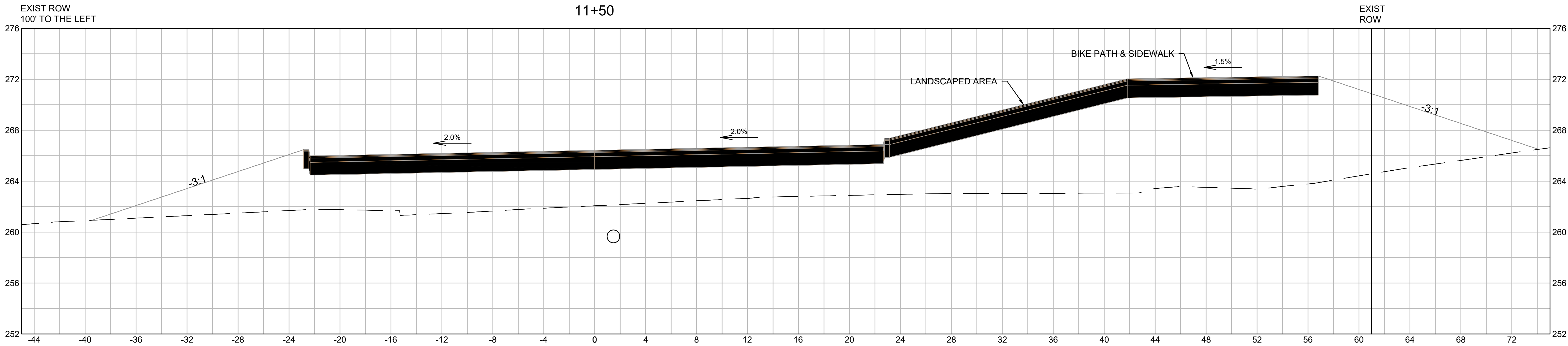
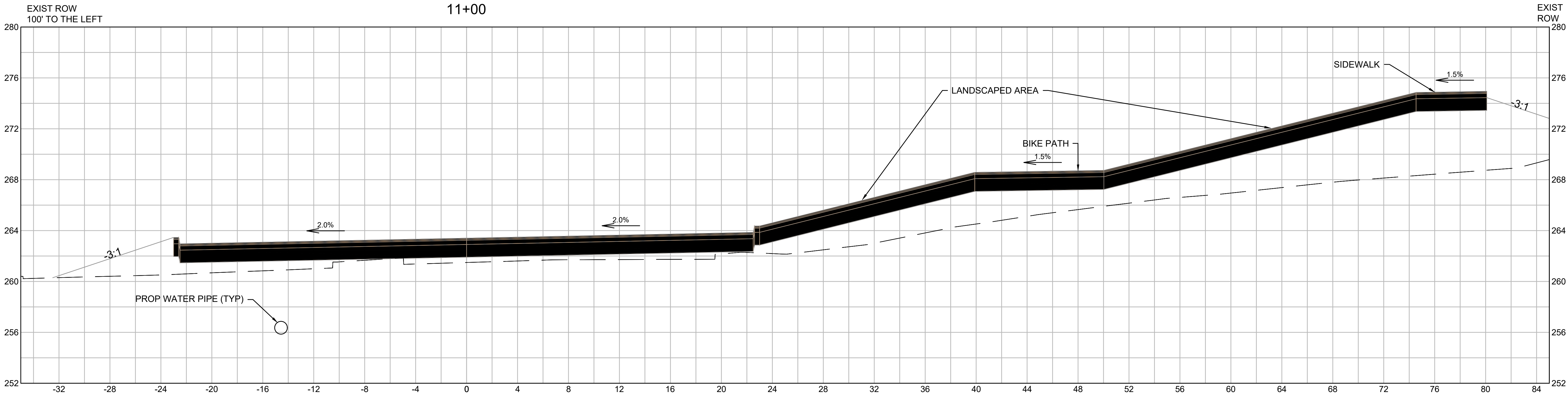
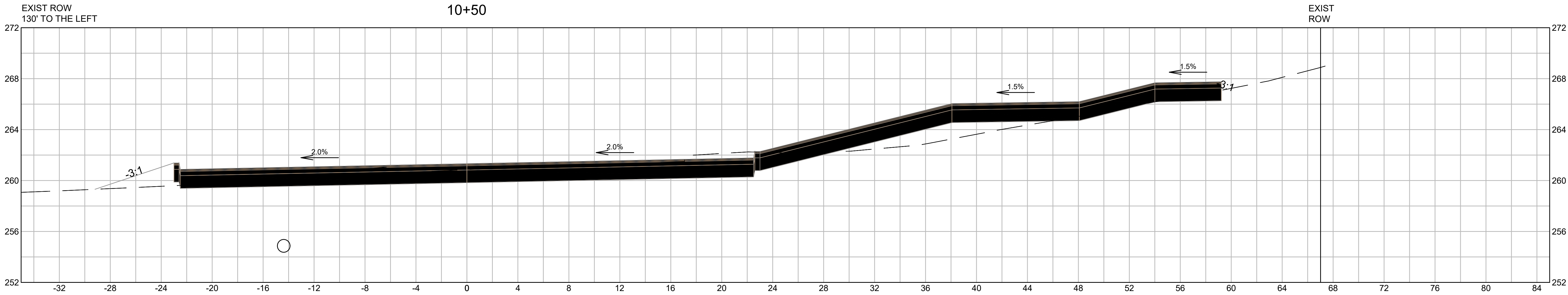
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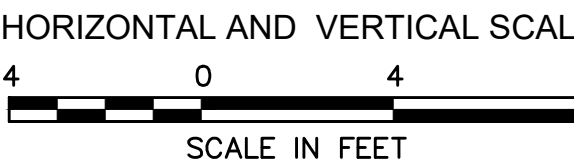
PROJECT NO. T1180  
TEC CAD FILE  
T1180\_DET  
DRAWING NO. C-38  
SHEET 38 OF 61

COMMONWEALTH OF MASSACHUSETTS  
RICHARD J. FRIBERG JR.  
CIVIL  
No. 47850  
REGISTERED  
PROFESSIONAL ENGINEER





- NOTES:
1. ALL LANDSCAPE BUFFERS TO BE A MAX OF 1:10 SLOPE.



| REVISIONS |                     |
|-----------|---------------------|
| 1.        | 2-21-24 PEER REVIEW |
| 2.        |                     |
| 3.        |                     |

DRAWING TITLE

**Roadway Cross  
Sections**

**10+50 to 11+50**

SUBDIVISION NAME & LOCATION

**King Street  
Commons**

550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER

**Lupoli Companies**

290 Merrimack Street  
Lawrence, MA 01840

DESIGNER / ENGINEER

**TEC**  
The Engineering Corp

TEC, Inc.  
282 Merrimack Street, 2nd Floor  
Lawrence, Massachusetts 01843  
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PROJECT NO.  
T1180

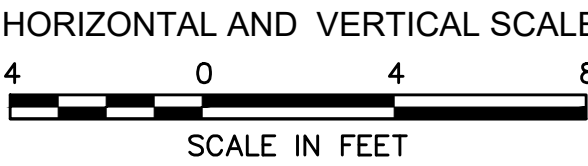
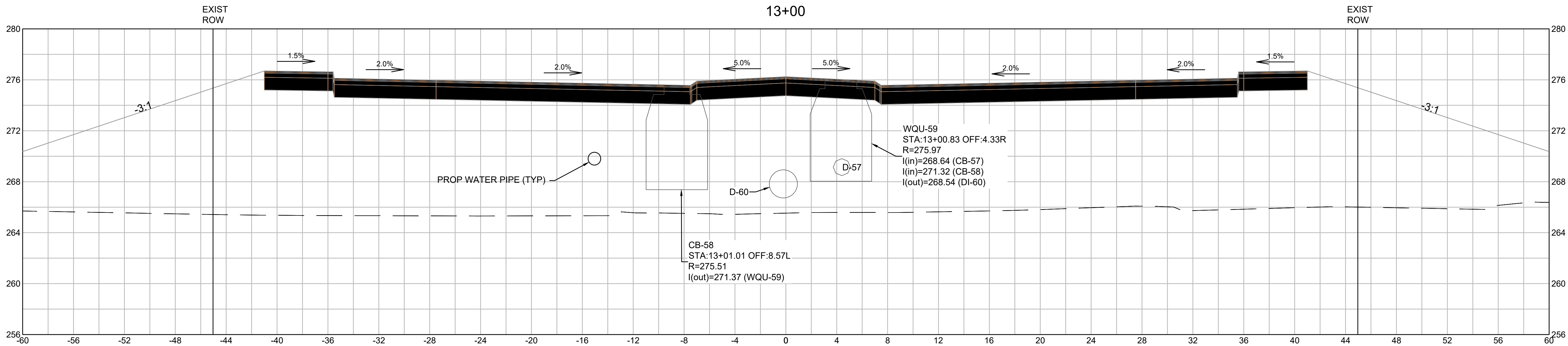
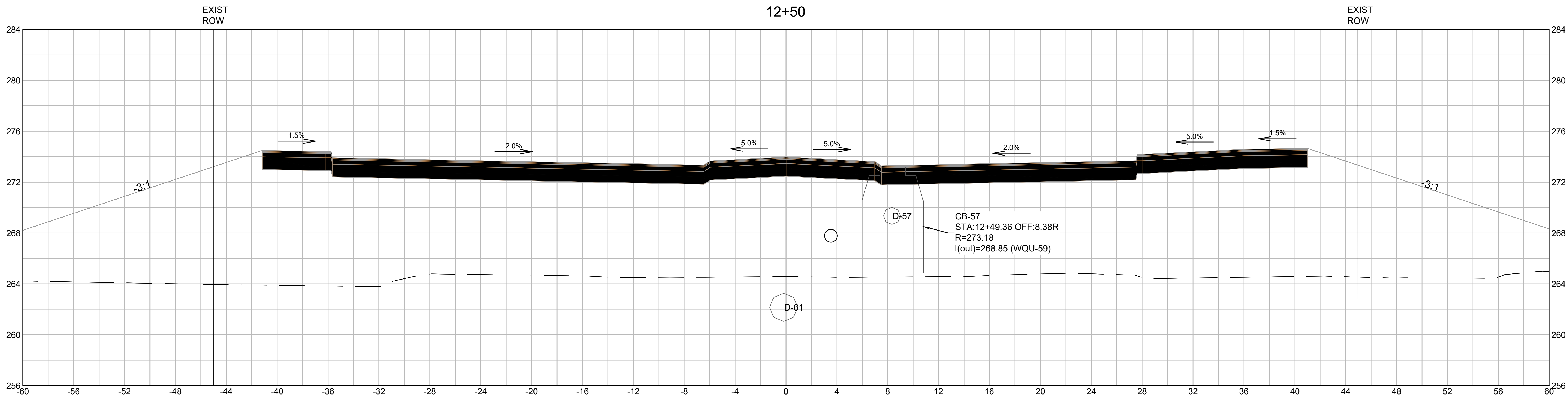
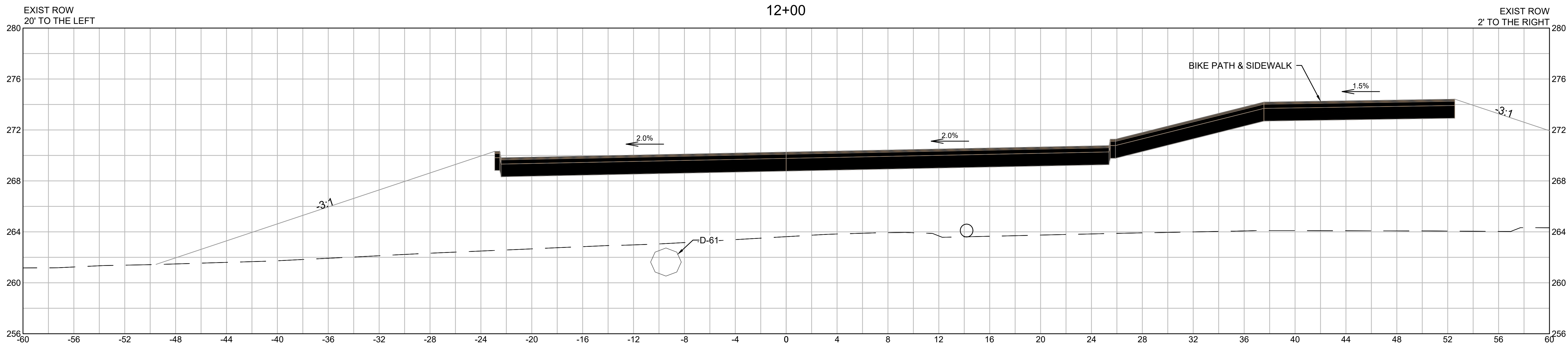
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T1180\_SECTION

DRAWING NO.  
**C-39**

SHEET 39 OF 61





| REVISIONS |                     |
|-----------|---------------------|
| 1.        | 2-21-24 PEER REVIEW |
| 2.        |                     |
| 3.        |                     |

DRAWING TITLE

**Roadway Cross Sections**

**12+00 to 13+00**

SUBDIVISION NAME & LOCATION

**King Street Commons**

550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER

**Lupoli Companies**

290 Merrimack Street  
Lawrence, MA 01840

DESIGNER / ENGINEER

**TEC**  
The Engineering Corp

TEC, Inc.  
282 Merrimack Street, 2nd Floor  
Lawrence, Massachusetts 01843  
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DESIGNED BY RJF DATE 8-22-23  
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PROJECT NO.  
T1180

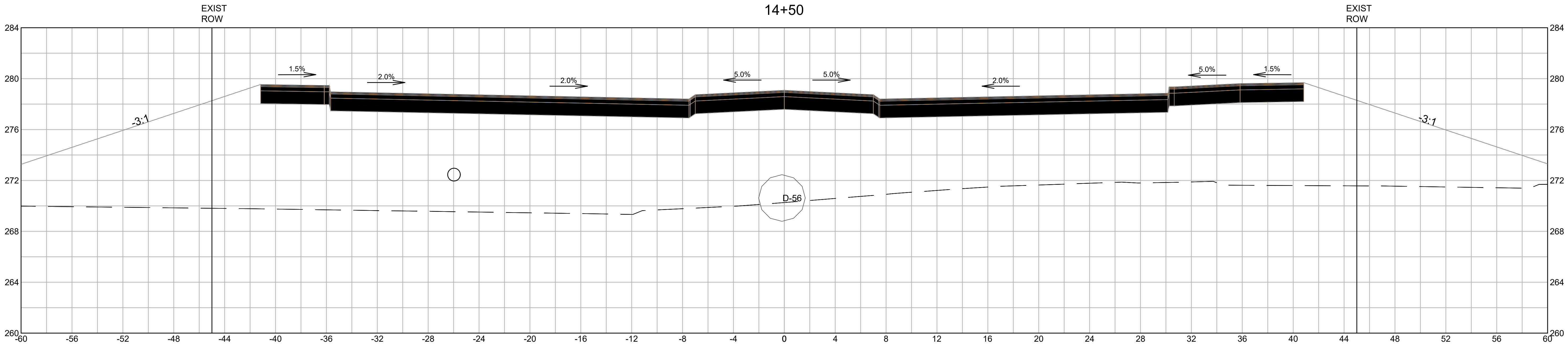
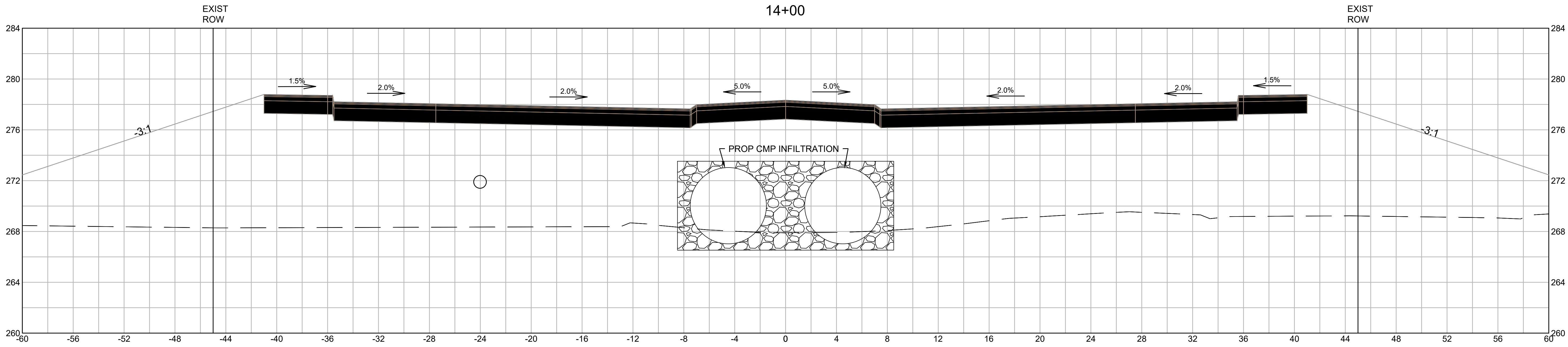
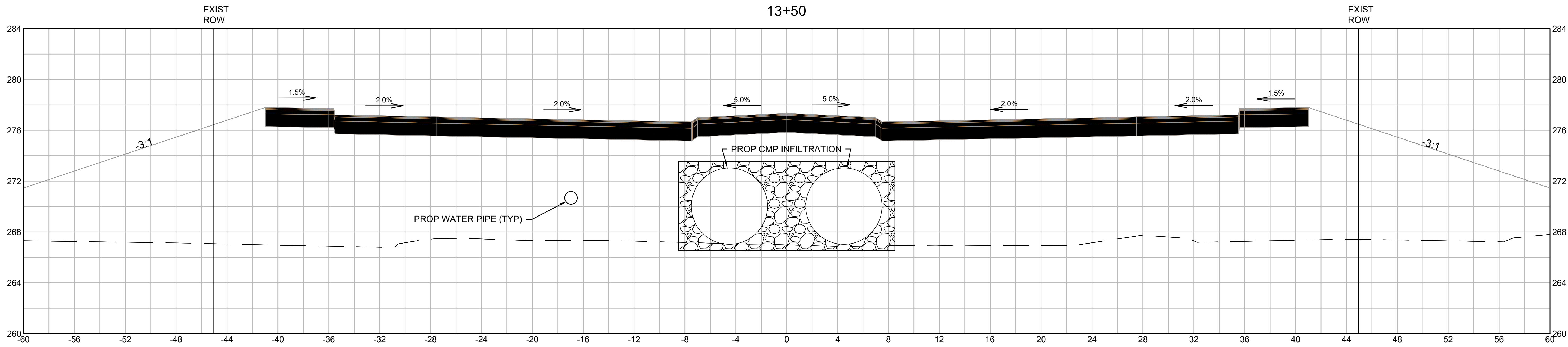
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DRAWING NO.  
**C-40**

SHEET 40 OF 61





HORIZONTAL AND VERTICAL SCALE

4 0 4 8

SCALE IN FEET

REVISIONS

1. 2-21-24 PEER REVIEW

2.

3.

DRAWING TITLE

Roadway Cross  
Sections  
13+50 to 14+50

SUBDIVISION NAME & LOCATION

King Street  
Commons  
550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER

Lupoli Companies  
290 Merrimack Street  
Lawrence, MA 01840

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PROJECT NO.  
T1180

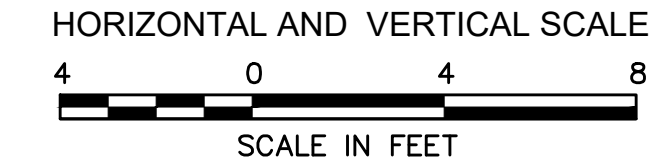
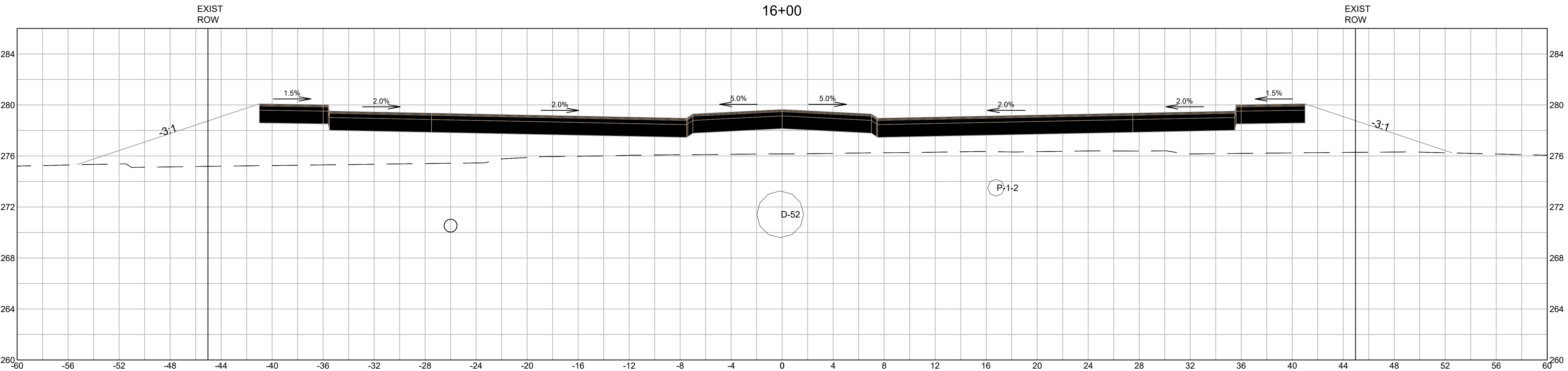
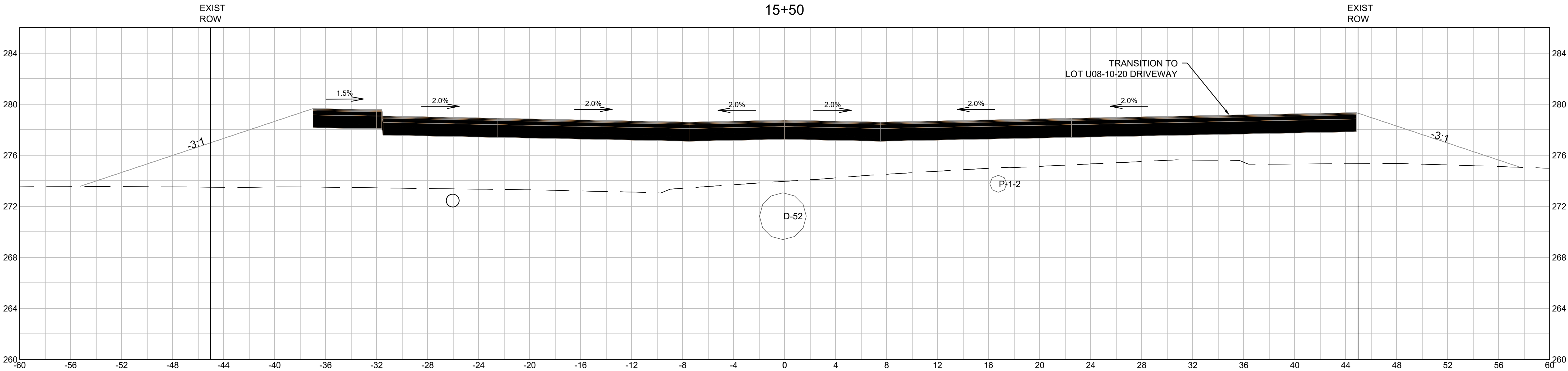
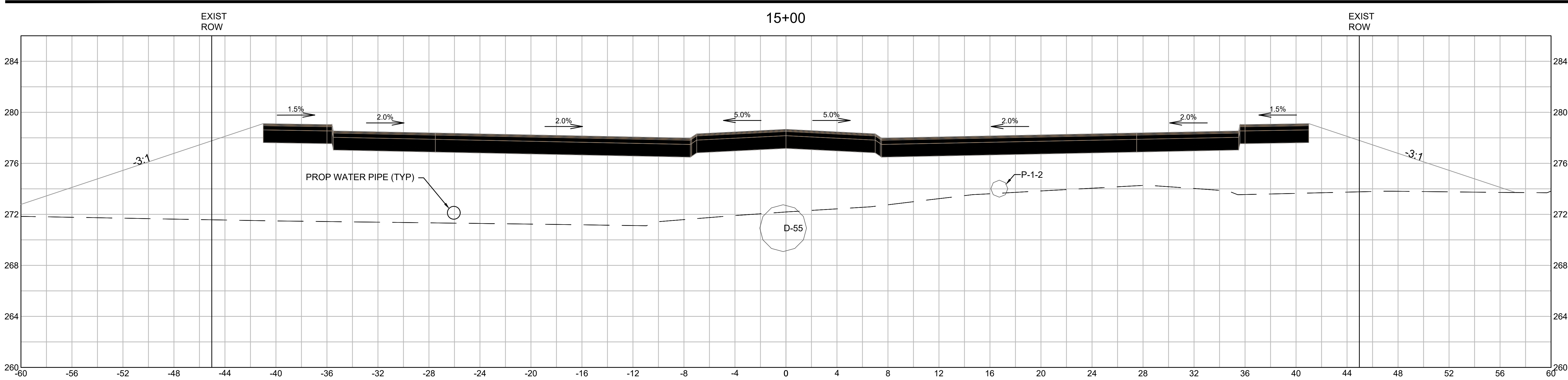
TEC CAD FILE

T1180\_SECTION

DRAWING NO.  
**C-41**

SHEET 41 OF 61





| REVISIONS |                     |
|-----------|---------------------|
| 1.        | 2-21-24 PEER REVIEW |
| 2.        |                     |
| 3.        |                     |

DRAWING TITLE

**Roadway Cross Sections**

**15+00 to 16+00**

SUBDIVISION NAME & LOCATION

**King Street Commons**

550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER

**Lupoli Companies**

290 Merrimack Street  
Lawrence, MA 01840

DESIGNER / ENGINEER

**TEC**  
The Engineering Corp

TEC, Inc.  
282 Merrimack Street, 2nd Floor  
Lawrence, Massachusetts 01843  
978.794.1792  
www.TheEngineeringCorp.com  
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DESIGNED BY RJF DATE 8-22-23  
CHECKED BY CPR SCALE AS NOTED

PROJECT NO.  
T1180

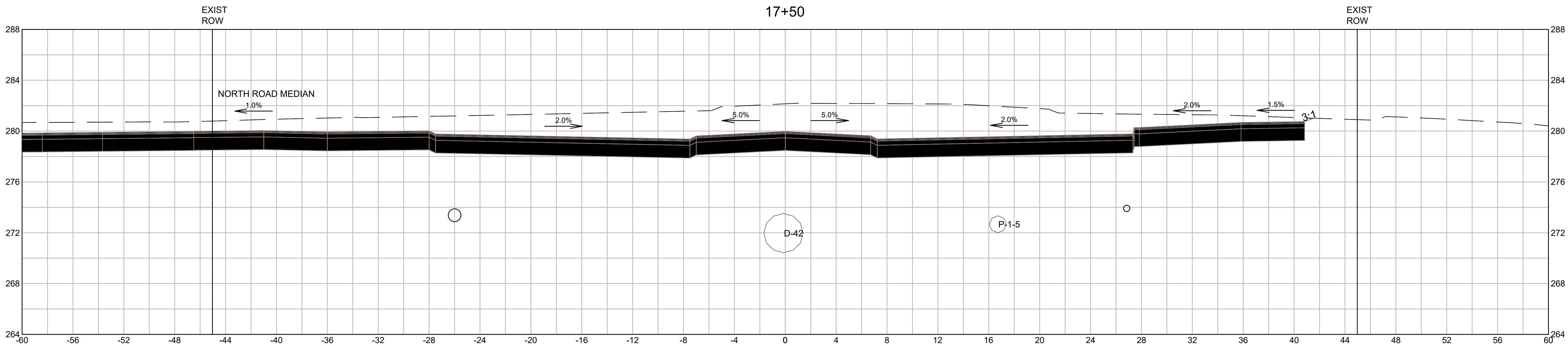
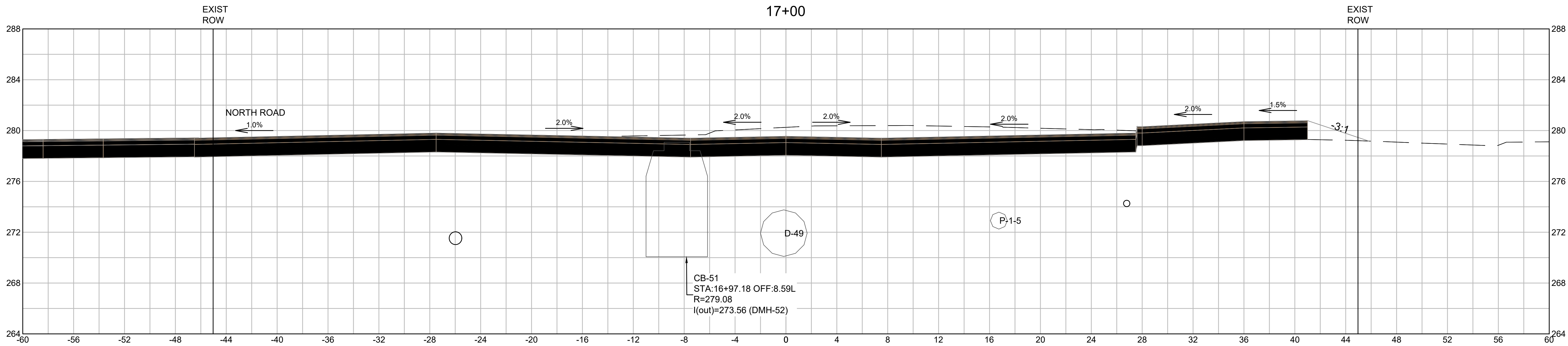
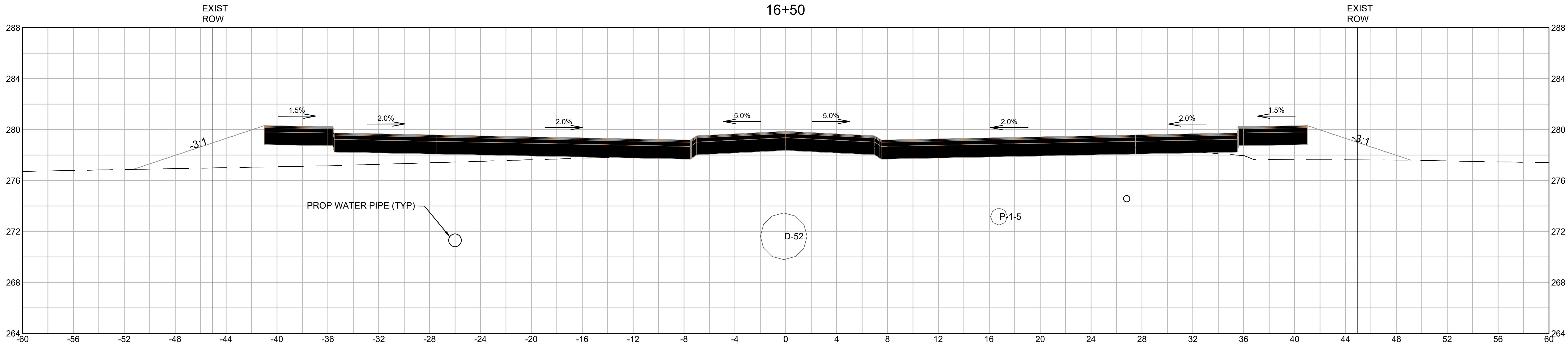
TEC CAD FILE

T1180\_SECTION

DRAWING NO.  
**C-42**

SHEET 42 OF 61





HORIZONTAL AND VERTICAL SCALE

4 0 4 8

SCALE IN FEET

| REVISIONS |                     |
|-----------|---------------------|
| 1.        | 2-21-24 PEER REVIEW |
| 2.        |                     |
| 3.        |                     |

DRAWING TITLE

Roadway Cross  
Sections  
16+50 to 17+50

SUBDIVISION NAME & LOCATION

King Street  
Commons  
550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER

Lupoli Companies  
290 Merrimack Street  
Lawrence, MA 01840

DESIGNER / ENGINEER

**TEC**  
The Engineering Corp

TEC, Inc.  
282 Merrimack Street, 2nd Floor  
Lawrence, Massachusetts 01843  
978.794.1792  
www.TheEngineeringCorp.com  
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DESIGNED BY RJF DATE 8-22-23  
CHECKED BY CPR SCALE AS NOTED

PROJECT NO.  
T1180

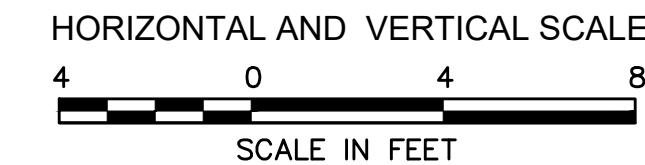
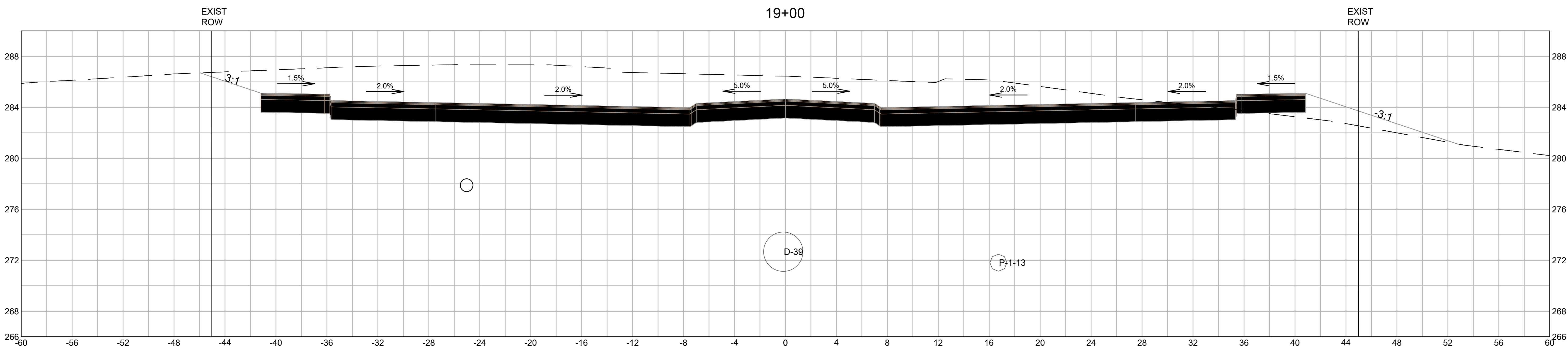
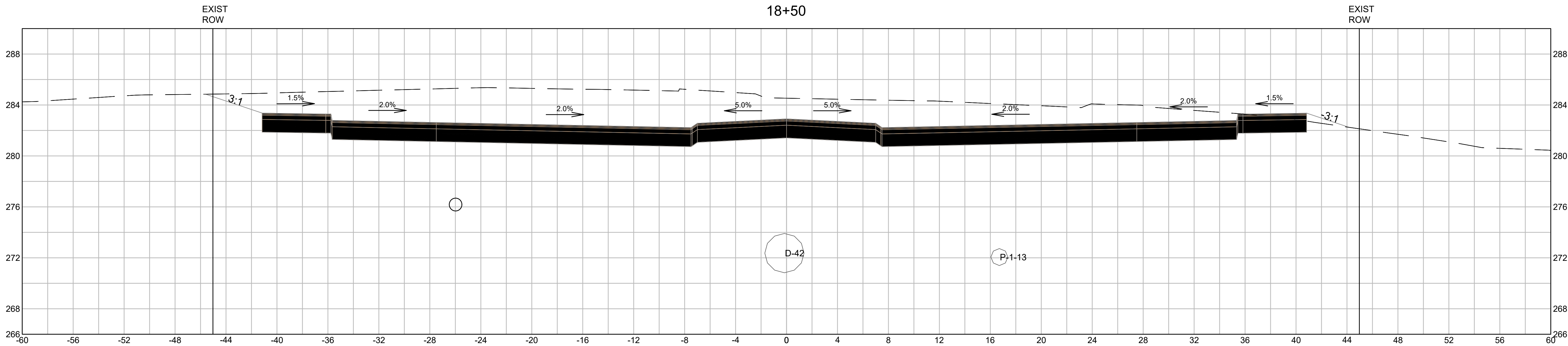
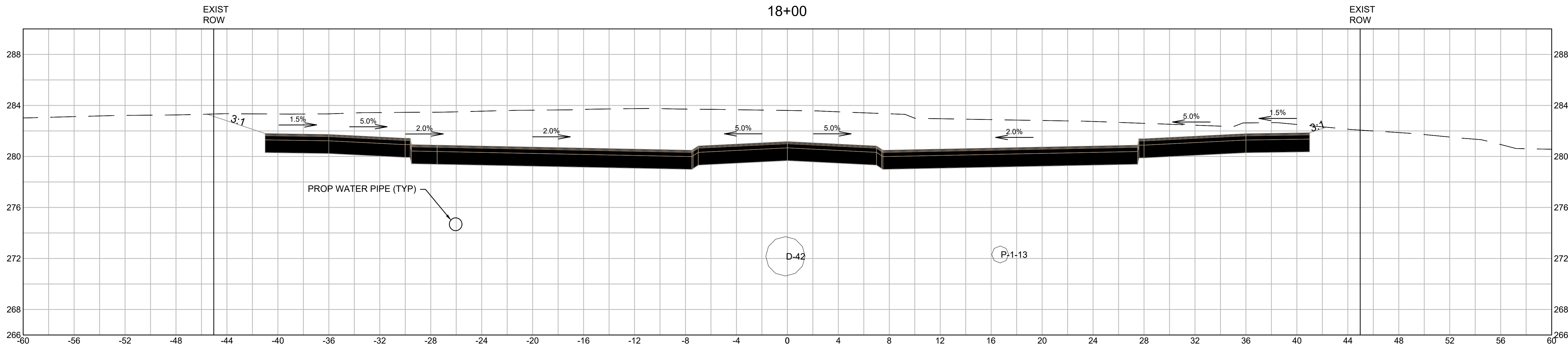
TEC CAD FILE

T1180\_SECTION

DRAWING NO.  
**C-43**

SHEET 43 OF 61





| REVISIONS |                     |
|-----------|---------------------|
| 1.        | 2-21-24 PEER REVIEW |
| 2.        |                     |
| 3.        |                     |

DRAWING TITLE

**Roadway Cross Sections**  
**18+00 to 19+00**

SUBDIVISION NAME & LOCATION

**King Street Commons**  
550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER

**Lupoli Companies**  
290 Merrimack Street  
Lawrence, MA 01840

DESIGNER / ENGINEER

**TEC**  
The Engineering Corp

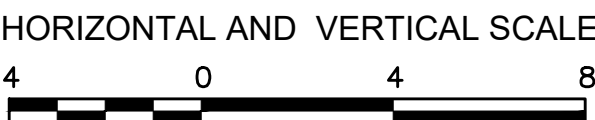
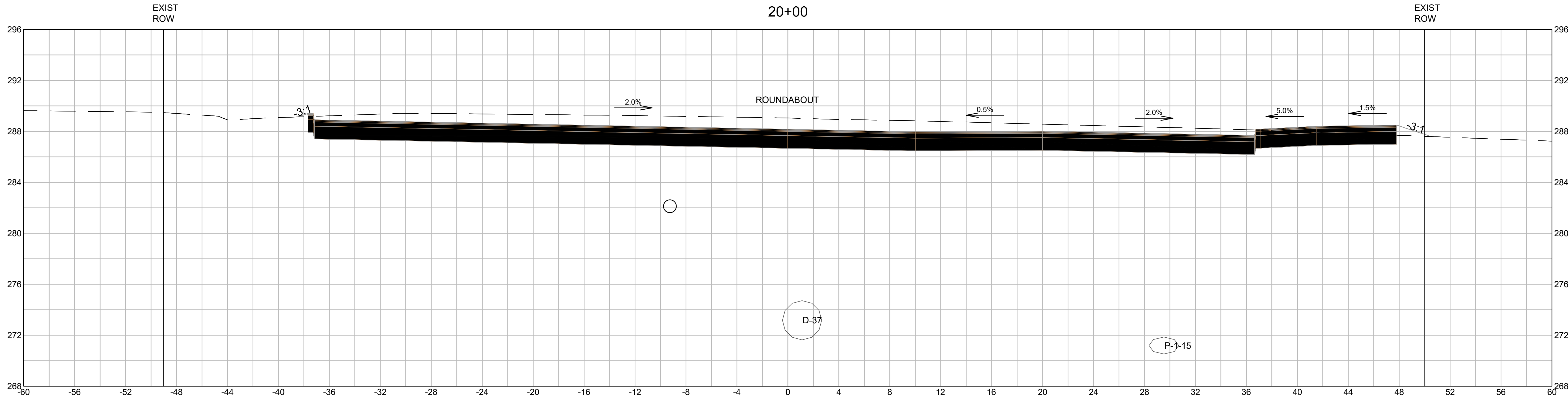
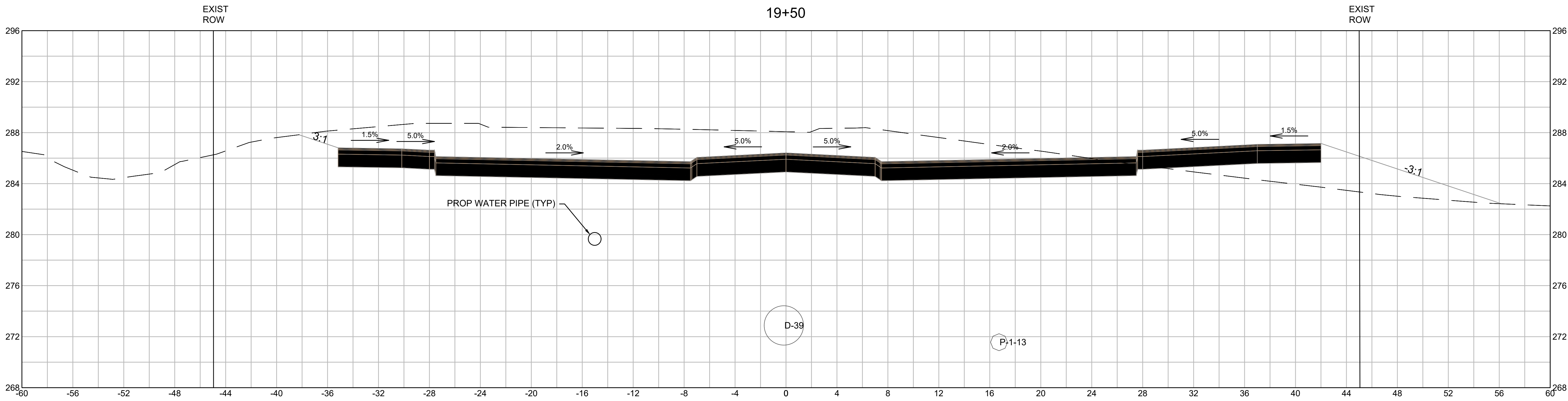
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Lawrence, Massachusetts 01843  
978.794.1792  
www.TheEngineeringCorp.com  
Lawrence | Hampton | Worcester

DESIGNED BY RJF DATE 8-22-23  
CHECKED BY CPR SCALE AS NOTED

PROJECT NO. T1180  
TEC CAD FILE  
T1180\_SECTION  
DRAWING NO. **C-44**  
SHEET 44 OF 61

RICHARD J. FRIBERG JR.  
CIVIL  
No. 47850  
PROFESSIONAL ENGINEER





SCALE IN FEET

| REVISIONS |                     |
|-----------|---------------------|
| 1.        | 2-21-24 PEER REVIEW |
| 2.        |                     |
| 3.        |                     |

DRAWING TITLE

## Roadway Cross Sections 19+50 to 20+00

SUBDIVISION NAME & LOCATION

**King Street Commons**  
550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER

**Lupoli Companies**  
290 Merrimack Street  
Lawrence, MA 01840

DESIGNER / ENGINEER



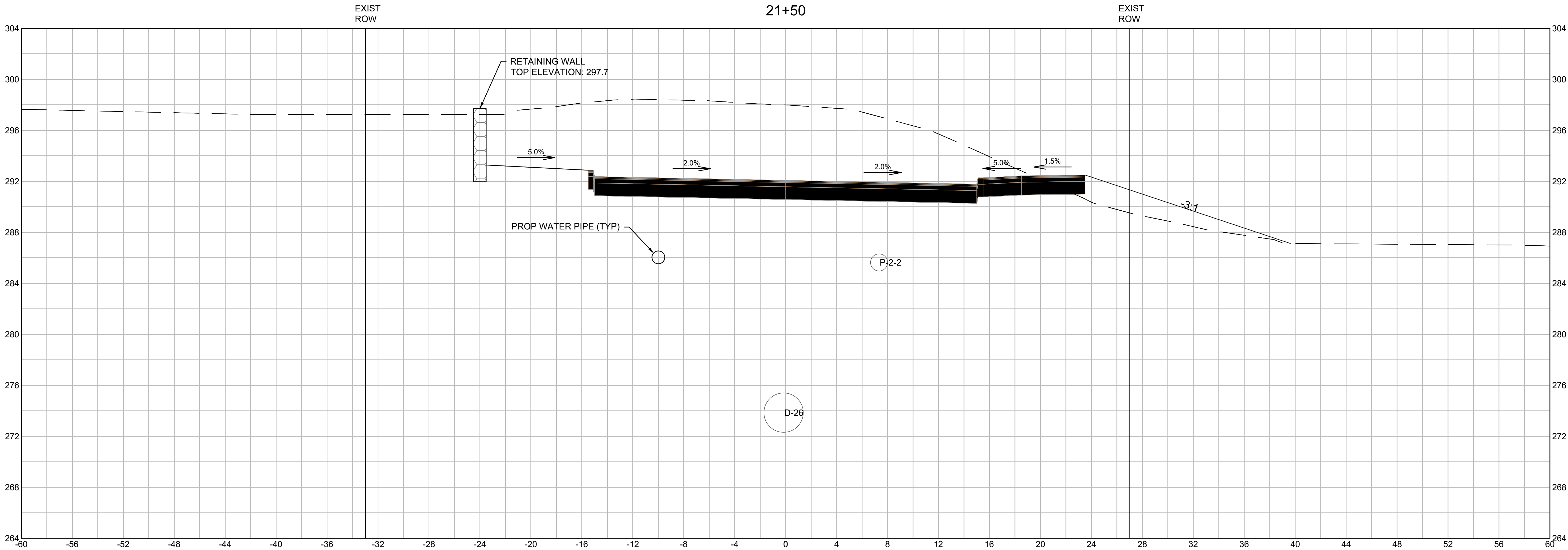
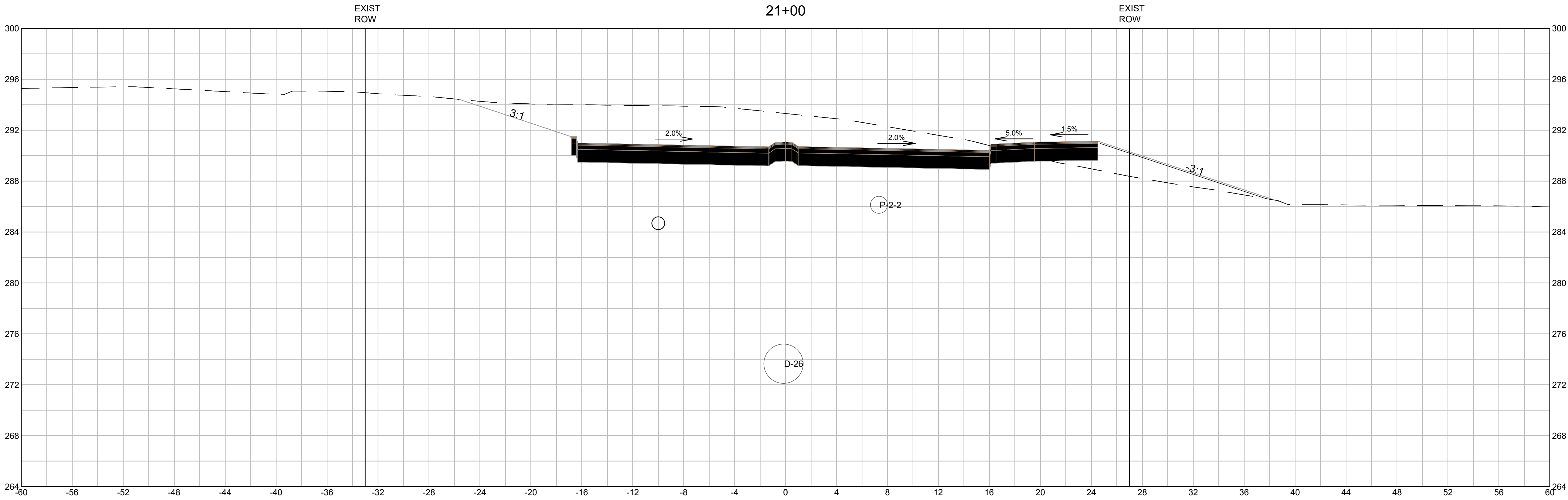
TEC, Inc.  
282 Merrimack Street, 2nd Floor  
Lawrence, Massachusetts 01843  
978.794.1792

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Lawrence | Hampton | Worcester

DESIGNED BY RJF DATE 8-22-23  
CHECKED BY CPR SCALE AS NOTED

|  |               |          |
|--|---------------|----------|
|  | PROJECT NO.   | T1180    |
|  | TEC CAD FILE  |          |
|  | T1180_SECTION |          |
|  | DRAWING NO.   | C-45     |
|  | SHEET         | 45 OF 61 |





| REVISIONS |                     |
|-----------|---------------------|
| 1.        | 2-21-24 PEER REVIEW |
| 2.        |                     |
| 3.        |                     |

DRAWING TITLE  
**Roadway Cross Sections**  
**21+00 to 21+50**  
SUBDIVISION NAME & LOCATION  
**King Street Commons**  
550 King Street  
Littleton, MA 01460  
OWNER / APPLICANT / SUBDIVIDER  
**Lupoli Companies**  
290 Merrimack Street  
Lawrence, MA 01840  
DESIGNER / ENGINEER

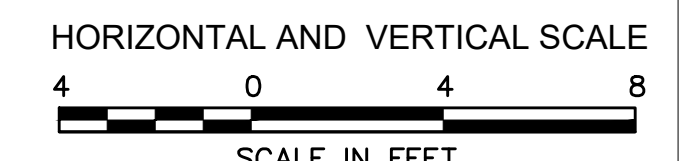
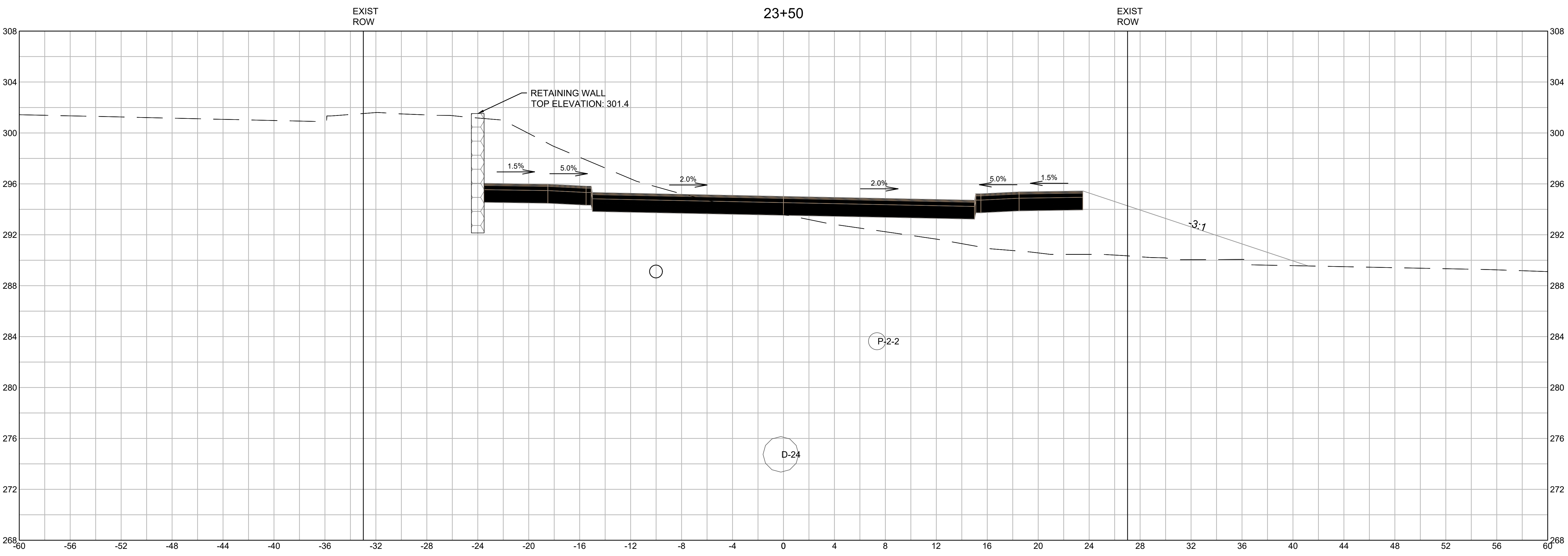
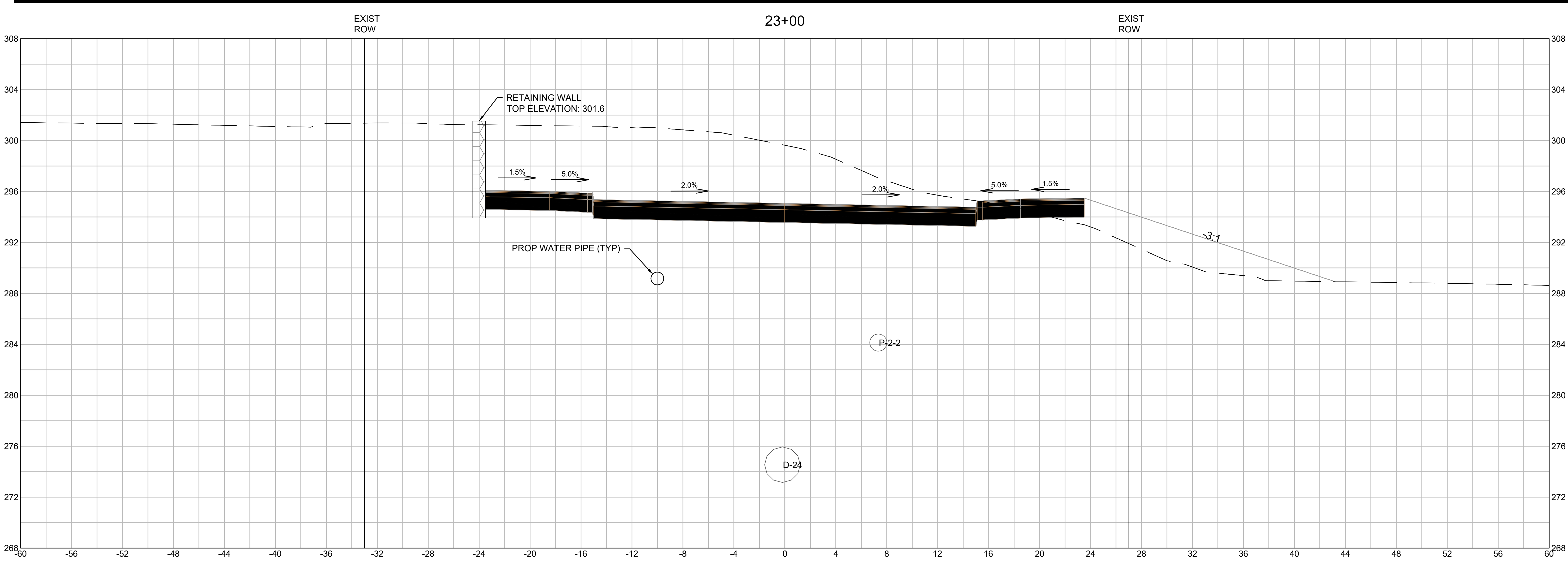
**TEC**  
The Engineering Corp  
TEC, Inc.  
282 Merrimack Street, 2nd Floor  
Lawrence, Massachusetts 01843  
978.794.1792  
www.TheEngineeringCorp.com  
Lawrence | Hampton | Worcester  
DESIGNED BY RJF DATE 8-22-23  
CHECKED BY CPR SCALE AS NOTED

PROJECT NO. T1180  
TEC CAD FILE  
T1180\_SECTION  
DRAWING NO. **C-46**  
SHEET 46 OF 61









REVISIONS

1.

2-21-24 PEER REVIEW

2.

3.

DRAWING TITLE

Roadway Cross  
Sections  
23+00 to 23+50

SUBDIVISION NAME & LOCATION

King Street  
Commons  
550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER

Lupoli Companies  
290 Merrimack Street  
Lawrence, MA 01840

DESIGNER / ENGINEER

TEC

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Lawrence, Massachusetts 01843  
978.794.1792  
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DESIGNED BY RJF

DATE 8-22-23

CHECKED BY CPR

SCALE AS NOTED

PROJECT NO.  
T1180

TEC CAD FILE

T1180\_SECTION

DRAWING NO.  
C-48

SHEET 48 OF 61

COMMONWEALTH OF MASSACHUSETTS

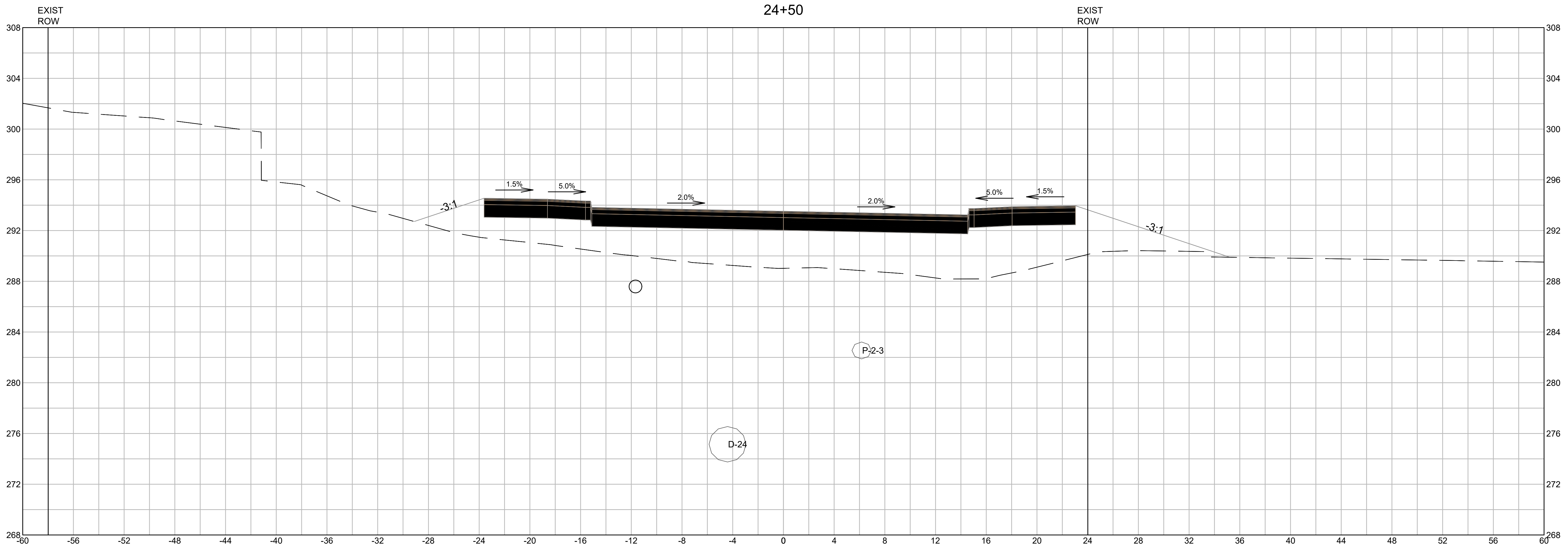
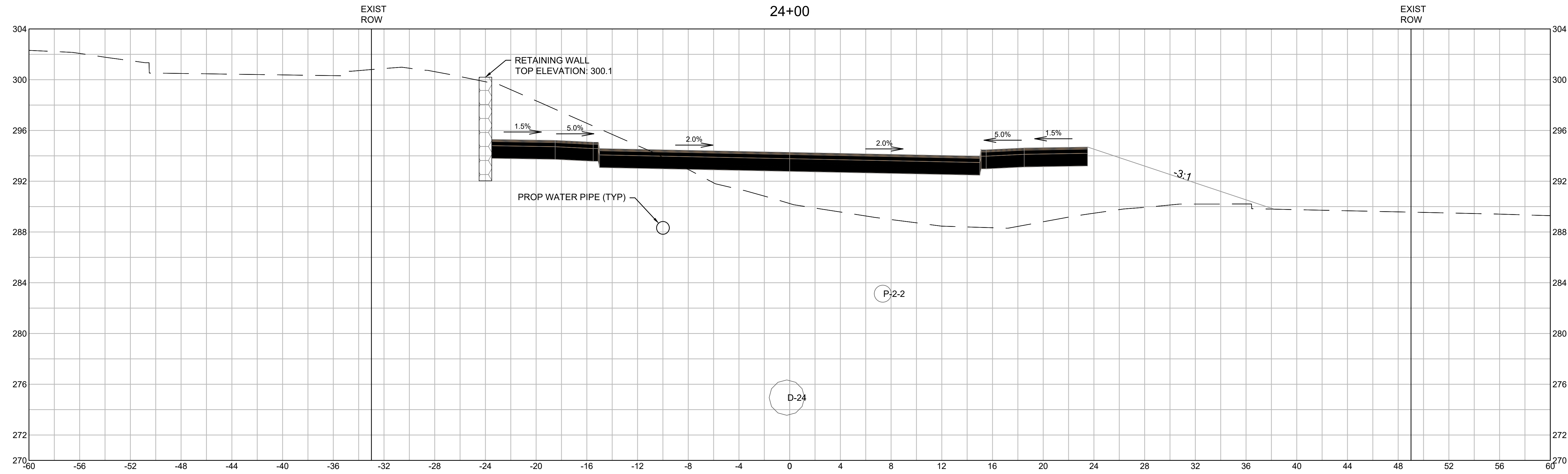
RICHARD J. FRIBERG JR.

CIVIL

No. 47850

REGISTERED PROFESSIONAL ENGINEER





HORIZONTAL AND VERTICAL SCALE

4 0 4 8

SCALE IN FEET

| REVISIONS |                     |
|-----------|---------------------|
| 1.        | 2-21-24 PEER REVIEW |
| 2.        |                     |
| 3.        |                     |

DRAWING TITLE

**Roadway Cross  
Sections  
24+00 to 24+50**

SUBDIVISION NAME & LOCATION

**King Street  
Commons**  
550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER

**Lupoli Companies**  
290 Merrimack Street  
Lawrence, MA 01840

DESIGNER / ENGINEER

**TEC**  
The Engineering Corp

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282 Merrimack Street, 2nd Floor  
Lawrence, Massachusetts 01843  
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DESIGNED BY RJF DATE 8-22-23  
CHECKED BY CPR SCALE AS NOTED

PROJECT NO.  
T1180

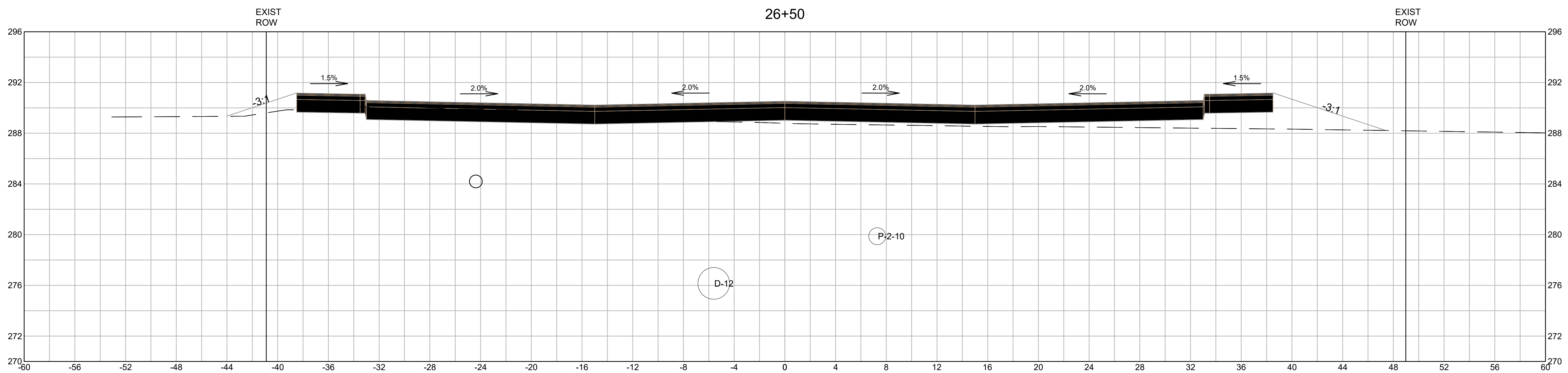
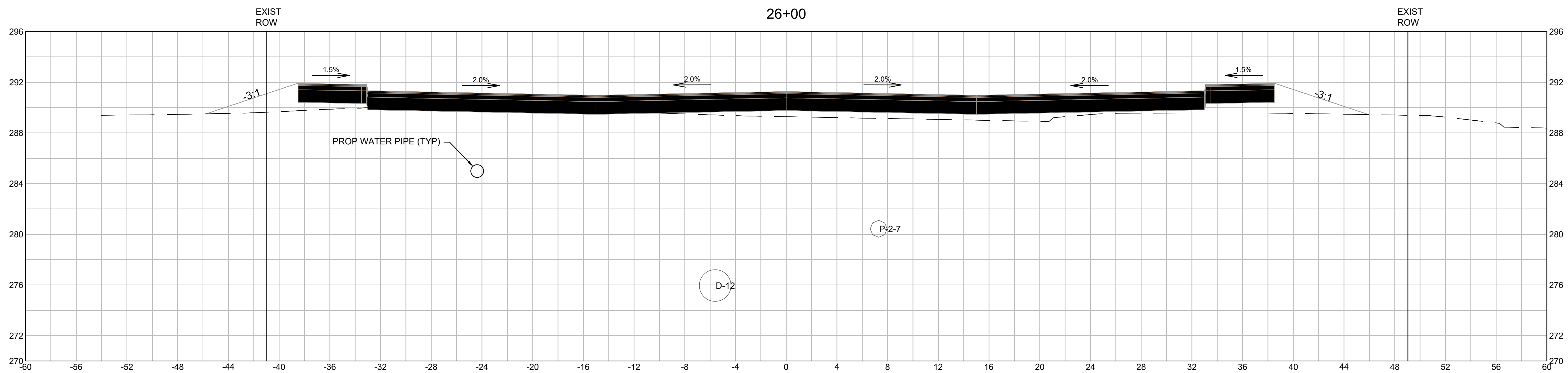
TEC CAD FILE

T1180\_SECTION

DRAWING NO.  
**C-49**

SHEET 49 OF 61





HORIZONTAL AND VERTICAL SCALE



SCALE IN FEET

## REVISIONS

1. 2-21-24 PEER REVIEW
- 2.
- 3.

## DRAWING TITLE

## Roadway Cross Sections

### 26+00 to 26+50

SUBDIVISION NAME &amp; LOCATION

## King Street Commons

550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER

Lupoli Companies  
290 Merrimack Street  
Lawrence, MA 01840

DESIGNER / ENGINEER



TEC, Inc.  
282 Merrimack Street, 2nd Floor  
Lawrence, Massachusetts 01843  
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DESIGNED BY RJR

DATE 8-22-23

CHECKED BY      CPE

SCALE AS NOTED



PROJECT NO.  
T1180

TEC CAD FILE

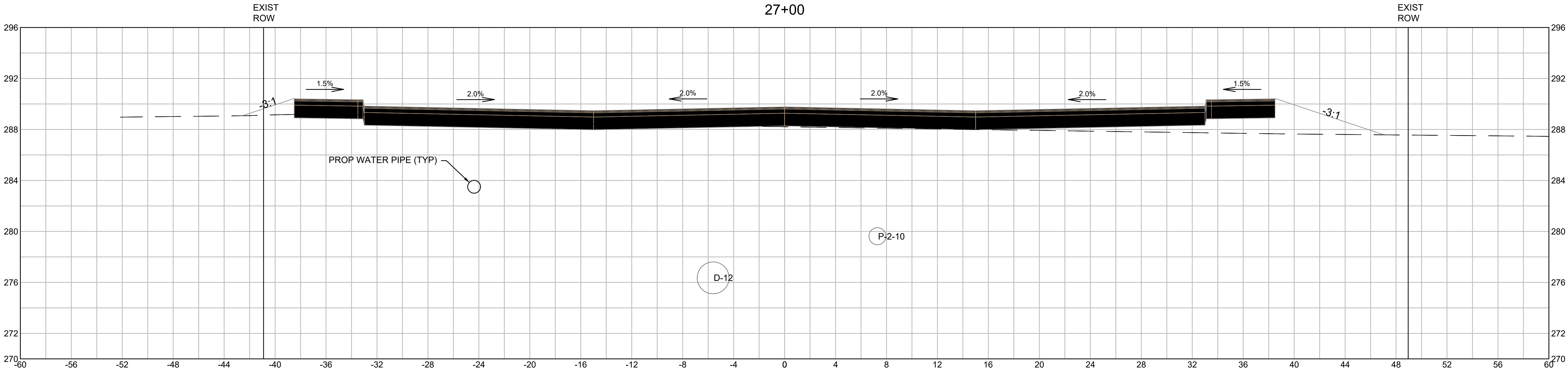
T1180\_SECTION

DRAWING NO.

C-50

SHEET 50 OF 61

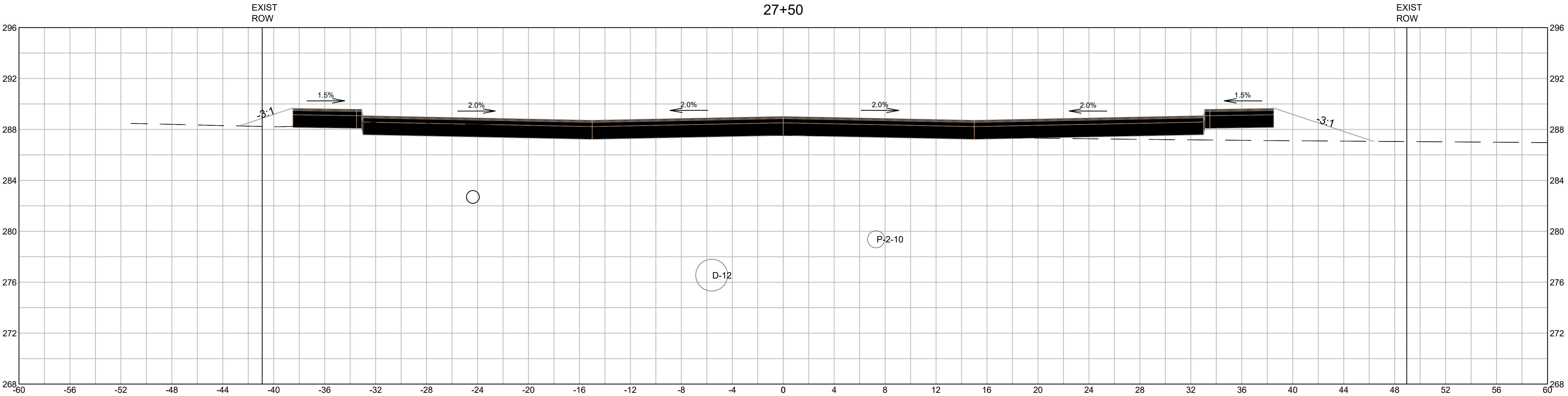




HORIZONTAL AND VERTICAL SCALE

4 0 4 8

SCALE IN FEET



| REVISIONS |                     |
|-----------|---------------------|
| 1.        | 2-21-24 PEER REVIEW |
| 2.        |                     |
| 3.        |                     |

DRAWING TITLE

**Roadway Cross Sections**  
**27+00 to 27+50**

SUBDIVISION NAME & LOCATION

**King Street Commons**  
550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER

**Lupoli Companies**  
290 Merrimack Street  
Lawrence, MA 01840

DESIGNER / ENGINEER



TEC, Inc.  
282 Merrimack Street, 2nd Floor  
Lawrence, Massachusetts 01843  
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DESIGNED BY RJF DATE 8-22-23  
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PROJECT NO.  
T1180

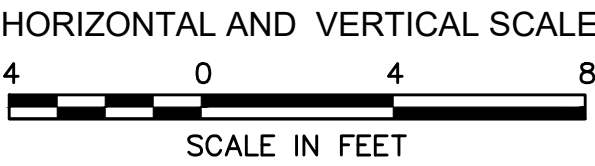
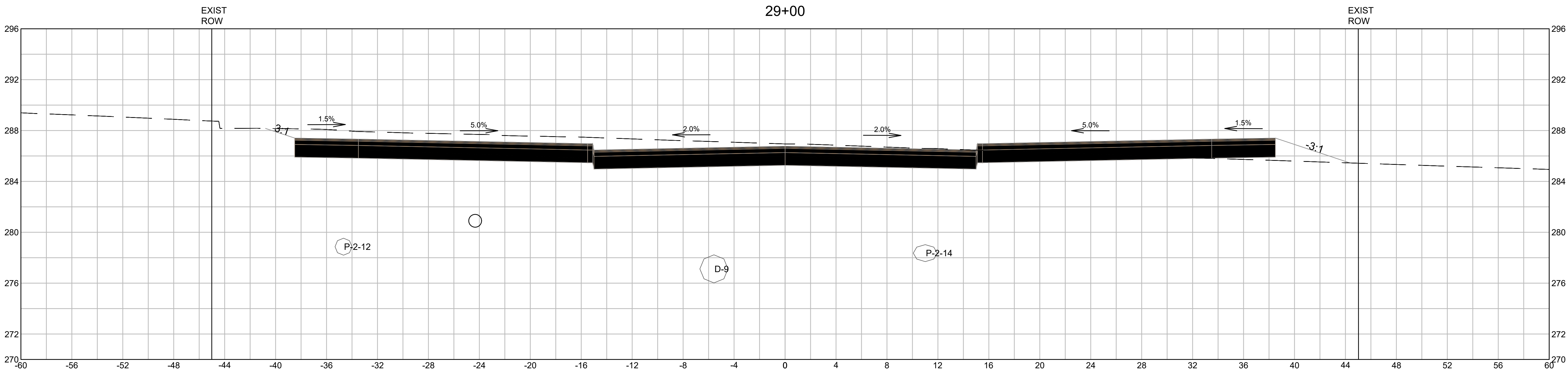
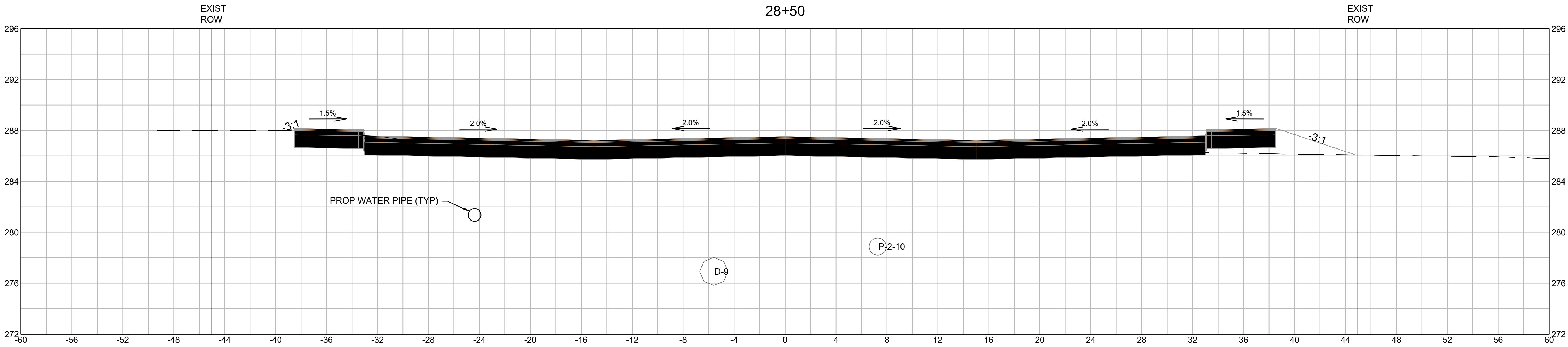
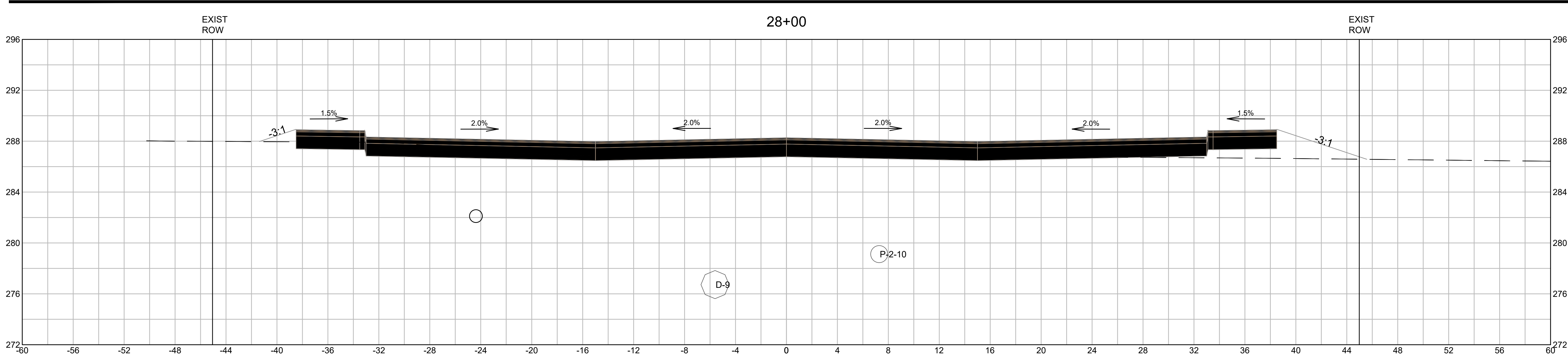
TEC CAD FILE

T1180\_SECTION

DRAWING NO.  
**C-51**

SHEET 51 OF 61





| REVISIONS |                     |
|-----------|---------------------|
| 1.        | 2-21-24 PEER REVIEW |
| 2.        |                     |
| 3.        |                     |

DRAWING TITLE

**Roadway Cross Sections**  
**28+00 to 29+00**

SUBDIVISION NAME & LOCATION

**King Street Commons**  
550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER

**Lupoli Companies**  
290 Merrimack Street  
Lawrence, MA 01840

DESIGNER / ENGINEER

**TEC**  
*The Engineering Corp*

TEC, Inc.  
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Lawrence, Massachusetts 01843  
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DESIGNED BY RJF DATE 8-22-23  
CHECKED BY CPR SCALE AS NOTED

PROJECT NO.  
T1180

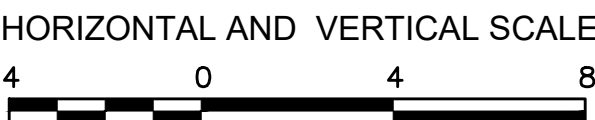
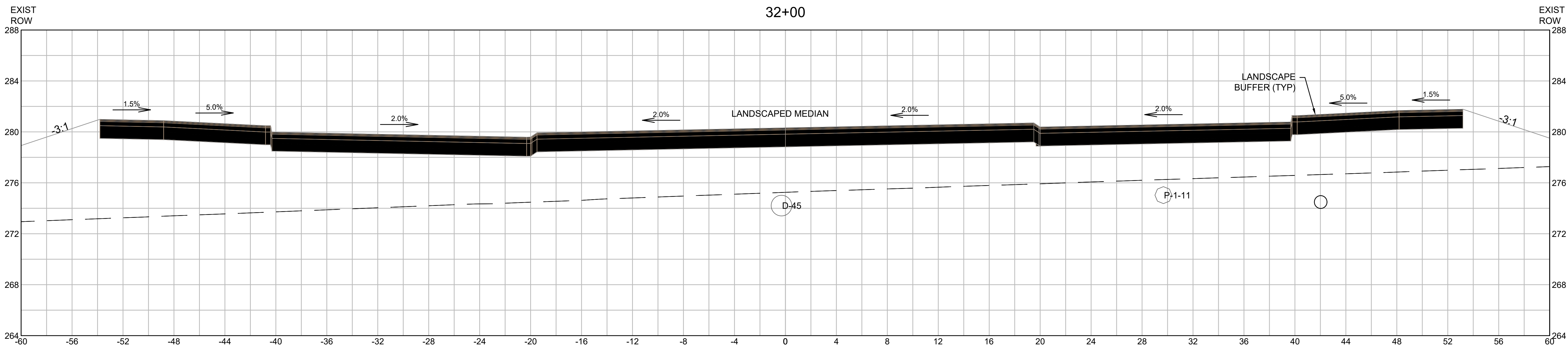
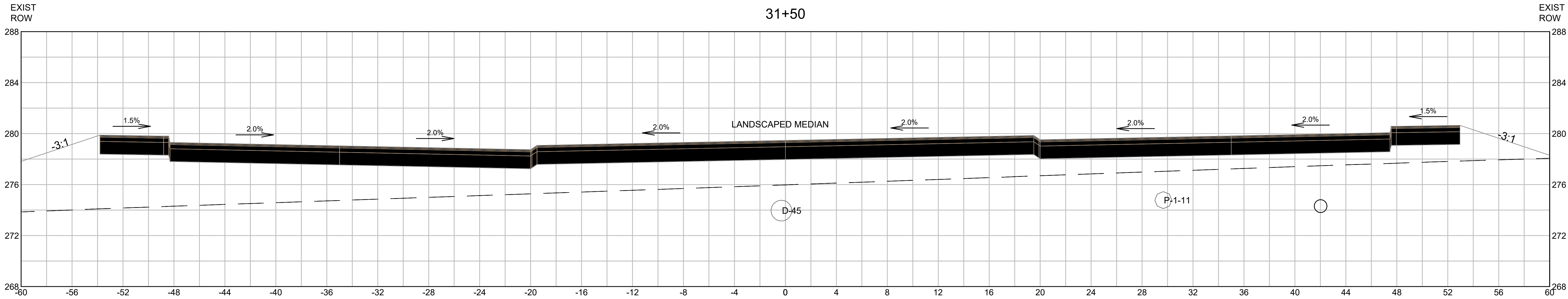
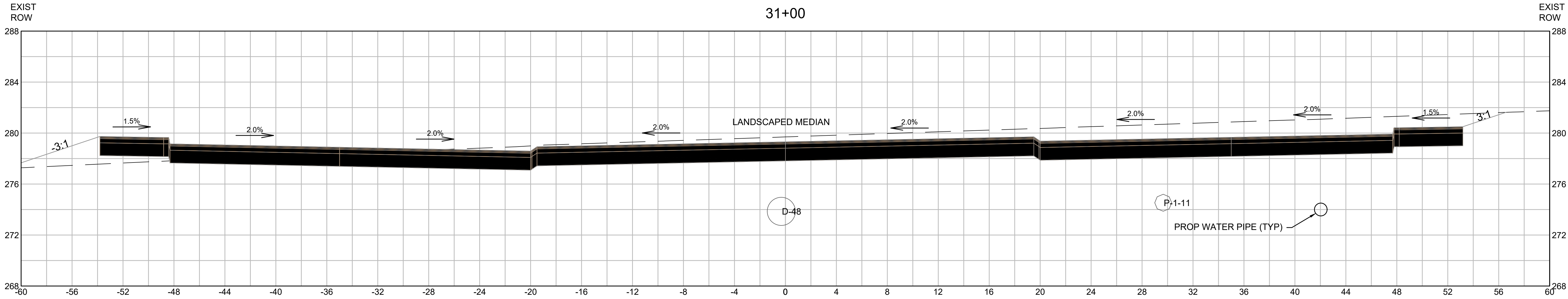
TEC CAD FILE

T1180\_SECTION

DRAWING NO.  
**C-52**

SHEET 52 OF 61





| REVISIONS |                     |
|-----------|---------------------|
| 1.        | 2-21-24 PEER REVIEW |
| 2.        |                     |
| 3.        |                     |

DRAWING TITLE

**Roadway Cross Sections**

**31+00 to 32+00**

SUBDIVISION NAME & LOCATION

**King Street Commons**

550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER

**Lupoli Companies**

290 Merrimack Street  
Lawrence, MA 01840

DESIGNER / ENGINEER

**TEC**  
The Engineering Corp

TEC, Inc.  
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Lawrence, Massachusetts 01843  
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CHECKED BY CPR SCALE AS NOTED

PROJECT NO.  
T1180

TEC CAD FILE

T1180\_SECTION

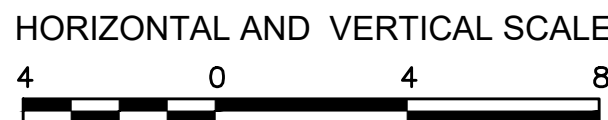
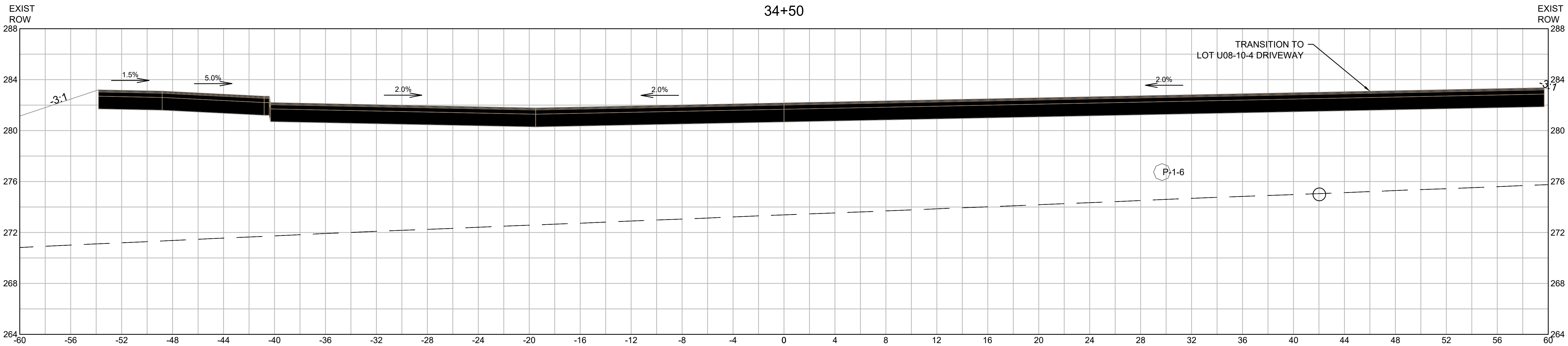
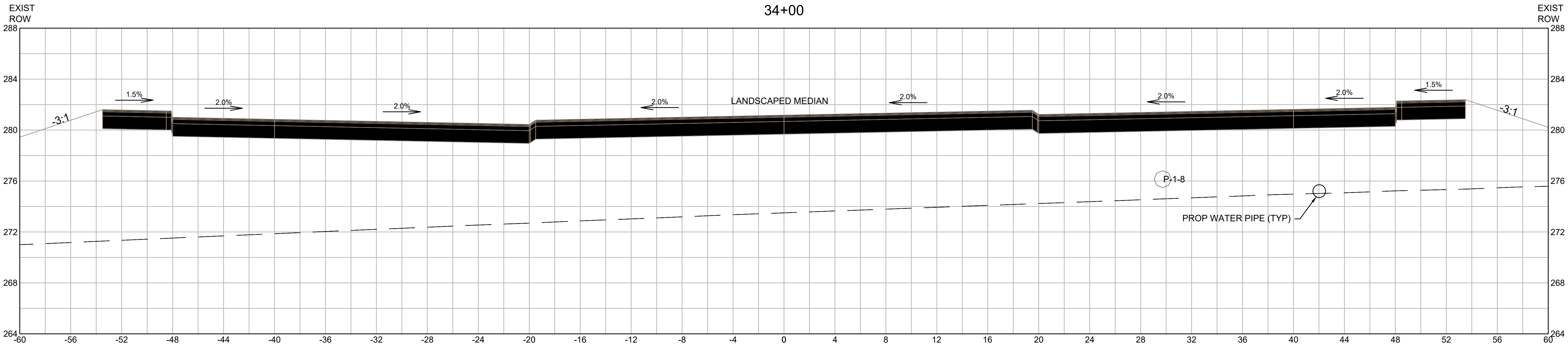
DRAWING NO.  
**C-53**

SHEET 53 OF 61









| REVISIONS |                     |
|-----------|---------------------|
| 1.        | 2-21-24 PEER REVIEW |
| 2.        |                     |
| 3.        |                     |

DRAWING TITLE

**Roadway Cross Sections**  
**34+00 to 34+50**

SUBDIVISION NAME & LOCATION

**King Street Commons**  
550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER

**Lupoli Companies**  
290 Merrimack Street  
Lawrence, MA 01840

DESIGNER / ENGINEER

**TEC**  
The Engineering Corp

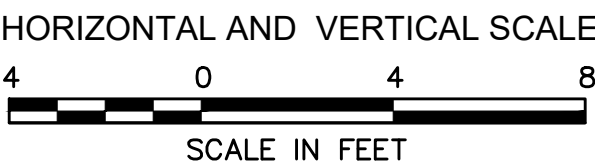
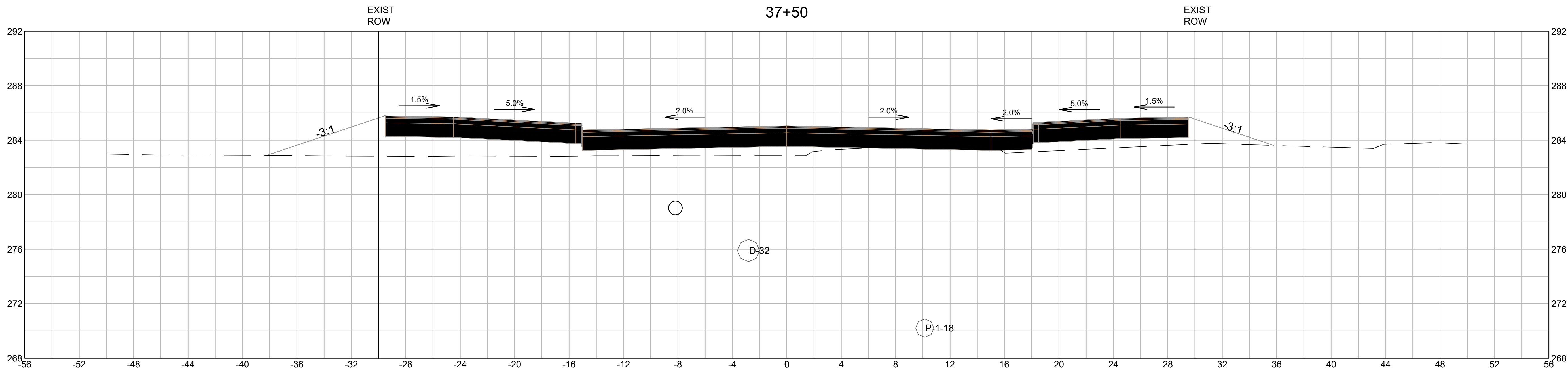
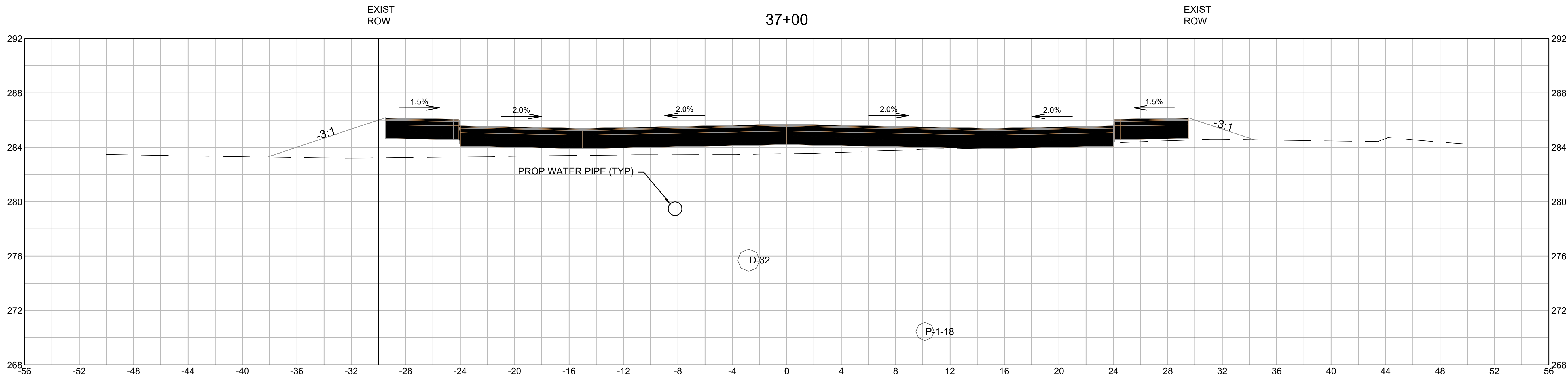
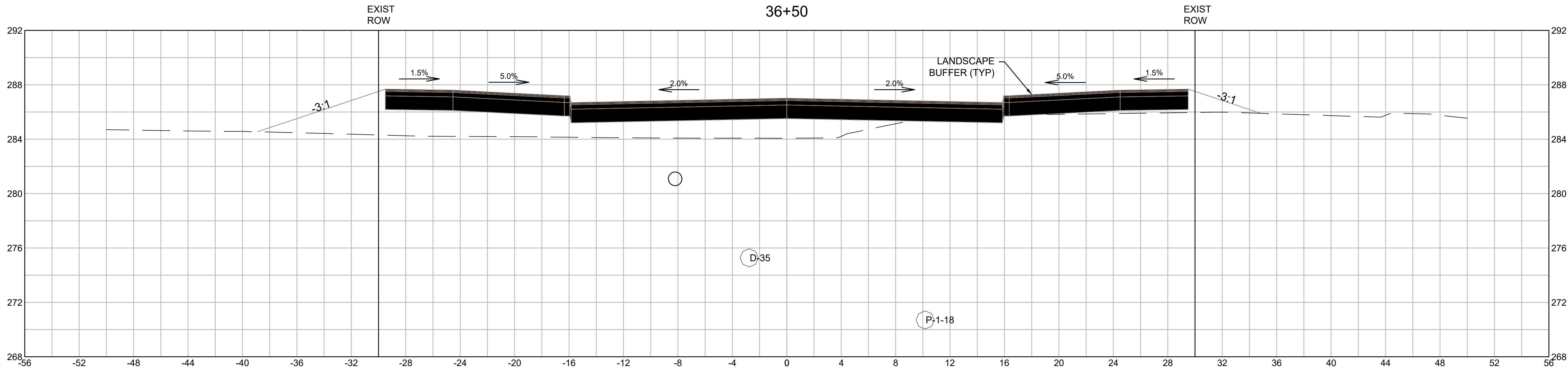
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Lawrence, Massachusetts 01843  
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DESIGNED BY RJF DATE 8-22-23  
CHECKED BY CPR SCALE AS NOTED

PROJECT NO. T1180  
TEC CAD FILE  
T1180\_SECTION  
DRAWING NO. **C-55**  
SHEET 55 OF 61

RICHARD J. FRIBERG JR.  
CIVIL  
No. 47850  
REGISTERED PROFESSIONAL ENGINEER





| REVISIONS |                     |
|-----------|---------------------|
| 1.        | 2-21-24 PEER REVIEW |
| 2.        |                     |
| 3.        |                     |

DRAWING TITLE

**Roadway Cross Sections**  
**36+50 to 37+50**

SUBDIVISION NAME & LOCATION

**King Street Commons**  
550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER

**Lupoli Companies**  
290 Merrimack Street  
Lawrence, MA 01840

DESIGNER / ENGINEER

**TEC**  
The Engineering Corp

TEC, Inc.  
282 Merrimack Street, 2nd Floor  
Lawrence, Massachusetts 01843  
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Lawrence | Hampton | Worcester

DESIGNED BY RJF DATE 8-22-23  
CHECKED BY CPR SCALE AS NOTED

PROJECT NO.  
T1180

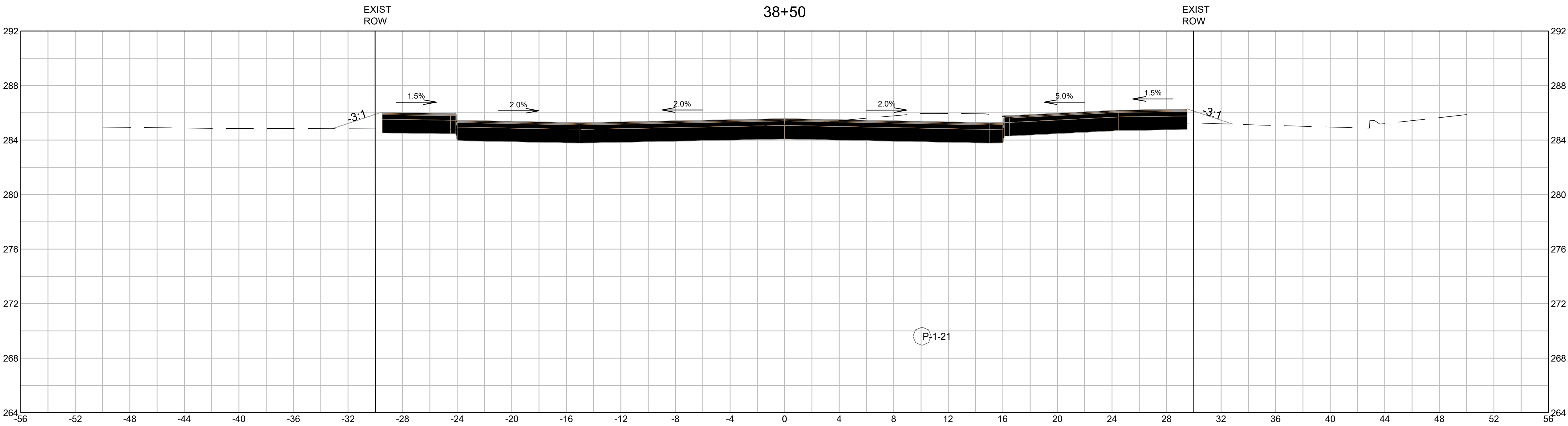
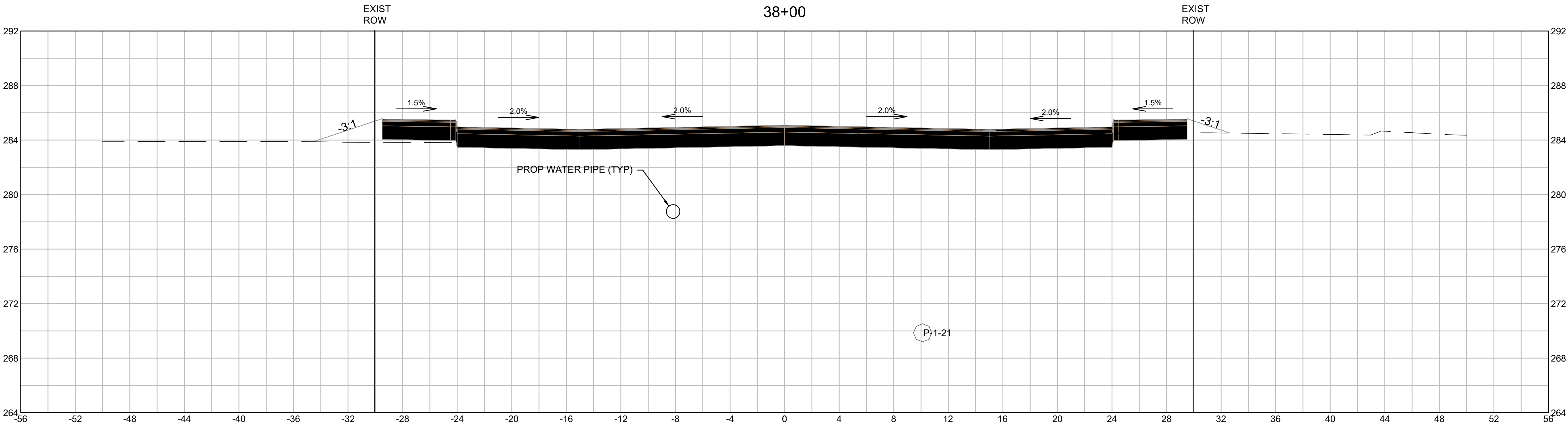
TEC CAD FILE

T1180\_SECTION

DRAWING NO.  
**C-56**

SHEET 56 OF 61





HORIZONTAL AND VERTICAL SCALE

4 0 4 8

SCALE IN FEET

REVISIONS

1. 2-21-24 PEER REVIEW

2.

3.

DRAWING TITLE

Roadway Cross Sections

38+00 to 38+50

SUBDIVISION NAME & LOCATION

King Street Commons

550 King Street

Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER

Lupoli Companies

290 Merrimack Street

Lawrence, MA 01840

DESIGNER / ENGINEER

**TEC**

The Engineering Corp

TEC, Inc.

282 Merrimack Street, 2nd Floor

Lawrence, Massachusetts 01843

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DESIGNED BY RJF DATE 8-22-23

CHECKED BY CPR SCALE AS NOTED

PROJECT NO. T1180

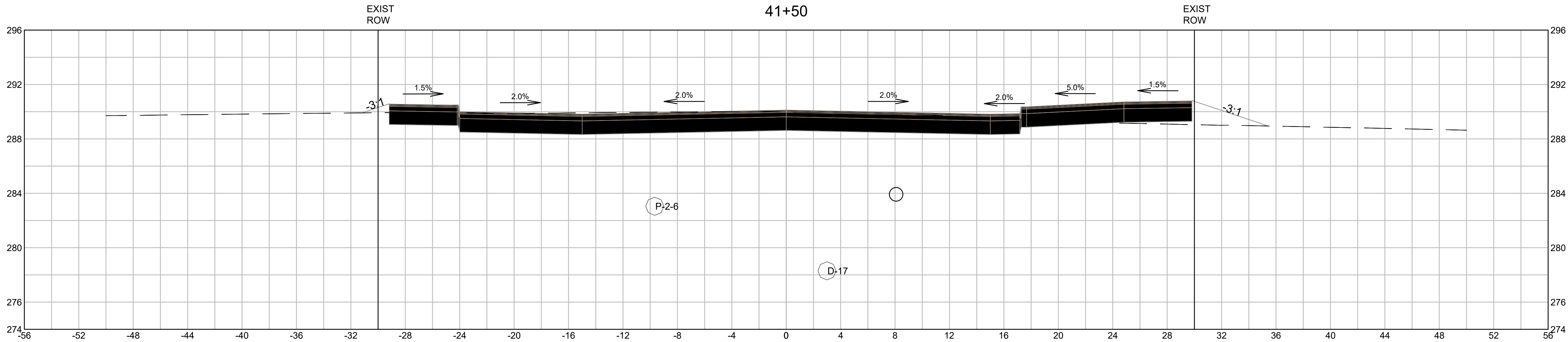
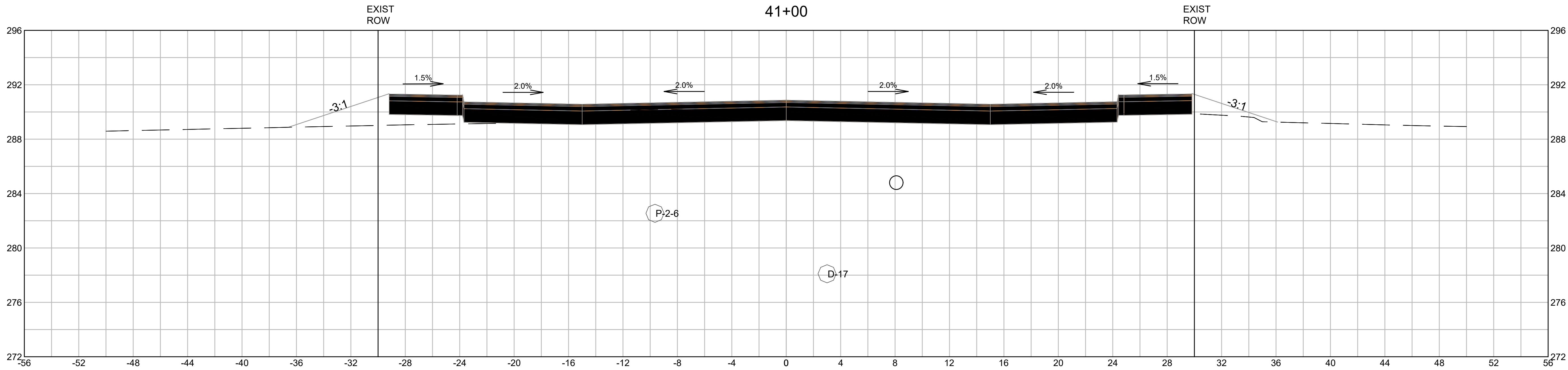
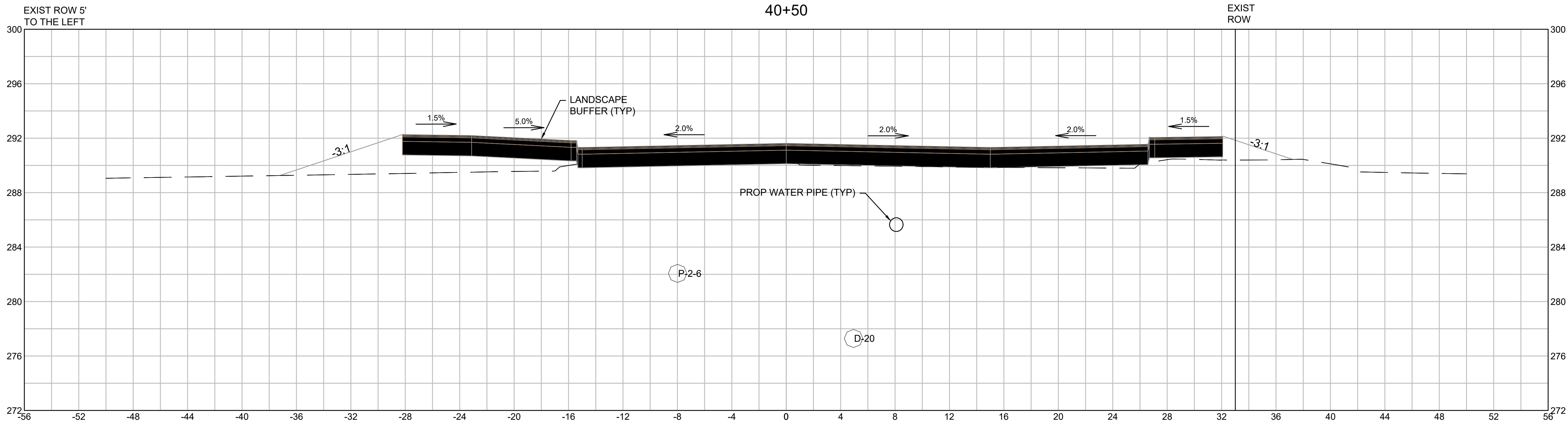
TEC CAD FILE

T1180\_SECTION

DRAWING NO. C-57

SHEET 57 OF 61





HORIZONTAL AND VERTICAL SCALE

4 0 4 8

SCALE IN FEET

REVISIONS

1. 2-21-24 PEER REVIEW

2.

3.

DRAWING TITLE

Roadway Cross  
Sections  
40+50 to 41+50

SUBDIVISION NAME & LOCATION

King Street  
Commons  
550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER

Lupoli Companies  
290 Merrimack Street  
Lawrence, MA 01840

DESIGNER / ENGINEER

**TEC**  
The Engineering Corp

TEC, Inc.  
282 Merrimack Street, 2nd Floor  
Lawrence, Massachusetts 01843  
978.794.1792  
www.TheEngineeringCorp.com  
Lawrence | Hampton | Worcester

DESIGNED BY RJF DATE 8-22-23  
CHECKED BY CPR SCALE AS NOTED

PROJECT NO.  
T1180

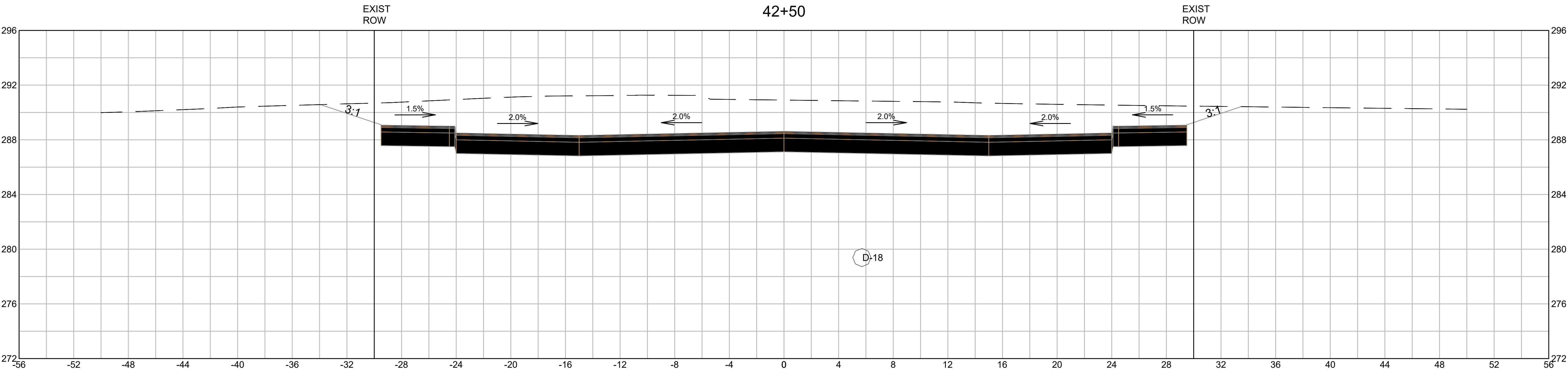
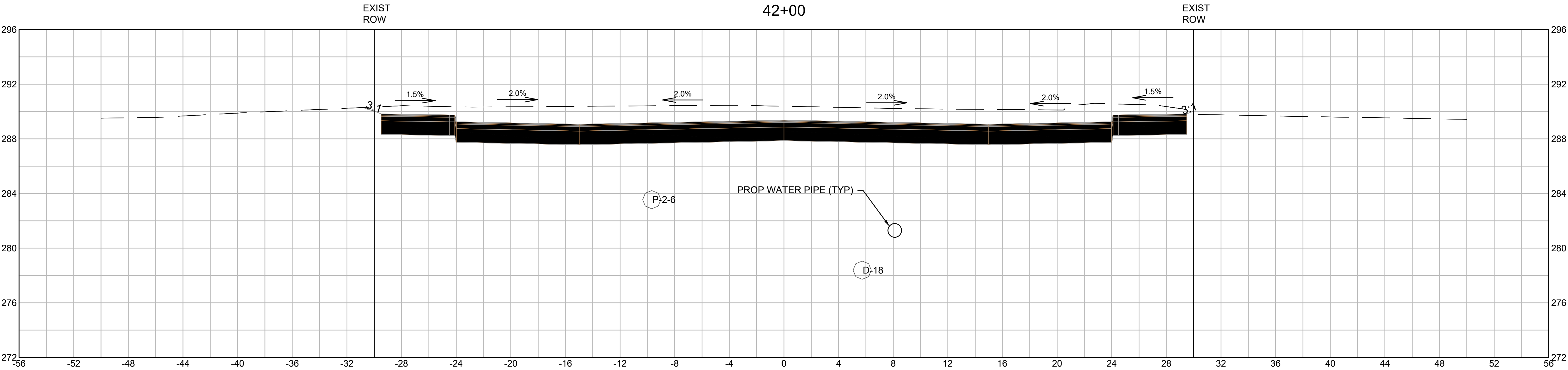
TEC CAD FILE

T1180\_SECTION

DRAWING NO.  
**C-58**

SHEET 58 OF 61





HORIZONTAL AND VERTICAL SCALE

4 0 4 8

SCALE IN FEET

REVISIONS

1. 2-21-24 PEER REVIEW

2.

3.

DRAWING TITLE

**Roadway Cross Sections**  
**42+00 to 42+50**

SUBDIVISION NAME & LOCATION

**King Street Commons**  
550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER

**Lupoli Companies**  
290 Merrimack Street  
Lawrence, MA 01840

DESIGNER / ENGINEER

**TEC**  
The Engineering Corp

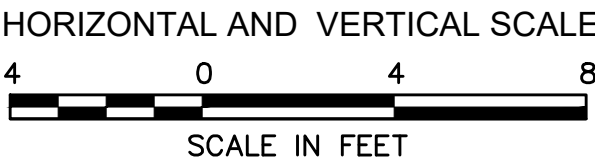
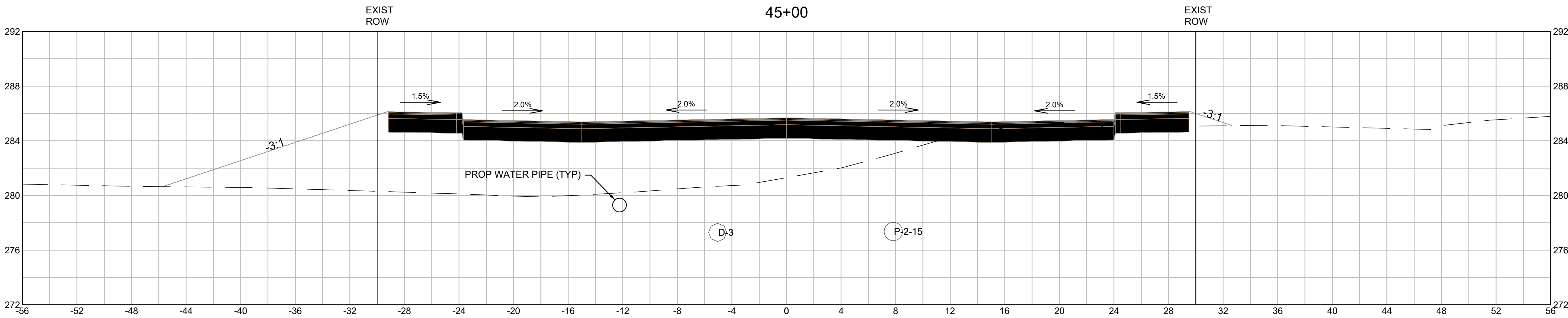
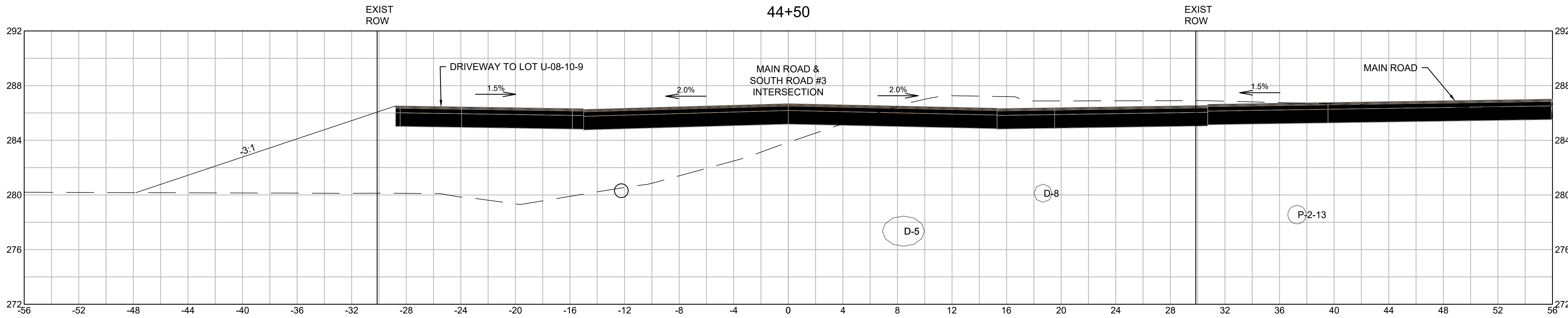
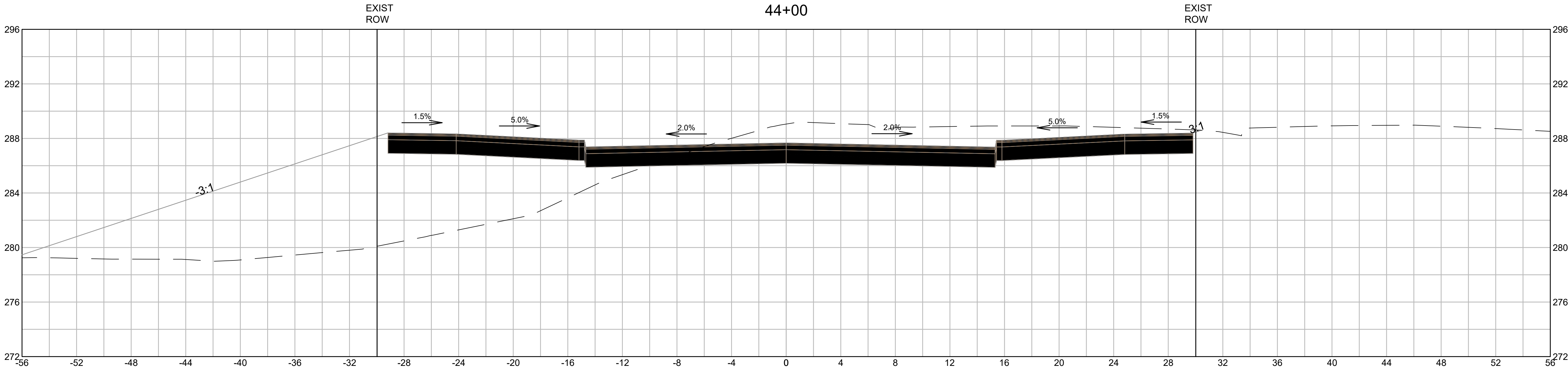
TEC, Inc.  
282 Merrimack Street, 2nd Floor  
Lawrence, Massachusetts 01843  
978.794.1792  
www.TheEngineeringCorp.com  
Lawrence | Hampton | Worcester

DESIGNED BY RJF DATE 8-22-23  
CHECKED BY CPR SCALE AS NOTED

PROJECT NO. T1180  
TEC CAD FILE  
T1180\_SECTION  
DRAWING NO. **C-59**  
SHEET 59 OF 61

RICHARD J. FRIBERG JR.  
CIVIL  
No. 47850  
REGISTERED  
PROFESSIONAL ENGINEER





| REVISIONS |                     |
|-----------|---------------------|
| 1.        | 2-21-24 PEER REVIEW |
| 2.        |                     |
| 3.        |                     |

DRAWING TITLE

**Roadway Cross Sections**  
**44+00 to 45+00**

SUBDIVISION NAME & LOCATION

**King Street Commons**  
550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER

**Lupoli Companies**  
290 Merrimack Street  
Lawrence, MA 01840

DESIGNER / ENGINEER



TEC, Inc.  
282 Merrimack Street, 2nd Floor  
Lawrence, Massachusetts 01843  
978.794.1792

www.TheEngineeringCorp.com  
Lawrence | Hampton | Worcester

DESIGNED BY RJF DATE 8-22-23  
CHECKED BY CPR SCALE AS NOTED

PROJECT NO.  
T1180

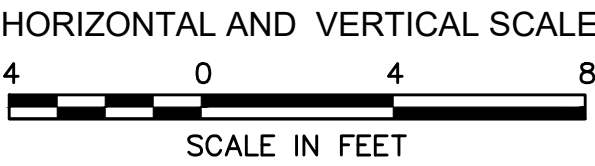
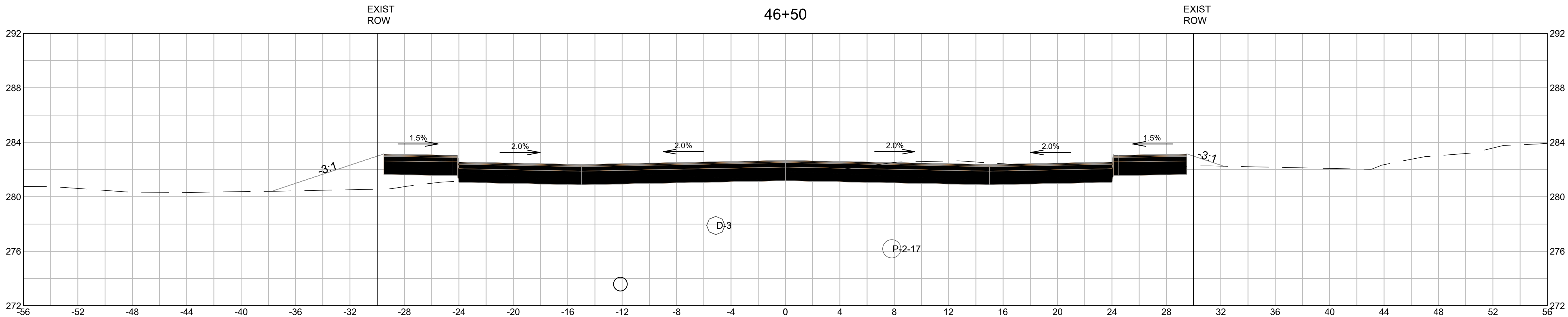
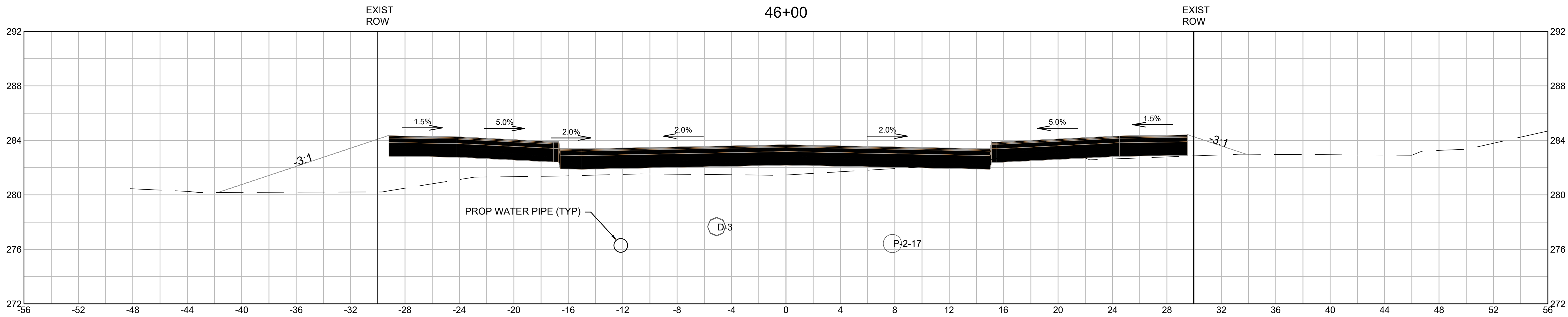
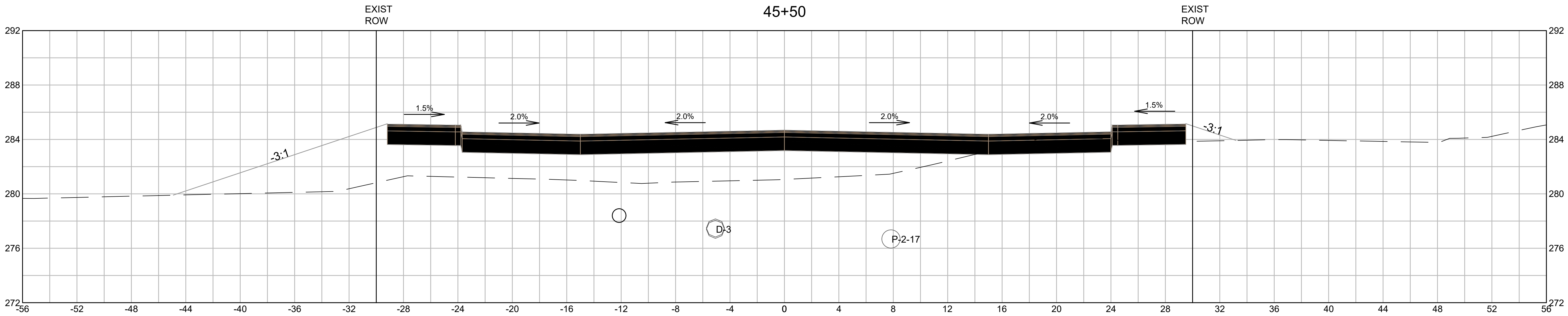
TEC CAD FILE

T1180\_SECTION

DRAWING NO.  
**C-60**

SHEET 60 OF 61





| REVISIONS |                     |
|-----------|---------------------|
| 1.        | 2-21-24 PEER REVIEW |
| 2.        |                     |
| 3.        |                     |

DRAWING TITLE

**Roadway Cross Sections**  
**45+50 to 46+50**

SUBDIVISION NAME & LOCATION

**King Street Commons**  
550 King Street  
Littleton, MA 01460

OWNER / APPLICANT / SUBDIVIDER

**Lupoli Companies**  
290 Merrimack Street  
Lawrence, MA 01840

DESIGNER / ENGINEER

**TEC**  
The Engineering Corp

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282 Merrimack Street, 2nd Floor  
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DESIGNED BY RJF DATE 8-22-23  
CHECKED BY CPR SCALE AS NOTED

PROJECT NO.  
T1180

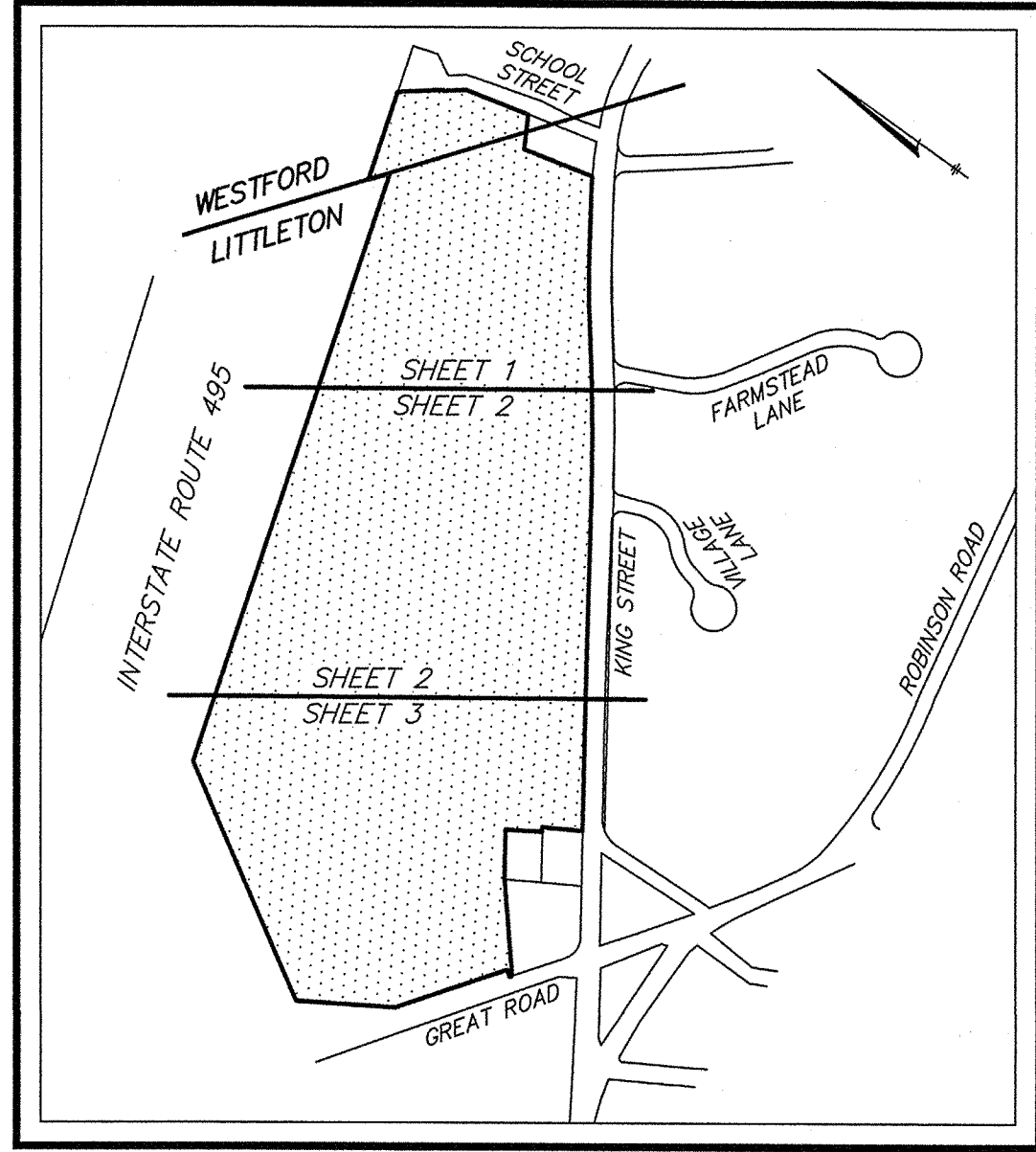
TEC CAD FILE

T1180\_SECTION

DRAWING NO.  
**C-61**

SHEET 61 OF 61





KEY SHEET  
SCALE: 1" = 500'

I CERTIFY THAT THIS PLAN CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

DATE \_\_\_\_\_ PROFESSIONAL LAND SURVEYOR

APPROVAL BY THE TOWN OF LITTLETON PLANNING BOARD

DATE \_\_\_\_\_

I, TOWN CLERK OF THE TOWN OF LITTLETON, HEREBY CERTIFY THAT THE NOTICE OF APPROVAL OF THIS PLAN BY THE PLANNING BOARD HAS BEEN RECEIVED AND RECORDED AT THIS OFFICE AND THAT NO NOTICE OF APPEAL WAS RECEIVED DURING THE TWENTY DAYS NEXT AFTER SUCH RECEIPT AND RECORDING OF SAID NOTICE.

DATE \_\_\_\_\_ TOWN CLERK

#### ASSESSORS:

PARCEL 10# U08-10-0 (#550)  
PARCEL 10# U08-17-4 (#584)

#### RECORD OWNER:

550 KING STREET LLC

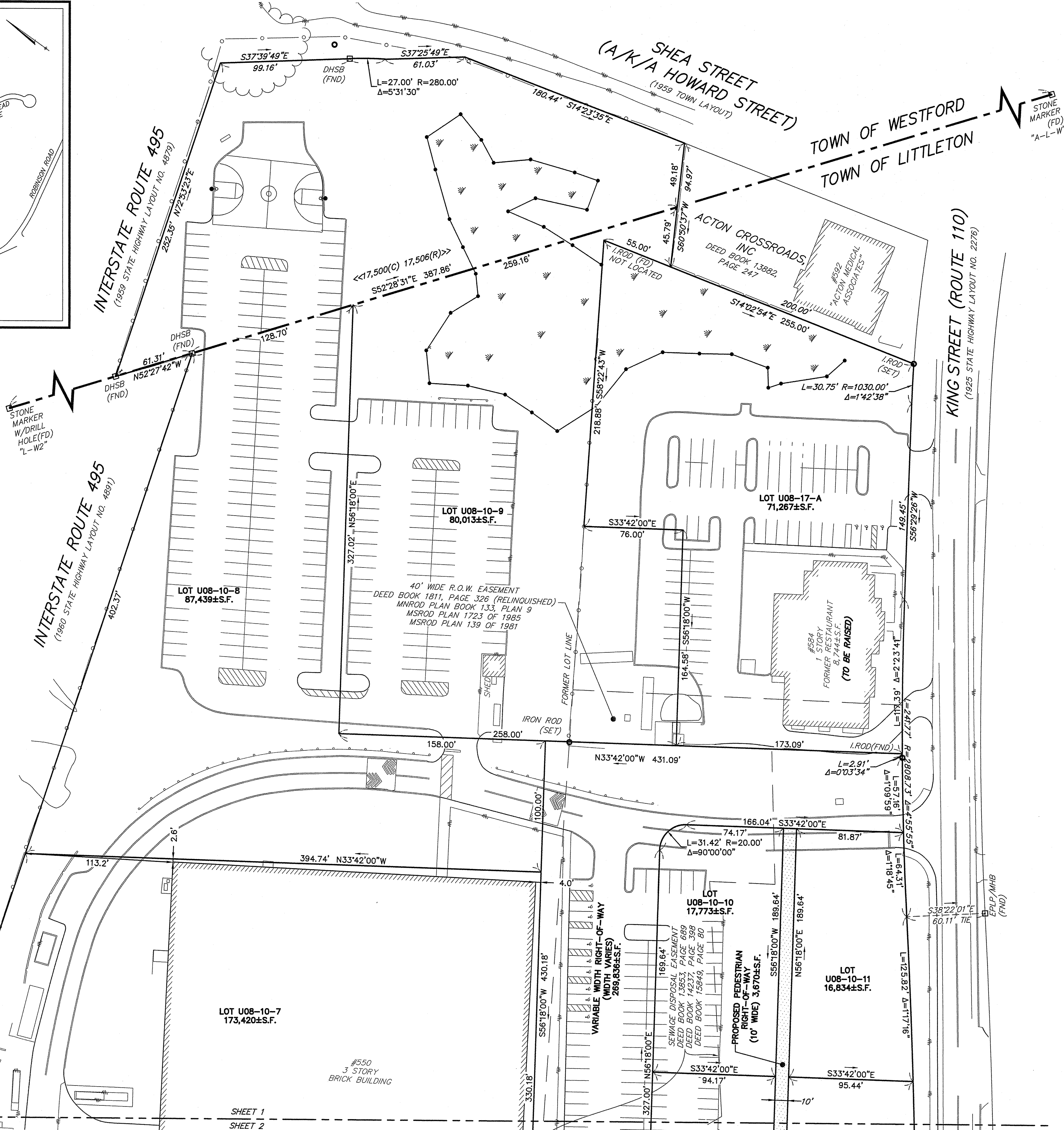
#### REFERENCES:

MIDDLESEX SOUTH REGISTRY OF DEEDS  
DEED BOOK 78708, PAGE 547  
DEED BOOK 80208, PAGE 416  
DEED BOOK 80418, PAGE 83 (DECISION)  
PLAN 538 OF 2006  
PLAN 82 OF 2008

MIDDLESEX NORTH REGISTRY OF DEEDS  
DEED BOOK 36259, PAGE 193  
DEED BOOK 37124, PAGE 89 (AFFIDAVIT)  
PLAN BOOK 221, PLAN 46

#### ZONING:

KING STREET COMMON  
VILLAGE COMMON



#### NOTES:

1) THE HORIZONTAL DATUM FOR THIS SURVEY IS THE MASSACHUSETTS COORDINATE SYSTEM, NAD 1983, MAINLAND ZONE. THE VERTICAL DATUM FOR THIS SURVEY IS THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). SAID DATUMS WERE ESTABLISHED VIA GPS OBSERVATIONS.

2) UNDERGROUND UTILITIES ARE SHOWN HEREON FROM FIELD LOCATIONS OF SURFACE VISIBLE STRUCTURES AND FROM AVAILABLE RECORD INFORMATION ON FILE AT THE TOWN OF LITTLETON DEPARTMENT OF PUBLIC WORKS, AND PRIVATE UTILITY COMPANIES. OTHER UNDERGROUND UTILITIES MAY EXIST. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE LOCATION, SIZE & ELEVATION OF ALL UTILITIES WITHIN THE AREA OF PROPOSED WORK AND TO CONTACT "DIG-SAFE" AT 811 AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION, DEMOLITION OR CONSTRUCTION.

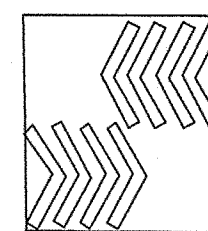
3) THE LIMIT OF BORDERING VEGETATED WETLANDS SHOWN HEREON WAS DELINEATED BY HANCOCK ASSOCIATES IN DECEMBER OF 2021 AND LOCATED VIA FIELD SURVEY.

4) THE SURVEYED PREMISES AS SHOWN HEREON IS NOT LOCATED WITHIN A SPECIAL FLOOD HAZARD AREA, OR OTHER FLOOD AREA, AS SHOWN ON FEMA NATIONAL FLOOD INSURANCE PROGRAM (NFIP) FLOOD INSURANCE RATE MAP (FIRM) NUMBER 25017C0236F, HAVING AN EFFECTIVE DATE OF JULY 7, 2014.

5) THIS PLAN IS THE RESULT OF AN ON-THE-GROUND INSTRUMENT SURVEY PERFORMED BY HANCOCK ASSOCIATES THROUGH FEBRUARY OF 2022 IN CONJUNCTION WITH PHOTOGRAMMETRIC INFORMATION PROVIDED BY EASTERN TOPOGRAPHICS.

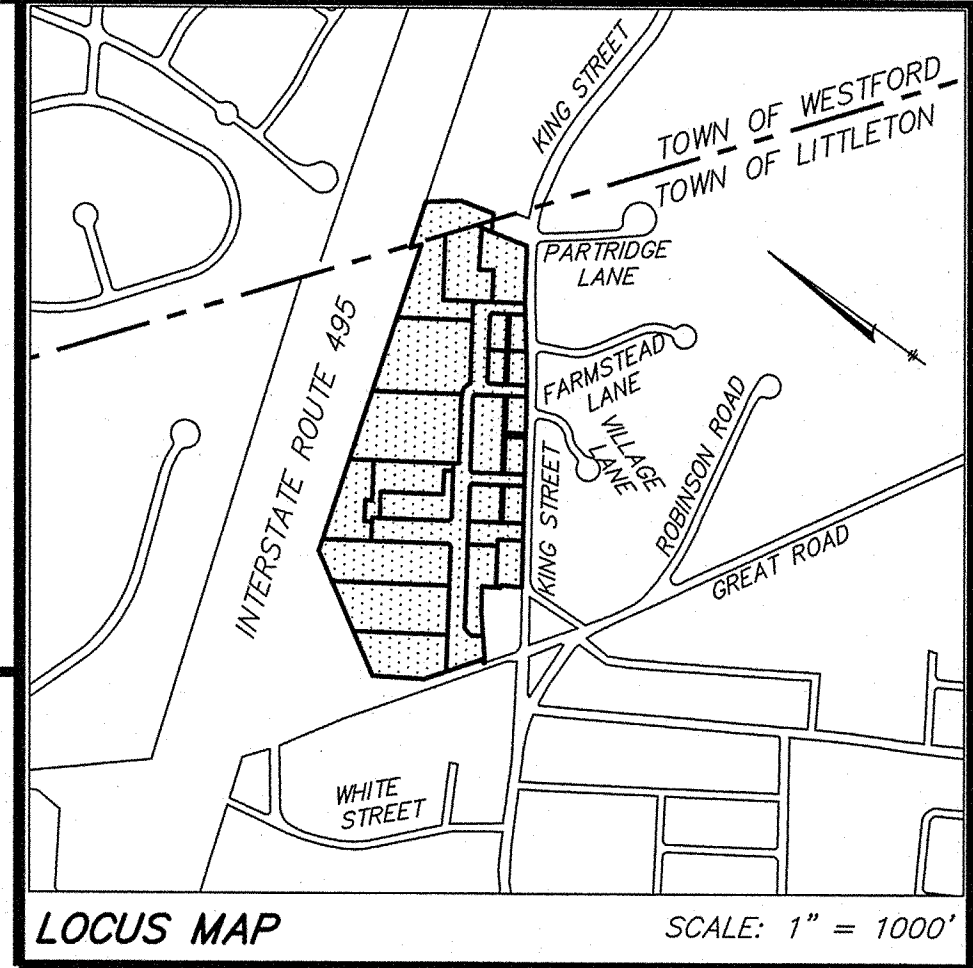
#### LEGEND

- CHAIN LINK FENCE
- METAL GUARDRAIL
- EDGE OF PAVEMENT
- EDGE OF WOODED AREA
- RETAINING WALL
- EDGE OF GRAVEL ROAD
- LIMIT OF BORDERING VEGETATED WETLAND
- EXISTING UTILITY POLE WITH DESIGNATION
- LIGHT POLE
- DHCB DRILL HOLE IN CONCRETE BOUND
- DHCB DRILL HOLE IN STONE BOUND
- MHB MASS HIGHWAY BOUND
- EPLP ESCUTCHEON PIN IN A LEAD PLUG
- I.ROD IRON ROD
- (FND) FOUND
- CLF CHAIN LINK FENCE
- BASKETBALL HOOP
- BOLLARD
- FP FLAG POLE



SCALE: 1" = 40'

0 40 80 160



SITE ADDRESS:

#550  
KING STREET

Littleton, Massachusetts

PREPARED FOR:

LUPOLI  
COMPANIES,  
LLC

290 Merrimack Street  
Lawrence, Massachusetts 01843

HANCOCK  
ASSOCIATES

Civil Engineers

Land Surveyors

Wetland Scientists

34 CHELMSFORD ST., CHELMSFORD, MA 01824  
VOICE (978) 244-0110, FAX (978) 244-1133  
WWW.HANCOCKASSOCIATES.COM

8-1-23



*Gregory A. Gould*

NO. BY APP DATE ISSUE/REVISION DESCRIPTION

DATE: 8/1/2023 DRAWN BY: JAR  
SCALE: 1"=40' CHECK BY: JMO

DEFINITIVE  
SUBDIVISION  
PLAN OF LAND  
IN  
LITTLETON,  
MASSACHUSETTS

PLOT DATE: Aug 17, 2023 3:24 pm  
PLOT: 25579-Subdiv-Littleton(Site)DWG1

DWG: 25579.dwg

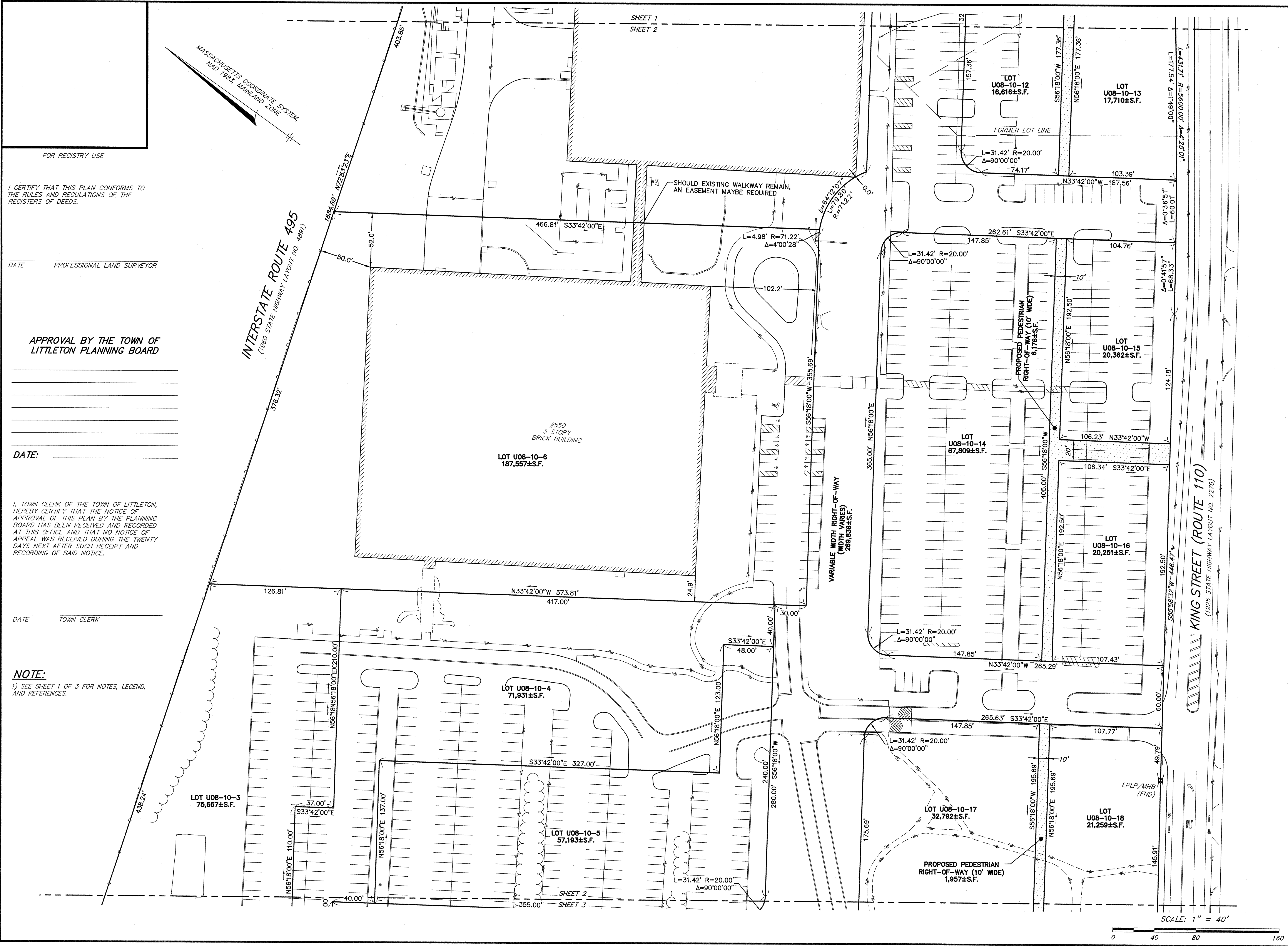
LAYOUT: DF Phase2

SHEET: 1 OF 3

PROJECT NO.:

25579





SITE ADDRESS:

#550  
KING STREET

Littleton, Massachusetts

PREPARED FOR:

LUPOLI  
COMPANIES,  
LLC

290 Merrimack Street  
Lawrence, Massachusetts 01843

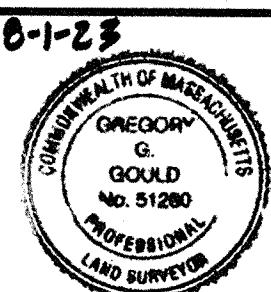
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*Gregory G. Gould*

NO. BY APP DATE ISSUE/REVISION DESCRIPTION

DATE: 8/1/2023 DRAWN BY: JAR  
SCALE: 1"=40' CHECK BY: JMO

DEFINITIVE  
SUBDIVISION  
PLAN OF LAND  
IN  
LITTLETON,  
MASSACHUSETTS

DWG: 25579df.dwg

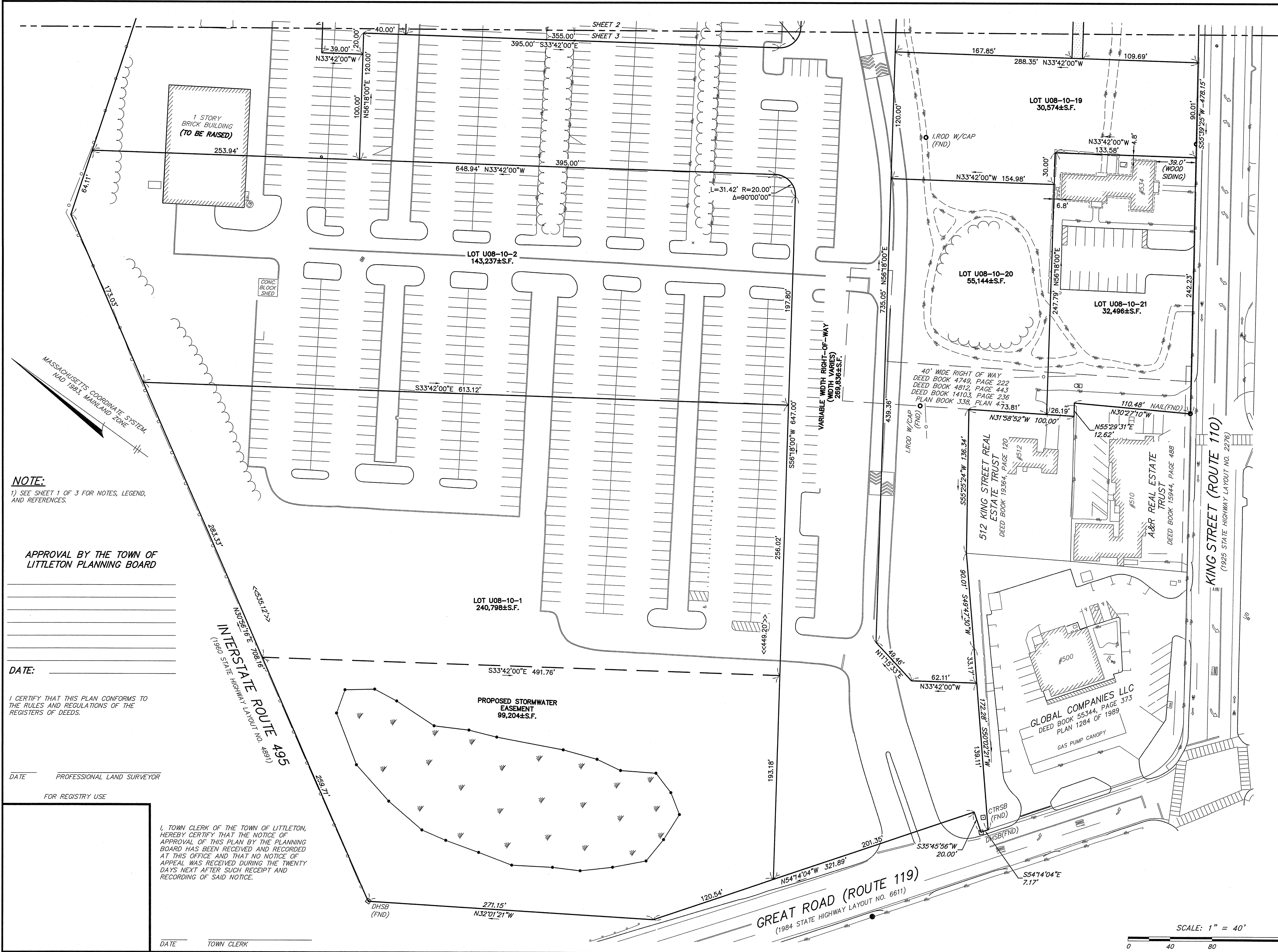
LAYOUT: DF Phase2

SHEET: 2 OF 3

PROJECT NO.:

25579





SITE ADDRESS:

#550  
KING STREET

Littleton, Massachusetts

PREPARED FOR:

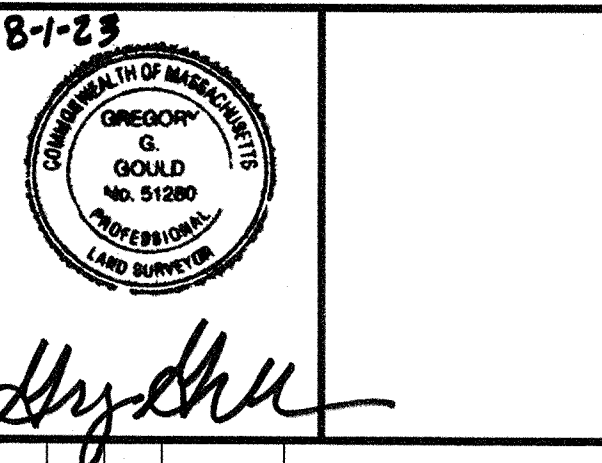
LUPOLI  
COMPANIES,  
LLC

290 Merrimack Street  
Lawrence, Massachusetts 01843

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Wetland Scientists

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WWW.HANCOCKASSOCIATES.COM



| NO. | BY | APP | DATE | ISSUE/REVISION | DESCRIPTION |
|-----|----|-----|------|----------------|-------------|
|     |    |     |      |                |             |
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|     |    |     |      |                |             |
|     |    |     |      |                |             |

DATE: 8/1/2023 DRAWN BY: JAR  
SCALE: 1"=40' CHECK BY: JMO

DEFINITIVE  
SUBDIVISION  
PLAN OF LAND  
IN  
LITTLETON,  
MASSACHUSETTS

DWG: 25579df.dwg  
LAYOUT: DF Phase2  
SHEET: 3 OF 3  
PROJECT NO.: 25579